

THE RICE CRISIS

MARKETS, POLICIES AND FOOD SECURITY



EDITED BY DAVID DAWE



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Contents

<i>Foreword by Kostas Stamoulis</i>	<i>vii</i>
<i>Preface</i>	<i>ix</i>
<i>List of contributors</i>	<i>xi</i>
<i>List of figures and tables</i>	<i>xiii</i>
<i>List of acronyms and abbreviations</i>	<i>xxi</i>

PART I – INTRODUCTION

1	Food Crises Past, Present (and Future?): Will We Ever Learn? C. Peter Timmer and David Dawe	3
---	--	---

PART II – OVERVIEW: THE WORLD RICE MARKET AND TRADE POLICIES

2	The World Rice Market Crisis of 2007–2008 David Dawe and Tom Slayton	15
3	Did Speculation Affect World Rice Prices? C. Peter Timmer	29
4	Trade-Related Policies to Ensure Food (Rice) Security in Asia Alexander Sarris	61

PART III – POLICY RESPONSES IN TRADITIONAL IMPORTING COUNTRIES

5	Volatility in Rice Prices and Policy Responses in Bangladesh Mahabub Hossain and Uttam Deb	91
6	Indonesia's Rice Policy and Price Stabilization Programme: Managing Domestic Prices during the 2008 Crisis Agus Saifullah	109
7	Rice Crisis in the Philippines: Why Did it Occur and What Are its Policy Implications? Arsenio M. Balisacan, Mercedesita A. Sombilla and Rowell C. Dikitanan	123

8	West African Experience with the World Rice Crisis, 2007–2008 Jenny C. Aker, Steven Block, Vijaya Ramachandran and C. Peter Timmer	143
---	---	-----

9	Rice in Africa: Will Imports Continue to Grow? Ousman Gajigo and Glenn Denning	163
---	--	-----

PART IV – POLICY RESPONSES IN TRADITIONAL EXPORTING COUNTRIES

10	The Political Economy of Thailand’s Rice Price and Export Policies in 2007–2008 Nipon Poapongsakorn	191
----	---	-----

11	The Vietnamese Rice Industry during the Global Food Crisis Pham Hoang Ngan	219
----	--	-----

12	Rice Production in Cambodia: Will Exports Continue to Grow? Sushil Pandey and Humnath Bhandari	233
----	--	-----

PART V – POLICY RESPONSES IN CHINA AND INDIA

13	How China Stabilized Grain Prices during the Global Price Crisis Cheng Fang	255
----	---	-----

14	Rice Policies in India in the Context of the Global Rice Price Spike Ashok Gulati and Monica Dutta	273
----	--	-----

PART VI – POLICY RESPONSES IN THE DEVELOPED COUNTRIES

15	Japan’s Rice Policy and its Role in the World Rice Market: Japan Should Act as a Watchdog Shoichi Ito	299
----	---	-----

16	The ‘Diplomatic Crop’, or How the US Provided Critical Leadership in Ending the Rice Crisis Tom Slayton	313
----	---	-----

PART VII – CONCLUSION

17	Can the Next Rice Crisis Be Prevented? David Dawe	345
----	---	-----

	<i>Index</i>	357
--	--------------	-----

Foreword

The spike in food prices in 2007–2008 was the biggest spike on world food markets since the world food crisis of 1973–1975. Poor people often spend as much as 40 per cent of their incomes on staple foods – thus, a large price shock is a major blow to the effective purchasing power of those who are food insecure, and the crisis caused great hardship to them in many countries around the world. But food prices on world markets eventually declined in the second half of 2008, and although domestic prices remain higher than before the crisis in some countries, the crisis has largely passed. Since large food price spikes seem to occur about once every 30 to 35 years, is there any scope for an analysis now? What is the usefulness of analysing the most recent world food crisis now if we don't have to deal with a similar crisis until 2040?

While it is true that large price spikes on world markets have occurred relatively infrequently in the past, there is some reason to think this may change in the future. First, biofuel demand has strengthened linkages between world energy and agricultural markets. Because world energy markets are so much larger than world agricultural markets, they may drive agricultural markets in the future. And world energy markets have historically been much more volatile than world food markets, creating the possibility that world food markets will become more volatile in the future. Second, climate change is expected to result in an increased frequency of severe climatic events that may reverse the historical trend of the past few decades to more stable cereal production and yields. Thus, it is important to understand more about the most recent world food crisis to help us potentially deal better with similar shocks that may occur in the future.

While there were price surges for all three of the world's major cereals (rice, wheat and maize) in the years 2006 to 2008, it is widely acknowledged that the spike in world rice prices had a fundamentally different explanation from the spikes in wheat and maize prices. Thus, while the world rice crisis was undoubtedly shaped to some extent by the same broad events that contributed to price spikes in other world food markets, the world rice economy took on a dynamic of its own, especially in early 2008. In particular, government policies were crucial, both in terms of their 'spill-over' effects on world markets, and in terms of their heterogeneous effects on domestic prices.

With a view to designing better policies, and in response to the needs expressed by many countries to learn how to deal more appropriately with shocks to international markets in an increasingly globalized environment, the Food and Agriculture Organization of the United Nations (FAO) has supported both a workshop and the publication of this book that gathers together insights from many different experts from around the world. The workshop brought together participants from a wide range of organizations: private traders, research institutes, international organizations and government agencies responsible for policy implementation. The book explores in detail the wide range of different policies employed by various countries before, during and in the immediate aftermath of the rice crisis. Different policies led to different results, thereby providing invaluable lessons for the future about dealing with food price shocks. It is my hope that this publication will contribute to a more informed debate on issues that are of fundamental importance to the food security of the hundreds of millions of undernourished people around the globe.

Kostas Stamoulis
Director, Agricultural Development Economics Division
Food and Agriculture Organization of the United Nations

Preface

World rice prices spiked in early 2008, with prices tripling in the span of just a few months. This crisis on the world market led to surges in domestic rice prices in many countries, leading to substantial effects on the poor in countries where rice is the staple food for consumers and the crop most widely grown by farmers.

Because rice is such an important crop for the world's poor, FAO felt that it was important to understand the origins of the world rice crisis, the nature of domestic policy responses to the crisis, and to attempt to answer the question 'Can the next rice crisis be prevented?'. In order to achieve these objectives, FAO convened a workshop in Chiang Mai, Thailand, in February 2009 that gathered together many different types of experts on the rice economy. This book has its origins in the discussions held during that workshop.

The purpose of the book is to stimulate and facilitate informed discussion. Given the effects of the world rice crisis on the poor, such debate is essential to helping countries manage such crises better in the future. But none of the statements in the book necessarily represent an official position of FAO, or any other organization that participated in the workshop.

One group of experts who participated in the workshop make their living in the international rice trade. While the rice traders who joined the workshop did not contribute any papers to this book, they did make presentations to the group during the workshop and contributed many important insights during the discussions. In this regard, a tremendous vote of thanks is due to Vichai Sriprasert, Sumeth Laomorphorn and Porntiwa Tanaphong for keeping everyone's feet firmly planted on the ground.

The other experts at the workshop hailed from a wide range of research, policy and government organizations around the world at both international and national levels. These experts prepared draft presentations or papers specifically for this workshop, but then updated and revised them substantially afterwards in order to create this book. Thanks are due to these people who contributed their time, expertise and knowledge of various aspects of the world's rice economy to this book. Thanks are also due to several authorities who shared their expertise during the workshop but did not contribute a paper to this volume: Zhou Hui (State Administration of Grain, China) and Dr Park

Dong-Kyu (Korea Rural Economic Institute).

The workshop would not have run as smoothly as it did without the excellent planning and logistical support provided over the span of several months, before, during and after the workshop, by Truchai Sodsoon of FAO's Regional Office for Asia and the Pacific and Juejan Tangtermthong of the Agricultural and Food Marketing Association for Asia and the Pacific (AFMA). Their support is very gratefully acknowledged. Editorial support from Adam Barclay in preparing some of the chapters is also gratefully acknowledged.

The workshop would not have been held at all without the intellectual support and encouragement from He Changchui, Deputy Director General for Operations at FAO; Hiroyuki Konuma, Assistant Director General and Regional Representative of FAO's Regional Office for Asia and the Pacific (RAP); Kostas Stamoulis, Director of FAO's Agricultural Development Economics Division (ESA) in Rome; Keith Wiebe, Deputy Director of ESA; Jairo Castaño, Senior Statistician at FAO RAP; and Dorjee Kinlay, Economist in ESA, who first suggested that we hold a workshop on this topic. Their inputs are sincerely valued.

Financial support from FAO, and from the organizations that allowed their staff members to take time off from their other duties and supported their travel in whole or in part, was very much appreciated by all the participants.

Finally, I would like to thank my family for their love and support, and for tolerating my continuing interest in anything to do with rice.

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List of Figures and Tables

Figures

2.1	Monthly inflation-adjusted rice prices, January 2000 to September 2007	16
2.2	Timeline of key events in the world rice crisis	19
3.1	Annual average percentage increase in rice yields and population between successive rolling five-year periods in rice-producing Asia	33
3.2	Demand factors contributing to food price formation since 2000	37
3.3	Granger causality test: Euro/US\$ \Rightarrow Brent crude	44
3.4	Granger causality test: Euro/US\$ \Rightarrow corn (maize)	46
3.5	Granger causality test: Euro/US\$ \Rightarrow hard wheat	46
3.6	Granger causality test: Euro/US\$ \Rightarrow rice	47
3.7	Granger causality test: Oil (Brent) \Rightarrow corn (maize)	48
3.8	Granger causality test: Oil (Brent) \Rightarrow palm oil	48
3.9	Granger causality test: Soft wheat \Rightarrow corn (maize)	49
3.10	Granger causality test: Corn (maize) \Rightarrow soft wheat	50
3.11	Granger causality test: Hard wheat \Rightarrow rice	50
3.12	Granger causality test: Hard wheat \Leftarrow rice	51
3.13	Long-run trend in real rice prices, 1900–2008	53
3.14	Long-run trend in real wheat price, 1900–2008	53
3.15	Long-run trends in real maize prices, 1900–2008	54
4.1	Recent export rice prices	63
4.2	Real prices of bulk food commodities, 1957–2008	64
4.3	Historic volatility and nominal international price for rice	68
4.4	Coefficients of variation of regional and global production of rice since 1961	69
4.5	Global ending stocks of rice and stock to utilization ratios for the whole world and for the world without China	70
4.6	Policy actions adopted by a sample of 77 developing countries to deal with high international food commodity prices	72
4.7	Projected population growth rates to 2017	74
4.8	Projected GDP growth rates for Asia and the world	75

4.9	Projected real international prices of food commodities in the medium term	75
4.10	Projections of net grain imports in Asia and the Pacific	76
4.11	China: Projections of net exports of milled rice	76
4.12	India: Projections of net exports of milled rice	77
4.13	Indonesia: Projections of net imports of milled rice	77
4.14	Philippines: Projections of net imports of milled rice	78
4.15	Thailand: Projections of net exports of milled rice	78
4.16	Viet Nam: Projections of net exports of milled rice	79
4.17	Least-developed Asia (Laos, Myanmar, Cambodia, plus nine smaller countries): Projections of net exports of rice	79
5.1	Trends in rice area harvested in Bangladesh, financial years 1971–1972 to 2008–2009	93
5.2	Trends in rice (paddy) production in Bangladesh, financial years 1971–1972 to 2008–2009	93
5.3	Trends in rice (paddy) yield in Bangladesh, financial years 1971–1972 to 2008–2009	94
5.4	Trends in milled rice imports by Bangladesh, financial years 1972–1973 to 2008–2009	96
5.5	Comparison of domestic rice prices in Bangladesh, Delhi and Bangkok, January 2004 to June 2009	98
5.6	Relationship between domestic wholesale and retail price of coarse rice with MEP declared by India	100
5.7	Trends in monthly retail, wholesale and farm-level real prices of coarse rice in Bangladesh, January 2003 to June 2009	101
5.8	Trends in marketing margins of coarse rice in Bangladesh, January 2003 to June 2009	102
5.9	Trends in inflation (moving average), July 2001 to June 2009	103
5.10	Trends in real agricultural wages in Bangladesh, January 2003 to February 2009	103
5.11	Trends in real prices of fertilizers in Bangladesh, 2002–2003 to 2008	107
6.1	International and domestic wholesale rice prices, 2000–2008	112
6.2	Real rice price movement: Paddy, wholesale and retail 2000–2008 (Rp/kg)	112
6.3	Production, rice price, GPP and urea price, 2000–2008	117
7.1	Domestic rice price (farm, wholesale and retail) movements, 2007, 2008 and January to August 2009	125
7.2	Paddy and milled rice annual/monthly average prices in the Philippines, 1990–2008	127
7.3	Trends in rice production, demand and population, and per capita consumption and per capita income, Philippines	128
7.4	Food consumption trends over time	129
7.5	Distribution of food expenses by income class, 2006	129
7.6	Poverty reduction performance versus the MDG target	131

7.7	Monthly relative distribution of production, imports and farm-gate prices in the Philippines, 2000 and 2002	134
7.8	Land and labour productivity growth in the agriculture sector	136
8.1	Evolution of rice consumption and production in West Africa	145
8.2	International versus domestic prices of imported rice, October 2003–June 2008	154
8.3	Millet versus imported rice prices in selected countries, October 2003–June 2008	156
8.4	Local vs imported rice prices in selected countries	158
8.5	Rice trade policy and world prices in Senegal	159
9.1	Paddy rice production in sub-Saharan Africa by sub-region	165
9.2	Paddy rice production, area harvested and yield in sub-Saharan Africa	168
9.3	Paddy rice yield by sub-region	168
9.4	Average per capita milled rice consumption, weighted by population	171
9.5	Distribution of urbanization rates in sub-Saharan Africa in 1965 and 2000	172
9.6	Total consumption growth and urbanization	173
9.7	Production and consumption of milled rice in sub-Saharan Africa, 1962–2005	175
9.8	Rice imports in sub-Saharan Africa	176
9.9	Production and consumption by sub-region	177
9.10	Rice imports forecast by sub-region	184
10.1	The organization of the paddy pledging programme	193
10.2	Percentage of the benefits of the paddy pledging programme accruing to farm income deciles, 2006–2007	198
10.3	Trends in paddy 5% prices and <i>Hom Mali</i> paddy prices	200
10.4	Seasonal price indices of paddy 5% broken and <i>Hom Mali</i>	201
10.5	World prices of rice, wheat and maize	205
10.6	Volume of monthly rice exports, January 2005–January 2009	210
10.7	Export prices of Thai and Vietnamese rice	211
10.8	Rice export and index of government rice stock	213
11.1	Viet Nam's paddy planted area, 1976–2008	222
11.2	Viet Nam's paddy production, 1976–2008	222
11.3	Viet Nam's paddy yield, 1976–2008	223
11.4	MRD ordinary paddy and rice price movements and world rice prices, 2008	226
12.1	Trends in area and production of rough rice, Cambodia, 1960–2008	236
12.2	Trends in yield of rough rice, Cambodia, 1960–2008	237
12.3	Per capita production of rough rice, Cambodia, 1960–2008	238
12.4	Rice exports from Cambodia, 1960–2008	239
12.5	Trade flow of paddy and rice in Cambodia	241
12.6	Monthly nitrogen fertilizer price index, Cambodia, 2007–2008	243

12.7	Monthly wholesale price of high-quality milled rice, Cambodia, 2005–2009	244
12.8	Scenario analysis of the growth of exportable surplus in Cambodia, 2010–2020	247
13.1	China's CPI and food price index, January 2003 to November 2008	256
13.2	Non-price government support, 2005–2008	259
13.3	China's rice area, yield and production index, 1991–2008	261
13.4	Rice production and domestic utilization, 2005–2008	261
13.5	World rice prices, China's grain export policies and rice exports	263
13.6	Fertilizer exports and trade policies	265
13.7	Ratio of ending stocks to domestic utilization	266
13.8	Domestic and world prices of rice, January 2004 to December 2008	266
13.9	Domestic and world prices of wheat, January 2004 to December 2008	267
13.10	Domestic and world prices of maize, January 2004 to December 2008	268
13.11	Domestic and world prices of soybeans, January 2004 to December 2008	268
13.12	Income (including subsidies) per hectare	270
13.13	Income (including subsidies) per ton	270
14.1	Spike in the global rice price	274
14.2	All-India average retail prices of rice (Rs/kg)	277
14.3	Global production of three key staples	278
14.4	Share in global rice production and percentage share in global rice production (TE 2008–2009)	278
14.5	Share in global rice stocks and percentage share in global rice stocks (TE 2008–2009)	279
14.6	Nominal and real minimum support prices for common paddy and wheat	280
14.7	Food grain stocks versus norm requirement	284
14.8	Export bans on rice	290
15.1	Per capita consumption of rice for Japan, Chinese province of Taiwan, Republic of Korea and China, 1961–2008	300
15.2	Structure and share of rice production costs in Japan, 2006	301
15.3	Weekly wholesale prices of rice in Japan, 1990–2009	302
15.4	Annual retail prices of milled rice in Tokyo, 1991–2008	302
15.5	Monthly retail prices of milled rice in Tokyo, 2007–2008	303
15.6	Budget for increases in food self-sufficiency rate for livestock feed	304
15.7	Strategic countermeasures against the global food shortage	305
15.8	Rice imports to Japan, 1980–2008	306
15.9	US milled rice prices by type, 1979–2007	307
15.10	Monthly prices of milled rice, USA	308
16.1	US rice outlays, 1981–2008 (million \$)	319

17.1	World rice prices adjusted for inflation (monthly, January 1962 to April 2009) and a lagged five-year moving average	351
------	--	-----

Tables

3.1	Significance of Granger causality tests for various commodities and the exchange rate between the euro and US dollar	52
3.2	Long-run relationships among rice, wheat and maize prices, 1900–2008	52
5.1	Trends in area, production and yield of rice (paddy) in Bangladesh, 1971–1972 to 2007–2008	92
5.2	Per capita consumption of rice, 2005	97
5.3	Consumption of different food items in Bangladesh, 1983–1984 to 2005	97
5.4	Distribution of food grains under PFDS in Bangladesh, 2006–2007 to 2008–2009	106
6.1	The development of GPP, domestic prices and world rice prices	111
6.2	Subsidized rice (RASKIN) distribution 2006–2008	115
6.3	Rice production by crop season, 2007–2008	116
6.4	The distribution of rice production in Indonesia, 2005–2008	118
6.5	Rice price movements and BULOG rice distribution during lean seasons, 2006–2008	119
6.6	Ratio of procurement against RASKIN requirement, 2007–2008	121
7.1	Domestic rice price movements: Growth rates and coefficients of variation	126
7.2	Extent of food deprivation in the Philippines, by income level	132
7.3	Extent of food deprivation in the Philippines, by occupation	132
7.4	Estimates of TFP growth for selected Asian countries, 1981–2001	136
7.5	Potential yield and yield gaps in rice in the Philippines	138
8.1	Area, yield and production of rice in selected West African Countries, 1961–2006	147
8.2	Imports of rice in selected West African countries, 1961–2006	148
8.3	Consumption and self-sufficiency of rice in selected West African countries, 1961–2006	149
8.4	Cumulative percentage changes in real rice prices, the last quarter of 2003 to the last quarter of 2007	152
8.5	Levels and changes in nominal prices (CFA) for millet, domestic and imported rice, the last quarter of 2003 to the second quarter of 2008	153
8.6	Correlation of international and domestic rice prices before and during the crisis	155
8.7	Correlation of domestic millet and rice prices before and during the crisis	157

8.8	Correlation of domestic and imported rice prices before and during the crisis	157
9.1	Rice producers in sub-Saharan Africa	166
9.2	Regression results with paddy rice production and rice yield as dependent variables	167
9.3	Countries with highest per capita rice consumption	170
9.4	Average consumption growth rates by sub-region	170
9.5	Urbanization rates in other regions	173
9.6	Regression results (sub-Saharan African countries) for the determinants of per capita rice consumption	174
9.7	Imports (milled rice terms in metric tons)	176
10.1	Planted area, paddy production and volume of paddy under the pledging programme	195
10.2	Cost of the pledging programmes, 2004–2006	197
10.3	Seasonal price indices	202
11.1	Viet Nam’s monthly rice exports, 2008	224
11.2	Urea prices in An Giang province, MRD, Viet Nam, 2003–2008	227
11.3	Paddy production, planted area and yield, Viet Nam, 2005–2008	228
11.4	Paddy production, planted area and yield, MRD, 2005–2008	229
11.5	Winter–spring paddy production cost in An Giang province, MRD, 2006–2008	230
12.1	Basic indicators, selected ASEAN countries	234
12.2	Rough rice average area, yield and production, selected ASEAN countries, 2005–2007	235
12.3	Percentage rice area by ecosystem, selected ASEAN countries	235
12.4	Percentage annual growth rates of rice area, yield and production, Cambodia, 1960–2008	237
12.5	Percentage annual growth rate of rice area, yield and production, by season, Cambodia, 1998–2007	238
12.6	Percentage rice area under improved varieties, Cambodia, 2002	238
12.7	Marketing margin of paddy from farmer to trader, Cambodia	242
12.8	Nitrogen–paddy price ratio, Cambodia, 2004–2008	242
12.9	Cost of rice production, Cambodia and Thailand	243
12.10	Parameters used in the food balance equation, Cambodia	246
12.11	Required yield levels by 2020 under assumed area growth rates, Cambodia	247
12.12	Infrastructure development status, selected ASEAN countries	248
13.1	China: Domestic agriculture and trade policies, 2001–2008	258
13.2	Government floor price for grains in 2004–2009	258
13.3	China’s international trade in cereals and soybeans, 2004–2008	264
13.4	Average production costs, subsidies and profits in paddy rice production, 2003–2008	269
14.1	Compound growth rates of area, production and yield of principal crops during 1990–2000 and 2000–2007	276

14.2	Percentage of levy on common milled rice in various states, 2008–2009	282
14.3	Production, procurement, stocks and off-take of rice and wheat	285
15.1	Agricultural situation in Japan, 1965 and 2005	303
16.1	US rough rice production by region	315
16.2	US rice exports	316
16.3	Top US rice food aid markets	318
16.4	US exports, GSM programmes	320
16.5	US and Thai FOB export prices	321
16.6	US Rice supply and distribution	322
16.7	US farm-gate prices for paddy	324
16.8	US exports to major destinations	325
16.9	US Production and exports	333
16.10	US rice exports by programme	334
16.11	US government outlays on rice	336
17.1	Volatility of real (inflation-adjusted) commodity prices	346

List of Acronyms and Abbreviations

AFET	Agricultural Futures Exchange of Thailand
AFMA	Agricultural and Food Marketing Association for Asia and the Pacific
AFSR	ASEAN Food Security Reserve
ARI	Africa Rice Initiative
ASEAN	Association of Southeast Asian Nations
BAAC	Bank for Agriculture and Agricultural Cooperatives
BULOG	Badan Urusan Logistik
CAGR	compound average growth rate
CARP	Comprehensive Agrarian Reform Program
CBOT	Chicago Board of Trade
CCP	Cabinet Committee on Prices
CCT	conditional cash transfer
CFA	Communauté financière d'Afrique (Financial Community of Africa)
CGD	Center for Global Development
CIMMYT	International Maize and Wheat Improvement Center
CIP	Central Issue Price
CNF	cost and freight
CPI	consumer price index
CRS	Catholic Relief Services
CRTC	Council on Rice Trade Cooperation
CV	coefficient of variation
DAP	diammonium phosphate
EAERR	East Asia Emergency Rice Reserve
ECA	Essential Commodity Act
EEP	Export Enhancement Program
EP	Essential Priority
ES	exportable surplus
ESA	Agricultural Development Economics Division (FAO)
FAF	Farmer Assistance Fund

FAO	Food and Agriculture Organization of the United Nations
FAPRI	Food and Agriculture Policy Research Institute
FCI	Food Corporation of India
FCMO	Farmers' Central Market Organization
FFE	Food for Education
FFW	Food for Work
FIELDS	Fertilizer, Infrastructure and Irrigation, Extension and Education, Loans, Drying and other Post-harvest Facilities, and Seeds
FM	Flour Mills
FOB	free on board
FPC	Fair Price Card
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GFI	government financial institution
GPP	government purchase price
G-to-G	government-to-government
GR	Gratuitous Relief
GVA	gross value added
HCMC	Ho Chi Minh City
HH	household
ICB	international commodity body
IEA	International Energy Agency
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IGG	intergovernmental group
IMF	International Monetary Fund
IRFSS	international rice food security system
IRRI	International Rice Research Institute
LEI	Large Employee Industries
LGU	local government unit
MA	minimum access
MAFF	Ministry of Agriculture, Forestry and Fisheries
MARD	Ministry of Agriculture and Rural Development
MDG	Millennium Development Goal
MEP	minimum export price
MLR	minimum lending rate
MMA	minimum market access
MOC	Ministry of Commerce
MOIT	Ministry of Industry and Trade
MOMAGRI	Mouvement pour une Organisation Mondiale de l'Agriculture (Movement for a World Agriculture Organization)
MoP	muriate of potash
MOU	memorandum of understanding
MRD	Mekong River Delta

MSP	minimum support price
MSR	minimum stock requirement
MV	modern variety
NFA	National Food Authority
NPC	nominal protection coefficient
NRA	nominal rate of assistance
OECD	Organisation for Economic Co-operation and Development
OMS	Open Market Sales
ON	Office du Niger
ONASA	Office Nationale de la Securite Alimentaire (Benin)
OP	Other Priority
OPEC	Organization of the Petroleum Exporting Countries
OREC	Organization of Rice Exporting Countries
ORS	Office Riz-Segou
PDS	Public Distribution System
PFDS	Public Food Grain Distribution System
PM	prime minister
PRRS	porcine reproductive and respiratory syndrome
PWO	Public Warehouse Organization
RAP	Regional Office for Asia and the Pacific (FAO)
RER	real exchange rate
RMA	Rice Millers' Association
RMR	regular milled rice
RRD	Red River Delta
SBS	simultaneous-buy-and-sell
SIMA	Systeme d'Informations sur le Marche Agricole (Niger)
SIM-C	System d'Information sur les Marches Cerealiers (Burkina Faso)
TE	triennium ending
TFP	total factor productivity
TPDS	Targeted Public Distribution System
TR	Test Relief
TSP	triple superphosphate
URAA	Uruguay Round Agreement on Agriculture
USDA	United States Department of Agriculture
USTR	United States Trade Representative
VAR	vector autoregressive
VAT	value added tax
VFA	Viet Nam Food Association
VGD	Vulnerable Group Development
VGf	Vulnerable Group Feeding
WARDA	West African Rice Development Authority
WFP	World Food Programme (United Nations)
WMR	well-milled rice
WTO	World Trade Organization

Part I

INTRODUCTION

Food Crises Past, Present (and Future?): Will We Ever Learn?

C. Peter Timmer and David Dawe

The world rice market ran amok in late 2007 and 2008. Prices spiralled as exporters restricted supplies to the market in order to protect their own consumers from shortages. Importers scrambled for supplies to stabilize their own markets. For several months in early 2008 it looked as though historic price levels would be reached even when adjusted for inflation. In the end, additional supplies were located (but not used), the panic subsided, and rice prices fell sharply to the trend they had been on since recovery began from the lows in 2002.

What happened? Why? Can a repeat be avoided? This volume seeks to answer those questions through a series of global market overviews and specific country analyses. This attempt at such an assessment is not as ambitious as the two classic studies of the world rice economy, Wickizer and Bennett (1941) and Barker and Herdt (1985). But a quarter century has elapsed since the Barker and Herdt study and the world rice economy has changed significantly since then. Even a partial reassessment is timely.

The debate over food crises

World food crises over the past two centuries have triggered a standard debate each time: how much can the market be relied on to provide food security and

how much should the government intervene on behalf of this objective? The debate has increased in sophistication over time. But so too have the numbers of food-insecure people – the total exceeds 1 billion hungry in mid-2009 (FAO, 2009). Each food crisis seems to stimulate a surge of government and donor activity on behalf of increased food production and better safety nets for the poor.

At the same time, market forces also respond, choking off demand (witness the 1 billion hungry people) and leading to investments in new agricultural technologies that have relentlessly pushed down staple grain prices over the long run. Since 1900, the inflation-adjusted price of rice has declined 1.37 per cent per year, corn by 1.25 per cent per year, and wheat by 1.05 per cent per year.

The ‘role of the state’ in sectoral and overall growth is an old debate (Timmer, 1991). The key elements have always been over provision of infrastructure, development of human capital through education and public health, investments in research and technology, and ‘picking winners’ by supporting particular sectors (agriculture versus industry) or industries (manufacturing versus finance, automobiles versus banks).

Within an industry, and especially within the food and agricultural sector, the question has tended to revolve around ‘price policy’ broadly construed, that is, government interventions into input and output prices through subsidies, taxes and trade policies that influence the prices of imports and exports (Timmer, 1986). If a particular product, food for example, is deemed to be meritorious, its inputs should be subsidized and its output supported. Of course, this argument runs immediately into the conflicting interests of producers and consumers of a commodity in the same economy, raising the ‘food price dilemma’ as a fundamental problem for government policy (Timmer et al, 1983).

Food crises force governments and donors to confront this dilemma in a painful and visible way. High food prices signal the scarcity of food to producers, consumers and governments alike. The almost universal response is a shift in *policy sentiment* toward greater intervention by governments on behalf of increasing food production, lowering food prices, and providing more reliable access by poor households to food.

All of these interventions come at a cost, however, and there is a gradual return to basic market forces as the crisis recedes and governments withdraw both financially and in policy activism. Historically, these market forces have pushed food prices so low that investments in productivity-enhancing research and infrastructure become unprofitable. Without these investments, growth in supply falls behind growth in demand, and the stage is set for another food crisis (Timmer, 1995). Gardner (1979) points out that the three price spikes seen between 1910 and 1980 seemed to occur about every three decades. The food crisis of 2007–2008 followed 35 years after the crisis in 1972–1973. Will we never learn?

The food crisis in 1972–1973

In mid-1972, policy analysts were feeling pretty good about the global food situation. The deep pessimism generated by two failed monsoons over the Indian subcontinent in 1965 and 1966, with all their attendant political tensions between India and the US, had given way to optimistic hopes for a ‘Green Revolution’ in rice and wheat, sparked by new ‘miracle’ seeds released in the mid-1960s from the International Rice Research Institute (IRRI) and the International Maize and Wheat Improvement Center (CIMMYT). With new seed technologies, investments in rural infrastructure and irrigation facilities, and construction of modern fertilizer factories wherever natural gas was available cheaply, it looked as though the world food economy was set for an era of rising productivity and cheaper food. Real rice prices on the Thai export market fell 57 per cent between October 1967 and April 1972.

These declining prices meant that very early in the Green Revolution there was professional concern over the ‘generations of problems’ that might occur when increased food production at the farm level needed to be sold into an unprepared marketing infrastructure (Falcon, 1970). The worries over the distributional dimensions of successful rice and wheat intensification programmes, when larger farmers had easier access to finance and inputs, took for granted the reality of higher productivity (Johnston and Cownie, 1969). From the start, the generation, dissemination and impact of the Green Revolution was considered to be a public sector (and donor) activity and responsibility, with the private sector primarily seen as responding to the new opportunities being generated by public sector investments and policies (Timmer, 1976, 1986).

The smooth rise in rice production was not to be. A widespread drought during the summer months of 1972, caused by a large-scale El Niño event, sharply reduced the dry-season rice crops throughout Southeast Asia, especially in Indonesia, Thailand and the Philippines. Domestic prices started to rise, and there was a scramble for supplies after thinking just months earlier that the Green Revolution had made most importing countries self-sufficient in rice. By April, 1973, Thailand, the world’s leading rice exporter, banned rice exports altogether.

For a very scary nine months, there was no world rice market. When it reopened in January 1974, Thai export prices in real terms were four times their level in early 1972. The episode was scary because countries dependent on rice imports to support domestic food security were suddenly left on their own. Large importing countries, such as Indonesia and India, resolved to increase rice production to achieve self-sufficiency, and have never trusted the world market for supplies of rice since then, despite active engagement with it.

The bad weather spread around the world, sharply affecting wheat and corn crops in the northern hemisphere in the autumn of 1972. All told, after the 1972 harvests were in, world coarse grain production fell by 16 million

tons, rice production by 14 million tons, and wheat production by 8 million tons. Because increases on trend of production, to meet demand from a growing population and increased consumption from more affluent diets, were about 33 million tons, the total shortfall in 1972 was about 70 million tons. This shortfall was almost 8 per cent of consumption.

The world food crisis of 1972–1973 was rooted in a severe weather shock to global grain production, although subsequent policy actions in the US and the Soviet Union exacerbated the problem and triggered the price explosion (Falcon and Timmer, 1974). The timing is now forgotten, but the Organization of the Petroleum Exporting Countries' (OPEC) decision on 15 October 1973 to embargo oil exports to the US and Europe came *after* the sharp increase in grain prices.

High oil prices were not a contributing factor to the world food crisis in 1972–1973. Indeed, one justification OPEC offered for the higher crude oil prices was its desire to catch up with the increases in food prices. If anything, the causation went in the other direction, from food prices to oil prices. After oil prices went up, fertilizer prices also rose sharply, so the food and energy economies became more tightly linked after 1974 (Timmer, 1975, 1976). At the World Food Conference in Rome in November 1974 there was considerable concern over availability of fertilizer and the ability of poor countries (and farmers) to afford it (Talbot, 1977). The 'seed-fertilizer revolution' depended on cheap fertilizer.

The food crisis in 2007–2008

Fast forward to mid-2007. Grain prices had been gradually rising in real terms for five years, and a 50 per cent spurt in corn prices between August 2006 and February 2007 showed how nervous grain markets had become. Crude oil prices had doubled since 2004. From December, 2006, oil prices rose very rapidly – from US\$60 per barrel to \$80 per barrel in just six months. Food policy analysts were holding their breath, waiting for the trigger to send prices spiralling into another world food crisis.

The trigger never materialized. Still, the food crisis happened anyway, a fairly clear result of self-fulfilling expectations. To be sure, there was a small decline – 0.7 per cent – in food grain production from the 2007 harvest, but this decline was entirely due to a 3.9 per cent decline in wheat production. Both rice and coarse grain production actually increased in 2007.

With supplies for near-term delivery tight, wheat prices started rising sharply in May 2007. They were followed by corn prices later in the year, as demand for ethanol production in the US put pressure on available supplies. Stocks of both wheat and coarse grains fell sharply during 2007 to levels relative to use that had not been seen since the mid-1970s. There was a clear case for higher wheat prices because of the 2007 production shortfall, and for higher corn prices because of mandated demand for biofuel production (Naylor and Falcon, 2008).

The actual price panic that resulted, however, had little rationale in the fundamentals of supply and demand. Speculative fervour spread from the crude oil and metals markets to agricultural commodity markets (Timmer, 2008). Prices spiked, first for wheat, then for corn. And then they collapsed when the speculative bubble burst. Prices peaked for wheat in February 2008, then again in June for corn, and in July for crude oil.

These commodities are very actively traded in organized futures and options markets. Granger causality testing on *daily* prices for these commodities between 2000 and 2008 showed strong price linkages, presumably intermediated by financial speculators, for extended periods of time, and no linkages at other times (Timmer, 2009).

These Granger causality results were presented on 26 January 2009, to a World Food Programme (WFP) seminar in Rome on ‘Food, Finance and the Future: Is Food Just Another Financial Instrument?’. The argument was made in the seminar that new financial instruments, especially commodity swaps that were underwritten by leading banks, pension funds and hedge funds, had led to the ‘financialization’ of agricultural commodity markets. An active discussion with the WFP participants showed that the consequences for food security are still poorly understood. See also Munier and Briand (2009) for further analysis of the financialization of agricultural commodity prices.

There is a clear case to be made that the sudden *spike* in wheat and corn prices was due to financial speculation. The role of financial speculation in the *formation* of agricultural commodity prices (as opposed to its role in managing risk from price movements) is highly controversial in the economics profession. For example, Wright (2009) argues that there is no mechanism by which added speculative investments in futures markets can cause prices on spot markets to increase unless these investments affect consumption decisions and resulting storage balances, and ‘there is no credible evidence’ this has happened. Wright (2009) does not consider the possibility that higher futures prices themselves might affect expectations, and ‘localized’ storage decisions, among market agents who are not actively engaged in organized commodity markets. The discussion of the industrial organization of the world rice economy (see Chapter 3 in this book) argues that these localized decisions contributed directly to the speculative spike in rice prices during the 2007–2008 food crisis.

Why rice?

The trick is to explain what happened to rice prices in 2007 and 2008. Futures markets for rice are thinly traded, and there is little opportunity for financial speculation in rice prices. The supply and demand fundamentals for rice were supportive of the gradual increase in world prices from their lows in 2001, but production had been increasing steadily, stocks relative to use had been increasing since 2003, and supplies available for export were adequate for normal demand.

Rice stocks in India and China had been reduced sharply between the late 1990s and the early 2000s as a conscious policy of both governments. With world prices low and declining, and very high storage costs being incurred, these stock reductions seemed entirely appropriate. As rice prices began to rise after the lows in 2002, rice stocks also began to increase again. This stockholding behaviour is entirely consistent with modern ‘supply of storage’ theories (Williams and Wright, 1991; Timmer, 2009).

There was no reason to expect a sudden surge in rice prices and, indeed, there was no surge until late in 2007. The timing is hard to explain, as rice prices *started* their rapid increase only shortly before the *peak* in wheat prices. Once the spiral started, however, rice prices then shot up far more rapidly than had wheat or corn prices, to a relatively higher peak in May 2008. The rice price explosion was the reason for much of the public anxiety about the welfare impact of the world food crisis because so many of the world’s poor are rice consumers. No lessons from the food crisis are of much relevance without understanding how this price spiral happened (and how it was stopped). That is the subject of this volume.

Asian rice policy during the crisis

The origin of this book lies in a workshop organized by FAO in Chiang Mai, Thailand, from 9–12 February 2009, which brought together a number of rice specialists to discuss ‘what went wrong with the world rice market?’. The sessions placed individual country experiences in the context of what happened in the world market itself. This book has been developed from the papers presented at the workshop, with two additional contributions commissioned especially for this volume (papers on the Philippines and the US).

Three overview chapters focus on the global market. Dawe and Slayton present an insider’s view of how policies pursued by individual countries led to the crisis in the world rice market in 2007–2008. The Timmer paper, by contrast, uses basic analytical models and time-series data to address the role of speculation in the formation of rice prices. The third chapter in this overview section, by Alexander Sarris, reviews the history of rice trade and presents suggestions for how to change trade regimes to improve food security.

The country discussions are grouped into four categories: traditional importers, traditional exporters, the ‘giant’ countries of China and India, and developed countries – Japan and the US.

There were sharp contrasts among the importing countries. The chapter by Hossain and Deb shows that domestic prices in Bangladesh rose substantially in the months before the world market crisis, although the crisis then sent prices even higher as Bangladesh tried to import from India. Farmers responded to the higher prices with a record boro crop, and domestic prices eventually began to fall in the face of this additional production coupled with lower prices on the world market. Indonesia, by contrast, was largely self-sufficient in rice in 2008. Indeed, as the chapter by Saifullah shows, Indonesia

actually banned the *export* of rice in an effort to calm expectations about price increases, a move that was successful. The chapter by Balisacan, Sombilla and Dikitanan shows that the Philippines also experienced sharp increases in domestic prices, and highlights the lack of long-term investment in efficient rice production that has left the country highly exposed to world markets.

Two chapters present the rice import story for Africa. The chapter by Aker, Block, Ramachandran and Timmer focuses on short-run policy responses in several West African countries. Historically, these countries had been reasonably successful at stabilizing their domestic rice prices, but the movements in 2008 were so large that much of the increase was passed into local markets, angering consumers. These countries were vulnerable to the world market because of their high dependency on imports. Indeed, the continent has become a large player in the world rice market, taking about a third of available supplies in the past several years. The chapter by Gajigo and Denning argues that import dependence in sub-Saharan Africa will probably continue to grow, despite favourable conditions for increased rice production.

Domestic prices increased sharply not only in many importing countries, but also in exporting countries. The chapter by Poapongsakorn on Thailand focuses on the political economy of domestic rice production and trade. Because Thailand is by far the world's leading exporter, its policy decisions had important implications for the world rice market, including its discussions of forming a rice exporters' cartel. The chapter by Pham discusses how Viet Nam, as a major exporter, benefited from higher prices. Despite higher fertilizer prices, higher rice prices meant improved incentives for farmers, who responded with increased production. The benefits to farmers were short-lived, however, as domestic prices collapsed in the second half of 2008. Cambodia has returned to the world rice economy as an exporter after several decades of isolation and reconstruction. The chapter by Pandey and Bhandari shows that prices also increased in Cambodia and highlights the obstacles to increasing Cambodia's exports, especially in the areas of grain quality, processing, transportation and links to major buyers.

China and India are the giants of the rice world, producing and consuming more than half the world's output. Until 2008, both countries had been significant exporters of rice, but both countries reduced exports during the crisis. The chapters by Fang on China and by Gulati and Dutta on India explain the reasons for these changes in export policies and show that, along with Indonesia, they were able to contain domestic price increases by restricting international trade.

The rich Asian countries were largely spared any impact from the world rice crisis because their domestic prices were already so high that even the sharp spike did not create parity with world prices. The chapter by Ito argues that Japan should play a more active role in stabilizing the world rice market, and discusses this role in the context of political pressures that keep Japanese rice prices very high. The role of the US in helping to pop the speculative

bubble by agreeing to allow Japanese re-exports of imported rice is discussed by Slayton.

This book helps provide an improved understanding of what happened (and why) on both world and domestic markets during the rice crisis of 2007–2008. The next step, using further analysis and political discussion, is to identify feasible policies that can be implemented to return world rice prices to lower and more stable levels with a view to improving food security for the billions of people who rely on rice as their staple food or as a key source of family income.

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Part II

OVERVIEW: THE WORLD RICE MARKET AND TRADE POLICIES

The World Rice Market Crisis of 2007–2008

David Dawe and Tom Slayton

Introduction

Between October 2007 and April 2008, a span of just six months, world market rice prices for Thai 100%B tripled, from \$335 per ton to over \$1000 per ton, reaching the highest level ever recorded in nominal terms. Even during the world food crisis of 1973–1975, world rice prices had never doubled within six months, much less tripled. More than any other event, this price surge brought tremendous media attention to the world food crisis of 2007–2008.

It is important to note that, after adjusting for inflation, peak prices in 2008 were well below the levels reached during the world food crisis in 1973–1975. Indeed, in real terms, the average price in 2008 was not even half of the average price during those three years. Even more strikingly, the peak in 2008 (again in real terms) was *below* the price in 74 of the 82 years between 1900 and 1981!¹ This shows how much real world rice prices have declined over the longer term (see Chapter 3).

While the historical perspective is interesting and important, the world rice market crisis of 2007–2008 led to substantial surges in domestic rice prices in

many countries around the world (Dawe and Morales-Opazo, 2009), which in most countries led to substantial adverse impacts on the welfare of the poor (Ivanic and Martin, 2008; Zezza et al, 2008; Dawe et al, 2010). Because rice is the most important source of calories for the world's poor, the world rice market crisis was probably the most serious shock to world food security in the previous 25 years. Thus, it is an event well worth explaining.

For the previous 20 years, the world rice market had been relatively stable (Dawe, 2002) and, as late as September 2007, it seemed as though the world rice market would not be subject to the price surges seen on the world maize and wheat markets: world maize prices increased 54 per cent from August 2006 to February 2007, followed by an increase in world wheat prices of 125 per cent from May 2007 to March 2008.

While world rice prices nearly doubled in nominal terms between the trough reached in April 2001 (\$170 per ton for Thai 100%B) and September 2007 (\$333 per ton), the gain in real terms was just 67 per cent, and, more important, the rise had been very steady and gradual, especially compared to later events (see Figure 2.1). Because the rise was gradual and from a very low starting point (the lowest real price since at least 1900), and because many Asian governments stabilize domestic prices, the price increase on world markets between 2001 and 2007 did not lead to substantial domestic price increases (Dawe, 2008a). But the world price increases that began in October 2007 were too large and too rapid for most countries to neutralize. The objective of this chapter is to describe and explain what happened to the world rice market during this time.

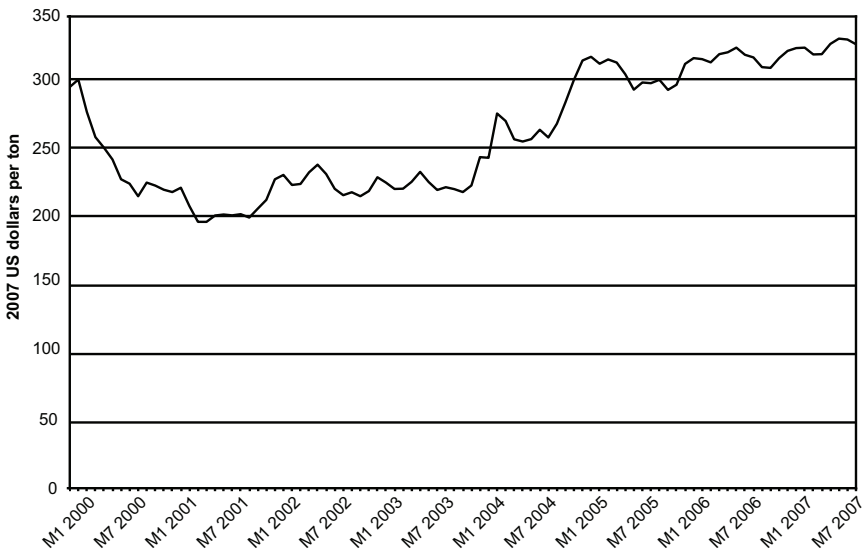


Figure 2.1 Monthly inflation-adjusted rice prices, January 2000 to September 2007

Note: Data refer to Thai 100B% FOB (free on board).

Source: FAO (2009b) for rice prices, IMF (2009) for US consumer price index.

Rice market fundamentals were not the cause

The crisis in the world rice market in 2007–2008 was not caused by adverse shocks to rice production or low rice stocks. First, FAO estimates that world rice production increased from 635.2 million tons of paddy in 2005–2006 (FAO, 2007) to 642.1 million tons in 2006–2007 (FAO, 2009a), an increase of 1.1 per cent. While not a large increase, it is similar to the rate of population growth in Asia, which is the main driver of demand as per capita rice consumption is declining in most countries and is generally stagnant in others.² In the subsequent two years, once world and domestic prices began to increase, world rice production increased by 2.9 and 4.1 per cent, much greater than the rate of population growth.

Second, the world rice stock to use ratio was roughly constant in the three years (2004–2005, 2005–2006 and 2006–2007) preceding the crisis, at 18 per cent. It is true that the world rice stock to use ratio was much higher in earlier years (for example 37 per cent in 2000–2001), but this was almost exclusively due to very high levels of China's stocks, which reached levels that exceeded annual use on several occasions in the late 1990s (i.e. a stock to use ratio of greater than 100 per cent) before they were considerably reduced (Dawe, 2009).³ China is often an important rice exporter, but it is difficult to argue that the decline in China's rice stocks from 1999–2000 to 2003–2004 (several years before the crisis) caused the world rice market upheaval in 2007–2008, especially as the decline in stocks did not lead to any major change in China's international trade flows.

In line with the favourable world rice production and stock situations noted above, it is also important to note that world rice trade increased during the crisis. World rice trade in the first four months of 2008, when prices increased by more than 150 per cent, was 20 per cent higher than in the first four months of 2007 (Slayton and Timmer, 2008). Thus, there were ample supplies available on world markets. The favourable situation as regards production, stocks and trade strongly suggests that factors other than basic market fundamentals were at work.

Several factors external to the rice sector, however, arguably set the stage for the rice crisis. Rising oil prices since 2004, a weak US dollar, and biofuel mandates and tariffs all contributed to rising maize and soybean prices, and a 4.7 per cent weather-induced decline in world wheat production from 2005–2006 to 2006–2007 led to a 67 per cent increase in world wheat prices from May to September 2007. These price increases for petroleum, maize, soybeans and wheat created an atmosphere of concern and thus contributed to the policy decisions by key rice trading countries, both exporters and importers. It was these policy decisions that led to a substantially larger and more rapid price increase on the world rice market than on world maize and wheat markets, and the next section of this chapter discusses these policy decisions in more detail.

Policies, uncertainty and 'rational panic'⁴

While maize markets had to contend with biofuel policies and mandates (which added to demand), and wheat prices had to contend with bad weather (which reduced supply), there was no similar fundamental challenge that rice markets had to contend with (other than policies). Rice is also barely traded on futures markets, removing another factor that arguably influenced maize and wheat markets (Gilbert, 2009; see also Chapter 3). Thus, policies and panic are the only plausible explanation for why rice prices increased so much more, and so much faster, than maize and wheat prices. The thin nature of the world rice market, and the large role that governments play in it, make the world rice market more vulnerable to such occurrences.

The atmosphere of uncertainty on world commodity markets noted above created incentives for policymakers to secure additional supplies as soon as possible. While such an approach might be rational for an individual country, it serves to propel prices higher in a vicious circle if all countries implement similar policies. Such policy decisions also create further uncertainty *within* countries, and can easily cause individual producers, traders and consumers to engage in hoarding. While the action of any one individual is irrelevant, Timmer in Chapter 3 shows that the cumulative effect when millions of households behave in this fashion can be quite substantial. Eventually market fundamentals will take hold, and when they did, the bubble popped. In addition to this 'rational panic', the manner in which the demand was expressed (for example supplies were purchased at prices well above then-existing market prices) also contributed to the crisis.

While many countries changed their trade policies during the crisis, the focus here is on three countries that played especially important roles given their large roles in the world rice trade. In 2007, India and Viet Nam were the world's second and third largest rice exporters, and the Philippines was the world's largest rice importer. While shipments from Thailand (the world's largest exporter) played an essential role in preventing even greater price surges, several statements by its government officials unnerved the market.

India

As noted above, the situation in the world rice market up until September 2007 was relatively stable, despite the volatility in other commodity markets. But, on 9 October 2007, India banned exports of non-Basmati rice (see Figure 2.2). This was a key decision from a country that, from 2002 to 2006, supplied about 17 per cent of the world market. This ban was replaced three weeks later with a series of ever-higher minimum export prices (MEPs) that were set well above world price levels.⁵ India then once again reverted to an outright ban on 1 April 2008. In the wake of these decisions to restrict exports by the world's second largest exporter in 2007, the world market price for Thai 100%B increased from \$335 per ton in October to \$481 per ton in February 2008, an increase of 43 per cent in four months, before soaring further in March and

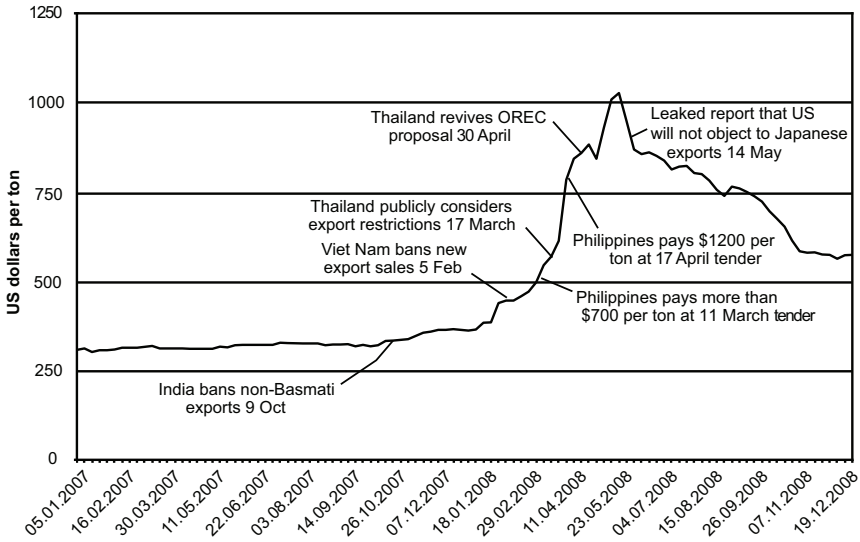


Figure 2.2 *Timeline of key events in the world rice crisis*

Note: Price data are weekly, Thai 100%B FOB (FAO, 2009b). Quoted Philippines prices are converted from Viet Nam 25% broken CNF to Thai 100%B FOB by using freight costs of \$30 per ton, financing costs of \$10 per ton, and the average quality differential between Thai 100%B and Viet Nam 25% from March 2007 to February 2008 of \$40 per ton (the quality differential is calculated based on data in FAO, 2009a). Source: As specified in the Note plus event details from Slayton (2009)

April as additional policy decisions in other countries exacerbated the uncertainty (see below).

India's decision to restrict rice exports had its roots in weather-related damage to its 2006 wheat crop and resulting wheat imports in 2006–2007 (April–March) of 6.7 million tons, the highest level in more than 30 years. Furthermore, world wheat prices were rising rapidly in mid-2007. Continuation of high levels of wheat imports was thus both expensive and politically problematic in the run-up to provincial and national elections.⁶ As a result, India bartered rice for wheat by reducing both wheat imports and rice exports. This stabilized aggregate national cereal supplies and eliminated the need for wheat imports.

It should be noted that some exemptions to the ban/MEP were permitted, especially to Bangladesh. For example, India on 1 December 2007, agreed to supply Bangladesh with 500,000 tons under a government-to-government (G-to-G) contract and two months later agreed to a price of \$399 cost and freight (CNF) (the CNF price includes the cost of the rice plus the freight costs for shipment to the destination port). India, however, supplied only 100,000 tons at this price and eventually the balance was contracted at \$430 CNF on 3 April 2008. The latter contracts provided for shipment within 60 days of the opening of the letters of credit, but the shipments were only completed in December 2008.

During the six-month period between October 2007 and March 2008, official statistics indicate over 2.5 million tons of non-Basmati were exported from India. Even after non-Basmati exports were once again banned on 1 April, shipments continued – above and beyond those exceptions allowed for the G-to-G sale to Bangladesh and sales agreed upon to Bhutan, Sri Lanka and others. From April to December, India exported 905,000 tons of non-Basmati, bringing calendar year 2008 movement to over 2.0 million tons, or 3.2 million tons below year-earlier shipments.

Although trade did not stop completely, the export restrictions created substantial uncertainty in the market, especially because the duration of the restrictions was not clear (the restrictions had still not been lifted as of November 2009). Informed observers generally expected a substantial shortfall in Indian exports.⁷ There is little doubt that the uncertain nature of the restrictions, both in terms of the temporal duration and the magnitude of the expected export shortfall, made importers nervous.

Viet Nam

Rice production in Viet Nam is spread over three seasons, with the winter-spring crop being the largest and the one that recharges the country's exportable surplus. The government regulates the quantity of rice exports, and, in a typical year, the export sales quota has been reached by late summer. A new quota is then not issued until the eve of the harvest of the winter-spring crop in the Mekong River Delta (MRD), which typically begins in late February. At this point in time, it is relatively clear how large the winter-spring harvest will be, and thus easier to set an export quota while still ensuring that domestic supplies will be adequate. Between late summer and late February, the execution of previously approved contracts is allowed, but new sales are not.

In 2007, the export sales quota was reached by 21 July and no further supplements to the quota were issued. Thus, while there was an export sales ban in place in Viet Nam before that in India, this ban was anticipated and did not substantially disrupt the international rice trade nor create added uncertainty.

The situation changed in early 2008, however. New export sales were once again allowed from mid-January, but they were only allowed for two and a half weeks before the government banned new sales due to fears over unseasonably cold weather in the Red River Delta. Initially, it was not clear how long the prohibition was to last. Traders were eventually advised that the ban would be lifted by the end of April, but this was subsequently extended through to June, and then was only lifted after a large G-to-G sale was negotiated with the Philippines. These actions added to uncertainty in the market.

Negotiations between Viet Nam and the Philippines

Despite the ostensible ban on new sales, Vinafood 2 (a state-owned exporter) and selected provincial food exporters were permitted to participate in the

National Food Authority's (NFA) December 2007 and January 2008 tenders for imported rice. (The NFA is the state-owned rice importer in the Philippines.) These tenders resulted in contracts for over 700,000 tons, of which about 620,000 tons were scheduled for first quarter arrival in the Philippines. The level of arrivals scheduled for the first quarter was higher than could be delivered given limited carry-over stocks in Viet Nam and the fact that the winter–spring harvest in the MRD does not begin until late February, making it difficult to ship such large volumes to Manila before the end of March. In the event, only about 320,000 tons were actually delivered during the first quarter. Furthermore, the price paid in the January tender was about \$70 per ton higher than that paid in the December tender, despite much smaller increases in both local Vietnamese and Thai export prices during that time.

In March and April, the Philippines continued to put out more large tenders. More important, however, it agreed to pay the increasingly high prices being quoted by Viet Nam, even though they were above market levels.⁸ While government stocks were low in the Philippines, private stocks (which constitute the bulk of total stocks) were estimated to be ample, and official forecasts were for a record dry-season crop. The eventual outcome for the 2008 dry-season crop (which is harvested January to June, with the bulk occurring in March and April), was an increase of 5.8 per cent over the previous record set in 2007. Domestic prices did increase from January to February, but the increase was in line with what would be expected based on normal seasonal patterns. Thus, there were no signs of a crisis in the Philippines when the 11 March tender was signed, although domestic prices did soar soon afterwards.

Despite the solid market fundamentals in the Philippines, it agreed at the 11 March tender to buy 25 per cent broken at a price of \$716 CNF, almost 50 per cent above the previous sales price, far above prevailing prices in the MRD, and \$150 per ton above prices in the spot market. Then, nine days before the 17 April tender, NFA announced that there would be another large tender in early May. This announcement contributed to higher prices and lower quantities offered at the April tender, when NFA bought about 365,000 tons, including 80,000 tons of Viet 25% at an average CNF price of \$1200 per ton, \$484 higher than the sales price of just one month earlier and again higher than the spot market.

These tenders fuelled speculation and higher prices in both the MRD and in the Philippines, as well as globally. When news of the April sales circulated within the MRD, local traders – including those involved in trading other commodities – jumped into the market as buyers and within a week there was a run on rice in Ho Chi Minh City (HCMC). Within the course of a two-day period, local prices doubled as rice disappeared from the markets within the city (prices subsequently fell quickly from these peaks). Monthly national average wholesale rice prices increased in the Philippines by 7 per cent in March, another 18 per cent in April, and by a further 19 per cent from April to July.

During this time, the Philippines made repeated efforts to commercially tender for US rice, even though the delivered prices would be very high given

the usual premium for US rice and the higher freight rates entailed by the longer shipping distance. The President also publicly pursued a memorandum of understanding (MOU) with Thailand for more rice deliveries. These actions, coupled with the acceptance of the high Vietnamese prices offered at the tenders, conveyed the impression that the Philippines would be willing to pay almost any price for rice imports. This very inelastic demand is difficult to reconcile with the large dry season harvest, which has accounted for 42 per cent of the annual harvest in recent years. Furthermore, it is not clear why the tenders were so large, or why a subsequent tender in May required a sovereign guarantee. Both of these conditions made it more difficult to procure rice at competitive prices from a wide array of traders.⁹

Thailand

While a number of countries restricted exports during the crisis, Thailand, in the end, never did. For six consecutive months beginning with October 2007, monthly Thai exports topped 1.0 million tons and during the subsequent four months sailings averaged 914,000 tons. Indeed, over the 12 months ending in September 2008, Thailand exported more than 11.7 million tons.¹⁰ Without these exports, it is hard to imagine how high world prices would have gone.

Nevertheless, Thai policies and statements also contributed to the uncertainty in the world market. In February 2008, the head of the Ministry of Commerce's Public Warehouse Organization called for the newly elected government to auction off half a million tons of its 2.1 million tons of stocks. Thai exporters were in favour of this proposal, but the government kept almost all of its stocks off the market. In mid-March, the Vice-Minister of Commerce was quoted as saying that the government was considering imposition of export restrictions for the first time in more than a generation (*Bangkok Post*, 2008). Then, on 28 March, the Minister urged farmers not to sell as he predicted prices would reach \$1000/ton by June (he did not specify whether he was referring to prices of Jasmine rice or 100%B). Thailand later insisted that it would not restrict exports and, indeed, it did not, but the threat of such action added to market uncertainty.

In late April, the Thai government resurrected a proposal that Thailand, Viet Nam, Cambodia and Myanmar create a rice exporter cartel, the Organization of Rice Exporting Countries (OREC). Not surprisingly, this proposal heightened market fears, and the Philippines and international organizations such as the Asian Development Bank came out against the proposal. The cartel plan was endorsed by Cambodia's prime minister, but world public opinion forced Thailand to withdraw the proposal on 6 May – just one week after it had been unveiled (USDA, 2008b).

Government stockpiling, more export restrictions, the media and international organizations

In addition to efforts by the Philippines to stockpile rice, other countries made similar moves. Malaysia, for example, announced plans in mid-January 2008 to increase Bernas' stock levels sixfold from two weeks (92,000 tons) to three months (550,000 tons).¹¹ Nigeria announced plans to increase imports by an extra 500,000 tons and build up its strategic reserve by the end of 2008. While these plans failed to materialize after world prices reversed direction, the statements of intent contributed to sending prices higher.

Exporters other than India, Viet Nam and Thailand also contributed to market uncertainty. Egypt suspended exports in mid-January, and the ban remained in place for almost a month, although it was then replaced with an export tax of more than \$50 per ton. By the end of March, a ban was back in place, due to expire in October. In early June, however, the ban was extended to April 2009. China delayed issuance of export quotas during the crisis, and shipped out only 56,000 tons at the peak of the market during April–June 2008, down from 170,000 tons during the same period one year earlier, despite holding substantial stocks.¹² And Cambodia also temporarily banned exports, although this ban was not as strict or effective as many thought (see next paragraph).

The media also played a role through superficial reporting of some of the export restrictions. For example, Cambodia's decision in late March 2008 to ban exports was given more play in the popular press than was warranted given its actual impact. Not only was the ban temporary (two months), but it was also soon largely lifted. About two-thirds of Cambodia's exports are made via Viet Nam, and the ban on shipments by the three eastern-most provinces was lifted within two weeks of the original announcement. Further, Cambodia is a very minor exporter – USDA (2009) estimates its annual exports averaged about 330,000 tons from 2004–2005 to 2006–2007 – and movement out of the country probably had largely occurred before the ban was announced (most of Cambodia's shipments occur around the beginning of the calendar year immediately after its main crop is harvested). Finally, the Cambodian–Vietnamese border is very porous and enforcement of the edict was probably difficult.

Similarly, at the peak of the crisis in late April it was reported that Brazil – (also a minor exporter – USDA (2009) reports its exports over the preceding three years as averaging just over 250,000 tons) had banned all rice exports. Within a few days, it was clarified that this only involved government-held stocks, but most buyers probably did not hear of this distinction.

Finally, statements by key officials of well-known international organizations forecast higher prices. While understandable on one level given the declining funds devoted to agricultural development during the past 20 years, such statements are viewed by many as authoritative and contribute to market jitters (see Chapter 14 for specific examples of such statements).

In sum, a series of government actions in India, Viet Nam, the Philippines, Thailand and other countries created substantial uncertainty in the world rice market.¹³ These policy decisions collectively created a speculative bubble that encouraged farmers, traders and consumers to hoard rice, further increasing prices.¹⁴

The bubble pops

The first two weeks of May brought two natural disasters: Cyclone Nargis struck Myanmar's Irrawaddy Delta on 3 May and a strong earthquake jolted Sichuan province in China on 12 May. Initial estimates of losses due to Cyclone Nargis were placed at 2 million tons of paddy, although these estimates eventually proved to be too high.

But, around the same time, the Philippines aborted its 5 May tender as there was only one bidder (Vinafood 2; at least two bids are legally required in order to execute a purchase), and that one did not meet the sovereign guarantee requirement that the Philippines imposed. Four days later, the Philippines publicly disclosed that it was negotiating with Japan for 60,000 tons of its domestic rice. That same day, the Center for Global Development (CGD) released a paper arguing that world rice prices could be reduced drastically and quickly if the US would allow Japan to export some or all of its 1.5 million tons of imported rice (Slayton and Timmer, 2008). The paper also pointed out that Thailand and China had large stocks available for export.

US Congressional Committee hearings on the food crisis were held on 14 May, and that evening Bloomberg news quoted an unnamed US trade official that the US would not object if Japan were to release its stocks. That week, US rice futures prices fell for four straight days, and rice futures prices in Thailand began a 29 per cent decline from 13 May to 3 June. The Philippines announced on 19 May that Japan might provide it with 250,000 tons, including 200,000 tons of imported rice. On 21 May, major Thai exporting companies began to once again provide daily price quotations, a long-standing practice they had suspended in February. At a high-level conference at FAO on 2 June, Japan pledged to export over 300,000 tons of imported rice. In the event, Japan never did export the rice that it pledged; indeed, rice exports in 2008 were only 117,000 tons, less than in 2007. But the mere prospect of this additional rice being released onto world markets seemed to have been sufficient to reverse the upward momentum of prices. According to weekly FAO (2009b) data, Thai 100%B rice prices peaked in the second half of May at more than \$1000 per ton FOB and slid downward from there. The decline in rice prices thus occurred even though oil prices were still rising (they did not peak until early July).

NFA then concluded a G-to-G deal with Viet Nam for 600,000 tons in mid-June, and signalled that it had met its import demands for the year, and a few days later Viet Nam lifted its export ban. Thailand had also indicated that it was considering unloading some of its stocks. These events helped reverse the dominant bullish market psychology that held sway just several weeks earlier.

This downward momentum was eventually sustained by larger macroeconomic forces and the financial and economic crisis. Freight rates, as measured by the Baltic Dry Index, began a sharp decline that saw rates decline 94 per cent from early June to the end of the year. World oil prices peaked at a monthly average of \$133 per barrel of West Texas Intermediate in July, and urea prices peaked in August. For the remainder of the year, cereal prices declined substantially. By December, average monthly prices for rice, wheat and maize had all declined by 45 to 50 per cent from their peaks earlier in the year.

Conclusions

While free markets do not always deliver optimal price stability, the world rice crisis of 2007–2008 was not due to a failure of free markets: government policy decisions were decisive in sparking and fuelling the crisis. The world rice market is particularly vulnerable in this regard because it is relatively thinly traded¹⁵ and because of the large role played by governments in the international trade that does take place. Government interventions by many countries, including major exporters and importers, created uncertainty and encouraged hoarding and panic on the part of other governments, farmers, traders and consumers. The role of state-owned enterprises was particularly problematic during the crisis due to their lack of transparency in conducting trade. While the private sector is not transparent either, its activities are constrained by competitive forces, which is not true for governments.

The world market price crisis eventually led to domestic price surges in a number of countries, examples of which are discussed in other chapters of this book. These increases in domestic prices caused severe hardship for many poor consumers, who in most of these countries dominate the lowest parts of the income distribution. These consequences underline the need to improve the functioning of the world rice market in times of crisis.

While governments will most likely continue to play an important role in this market, this role needs to be more transparent and predictable, and should be tempered by a much greater role for the private sector (see the concluding chapter of this book). Such relatively simple changes would most likely have been sufficient to avoid the crisis that occurred, even in the absence of other measures that have been discussed (for example regional stocks, larger national stocks, virtual reserves).

Notes

- 1 Seven of the eight exceptions were during the depth of the Great Depression and the three years immediately prior to the 1973–1975 world food crisis.
- 2 It should be noted, however, that world and Asian rice production have been growing at rates slower than Asian population growth since 1990 (Dawe, 2008b). This is a serious medium- to long-term problem, but does not change the fact that sudden production shortfalls did not spark the world rice crisis. The slow long-

- term growth of yield (and production) relative to population was most likely responsible for the gradual climb in rice prices from 2001 to 2007 (see Chapter 3).
- 3 The stock releases in China stabilized domestic consumption in the face of large declines in production for both rice (19 per cent) and wheat (24 per cent) between 1999 and 2003. The production declines were due primarily to large declines in area harvested in the face of increased labour scarcity.
 - 4 The discussion in this section draws heavily on Slayton (2009).
 - 5 The first MEP on 31 October was set at \$425 or \$100/ton above prevailing Pakistani 25%, but in late December it was raised to \$500 – \$150/ton above FOB Karachi values. On 9 March 2008, the MEP was boosted to \$650 or \$190 over Pakistani 25% quotes.
 - 6 There were elections in several important states such as Madhya Pradesh, Rajasthan, Chhattisgarh and Delhi in late 2007 and the national election in 2008. Traditionally, food inflation plays a significant role in deciding the election outcome as high food prices impact the livelihood of *aam aadmi* (common man) who spend more than half of their income on food.
 - 7 The US Department of Agriculture (USDA) initially forecast a 1.8 million ton decline in exports (USDA, 2007), but revised this to a decline of 3.5 million tons as the magnitude of India's 2008 export volume became apparent (USDA, 2008a).
 - 8 This same practice of paying above market levels continued into 2009 (Reuters, 2009).
 - 9 Viet Nam's policy of limiting domestic participation in the NFA tenders also helped to propel world prices higher.
 - 10 This was 3.1 millions tons above the export levels averaged during 2002–2006.
 - 11 Bernas is Malaysia's sole rice importer.
 - 12 China's annual export quotas for rice are typically only decided by the National Development & Reform Commission about one month after the end of the lunar New Year celebrations. As of late April 2008, however, a senior official was quoted as saying export quotas for 2008–2009 still had not been issued (China Knowledge, 2008).
 - 13 Other government actions fuelled speculation in domestic markets, but those actions are not discussed in this chapter, which focuses on the world market. For more details, see Slayton (2009).
 - 14 It might be objected that the data on stocks do not show a large increase during this time. However, FAO and USDA, the two main sources of stock data, only maintain data on an annual basis. Furthermore, the quality of the data is acknowledged to be low given the difficulties of convincing market participants to provide accurate information, and this difficulty would be amplified in a crisis situation where some governments threatened severe penalties (for example life imprisonment) for hoarding or speculation. The volume of stocks held by billions of small consumers across Asia is another large source of uncertainty (see Chapter 3).
 - 15 During the period 2000–2007, world exports constituted 7, 13 and 20 per cent of production for rice, maize and wheat, respectively.

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Did Speculation Affect World Rice Prices?

C. Peter Timmer

Introduction

Did speculation affect the formation of rice prices during the rapid escalation of prices in world markets late in 2007 and early in 2008? Although debated at the time, in retrospect – after the sudden collapse of most commodity prices and the rapid decrease in rice prices between June and August – the answer is easy: of course it did. The questions now are how much, through what mechanisms, what will happen as these influences unwind, and how is the story for rice different from other commodities?

To answer these questions, this chapter¹ addresses four separate topics, each linked to the others by basic mechanisms of price formation. Simple supply and demand models are a start and are developed in the next section. The difference between short-run responses to prices changes and those responses after full adaptation is possible in the long run, is crucial and the conceptual model highlights the importance of these differences for understanding current prices. History matters.

But storage and price expectations also become important for storable commodities in the short run – the length of time the commodity can be stored – a year or so for rice. A model of the ‘supply of storage’, a staple of commodity market analysis for more than half a century, is used to understand the

factors affecting price expectations, and price formation, in the short run. This model is very powerful in its ability to explain hoarding behaviour and subsequent impact on prices.

The supply of storage model is less successful in explaining the impact on spot market prices of futures market prices that are driven by ‘outside’ speculators, i.e. those who have no interests in owning the actual commodity but are investing solely on the basis of expected price changes on futures markets. The role of outside speculators in commodity price formation is an old debate, although one that has usually not included rice because of the thinness of rice futures markets.

Next, this debate over the role of speculation is revived in an effort to understand the impact of financial factors and actors on commodity price formation using very short-run prices and Granger causality analysis, for a wide range of financial and commodity markets, including rice. These results are highly preliminary, but are also very provocative. Speculative money seems to surge in and out of commodity markets, strongly linking financial variables with commodity prices during some time periods. But these periods are often short and the relationships disappear entirely for long periods of time. The links between financial markets and commodity markets are not simple nor are they stable. Much more research is needed to understand both the short-run and long-run linkages between financial and (food) commodity markets.

Finally, the chapter addresses the long-run relationship between prices of the three basic cereal staples, rice, wheat and corn (maize), since 1900. It is clear there has been a long-run decline in the prices of all three cereals. There is a basic commonality in this decline, as all three commodities have trend price declines of more than 1.0 per cent per year over the past century. Further, this decline accelerated after the mid-1980s, again for apparently common reasons. Only the recent run-up in cereal prices in 2007–2008 returned them to the long-run downward trend. Despite these common features, however, and important cross-commodity linkages, price formation for rice has several unique dimensions that are also worthy of further study.

The analytics of what causes high food prices

Understanding causation implies an empirically refutable model of mechanisms of action. For food prices, this means an analytical model based on supply and demand mechanisms with equilibrium prices derived from basic competitive forces. There are many such models in existence (IFPRI, FAPRI, MOMAGRI, FAO, USDA), but none that address the specific issues in this chapter (Munier, 2008; Trostle, 2008).

Here we seek to understand the contribution from a wide range of basic causes to price formation for three important staple food grains – rice, wheat and corn.² Some of these causes may be exogenous, for example weather shocks or legislated mandates for biofuel usage. But many will be endogenous, for example responses of producers and consumers to prices themselves,

perhaps even policy responses of governments to prices. Export bans for rice as a way to prevent domestic food price inflation are an obvious example (Brahmbhatt and Christiaensen, 2008; Slayton and Timmer, 2008; Slayton, 2009).

The model of price formation developed here attempts to incorporate all of these factors in a rigorous enough way to bring data to bear on answering the key question: what caused the recent run-up in world market prices for these basic commodities, and why did prices come down so sharply? For several of the factors, the answers remain more impressionistic than statistical, but we push the statistical approach as far as it will go (perhaps too far; see the Granger causality tests below).

A simple model of price formation to use as a heuristic device

Consider the most basic model of commodity price formation that is capable of illuminating our problem:

$$D_t = f(a_t P_t, sr_d, P_{t-n}, lr_d) = a_t P_t^{sr_d} P_{t-n}^{lr_d}$$

$$S_t = g(b_t P_t, sr_s, P_{t-n}, lr_s) = b_t P_t^{sr_s} P_{t-n}^{lr_s}$$

where D_t = demand for the commodity during time t ; S_t = supply of the commodity during time t ; f and g = functional forms for demand and supply functions, respectively; a_t = time-dependent shifters of the demand curve; b_t = time-dependent shifters of the supply curve; P_t = equilibrium market price during time t ; P_{t-n} = market price during some previous time period $t-n$; and, sr_d , sr_s , lr_d and lr_s = indicators that demand and supply responses will vary depending on whether they are in the short run sr or long run lr . In the specification below, these will be short-run and long-run supply and demand elasticities.³

In short-run equilibrium, $D_t = S_t$. For simplicity (and the ability to work directly with supply and demand elasticities), assume the demand and supply functions are Cobb-Douglas. Then:

$$\log a_t + sr_d \log P_t + lr_d \log P_{t-n} = \log b_t + sr_s \log P_t + lr_s \log P_{t-n}$$

Solving for the equilibrium price P :

$$\log P_t + [\log b_t - \log a_t] / [sr_d - sr_s] + \log P_{t-n} [lr_s - lr_d] / [sr_d - sr_s]$$

Taking first differences to see the factors that explain a change in price from $t-1$ to t reveals a somewhat complicated result:

$$d \log P_t = \{[\log b_t - \log b_{t-1}] / [\log a_t - \log a_{t-1}]\} / [sr_d - sr_s] + [\log P_{t-n} - \log P_{t-(n+1)}] [lr_s - lr_d] / [sr_d - sr_s],$$

where $d\log P_t$ = the percentage change in price from time period $t-1$ to time period t (for relatively small changes). This is what we are trying to explain. What ‘causes’ changes in $d\log P_t$? Why are food prices high (or low)?

To answer these questions, it helps to simplify the equation. Let SR = the net short-run supply and demand response $sr_d - sr_s$, which is always negative because $sr_d < 0$ and $sr_s > 0$. Let LR = the net long-run supply and demand response $lr_s - lr_d$, which is always positive, for similar reasons (note that the demand coefficient is subtracted from the supply coefficient in this case, the opposite from the short-run coefficients above). Let $d\log b_t = \log b_t - \log b_{t-1}$, which for small changes is the percentage change in the supply shifters. Let $d\log a_t = \log a_t - \log a_{t-1}$, which for small changes is the percentage change in the demand shifters. Finally, let $d\log P_{t-n} = \log P_{t-n} - \log P_{t-(n+1)}$, which for small changes is the percentage change in the commodity price for some specified number of time periods in the past, for example, five or ten years (after which the *long-run* producer and consumer responses to price have been fully realized).⁴

Combining all of these new definitions, we have a simpler equation explaining percentage changes in commodity prices:

$$\begin{aligned} \text{Per cent change in } P_t = & [\text{per cent change in } b_t - \text{per cent change in } a_t]/SR \\ & + [\text{per cent change in } P_{t-n}] LR/SR \end{aligned}$$

The ‘surprising’ result is how simple the answer appears to be. There are four key drivers:

- 1 the relative size of changes in a_t to b_t , i.e. factors shifting the demand curve relative to factors shifting the supply curve;
- 2 the relative size of short-run supply and demand elasticities (sr_s and sr_d);
- 3 the relative size of long-run supply and demand elasticities (lr_s and lr_d);
- 4 how large the price change was in earlier time periods.

Why the analytics matter

A simple numerical example, with plausible parameters, shows the power of this ‘explanatory’ equation. Assume the following numerical parameters for purposes of illustration:

$$sr_d = -0.10$$

$$sr_s = +0.05$$

$$lr_d = -0.30$$

$$lr_s = +0.50$$

These values imply that $SR = -0.15$ and $LR = 0.80$.

The short-run elasticities assumed here are quite low, but realistic for annual responses. Demand responds 1 per cent for a 10 per cent change in price; supply only responds by half a per cent to a similar 10 per cent price change (the signs, of course, are negative for demand and positive for supply responses).

The long-run elasticities are also on the low side of econometric estimates, but again, seem realistic for a world facing increasing resource constraints. Although some estimates of long-run supply response are quite high, approaching unity or higher, these were estimated for time periods when acreage expansion was significant and fertilizer usage was just becoming widespread (Peterson, 1979). In principle, these long-run elasticities are net of the short-run elasticities.

Assume, as seems to be the case since the early 2000s, that demand drivers have been larger than supply drivers. A reasonable estimate is that demand has been shifting out by 3.0 per cent per year and supply shifting out just 1.5 per cent per year. A (partial) example of such a growing imbalance between demand (population growth) and supply (yields) for rice in Asia is shown in Figure 3.1. Finally, assume that prices in the past have been ‘low’, so the change in P_{t-n} is -10.0 per cent. What do all these parameters mean for current price change?

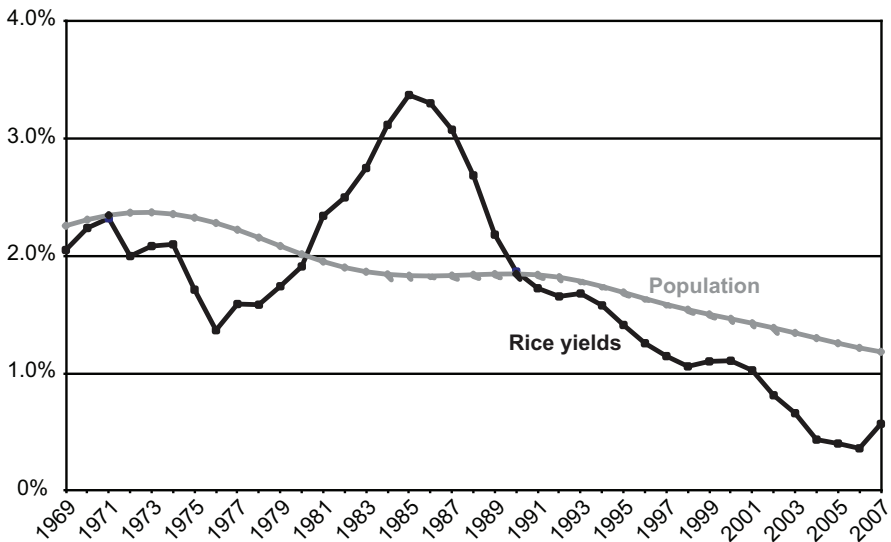


Figure 3.1 Annual average percentage increase in rice yields and population between successive rolling five-year periods in rice-producing Asia

Note: The figure shows the annual average percentage change in yields and population. For example, the data for 1969 are the change between 1965 and 1969 and 1960 and 1964. Rice-producing Asia is an aggregate of 17 large Asian countries (Bangladesh, Cambodia, China, Democratic People’s Republic of Korea, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand and Viet Nam).

Source: Raw data from USDA for yields and FAO for population. Chart from Dawe (2008c)

Plugging these values into the price change equation yields the following result:

$$\begin{aligned}
 \text{Per cent change in } P_t &= [1.5 \text{ per cent} - 3.0 \text{ per cent}] / -0.15 \\
 &+ [-10.0 \text{ per cent}] 0.80 / -0.15 \\
 &= [10.0 \text{ per cent}] + [53.3 \text{ per cent}] \\
 &= 63.3 \text{ per cent higher}
 \end{aligned}$$

This is a very dramatic result. The imbalance between ‘current’ supply and demand drivers causes the price to rise by 10 per cent, but the historically low prices (and ‘only’ a 10 per cent decline in the earlier period) cause current prices to be 53 per cent higher, as the long-term, lagged response from producers and consumers to these earlier low prices has a very large quantitative impact. *Much of the slow run-up in food prices from 2003 to 2007 would seem to be caused by producers and consumers gradually responding (i.e. reflecting their ‘long-run’ responses) to earlier episodes of low prices, especially from the late 1990s until about 2003.* For example, between 1996 and 2001 the real price of rice declined by 14.7 per cent per year!

Over long periods of time, the first driver is clearly most important – how fast is the demand curve shifting relative to the supply curve? At the level of generality specified in this model, the actual underlying causes of these shifts do not matter. All that matters is the net result. If the demand curve is shifting outward by 3 per cent per year, and the supply curve is shifting out by just 1.5 per cent per year, the difference of 1.5 per cent per year will push prices higher, by an amount determined by net short-run supply and demand elasticities with respect to price. The ‘simple’ fact is that commodity price changes are driven by the net of *aggregate* supply and demand trends, not their composition.

It is important to realize that the analytical model of price formation makes a sharp distinction between factors that shift the demand and supply curves (the a_t and b_t coefficients) and the responsiveness of farmers and consumers to changes in the market price (the sr_s and sr_d coefficients), which show up as movements along the supply and demand curve.

Analytically, the distinction is very clear, but empirically it is often hard to tell the difference. If farmers use more fertilizer in response to higher grain prices, should this count as part of the supply response or as a supply shifter? If governments and donor agencies restrict their funding of agricultural research because of low grain prices, is the resulting lower productivity potential a smaller supply shifter a decade later or a long-run response to prices? Whatever the labels, it is important to understand the causes.

The composition of changing demand and supply trends

This ambiguity can be a serious problem because it is the composition of changing demand and supply trends that we are seeking to understand, even

quantify, as a way to understand the causes of changes in food prices. The list of possible factors is long. For demand, it includes (in order of predictability):

- 1 population (driven by demographic transition, fertility, mortality, famine);
- 2 income growth (driven by economic policy, trade, technology, governance):
 - direct consumption,
 - indirect consumption through livestock feeding or industrial utilization;
- 3 income distribution (driven by globalization, food prices, agricultural growth, structural transformation);
- 4 biofuel demands (driven by political mandates and the price of petroleum):
 - direct demand for maize and vegetable oils,
 - ripple effects on other commodities;
- 5 US dollar depreciation (most commodities on world markets are priced in dollars);
- 6 food prices (endogenous, driven by supply/demand balance and technical change; impact felt through the demand elasticities);
- 7 private stockholding:
 - commercial (driven by price expectations and supply of storage),
 - household (driven by price panics and hoarding);
- 8 public stockholding (driven by buffer stock policy):
 - trade policy,
 - procurement policy;
- 9 financial speculation:
 - futures/options markets and ‘sophisticated’ speculators,
 - role of commodity index funds available to general investors.

For supply, the list is not so long, but the factors may be even more difficult to understand and quantify:

- 1 area expansion:
 - irrigation and cost of water,
 - deforestation and environmental costs,
 - ‘benign’ area expansion in Africa and Latin America?⁵
- 2 yield growth:
 - availability and costs of inputs:
 - fertilizer costs,
 - energy costs,
 - sustainability issues,
 - seed technology and the genetically modified organisms (GMO) debate,
 - management improvements/farmer knowledge;
- 3 variability:
 - weather,
 - change.

It would be desirable to put quantitative weights on each of the supply and demand factors in terms of their role in causing price changes for key food commodities: rice, wheat, corn. Other researchers are attempting to do the same thing. The main debates have been over how much biofuels and financial speculation caused the sharp run-up in food and oil prices in 2007 and early 2008, after allowance is made for rising demand for basic commodities in rapidly growing developing countries, especially China and India.

A paper by Don Mitchell, Senior Commodity Economist at the World Bank, for example, caused a furore when it was ‘leaked’ to the press in July: his finding was that perhaps three-quarters of the run-up in grain prices was caused by US policy toward ethanol production from corn (Mitchell, 2008).⁶ At the same time, the US Secretary of Agriculture was arguing publicly, at the FAO Food Summit in June, that biofuel production played only a minor role in high food prices – 2–3 per cent. Somebody is wrong.

The point is that these are contentious issues with no clearly accepted methodology for resolving them, a point also stressed by Abbot et al (2008, p8, emphasis added): ‘The factors driving current food price increases are complex. We make no attempt to calculate what percentage of price changes are attributable to the many disparate causes, and, indeed, *think it is impossible to do so.*’

The simple model here reveals why. If, for example, population growth is adding 1.5 per cent per year to demand for a staple food grain, income growth is adding 0.5 per cent per year to direct demand for that grain, and indirect demand via livestock feeding is adding 1.0 per cent per year, demand is growing by 3 per cent per year. If, at the same time, supply is growing by 1.5 per cent per year (0.5 per cent from area expansion and 1.0 per cent from annual yield growth, for example), the net result is that aggregate demand growth exceeds aggregate supply growth by 1.5 per cent per year and this will put upward pressure on the equilibrium price of this food grain. Even if lagged prices had been in long-run equilibrium until demand shifters started to outstrip supply shifters, just this imbalance of 1.5 per cent per year leads to price increases of 10 per cent per year with the assumed short-run supply and demand elasticities. Between 2001 and 2006, real rice prices increased over 8 per cent per year on world markets.

What can simple supply and demand models say about the explosion of food prices?

There is no meaningful way to say what element of demand is growing ‘too fast’ so long as each of the components of demand growth is growing relatively steadily. Indeed, the ‘blame’ for rising grain prices can equally be laid at supply growth that is ‘too slow’. Market clearing prices are driven by the aggregate of supply and demand in that market at a point in time. Prices themselves cannot reveal the underlying composition of those supplies and demands (the origin of the classical ‘identification problem’).

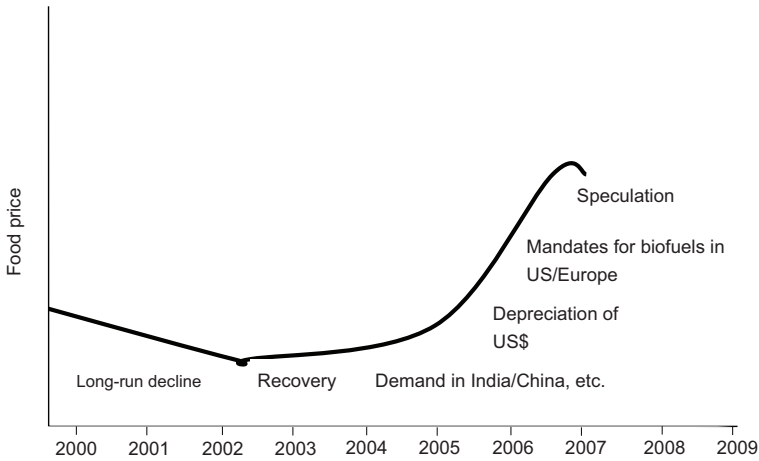


Figure 3.2 Demand factors contributing to food price formation since 2000

Source: Timmer (2008a)

This perspective on formation of market prices presents a conundrum. The ‘slow and steady’ shifters of both supply and demand can explain gradual increases in prices, such as seen from the early-2000s until late 2007 (see Figure 3.2). The lagged response to earlier periods of low prices can explain some acceleration in these prices, especially for rice and wheat. But the explosion in food prices late in 2007 and in the first half of 2008 clearly requires additional explanation involving factors not incorporated in the simple model of price formation just outlined. Much of the additional ‘analytical’ explanation of short-run price movements will be provided from the supply of storage model, with its focus on links between inventory movements and price expectations that can be expressed in futures markets.

The supply of storage model and short-run price behaviour

The link between the supply of grain held in storage and prices in both spot and futures markets has long been the subject of analytical attention (Working, 1933, 1948, 1949; Keynes, 1936; Kaldor, 1939; Brennen, 1958; Telser, 1958; Cootner, 1960, 1961; Weymar, 1968; Williams and Wright, 1991). The basic ‘supply of storage’ model that has emerged from this theoretical and empirical work is the foundation for understanding short-run price behaviour for storable commodities (Houthakker, 1987). It stresses the interrelated behaviour of speculators and hedgers as they judge inventory levels in relation to use. The formation of price expectations is the key to this behaviour.

The basic supply of storage model

The basic supply of storage model is a simple extension of the supply/demand model already used here. The formulation here follows Weymar's presentation, with three behavioural equations and one identity (error terms are omitted for simplicity):

$$C_t = f_c(P_t, P_t^L) \quad (3.1)$$

$$H_t = f_b(P_t, P_t^L) \quad (3.2)$$

$$(P_t^* - P_t) = f_p(I_t) \quad (3.3)$$

$$I_t = I_{t-1} + H_t - C_t \quad (3.4)$$

Where C = consumption, P = price, P^L = lagged price, H = production (harvest), I = inventory, and P^* = expected price at some point in the future. According to Weymar (1968, p28):

The first two equations, indicating the dependency of consumption and production on current and/or lagged price, reflect traditional micro economic theory. While other variables may appear in these relationships (e.g. consumer income, government support levels), their exclusion here will not affect the discussion that follows. [The third equation] represents the 'supply of storage' curve ... and reflects the notion that the amount of a commodity that people are willing to carry in inventory depends on their expectations as to future price behavior. If they feel that the price will increase substantially, they will be willing to carry heavier inventories (supply more storage) than would otherwise be the case. Because the inventory level is in fact determined by the identity expressed in [the fourth equation], the supply of storage function can be used to explain the gap between the current price and price expectations in terms of the current inventory level.

Thus the relationship between current inventories and current price helps explain price expectations, and vice versa. These price expectations can then be expressed in prices on futures markets. The actual working out of this theory empirically requires a close understanding of the behaviour of market participants – farmers, traders, processors and end users (consumers) – in their role as hedgers or speculators. The current controversy over the role of 'outside' speculators – investors who are not active participants in the commodity system – has many precursors in the history and analysis of commodity price formation on futures markets (see, for example, the Telser-Keynes debate reviewed by Cootner, 1960).

The empirical relevance of the supply of storage model

The empirical difficulty in using the supply of storage model to understand short-run price behaviour is having current information on inventory levels. This is not such a severe problem when virtually all the commodity storage is in commercial hands, as with cocoa or wheat, and stock levels for such commodities are reported regularly or can be estimated fairly accurately. For a commodity such as rice, however, that is mostly grown by smallholders, is marketed by a dense network of small traders and processors, and is purchased by consumers in a readily storable form (milled rice), stock levels can change at any or all levels of the supply chain, and there are virtually no data available on these inventory levels.

For the purposes here, the main advantage of the supply of storage model is its ability to build conceptual links between long-run supply and demand trends, where basic models of producers and consumers provide operational guidelines to decision-making and price formation, and very short-run movements in prices that often seem totally divorced from supply and demand fundamentals. Because long-run trends are gradually built up from short-run observations, these links are crucial for understanding price behaviour even in the long run.

The key, then, to making the supply of storage model operational in the short run is to use it to gain insight on formation of price expectations. In the very short run, from day to day or week to week, these expectations seem to be driven by a combination of price behaviour for commodities broadly and the specifics of individual commodities. Broad commodity price trends are captured by the International Monetary Fund's (IMF) commodity price index, the *Economist* price index, or the Goldman-Sachs commodity price index, for example. Thus, traders operating in any one specific commodity market, such as oil, corn or wheat, will be following closely the broader price movements for all commodities (Sanders and Irwin, 2008). These broad price movements seem to be driven by basic macroeconomic forces such as rates of economic growth, the value of international currencies, especially the US dollar, and relative inflation rates (Timmer, 2008a).

But traders are also following closely the specifics of the commodity as well. Here inventories (especially relative to actual use for consumption) are the key to price formation, once the harvest/supply situation for the crop is established. Clearly, the analytics of price behaviour for oil or metals begin to look quite different from the analytics of food commodities at this stage, as seasonal production and the inherent need to store the commodity for daily use throughout the year drive inventory behaviour via the supply of storage.

Typically, commodities for which inventory data are reasonably reliable tend to have their short-run prices driven by unexpected supply behaviour, whereas commodities with poor data on inventories, especially where significant inventories can be in the hands of millions of small agents – farmers, traders, consumers – tend to have their extremes in price behaviour generated

by rapidly changing price expectations themselves, and consequent hoarding or dishoarding of the commodity.

The *short-run price dynamics* for rice thus look significantly different from wheat or corn, partly because of the different industrial organization of the respective commodity systems. There are surprisingly few studies of individual commodity systems that are set within this broader macroeconomic and organizational framework (see Timmer, 1987, for an exception). The world food crisis in 2008 provides ample rationale for major new studies within this framework for all of the major food commodities.

These studies would generate considerable insight into why the short-run price dynamics for different commodities are so different, especially the varying roles of financial markets in accommodating, even driving, these price dynamics. However, long-run price relationships across commodities, and thus the dynamics of price trends over extended periods of time, are likely to be little influenced by the industrial organization of the commodity system and more influenced by changing relative technologies and tastes. These long-run relationships are analysed in the final section of this paper.

Why the difference in market structure for rice matters in short-run price formation

Experience with world rice prices since the middle of the decade illustrates the importance of market structure to short-run price dynamics. The actual production/consumption balance for rice has been relatively favourable since 2005, with rice stocks to use ratios improving slightly. This stock build-up was a rational response to the very low stocks seen at the middle of the decade and to gradually rising rice prices – exactly what the supply of storage model predicts. Short-run substitutions in both production and consumption between rice and other food commodities are limited, and until late 2007, it seemed that the rice market might ‘dodge the bullet’ of price spikes seen in the wheat, corn and vegetable oil markets. The lack of a deeply traded futures market for rice also made financial speculation less attractive.

But the world rice market is very thin, trading just 6–7 per cent of global production. While this is a significant improvement over the 4–5 per cent traded in the 1960s and 1970s, it still leaves the global market subject to large price moves from relatively small quantity moves.

The global rice market is also relatively concentrated, with Thailand, Viet Nam, India, the US and Pakistan routinely providing nearly four-fifths of available supplies. Only in the US is rice not a ‘political commodity’ from a consumer’s perspective (although it certainly is a political commodity for producers in the US). All Asian countries show understandable concern over access of their citizens to daily rice supplies. Both importing and exporting countries watch the world market carefully for signals about changing scarcity, while simultaneously trying to keep their domestic rice economy stable.

As concerns grew in 2007 that world food supplies were limited and prices for wheat, corn and vegetable oils were rising, several Asian countries reconsidered the wisdom of maintaining low domestic stocks for rice.⁷ The Philippines, in particular, tried to build up their stocks to protect against shortages going forward. Of course, if every country – or individual consumer – acts the same way, the hoarding causes a panic and extreme shortage in markets, leading to rapidly rising prices. Even US consumers are not immune from this panic, as indicated by the ‘run’ on bags of rice at Costco and Sam’s Club in April 2008. Such price panics have been fairly common over the past 50 years, but the hope was that deeper markets, more open trading regimes, and wealthier consumers able to adjust more flexibly to price changes had made markets more stable.⁸ It turns out this was wishful thinking, as the price record for rice shows.

After an acceleration started in September 2007 in the gradual price increases seen for half a decade, concern over the impact of higher rice prices in exporting countries, especially India, Viet Nam and Thailand, started to translate into talk, and then action, on export controls.⁹ Importing countries, especially the Philippines, started to scramble for supplies. Fears of shortages spread and a cumulative price spiral started that fed on the fear itself.

The trigger for the panic was provided by inter-commodity price linkages. In India, the 2007 wheat harvest was damaged by drought and disease – as in so many other parts of the world. Thus the National Food Authority had less wheat for public distribution. Importing as much wheat as in 2006 (nearly 7 million tons) would be too expensive (both economically and politically) because of the high wheat price in world markets, so the NFA announced it needed to retain more rice from domestic production.

Barriers were put on rice exports in September – India is the second largest rice exporter in the world, 5 million tons in 2007 – and eventually an outright ban on exports of non-Basmati rice from India was announced in February 2008. Other rice-exporting countries followed, as rice prices started to spike.

The newly elected populist government in Thailand did not want consumer prices for rice to go up, and the commerce minister openly discussed export restrictions from Thailand – the world’s largest rice exporter, 9.5 million tons in 2007. On 28 March 2008, rice prices in Thailand jumped \$75 per ton. Prices continued to skyrocket until it cost over \$1100 per ton in April. This is the stuff of panics.

Low and declining rice stocks have been held accountable for the rising prices, with the argument that rice consumption has outpaced rice production for a number of years since 2000 (a mathematical inevitability if rice stocks are falling). Rice stocks in China have come down over the past decade, but that was a sensible response to growing reliance on trade as the buffer, and to lower prices in world markets. There has been little change in rice stocks in the rest of the world – indeed, the stocks to use ratio has been rising since 2005. Holding rice stocks in tropical conditions is extraordinarily expensive, so a smoother flow of rice internationally reduces this wasteful stockholding.

Now that the exporting countries are clearly willing to put bans on rice exports to protect their own consumers, nearly all countries will be forced to resort to domestic stockpiles. That is a real tragedy for poor consumers and for economic growth – capital tied up in funding inventories is not very productive in stimulating productivity growth.

The psychology of hoarding behaviour is important in explaining why rice prices suddenly shot up starting in late 2007. Financial speculation seems to have played only a small role (partly because futures markets for rice are very thinly traded). Instead, decisions by millions of households, farmers, traders and some governments sparked a sudden surge in demand for rice and changed the gradual increase in rice prices from 2002 to 2007 into an explosion. This was ‘precautionary’ demand even if not ‘speculative’ demand, to employ the language Keynes (1936) used in the debate over the role of speculative demand in the supply of storage.

A rough calculation of the effect of household hoarding of rice shows the potential. Assume that 1 billion households consume 1 kilogram (kg) of rice a day (for a total consumption of 365 million tons, for the year, which is the right magnitude). Assume they keep a one-week supply in their pantry, or 7kg per household, which is 7 million tons of household stocks in total. This quantity probably varies by income class, with the very poor buying hand to mouth, and better-off households storing more just for convenience. When prices start to rise, or the newspapers/TV start talking about shortages of rice, each household, *acting independently*, decides to double its own storage, thus buying an additional 7kg per household. This means the world rice market needs to supply an additional 7 million tons of rice over a short period (a few weeks ...). This quantity is about one quarter of total annual international trade in rice (recent levels have been 27–30 million tons per year).

Roughly 7 million tons is just the added demand from households. Farmers, traders, rice millers and even governments will also want to hold more stocks in these circumstances. As an example, the Government of Malaysia announced that it was doubling the size of the national buffer stock held by Bernas, even though it had to pay extremely high prices to do so. The Philippines increased its government-held stocks. Indonesia tripled its level of buffer stocks, from 1.0 to 3.0 million tons.

To determine the impact on prices, short-run supply and demand parameters from the analytical model developed above can be inserted into the price determination mechanism: -0.1 for demand and 0.05 for supply. With a 25 per cent increase in short-run demand on the world market (suddenly), the world price will have to rise by 167 per cent to get a new equilibrium. That is what happened – *panicked hoarding caused the rice price spike*.

Fortunately, a speculative run can be ended by ‘pricking the bubble’ and deflating expectations. Once the price starts to drop, the psychology reverses on hoarding behaviour by households, farmers, traders and even governments. When the Government of Japan announced in May, after considerable international urging, that it would sell 300,000 tons of its surplus ‘WTO’ (World

Trade Organization) rice stocks to the Philippines, prices in world rice markets started to fall immediately (Mallaby, 2008; Slayton and Timmer, 2008). By late August, medium-quality rice for export from Viet Nam was available for half what it sold for in late April, as dishoarding gained momentum.

Do financial markets drive price formation on commodity markets? Testing for Granger causality across exchange rates and commodities¹⁰

It is possible to examine the changing relationships for price formation across commodities in a formal way using the methodology of Granger causality. Simply put, variable *X* is said to ‘Granger cause’ variable *Y* if time-series information on variable *X* adds to the explanation of variable *Y* over and above the ability of past values of variable *Y* to explain the current value. Econometrically, vector autoregressive (VAR) techniques are used to determine how much of variable *Y* can be explained using just lagged values of variable *Y* itself, after which lagged values of variable *X* are added to the regression. If these lagged values are statistically significant in contributing additional explanatory power to variable *Y*, then variable *X* is said to ‘Granger cause’ variable *Y*. Reverse causation is routinely tested as well, and with many macro-economic variables, direct and reverse causality are often found simultaneously.

Most financial market analysts argue that the depreciating US dollar was a major reason for oil prices to rise. Through a biofuels connection, higher oil prices might then cause corn (maize) prices to rise (the main mechanism analysed in the Farm Foundation report – see Abbot et al, 2008). Higher corn prices might then spill over to other commodities through both supply and demand linkages, thus causing wheat, rice, soybean or palm oil prices to rise. Using Granger causality methods, it is possible to test certain elements of this interpretation. In the first instance we are seeking very short-run linkages that are most likely mediated through futures and other financial markets, so daily price movements are required to observe such short-run effects. Indeed, given the split-second decision-making on most trading floors where these ‘investments’ are being made, even daily prices might aggregate away some of the effects we wish to observe.

Figure 3.3 shows a startling result for the Granger test that the exchange rate between the euro and the US dollar ‘causes’ the price of oil (Brent). A 15-day lag is specified and the model is run on (daily) rolling six-month horizons, starting on 31 December 1999 and ending on 2 July 2008. Each observation in Figure 3.3 is thus the outcome of a Granger regression on six months of daily price data, resulting in 2090 regressions. The vertical axis is the probability that the null hypothesis of no Granger causation is rejected. Values between 0.95 and 1.00 reflect a very high probability that Granger causation in the direction specified is significant.

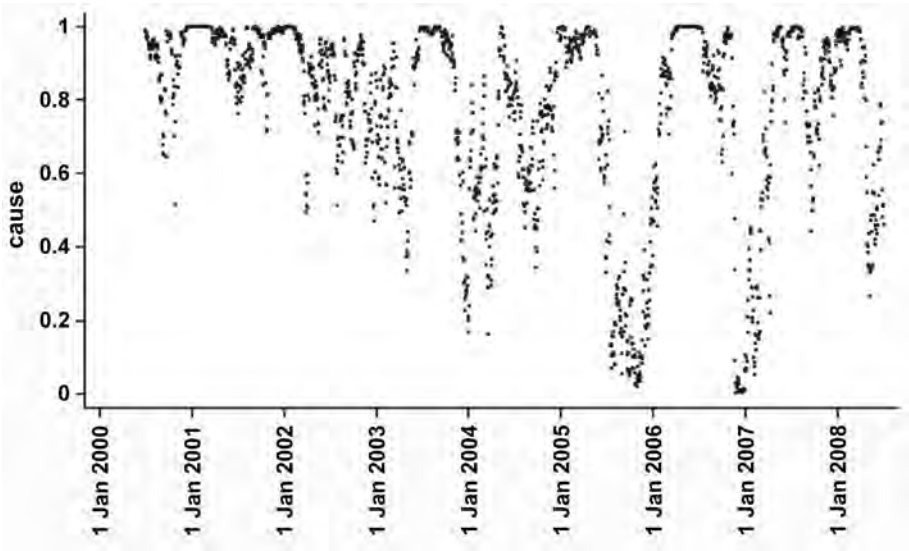


Figure 3.3 Granger causality test: Euro/US\$ \Rightarrow Brent crude

Note: The Granger causality test is applied to daily rolling six-month data starting from 31 December 1999 to 2 July 2008, a total of 2090 separate regressions. A 15-day lag is specified in the VAR regressions. The symbol \Rightarrow indicates the direction of causality being tested. In this particular example, 36 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.3.

Source: Author's calculations

As Figure 3.3 demonstrates, there are several lengthy intervals when the exchange rate seems to be 'causing' the price of oil – at least seven intervals of more than two months just between 2000 and 2008. But there are also many intervals when there seem to be no linkages at all between the two markets. If the question is, 'did the depreciation of the US dollar cause high oil prices?', the answer seems to be, 'it depends on when you look, but 36 per cent of the time the answer is yes'. No model that assumes a stable relationship between the two variables can possibly capture this behaviour. To understand it, we almost certainly need to understand behaviour in financial markets and especially the formation of price expectations on the part of traders in these markets, including markets for commodities.

Price expectations are hard to measure (much less forecast), but the supply of storage model tells us they are likely to be influenced most by volatile elements in both the supply and demand for the commodity. From this perspective, the most volatile element behind the sudden and sharp run-up in food commodity prices was likely to have been the 'hot money' in search of the next investment boom, after the crash in tech stocks and then real estate derivatives (and before the financial system itself crashed). The source of this hot money was the massive liquidity infusion provided by the US Federal Reserve System as it sought to stave off (unsuccessfully, as it turns out) a recession caused by collapsing real estate values and subsequent threats to the nation's financial

system (see Frankel, 2006).

This money had to go somewhere (as long as investors were still willing to take risks). Thus the real trigger for the spike in food prices in 2007 seems to have been speculative behaviour on the part of large investment/hedge funds with hundreds of billions of dollars looking for an arena with potential for asset price appreciation. The combination of a rapidly falling dollar, movement of investment funds into commodities, especially petroleum and then on to other commodities, was the trigger needed for commodity markets to explode. The Bank of International Settlements in Basel estimates that hundreds of billions of dollars were invested in commodity funds in late 2007 and early 2008, and until June 2008, they all were betting on higher prices.

As noted already, rice prices in world markets did not follow these early price booms in oil, wheat and corn, mostly because the venues for speculation in rice price movements by 'outside' investors in futures and options markets are extremely limited for rice. For example, average daily trading volumes in December 2008 on the Chicago Board of Trade for corn and wheat futures contracts were *132 times* the daily volume for (rough) rice. Daily volume for options contracts for corn and wheat were *557 times* those for (rough) rice.

These tiny trading volumes mean it is not possible for major participants in world rice trade to routinely use futures and options markets to manage their price risks. In reverse, 'outside' speculators have very limited instruments to participate in or drive movements in rice prices. Still, formation of rice prices can be significantly influenced, especially in the short run, by price behaviour in other related commodity markets because prices in these other markets influence how the millions of small-scale participants in the rice system form their own expectations about rice prices. As was seen in late 2007 and early 2008, these expectations can be self-fulfilling.

Exchange rates driving food commodity prices

Of course, the depreciating dollar does not need to act through oil prices alone to affect commodity prices; it can also directly impact these prices. In the medium run, both supply and demand adjustments by producers and consumers to changes in the value of the US dollar relative to their own domestic currency cause the US dollar price of most commodities to rise when the dollar falls. These price changes can be explained by the 'fundamentals' of supply and demand.

In the very short run, however, in daily price formation, a declining dollar seems likely to stimulate *financial speculation* in commodity markets, thus establishing a direct price link even before producers and consumers have had a chance to adjust. Figures 3.4 and 3.5 show how these connections come and go between the euro/US\$ rate and corn (maize) and hard wheat prices respectively. We still do not know why these short-run speculative connections get established for shorter or longer periods of time, and then disappear altogether for extended periods of time.

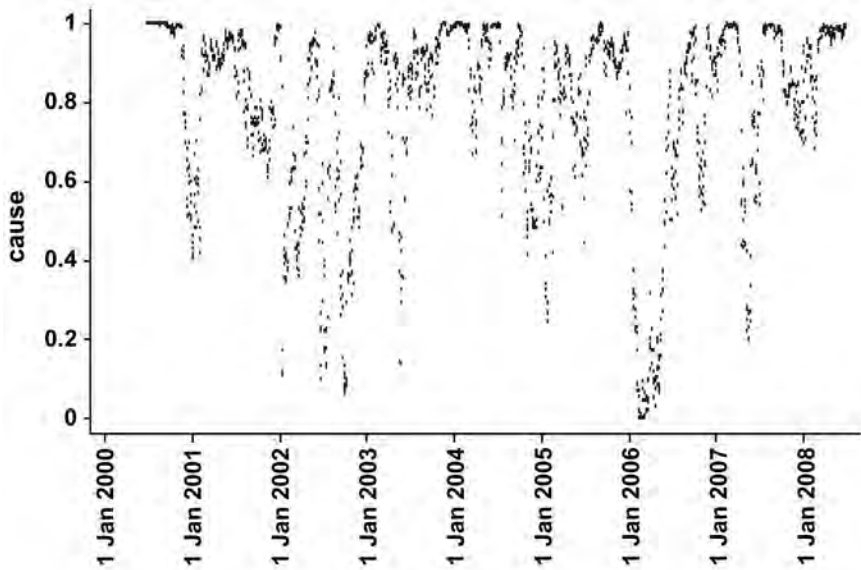


Figure 3.4 Granger causality test: Euro/US\$ \Rightarrow corn (maize)

Note: Please see notes in Figure 3.3. In this particular example, 30 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.4.
Source: Author's calculations

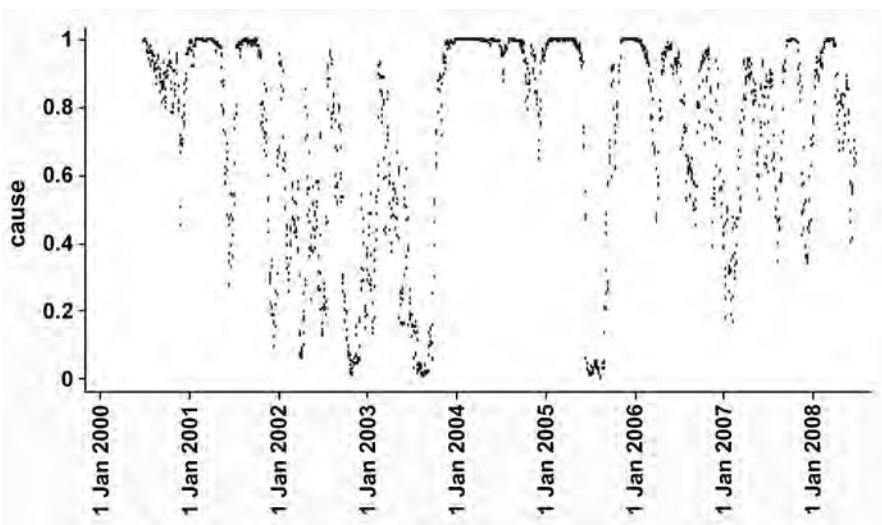


Figure 3.5 Granger causality test: Euro/US\$ \Rightarrow hard wheat

Note: Please see notes in Figure 3.3. In this particular example, 36 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.5.
Source: Author's calculations

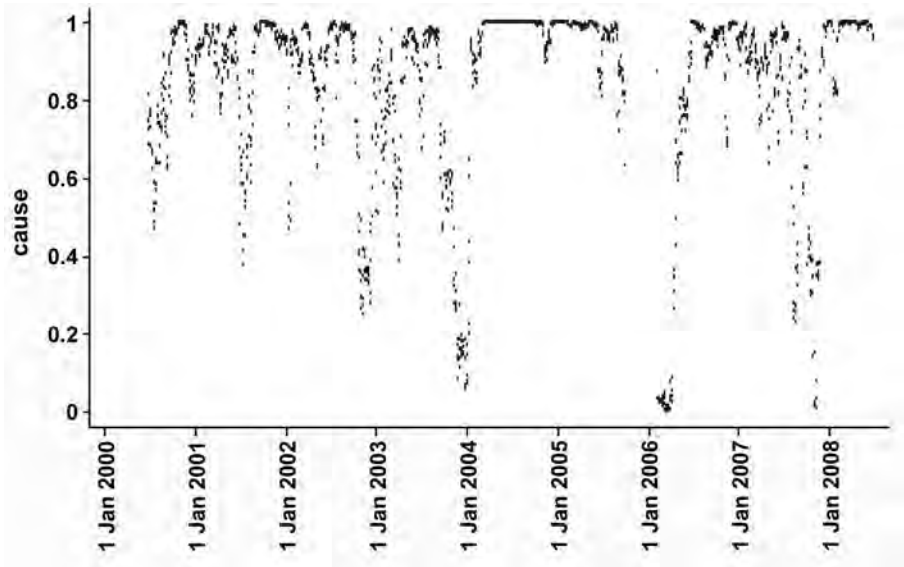


Figure 3.6 *Granger causality test: Euro/US\$ \Rightarrow rice*

Note: Please see notes in Figure 3.3. In this particular example, 47 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.6.

Source: Author's calculations

It is especially difficult to explain these short-run price linkages for rice (see Figure 3.6). For long periods of time the euro/US\$ rate seems to drive the price of Thai rice. This may simply be a factor of the Thai baht being linked to the appreciation of the euro, with the US dollar price of Thai rice being converted directly from the baht wholesale price.¹¹

Cross-commodity linkages

One broad hypothesis underlying the various explanations for sharply higher food prices on world markets has been the link between oil prices and food commodity prices. As Timmer (2008a) puts it, if high oil prices are here to stay, high food prices are here to stay. The logic of this connection, through biofuel production, depends on medium- to long-run responses by producers and consumers to the profitability of converting corn or vegetable oils into ethanol or biodiesel.¹² But again, financial speculators can see this longer-run potential and convert it into short-run price behaviour by investing in futures markets (and other more exotic derivatives). Figures 3.7 and 3.8 show how the oil price drives the daily formation of maize and palm oil prices. Again, we need to understand why the periods of strong price linkages come and go.

Most commodity analysts think the main connection between the maize market and wheat market comes through livestock feeding, with soft wheat serving as a very close substitute for maize in many feed rations. Figures 3.9 and 3.10 test in which direction this linkage tends to run in the very short run.

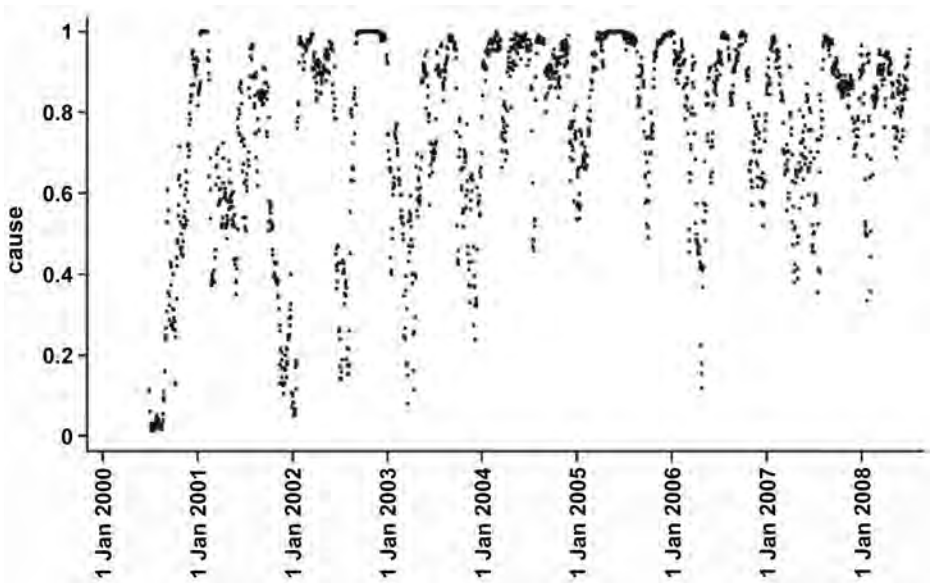


Figure 3.7 Granger causality test: Oil (Brent) \Rightarrow corn (maize)

Note: Please see notes in Figure 3.3. In this particular example, 26 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.7.
Source: Author's calculations

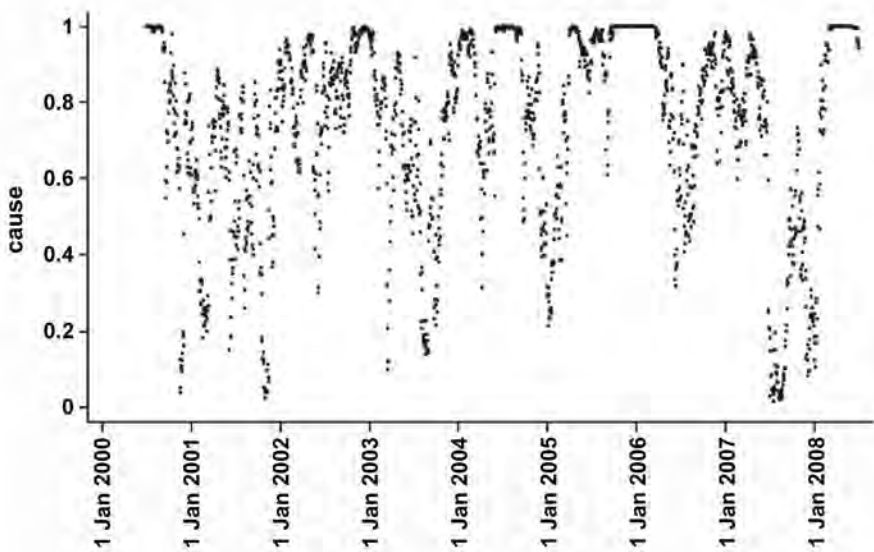


Figure 3.8 Granger causality test: Oil (Brent) \Rightarrow palm oil

Note: Please see notes in Figure 3.3. In this particular example, 27 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.8.
Source: Author's calculations

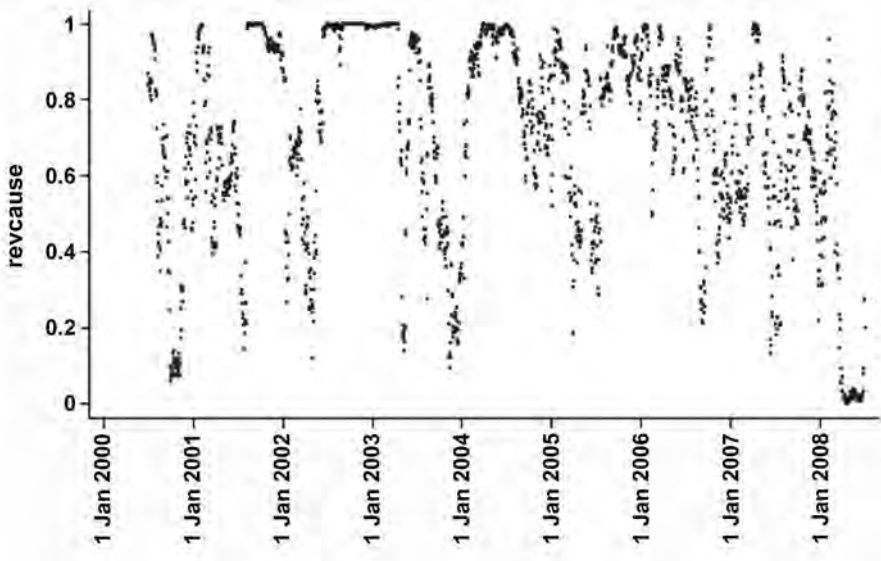


Figure 3.9 Granger causality test: Soft wheat \Rightarrow corn (maize)

Note: Please see notes in Figure 3.3. In this particular example, 24 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.9.

Source: Author's calculations

Visually, it seems like soft wheat had more of an impact on maize prices before 2004 (Figure 3.9), with maize having more of an impact on soft wheat after then (Figure 3.10). Such a change would be consistent with the argument that biofuel demand for maize in the US after 2005 became a much more important driver of maize prices. Formal confirmation of this hypothesis is part of the ongoing research.

What explains rice price behaviour, in terms of cross-commodity linkages? Normally, rice behaves as a 'special' commodity, driven mostly by national and international balances for the commodity itself, with relatively weak connections to other commodities (Dawe, 2008a, 2008b, 2008c). Rice is not used for livestock feed or biofuel production, except in very unusual circumstances. The Japanese, for example, allow their imported rice required by WTO commitments to deteriorate in storage, and then feed it to livestock.

But there are substantial regions in Asia where rice competes with wheat in consumption. Over the long run, commodity analysts expect rice and wheat prices to reflect this substitution and exhibit a relationship that captures the opportunity cost of producing each commodity (at the long-run margin). Although this relationship is likely to be stable only in the long run, with very substantial divergences from year to year, it is apparently important enough for short-run commodity traders to factor wheat prices into expectations about rice prices, and vice versa. Figures 3.11 and 3.12, respectively, show the episodes when short-run prices of hard wheat drive rice prices, and when rice prices are driving the prices of hard wheat.

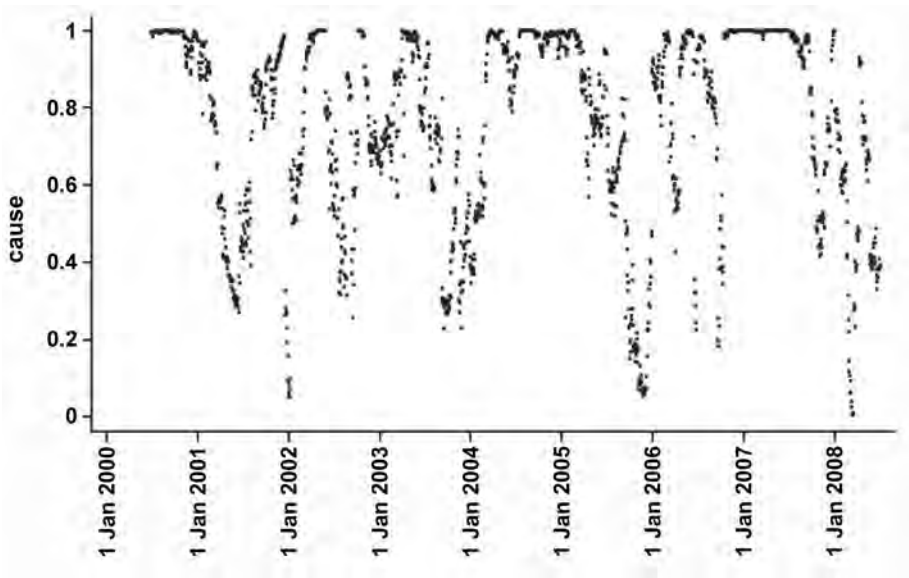


Figure 3.10 *Granger causality test: Corn (maize)⇒soft wheat*

Note: Please see notes in Figure 3.3. In this particular example, 37 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.10.

Source: Author's calculations

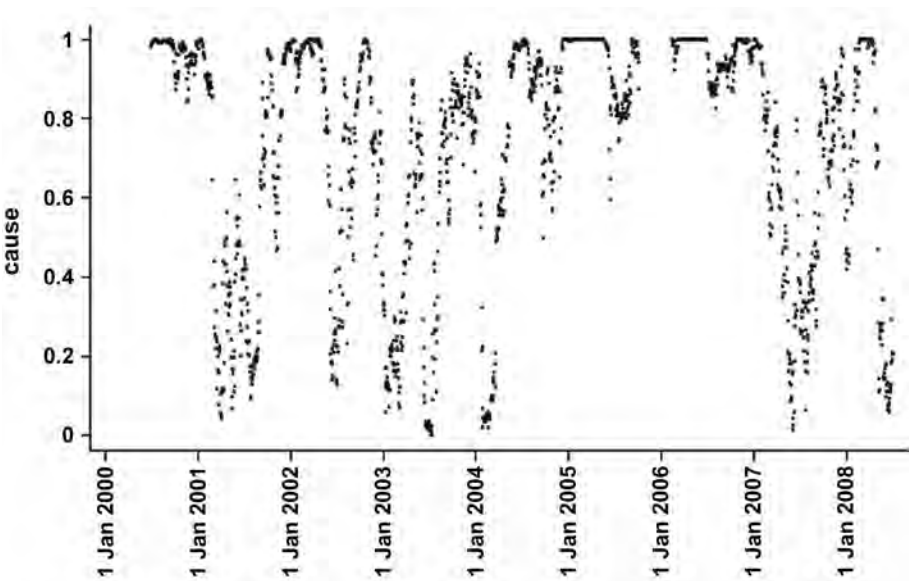


Figure 3.11 *Granger causality test: Hard wheat⇒rice*

Note: Please see notes in Figure 3.3. In this particular example, 33 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.11.

Source: Author's calculations

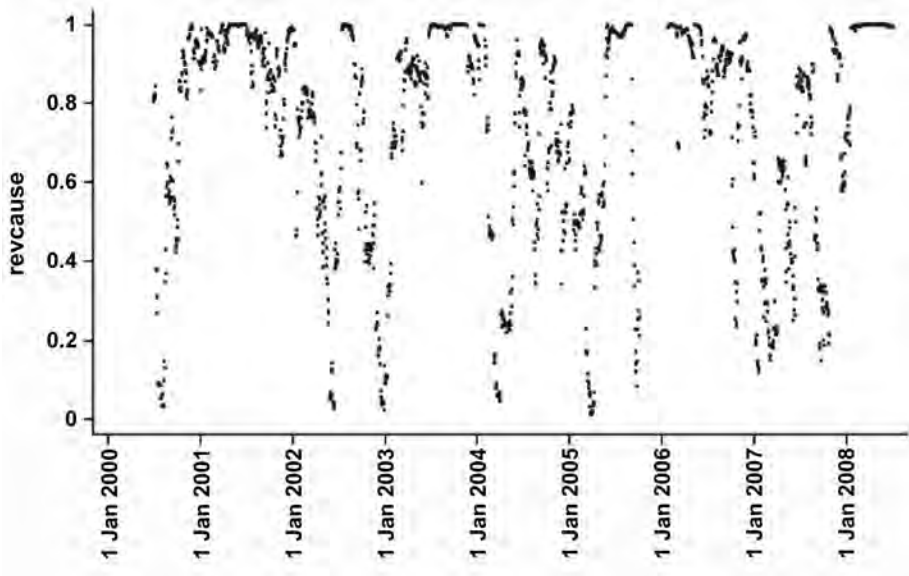


Figure 3.12 Granger causality test: *Hard wheat* \leftarrow *rice*

Note: Please see notes in Figure 3.3. In this particular example, 31 per cent of the observations are significant at the 0.05 level or better, i.e. the significance level is 95 per cent or above, as plotted in Figure 3.12.

Source: Author's calculations

Although the timing of the linkages across all these commodities is not yet understood, it is clear that financial markets must be the main integrator of these markets in the very short run, for daily price formation. The Granger causality results already show that there are episodes when the rice market is connected to the hard wheat market (in both directions). The wheat market (mostly via the market for soft wheat, which competes at both the production and consumption margin with hard wheat) is connected to the maize market. And all of these commodity markets are linked at times to the market for oil and to the rate of exchange between the euro and the US dollar.

An overview of these linkages, as revealed by the Granger causality analysis, is shown in Table 3.1. Each cell reports the percentage of significant coefficients for each commodity (in the columns) that is 'Granger caused' by the exchange rate or commodity in each row (the upper right part of the table). 'Reverse Granger causality' is shown in the bottom left part of the table. Thus daily values of the euro/US\$ exchange rate 'cause' the daily prices of crude oil 36 per cent of the time. At the same time, crude oil prices 'cause' the euro/US\$ exchange rate 26 per cent of the time. Understanding the timing of these linkages, and what causes their strength to come and go, is the purpose of the next stage of research.

Table 3.1 *Significance of Granger causality tests for various commodities and the exchange rate between the euro and US dollar*

	<i>EU/US FX rate</i>	<i>Crude oil</i>	<i>Corn</i>	<i>Hard wheat</i>	<i>Soft wheat</i>	<i>Rice</i>	<i>Palm oil</i>
EU/US FX rate	—	36	30	36	42	47	36
Crude oil	26	—	26	?	?	?	27
Corn	35	49	—	45	37	?	?
Hard wheat	28	?	38	—	?	33	?
Soft wheat	19	?	24	?	—	27	?
Rice	30	?	?	31	36	—	?
Palm oil	43	28	?	?	?	?	—

Note: Granger causality for each pair is tested horizontally. Reverse Granger causality is tested vertically. See text for an example. A question mark (?) indicates the statistical analyses have not yet been conducted.

Source: Author's calculations

Long-run price relationships among the staple cereals

As noted, most commodity market analysts think there is a long-run relationship among the prices of staple grains, based on commodity substitutions in both production and consumption (Timmer et al, 1983). Mitchell (2008), for example, argues that wheat prices historically have averaged about 60–80 per cent of the price of rice (and thus were far ‘too high’ in early 2007, reflecting speculative pressures in the wheat market). Table 3.2 presents results from analysing the long-run relationship between prices of the three basic cereal staples, rice, wheat and corn (maize), since 1900.

It is clear there has been a long-run decline in the prices of all three cereals – there is a basic commonality in this decline, as all three commodities have trend price declines of more than 1.0 per cent per year. Further, this decline accelerated after the mid-1980s, again for apparently common reasons (see

Table 3.2 *Long-run relationships among rice, wheat and maize prices, 1900–2008*

<i>Independent variable</i>	<i>Rice</i>		<i>Wheat</i>		<i>Maize</i>	
	1	2	3	4	5	6
Constant	31.5944	11.5888	26.0225	2.2670	29.9852	5.8011
(t-stat)	(16.7)	(3.9)	(16.5)	(1.1)	(17.2)	(2.6)
Time ¹³	−0.0134	−0.0053	−0.0105	−0.0005	−0.0125	−0.0027
(t-stat)	(14.1)	(4.0)	(13.0)	(0.6)	(14.1)	(2.7)
Log rice price	—	—	—	0.1910	—	0.1345
(t-stat)	—	—	—	(3.2)	—	(1.9)
Log wheat price	—	0.4728	—	—	—	0.7661
(t-stat)	—	(3.2)	—	—	—	(9.3)
Log maize price	—	0.2569	—	0.5909	—	—
(t-stat)	—	(1.9)	—	(9.3)	—	—
Adj. R sq	0.645	0.771	0.609	0.857	0.645	0.869

Note: Dependent variable is logarithm of price in all regressions.

Source: Data from Eberstadt (2008), analysis by author

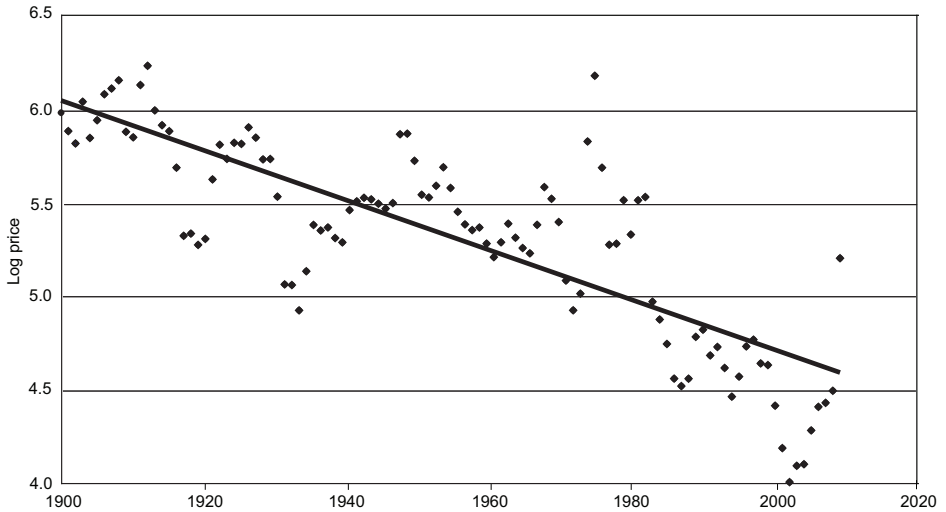


Figure 3.13 Long-run trend in real rice prices, 1900–2008

Source: Data from Eberstadt (2008), analysis by author

Figures 3.13, 3.14 and 3.15). Even the recent run-up in cereal prices in 2007–2008 barely returned them to the long-run downward trend. From the figures it is clear that, relative to these trends, wheat and maize prices rose more sharply than did rice prices. It is also clear from Table 3.2 and Figures 3.13–3.15 that price formation for rice has several unique dimensions that are worthy of further study.

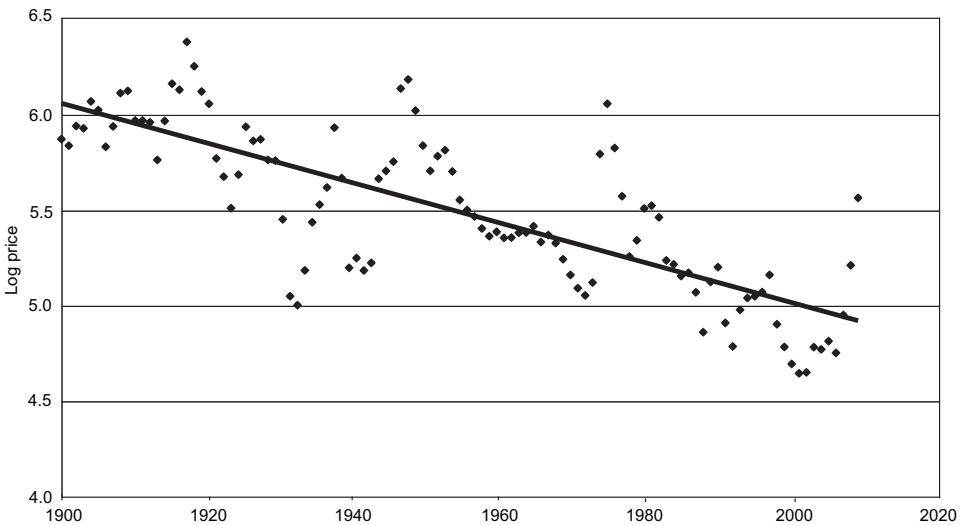


Figure 3.14 Long-run trend in real wheat price, 1900–2008

Source: Data from Eberstadt (2008), analysis by author

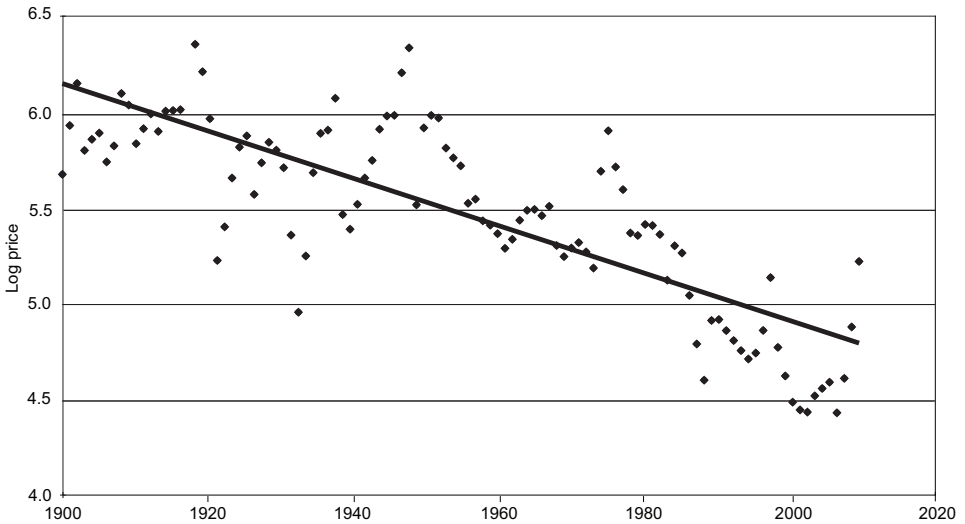


Figure 3.15 Long-run trends in real maize prices, 1900–2008

Source: Data from Eberstadt (2008), analysis by author

Two basic models of long-run price formation are tested in Table 3.2 for each of the three basic food cereals, rice, wheat and maize. The first asks simply what the long-run time trend in real prices is, without further explanatory variables (Equations 1, 3 and 5). There can be no mistaking the sharp downward trend, either econometrically in Table 3.2 or visually from Figures 3.13, 3.14 and 3.15 (where the fitted trends are shown against the raw data). The trend decline for rice is 1.34 per cent per year, for maize it is 1.25 per cent per year, and for wheat it is 1.05 per cent per year. The difference between the trend decline for rice and wheat is significant at the 5 per cent level. Something has been driving rice prices down faster than wheat prices over the past century. The difference between the simple trend decline for rice and maize is not significant. The very simplicity of this trend analysis, of course, precludes any attempt at explaining why there are differences in trends.

The second model is slightly more sophisticated and starts to address the issue of differences in price formation among the three cereals (Equations 2, 4 and 6). This model still tests for the existence of a time trend, but now the trend estimate for the price of each commodity is (statistically) controlled for the prices of the other two commodities in the same year.¹⁴ The results are actually quite dramatic. The downward time trend for wheat disappears altogether, with rice prices (coefficient = 0.19) and maize prices (coefficient = 0.59) both having a highly significant impact on wheat prices.

Maize prices behave in a similar but less dramatic fashion. The time trend is only -0.27 per cent per year, although it is statistically significant. Rice prices have only a marginal impact on maize prices, with a coefficient of 0.13 that is not significant at the 5 per cent level. Wheat prices, however, have a very

large impact on long-run maize prices (confirming the short-run results seen in the Granger causality tests), with a coefficient of 0.77 that is highly significant.

Although somewhat related to wheat and maize prices, rice prices clearly have a different pattern of price formation. The impact of maize prices on rice prices is only marginally significant (as was the case in reverse). Wheat prices have a modest impact which is statistically significant. Comparing the sum of the two coefficients for each of the three regressions is revealing: the sum for rice (of the maize and wheat coefficients) is 0.73, with an average *t*-statistic of only 2.6. The total for wheat (of the rice and maize coefficients) is 0.78, with an average *t*-statistic of 6.3. Maize prices are best explained by the other two commodity prices: the sum of the coefficients is 0.90, with an average *t*-statistic of 5.6. Clearly, rice prices exhibit substantial independence from maize and wheat prices. This conclusion is also borne out by the adjusted R-squared coefficients for each of the price regressions: rice is 'only' 0.77 whereas both maize and wheat are 0.86.

Most significantly, the exogenous time trend for real rice prices, even after controlling for the impact of wheat and maize prices, continues to be substantial and negative, with a significant coefficient of -0.53 per cent per year. Even if maize and wheat prices remained stable in real terms, rice prices would be lower by more than 40 per cent after a century.

There would seem to be two implications of these statistical results. First, both maize, and especially rice, prices, have been driven down by powerful exogenous factors, even after controlling for the general decline in the prices of the other grains. Presumably differential technological change is the main driver of these negative time trends, although demand growth for rice may have been slower over the long run than for wheat. Because of its role in livestock feeding, however, the demand for maize has grown the fastest of the three cereals, yet it still has a small but significant downward trend in price, after allowing for the general decline in cereal prices. This pattern suggests that differential technological change is probably the main driver of prices over the long run.

Second, rice prices clearly have a life of their own. This is seen in the strong downward time trend, when tested alone, in the continued significance of a downward trend when allowance is made for the prices of wheat and maize, and for the relatively small explanatory power of the fully specified price model that allows for these other prices. What causes these long-run differences in price trends?

For the short run, the answer would seem to lie in market structure. It has already been established here that one unique dimension of short-run rice price formation stems from the highly unusual industrial organization of the world's rice economy, with many small producers, traders, retailers and consumers handling a product that is storable at each stage.

The supply of storage model, in turn, argues that this highly decentralized storage capacity is subject to changes in price expectations on the part of participants all along the supply chain. These expectations become self-fulfill-

ing and lead to episodes of panic buying, and subsequent destocking, which sharply destabilize actual prices. Because no one has data on the size of rice stocks in the hands of these multitudinous market participants, their impact on rice price formation is virtually impossible to predict ahead of time. Rice really is ‘different’ in the short run.

Does this difference in market structure also account for the difference in long-run price trends between rice and the other two staple food grains, corn and wheat? Only to a limited extent. The faster downward trend in rice prices, even holding constant the prices of wheat and corn, argues that the long-run equilibrium between supply and demand for rice is shifting down faster than for corn and wheat. Faster technological change for rice could push the supply curve out faster. Slower population growth in rice-consuming countries, and a faster transition to very low, even negative Engel coefficients for rice, could account for slower demand growth. Changing consumer tastes could also be a factor.

But the greater variance in the downward trend for rice (the lower R-squared) does suggest that market structure has long-run significance as well as short-run significance. The political economy of high variance in world rice prices is well understood – it leads countries to retreat into autarky, and dump their own instability into a smaller world rice market. One consequence of this drive for self-sufficiency among rice importers is larger overall production than would be expected in a world of free trade. This added production should also contribute to a long-run decline in world prices.

Breaking into this vicious circle, seen clearly in the price spike in late 2007 and early 2008, will require binding agreements, perhaps even contracts, between rice importers and exporters over multi-year periods, not just for short-run trade. Because there seem to be virtually no national or international pressures for such binding agreements, rice is likely to remain a ‘different’ commodity for decades to come.

Notes

- 1 A review of the causes of high food prices in Asian economies appeared in Timmer (2008a) and an early version of this analytical perspective was presented in Timmer (2008b).
- 2 Price formation for palm oil is also analysed to some extent because of its role in meeting biodiesel mandates in Europe.
- 3 In an empirical specification, the long-run price elasticities would be net of the short-run elasticities.
- 4 It would be possible to specify this model with specific time lags that add up to the long-run response, and such an approach would improve the empirical validity of this model. The purpose here, however, is to clarify a conceptual point, that historical prices have current significance because of both behavioural and technological lags in the response by producers and consumers to these prices.
- 5 ‘Benign’ refers to expansion of cropped area that is environmentally sustainable and not a significant contributor to long-run climate change.

- 6 An early draft and PowerPoint presentation based on Mitchell's research were unequivocal that about three-quarters of the run-up in food prices through late 2007 was due to US biofuel mandates. The subsequent World Bank Research Paper (Mitchell, 2008) is somewhat more hedged.
- 7 What follows is a very brief overview of the 'fire' in the world rice market from late 2007 until mid-2008. See Slayton (2009) for a detailed analysis and chronology.
- 8 The prospect of more stable markets for rice from these forces was raised in Timmer (1991).
- 9 It is almost amusing that Indonesia announced a ban on rice exports early in 2008, before its main rice harvest started in March. Historically, Indonesia has been the world's largest rice importer, surpassed only recently by the Philippines, and no one in the world rice trade was looking to Indonesia for export supplies. But there was a rationale to the announcement by the minister of trade – it signalled that Indonesia would not be needing imports and was thus not vulnerable to the skyrocketing prices in world markets. The calming effect on domestic rice market participants meant that little of the hoarding behaviour seen in Viet Nam and the Philippines was evidenced in Indonesia.
- 10 This part of the chapter is very much research in progress and thus raises far more questions than it answers.
- 11 The 'daily' rice price used in this analysis is Thai 5% broken, FOB Bangkok. The official source for this price, the Thai Board of Trade, only issues it on a weekly basis, and even then the official price quotes are often significantly different from the prices at which actual trades are taking place. One simple indicator of how 'different' the world rice market is from the corn and wheat markets is that there is no daily, transparent, reliable price quotation for rice exports from any of the major origins.
- 12 There has been a long-standing link between energy prices and the price of food commodities because of links from the supply side – irrigation costs, fertilizer costs, cultivation costs, transportation costs and processing costs all are significantly influenced by energy costs (Timmer, 1984).
- 13 Because the price terms are in logarithms, the coefficient on the time variable can be interpreted as the annual per cent 'trend' change in the dependent variable. Thus, in Equation 1, the annual rate of decrease in rice prices is estimated to be 1.34 per cent per year, before allowance is made for the impact of price changes for other staple food commodities. Holding constant the prices of wheat and maize in each year, the trend decrease in rice prices drops to just 0.53 per cent per year. A similar interpretation holds for the time coefficients for the other commodities.
- 14 Technically this assumes that the prices are independent of each other in the same year, which is obviously not true if their price formation is determined simultaneously from a common set of exogenous factors. This not a serious problem here, where the issue is simply the impact of the other commodity prices on the 'exogenous' time trend. Introducing lagged values would solve the econometric problem without changing the results discussed here.

Acknowledgements

I would like to thank David Dawe, Tom Slayton and participants at a World Food Programme seminar in Rome on 'Food, Finance and the Future: Is Food Just Another Financial Instrument?' for helpful comments. Robin Kraft at CGD provided essential research assistance. The views, and mistakes, expressed are my own.

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Trade-Related Policies to Ensure Food (Rice) Security in Asia

Alexander Sarris

Introduction

The sudden and unpredictable large increases (spikes) of many internationally traded food commodity prices in late 2007 and early 2008 caught all market participants, as well as governments, by surprise and led to many short-term policy reactions that may have worsened the price rises. Many governments, think-tanks and individual analysts called for improved international mechanisms to prevent and/or manage sudden food price rises. Similar calls for improved disciplines of markets were made during almost all previous market price bursts, but were largely abandoned after the spikes passed. The financial crisis that started to unravel in 2008 has coincided with sharp commodity price declines, and food commodities have followed this general trend. The price volatility has been considerable. For instance, in February 2008, international wheat, maize and rice price indices stood higher than the same prices in November 2007, namely only three months earlier, by 48.8, 28.3 and 23.5 per cent respectively. In November 2008, the same indices stood at -31.9 , -3.2 and 52.3 per cent higher respectively, compared to November 2007. In other words within one year these food commodity prices had increased very sharply in the first part of the year, and subsequently declined (except rice) equally sharply. Clearly such volatilities of world prices create much uncertainty

among all market participants, and make both short- and longer-term planning very difficult for all.

Rice is a particularly sensitive commodity for countries in Asia as it provides the basic food, and hence is the basic wage good, for the bulk of Asian populations, both rural and urban. Hence the sharp price rises in world rice prices were of particular concern to policymakers. Because of its importance, rice is the object of considerable policy focus of all Asian governments, and rice price stability is a major objective. It is understandable that the recent sudden rice price spikes caused much alarm among Asian policymakers. The major concern was not only price rises, but most importantly access to sufficient supplies to satisfy basic food needs. In response there have been calls for various types of interventions or arrangements to prevent future rice price spikes and assure supplies in times of crises. The purpose of this chapter is to discuss policies, both single country and also possible multi-country arrangements, to prevent future rice price spikes and to assure smooth flows of supplies to rice-importing countries.

The recent rice price spike is not unique. In the food commodity markets there have been four periods of sudden price increases (and subsequent declines), before the most recent one, in the last 40 years (1973–1975, 1978–1979, 1986–1987 and 1995), although only the one of 1973–1975 was of comparable magnitude to the recent spike. Recently international food commodity prices have declined sharply and unpredictably from their peaks of early 2008. How can one interpret these sharp food commodity price swings, and is the recent one unusual?

There have been many analyses of the recent food price surges (Abbott et al, 2008; Baltzer et al, 2008; Helbling et al, 2008; Mitchell, 2008; Schnepf, 2008; Trostle, 2008; von Braun et al, 2008). Recently Headey and Fan (2008) made an assessment of all the various explanations and factors that have been proposed to explain the food price surge of late 2007 and 2008, and found that among the many factors proposed only a few are consistent with the underlying facts of the crisis. The rice market developments have also been the object of some recent analyses (for example Brahmabhatt and Christiaensen, 2008), and the reasons indicated there seem different from the reasons for the other agricultural commodity price spikes.

The plan of the chapter is as follows. First a brief review of the recent rice market upheaval is attempted. Then we discuss some rice market instability as well as medium-term projections of the world rice economy with a focus on Asia. We then examine policies to improve rice market performance and to assure smooth flow of supplies, culminating with a concrete proposal for an institutional structure and arrangement to assure mutual market confidence.

The recent rice price spike in perspective

Figure 4.1 indicates the evolution of monthly nominal international prices of the main traded rice commodities since 2006. It can be seen firstly that, after a

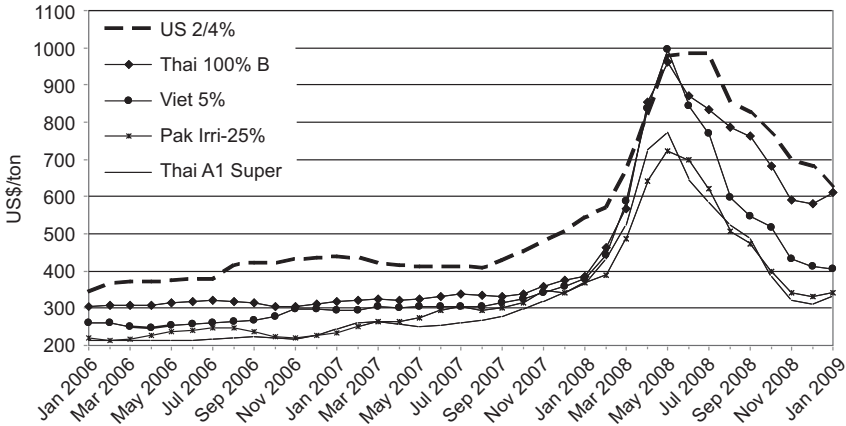


Figure 4.1 Recent export rice prices

Source: FAO Trade and Markets Division

period of relatively stable prices since 2006, all types of rice commodities started a sharp upward spike towards the end of 2007 and early 2008. This spike peaked in May 2008 and since then prices have come down quite sharply, but still seem to be far above their prices two years ago. For the last two months of 2008 and January 2009, prices of the five rice varieties indicated in Figure 4.1 have been on average between 51 and 94 per cent above their respective prices of the first three months of 2006. Hence, even after the summer 2008 spike, there appears to be a significant positive price difference between prices in late 2008 early 2009 and the same prices two years ago.

While, however, the world price changes in rice as well as some of the other basic food commodities appear significant in nominal terms in relation to the trends of the past 20 years, when examined in real terms, prices during the recent crisis appear still considerably smaller compared to the peaks during the previous major food crisis of the mid-1970s. Figure 4.2 indicates the real international prices (deflated by the US producer price index) of the main cereals and oilseeds from 1957 to 2008. It can be readily seen that for all commodities indicated, the real prices at the height of the crisis in 2008 were considerably lower compared to the real prices in the mid-1970s. For rice in particular the recent prices when examined in real terms are less than a third of their peaks of the mid-1970s.

Another salient pattern evident in the graphs of Figure 4.2 is that the long-term decline in food commodity prices, which appears to have been in place since the late 1950s, seems to have stopped in the late 1980s and early 1990s, with the trend lines indicating steady, albeit still fluctuating, patterns. This suggests that there may have been several slowly evolving factors affecting global food markets that gradually created a situation of tightly balanced supply and demand, where a spike was almost inevitable in response to small

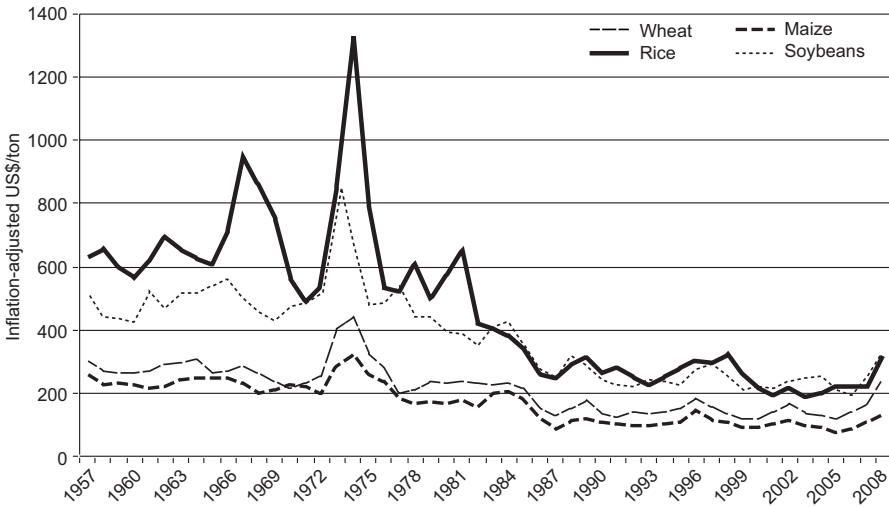


Figure 4.2 Real prices of bulk food commodities, 1957–2008

Source: FAO Trade and Markets Division

shocks. Several of these factors have been discussed and analysed by many authors and think-tanks, as well as FAO. They include the following:

- 1 **Growing world demand for basic food commodities**, due to growth in emerging economies, such as China and India. This development has been touted considerably by many observers, but in fact it has been occurring gradually for several years and cannot account for the sudden price spikes. Furthermore, the rate of growth of these countries' demand or utilization of cereals, the most widely consumed and traded food commodities, for food, feed and other non-biofuel uses, has been decreasing rather than increasing. In fact this is compatible and predicted by conventional economic wisdom, which indicates that as incomes rise, the demand for basic foods rises by less than the rise in incomes.
- 2 **Demand of cereals for biofuel production**. It is true that a significant amount of production of maize in the US, oilseeds in the European Union and sugar in Brazil have been utilized for biofuel production, often with help from a variety of support policies and mandated alternative energy targets. This has also been occurring over a number of recent years and accounts for a significant portion of market demand for these commodities, as well as, via substitution, for indirect demand for several other commodities that compete for the same resources, such as land. As this has been occurring for some time, and helped keep prices increasing and strong overall, it is unlikely to have been a major factor for the sudden price spikes, albeit it may have had amplifying effects in an already tight market. As rice, however, is not a biofuel stock, the influence on the rice market is most likely to have been indirect, through demand substitution effects.

- 3 **The rise in petroleum prices.** Petroleum prices started rising in 2004 and continued rising all throughout the past few years, before sharply declining in late 2008. The reason is largely demand by fast-growing countries with energy-intensive economies, such as China and India. The oil price increase, apart from pushing costs of agricultural production and transport higher, induced a demand for alternative fuels, which in the context of the rising awareness about climate change created a strong demand for biofuels. This, in turn, translated to increasing demand for agricultural raw material feedstocks for biofuel production. Oil price increases accelerated starting in late 2007 and continued increasing rapidly until August 2008, when they started a rapid decline. Food commodity prices, especially those for biofuel stocks, seem to have followed this trend quite closely, including through the spike period of late 2007–2008 and hence one might induce that there is a close link between oil prices and food prices that may have been one of the main contributing factors to the recent food price spike and subsequent decline.
- 4 **Slowing rates of increases in farm productivity.** During the more than 30 years since the last major food price crisis of 1973–1975, agricultural prices in real terms have been declining due to fast rates of growth of agricultural productivity (both land productivity as well as total factor productivity – TFP). In the more recent period, agriculture has been neglected in most developing countries, as the World Bank’s 2008 *World Development Report* aptly illustrated. The neglect not only involved lower productivity growth, via lower investments, but also the perception that agricultural supplies were not a problem in a world of low prices. Nevertheless, recent research by Fuglie (2008) indicates that for the world as a whole, annual growth in TFP in the period 2000–2006 does not appear to have slowed down from the levels of 1990–1999. However, for most regions in Asia (the exception is Southeast Asia), growth in TFP in the most recent 2000–2006 period appears to have slowed down considerably from the high growth levels of the 1990–1999 period.
- 5 **The evolution of global food commodity stocks.** The ratio of end of season world rice stocks to global utilization appears to have decreased considerably between 2000 and 2008 and this has been alleged to have influenced recent price rises. This decline can be accounted for largely by the decline in the stocks of China. It is a fact that when commodity markets face lower end of season stocks, they react much more strongly to any negative shocks. However, as will be seen later, excluding China, world rice stocks as well as stock to utilization ratios have not changed appreciably in the last 20 years, and in fact may have increased.
- 6 **Commodity speculation.** This factor has been highlighted by many analysts and politicians, to the point of blaming the organized commodity exchanges for the price spikes. Speculation is an ordinary fact of life in all commodity markets, and is a necessary ingredient of all commodity trade. Any agent who buys a contract for a commodity (in the physical or future

markets) with the intention of selling it later for a profit can be considered a speculator. Organized commodity exchanges are important institutions for both market transparency as well as the transfer of market risk from physical markets to speculators, and they guarantee transactions via the underlying clearing houses. It is no coincidence that they have evolved and grown over a period of more than two centuries, as they have been perceived as important institutions for managing market risks. The advent of large investments by commodity funds in recent years has raised new issues about the utility of the organized exchanges as risk transfer mechanisms, and about the role of unfettered speculation in persistent price rises. Detailed analyses of recent events (Gilbert, 2010) have suggested that there is weak evidence that such investments have contributed to the commodity price boom. However, rice does not have significant organized future markets, as rice is a highly differentiated crop, so financial speculation in the rice market seems not to be a major reason for the recent price spike.

- 7 **Macroeconomic factors.** While most commodity market analysts look for commodity-specific fundamental factors to explain individual commodity price spikes, there are systemic macroeconomic factors that affect all commodities that have been very influential. The recent commodity boom has involved most traded commodities and not only agricultural ones. One of the key factors that fuelled such a boom seems to have been a period of easy money and loose regulation of financial transactions, which resulted in a fast expansion of global financial liquidity, a weak US dollar and low interest rates. It is notable that the previous large commodity boom of 1973–1975 was also preceded by a period of expanding global liquidity fuelled by large US external deficits and loose monetary policies, much like in recent years. It has been shown by research (Abbott, et al, 2008; Mitchell, 2008) that US dollar depreciation has contributed around 20 per cent to increases in food prices. Frankel (2008), in turn, has made the argument that low interest rates, themselves induced by monetary expansion, encourage portfolio shift into commodities, and also discourage stockholding, therefore, contributing to commodity price rises. Given that the commodity boom of early 2008 came to an abrupt stop in late 2008, followed by subsequent strong price declines in the wake of the global financial crisis, without substantial changes in the underlying commodity market fundamentals, this suggests that macroeconomic factors were important in the recent boom.

The important point to highlight is that most of these factors were slow in developing over several years, but cumulatively they created a situation of tightly balanced world supply and demand for many agricultural commodities. Furthermore, they made the demand for the agricultural commodities very price inelastic. The demand curve for agricultural (and other commodities) is price elastic when there are ample supplies (from both production and stocks) but becomes very inelastic when the overall supplies are small. As indicated

above, both the reduction of global stocks and the macro factors that fuelled demand growth pushed the supply–demand balance of most food agricultural commodities into a territory where small shocks or small changes in perceptions could have had very strong price effects. In fact the food production shocks that happened were small, exemplified by the fact that global grain production declined by only 1.3 per cent in 2006, but then increased by 4.7 per cent in 2007, and a further 4.8 per cent in 2008, despite the fact that some of the major exporting countries such as Australia experienced very sharp negative production shocks (of the order of 50–60 per cent in both 2005 and 2006). Such production shocks are rather normal in global food commodity markets, and have occurred on a similar scale several times in the past without causing price spikes. In the rice market, world production in 2007 hardly changed from production in 2006, and in 2008 it increased by 2.4 per cent compared to 2007, hardly alarming figures. It then appears that production shocks were not the main factor driving the commodity markets, but rather some of the other factors indicated above.

A factor that seems to have contributed considerably to the recent short-term price spikes is hoarding tendencies and policies affecting the normal flow of commodities. It is well known that the reaction of many private agents as well as governments at the onset of price rises was destabilizing, in the sense that their actions fuelled the demand for current supplies, led by fears of impending basic commodity shortages. In other words, when market agents realized that there were inadequate buffers in the global markets to ensure smooth supply flows, they started to behave atomistically, to ensure their own smooth supply flow. This created panic buying and hoarding, even when the underlying conditions did not justify it, thus creating the price spikes. The case of the global rice market is a good case in point, where, despite adequate global production and supplies, uncoordinated government actions, such as export restrictions, starting with that of India in October 2007, and then followed by export restrictions of Egypt, Viet Nam and China, created a short-term hoarding panic and a scramble for available import supplies. The realization in mid-2008 that the situation was not as critical as many thought, led to the opposite effect and a sharp price decline followed.

The evolution of rice market price instability and underlying factors

In the context of the events of the last two years, it is interesting to examine the evolution of world market price volatility. Figure 4.3 plots the indices of annualized historic volatilities (estimated by normalized period to period changes of market prices¹) of nominal international prices of rice (averages of the various rice prices exhibited earlier) over the previous five decades. The Figure also exhibits the nominal international rice on the basis of which the indices of volatility are determined. The reason for the juxtaposition of the two types of information is to examine visually the relationship between the level of

commodity prices and the market volatility. It has been known for a long time, since Samuelson's classic article (Samuelson, 1957), that in periods of price spikes, overall supplies are tight and market volatility should be higher, hence the expectation is that during periods of price spikes the index of market volatility should exhibit a rise as well.

A most notable first characteristic of the graphs in Figure 4.3 is that historic volatility (as an index of market instability) of rice, while quite variable, appears not to have grown during the past five decades, although there were notable short-term peaks in 1993–1994 and 2007/2008. Also, while there appears to be no clear correlation between volatility and the underlying international price in the 1973–1975 period, there seems to be a strong relationship in the most recent 2007/2008 period. While these observations are just visual and need to be corroborated with appropriate econometric analysis, they raise some questions about the alleged positive relationship between the level of prices and the level of volatility.

In the section above, the factors that may have contributed to the recent price spike were reviewed. The discussion in this section concerns the factors that are considered as important in affecting market volatility as expressed by price volatilities.

There are two factors that traditionally have been considered the main ones in influencing agricultural market price instability. These are the variability of production and the level of end of previous period stocks. The more variable is agricultural production, the more one expects to observe large period to period price variations, namely larger volatility. In the same vein, the smaller the end of season stocks, the more any new market developments are likely to affect prices, and hence the more variable is market price.

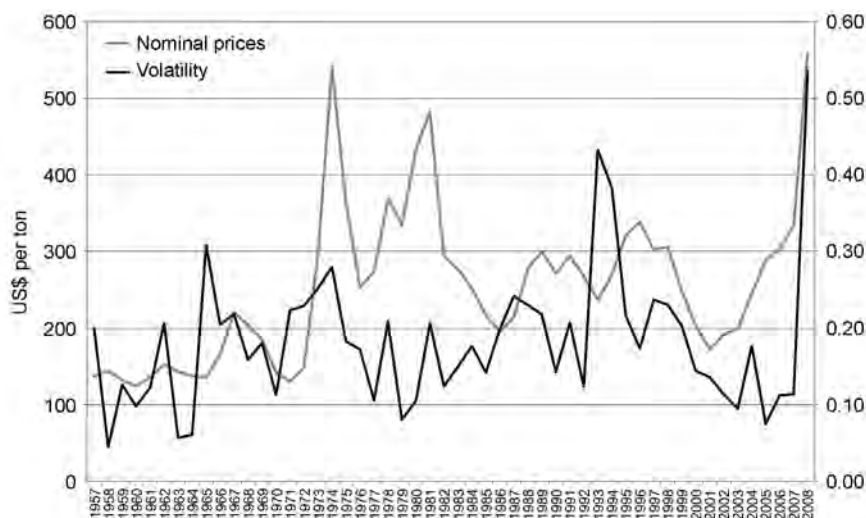


Figure 4.3 Historic volatility and nominal international price for rice

Figure 4.4 exhibits trends in the coefficients of variation of annual production of rice computed for four 10-year periods ending in 1999, as well as the most recent period 2000–2006, and for the five continents, as well as the world as a whole. The data indicate the magnitude of year-to-year variability of agricultural production relative to the ten-year average of the relevant period, in order to ascertain whether there appear to be any discernible trends in variability.²

Global paddy rice production variability appears to have declined over time. The trend is similar in all continents, except Oceania, which, however, accounts for only 0.1 per cent of global paddy production. It thus appears that one of the main traditional factors that affect price volatility, namely production variability has become less important over the previous 50 years. Hence this factor, if anything, implies lower overall market volatility.

Turning to end of season stock levels, Figure 4.5 exhibits the end of season global rice stocks both absolutely and as a share of total utilization, and also the same figures without China for the past 20 years. The first observation is that global end of season stocks of rice do not appear to have been in 2007–2008 much smaller in absolute levels than in earlier periods, notably the early to mid-1990s. Stocks increased considerably and reached a peak around 2000–2001 and then started declining. The decline continued until 2004–2005 and these trends occurred both with and without China. After 2005 stocks appear to have increased in absolute terms.

Turning to stock to utilization ratios, the most interesting observation from Figure 4.5 is that the ratios seem to follow the same patterns and turning points

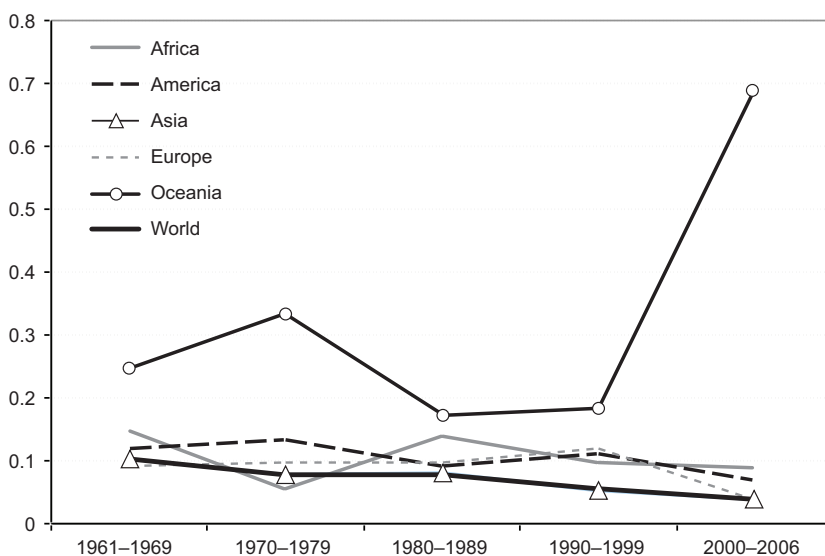


Figure 4.4 *Coefficients of variation of regional and global production of rice since 1961*

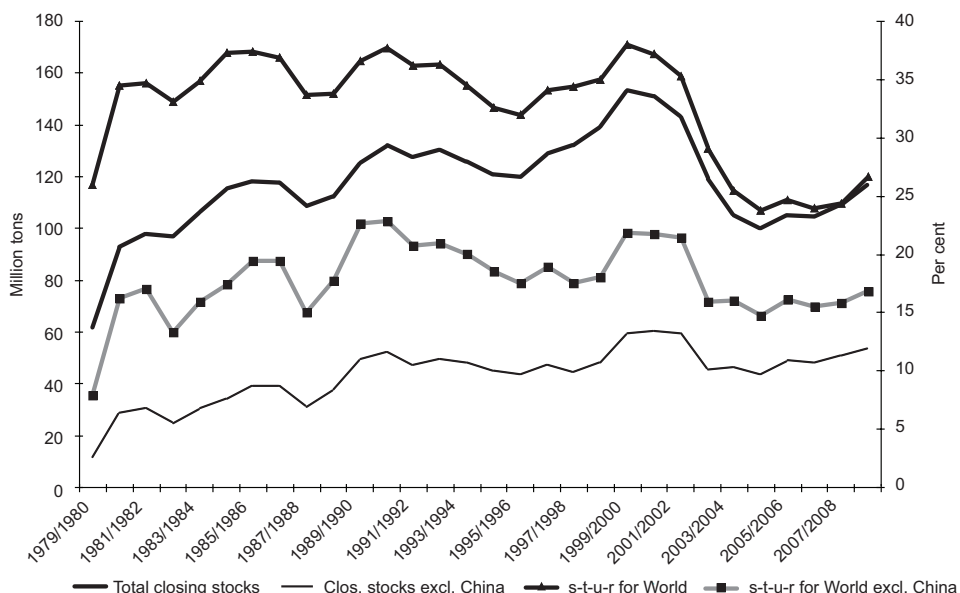


Figure 4.5 *Global ending stocks of rice and stock to utilization ratios for the whole world and for the world without China*

Note: s-t-u-r: stock to utilization ratio

Source: FAO Trade and Markets Division

both with as well as without China. Also, although there appears to be a negative trend in the ratio of stocks to utilization for the world, when one examines the whole 30-year period from 1979 onwards, there is no marked negative trend for the ratios if China is excluded from the world total. In fact for rice, the ratios for the world as well as without China exhibit a slight positive trend.

However, China is an important producing and trading country, accounting for 29 per cent of global paddy rice production. It also, and for the most recent years for which data is available (2007–2008), accounts for 53 per cent of global rice stocks. It is clear that, irrespective of whether the Chinese authorities use stocks for domestic market stabilization or for managing their net export/imports of basic food commodities (the two are not independent from each other), the size of Chinese stocks, as well as changes thereof, may affect the global trade picture and price expectations, and hence possibly global prices.

Turning now to the newer factors affecting market volatility, the most difficult to analyse is the influence of commodity traders in organized exchanges. The reason that this is very difficult is that the classification of traders as commercial (namely those who have an interest in the actual physical commodity) and non-commercial that has been adopted in several large exchanges, and on the basis of which some data can be compiled, is not representative of the actual intentions and positions of financial funds, as well as other non-

commercial actors (Gilbert, 2010). If one examines the participation of commercial and non-commercial traders in total open interest in the Chicago Board of Trade (CBOT) and in selected futures contracts, then it appears that the share in open interest of non-commercial traders increased considerably in all CBOT markets between 2005 and 2008, and this is the period of the financial boom. However, this simple contemporaneous development is not a proof of causality. The question is whether the undoubted increase in participation of non-commercial traders in the organized futures and other derivative markets affected the market fundamentals, and in particular the level of prices and volatility. There is very little research on this issue, but some recent empirical analysis by Gilbert (2010) and a policy brief by the Conference Board of Canada (CBC, 2008) seem to suggest that it is price volatility that attracts non-commercial and other financial traders, and not the other way around.

A lot has been said about the influence of the unstable exchange rate of the US dollar on commodity markets. It is a fact that in recent years the US\$ exchange rate has varied considerably against the currencies of other major trading countries. For instance the US\$ depreciated against the euro by more than 30 per cent between 2003 and 2007. It is also the case, albeit not obvious that since the prices of most internationally traded agricultural commodities are quoted in US\$, a US\$ depreciation has a considerable influence on US\$ prices of traded commodities. FAO has estimated that a 10 per cent US\$ depreciation against all currencies, *ceteris paribus*, could have a 3.5 per cent upwards influence on global rice commodity prices. Clearly then it appears that the instability of the US\$ exchange rates must have contributed significantly to market price volatility. Given recent global financial and production developments, the huge international financial flows they imply from agents looking for safe havens, it is likely that this instability will continue in the future, and hence this is likely to continue affecting adversely commodity market volatilities.

Apart from the instability of the US\$, macroeconomic instability is likely to have contributed considerably to commodity markets instability. Gilbert (2010) in his empirical analysis finds that both money supply as well as gross domestic product (GDP) seem to Granger cause commodity prices. The influence may be indirect, for instance through interest rates, as Frankel (2008) has already indicated. The current financial crisis does not bode well for monetary stability, especially given the significant monetary expansion that is likely to follow the fiscal stimulus packages now envisioned in most large economies. Hence it is likely that macroeconomic factors will continue adding instability to world commodity markets.

The price of petroleum was already alluded to as an important determinant of agricultural commodity prices, especially for those commodities that can be utilized as biofuel production feedstocks. Schmidhuber (2006) has shown that when petroleum prices are in a certain price range, then oil prices and biofuel feedstock prices seem to be much more strongly correlated. Several analysts have attributed significant influence on agricultural commodity prices of petro-

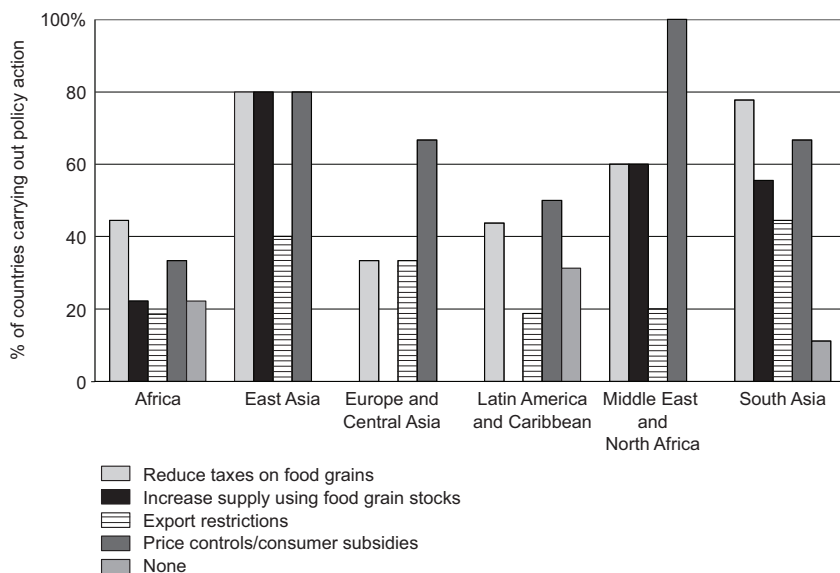


Figure 4.6 Policy actions adopted by a sample of 77 developing countries to deal with high international food commodity prices

Source: FAO Trade and Markets Division

leum prices, coupled with biofuel policies (for example Abbott, et al, 2008; Mitchell, 2008). Despite the rapid fall of petroleum prices in late 2008 and early 2009, the underlying demand for oil in the medium term is real and likely to increase (OECD-FAO, 2008). This is likely to induce a continuing linkage between petroleum prices and biofuel feedstock prices, albeit not during all periods. As oil prices are likely to be quite unstable given the uncertainties in global economic growth, this most likely will induce instability of the agricultural commodity markets, both for those products that are directly related to biofuels, such as maize, sugar and rapeseed, and for commodities that are substitutes in production.

The final factor that is likely to affect commodity market volatility is country policy actions and reactions to external events. The commodity scare of 2007–2008 and the publicity it received made many governments overreact, by measures that were not always effective at achieving their stated objectives. Figure 4.6 compiled from a FAO survey of government actions in 77 developing countries during the 2007–2008 period, tabulates the type of measures that were undertaken in response to the global price rises. The first observation is that there are only a few countries whose governments did nothing in response to the global commodity crisis. The second observation is that countries in East Asia and South Asia appear to have been among the most active in intervening in their domestic markets to avert possible negative consequences of international price rises.

Market volatility may offer opportunities for speculators, but it is certainly problematic for the participants in the physical markets. Given the size of the recent international price variations during a single year (sharp increases in late 2007 and early 2008 and equally sharp price decreases in late 2008), many governments and market agents are rightfully questioning whether this type of extreme market volatility might continue in the future. In this context the following thoughts may be useful in assessing the future prospects for market volatility.

First, it will take some time for food stocks to be replenished, especially if unusual weather events continue to occur over the next few seasons. Despite the fact that prices have come down from their peaks of 2008 and that global production seems to have responded positively to the crisis, the decline in prices may discourage many farmers from further production increases, and governments from productive investments. Hence, stock replenishment may be a slow process, implying that the markets will be tightly balanced for some time to come. With the financial crisis hitting on top of the food crisis, financing will also be scarce for all investments, and this will include investments in stocks. However, low interest rates may make stock replacement easier.

Biofuel demand is likely to be important for some time if petroleum prices stay high. With the global financial and now economic crisis lowering overall petroleum demand, this looks like a less pressing issue, but petroleum prices are highly uncertain, and hence it is not clear that they will come down strongly and persistently. Hence, biofuel demand is likely to stay strong, especially since mandates are likely to stay and investments made in biofuel-producing plants will not be easy to just abandon. Finally, biofuel demand is likely to stay until more energy-efficient new generation biofuels that do not compete with land resources for food production become widely available commercially, and this is not likely to happen for several more years.

The overall conclusion then is that the global food commodity markets are likely to stay volatile in the next few years, until stocks are replenished, petroleum prices stabilize and the global financial crisis works itself out. An added risk is that the efforts currently made to renew emphasis on agricultural investments to boost productive efficiency, especially in developing agriculture-dependent countries, may be derailed by the probably short-lived hiatus of low global food commodity prices. This calls for a continuing watch on global food markets and developments.

The medium-term outlook for rice in Asia

The medium-term outlook for the world rice economy seems quite bright for economies in Asia. According to projections performed by the Organisation for Economic Co-operation and Development (OECD) and FAO (OECD-FAO, 2008) population growth rates in the world are projected to slow down in the next ten years, with the population growth rate in Asia to slow down to about 1.1 per cent (see Figure 4.7). At the same time GDP growth rates are also

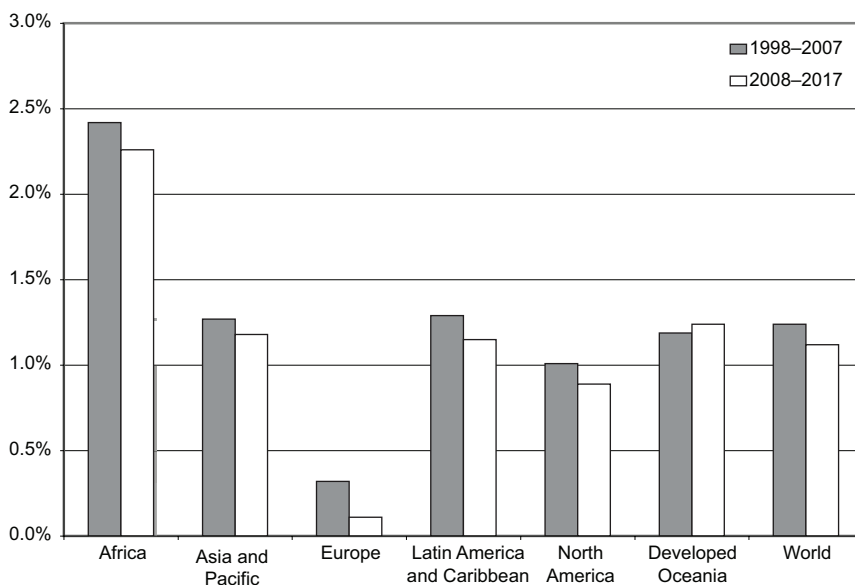


Figure 4.7 Projected population growth rates to 2017

Source: FAO Trade and Markets Division

projected to slow down, but Asia GDP growth is still projected to grow at a higher pace than that of the rest of the world (see Figure 4.8). World production is expected to keep up with demand for food commodities, and this will imply that the real prices of all food commodities will resume their downward trend, but because of new demands such as those from biofuels, as well as projected high prices for petroleum, the real prices in the next ten years for most agricultural food commodities are likely to stay above their levels of the early 2000s (see Figure 4.9).

Concerning annual growth in global demand for rice, this is likely to be close to zero for developed countries, and only about 1 per cent for developing countries. While global annual rice production growth is projected to stay slightly below 1 per cent, world trade is expected to expand faster and at a rate close to 2.5 per cent. Asia in particular is projected to increase its net exports of rice (see Figure 4.10).

Figures 4.11–4.17 indicate the projections of the net trade positions for the main Asia rice-trading economies. It can be seen that China and India are projected to maintain but not expand their net trade export positions of rice. Indonesia and Philippines are likely to increase their net imports, while Thailand, Viet Nam and the least-developed Asia countries are expected to expand their net exports.

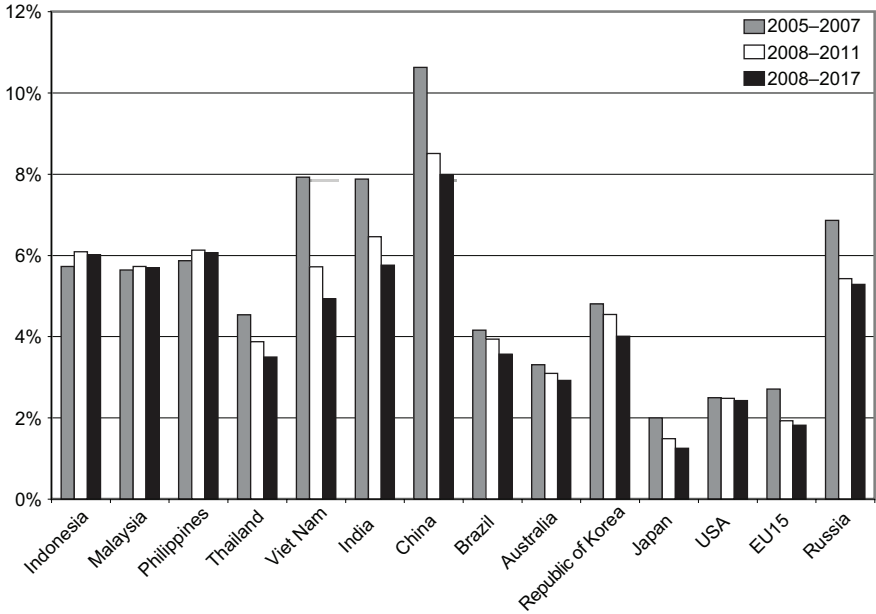


Figure 4.8 Projected GDP growth rates for Asia and selected countries

Source: FAO Trade and Markets Division

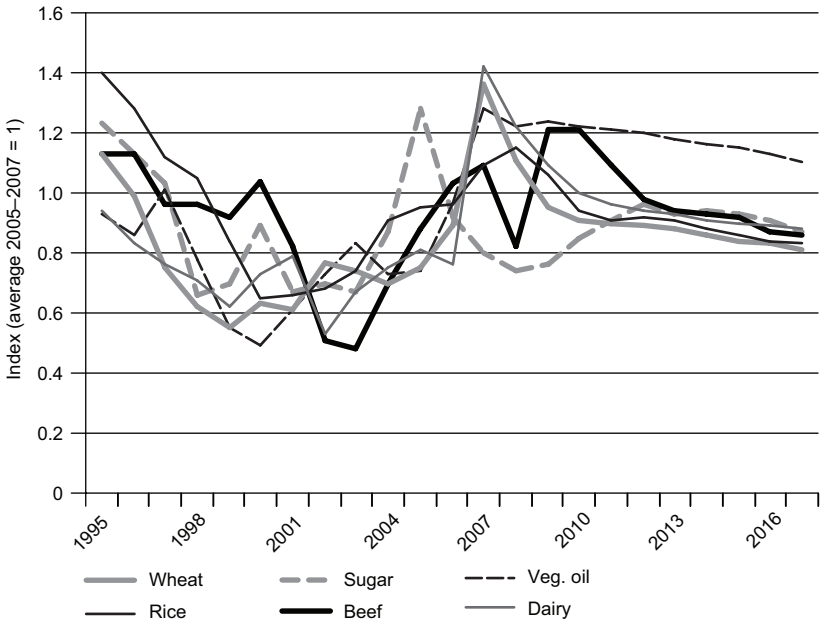


Figure 4.9 Projected real international prices of food commodities in the medium term

Source: FAO Trade and Markets Division

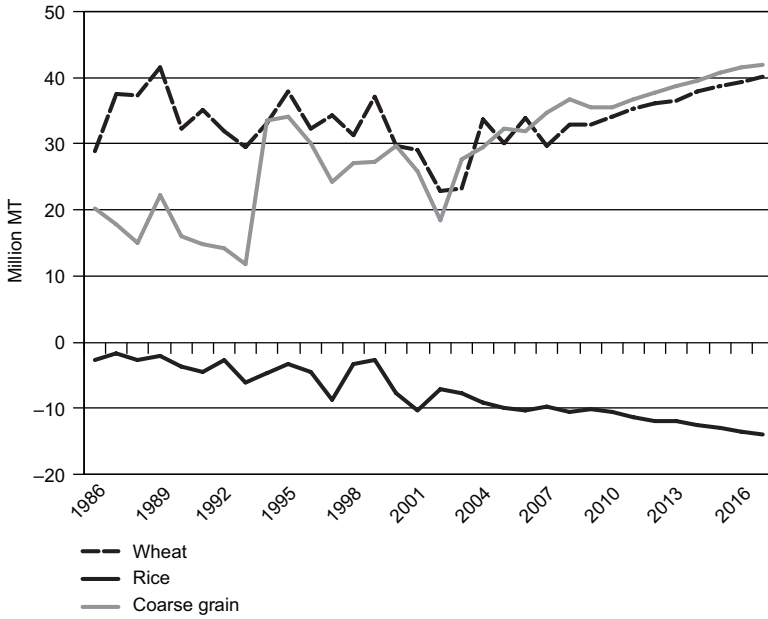


Figure 4.10 Projections of net grain imports in Asia and the Pacific

Source: FAO Trade and Markets Division

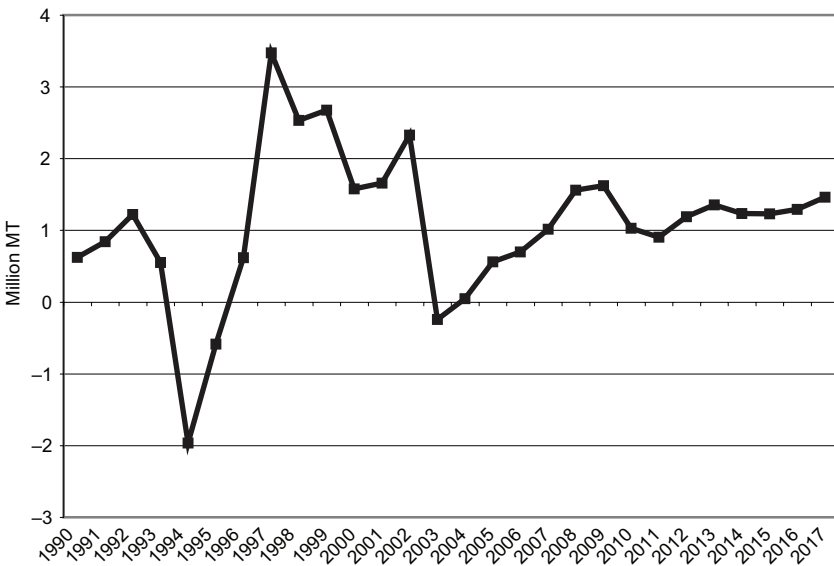


Figure 4.11 China: Projections of net exports of milled rice

Source: FAO Trade and Markets Division

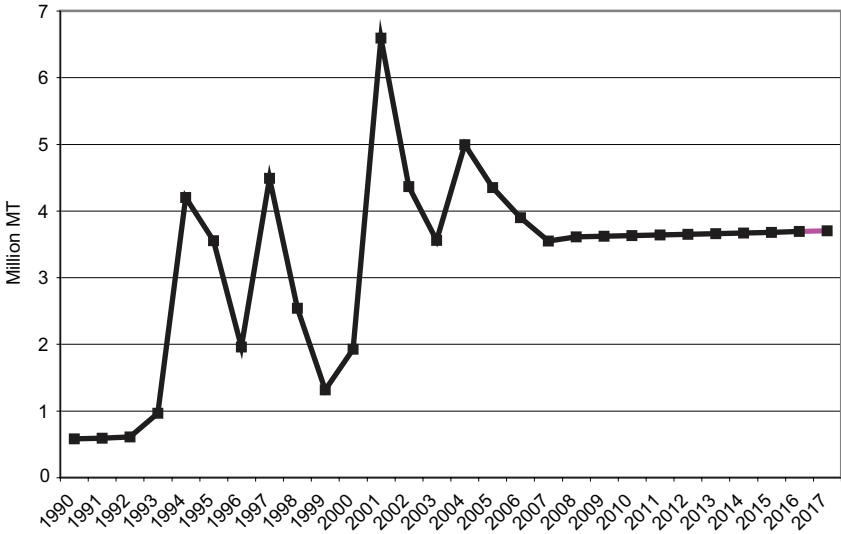


Figure 4.12 India: Projections of net exports of milled rice

Source: FAO Trade and Markets Division

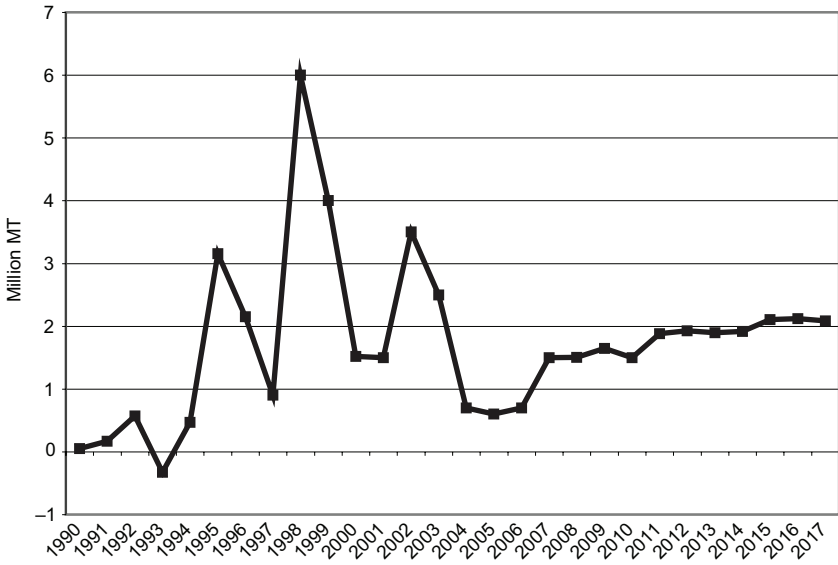


Figure 4.13 Indonesia: Projections of net imports of milled rice

Source: FAO Trade and Markets Division

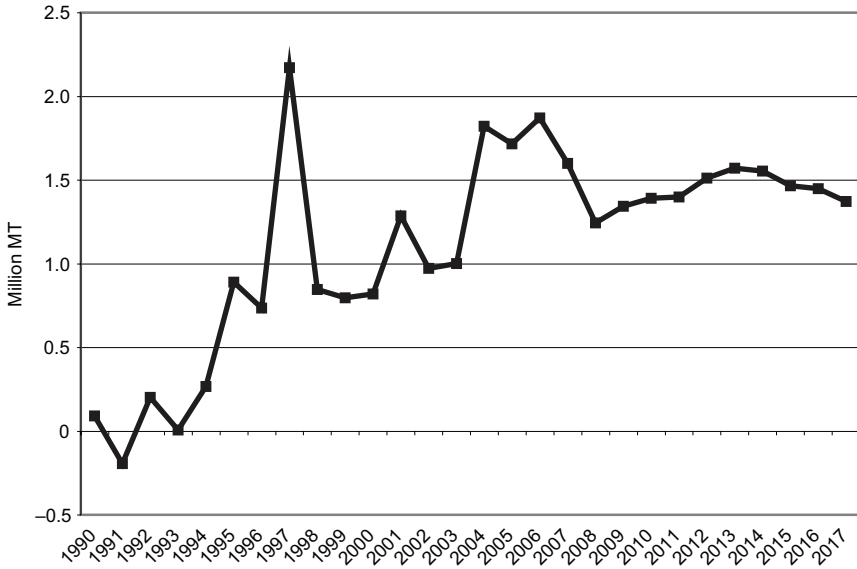


Figure 4.14 *Philippines: Projections of net imports of milled rice*

Source: FAO Trade and Markets Division

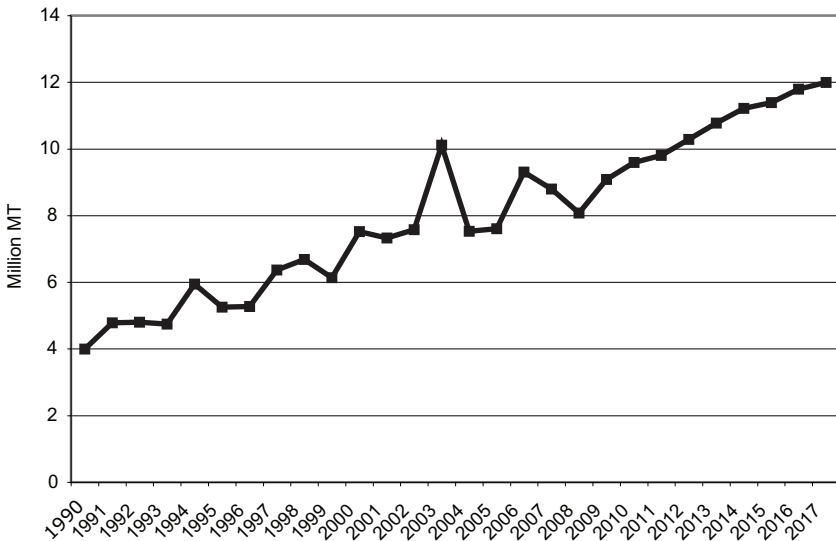


Figure 4.15 *Thailand: Projections of net exports of milled rice*

Source: FAO Trade and Markets Division

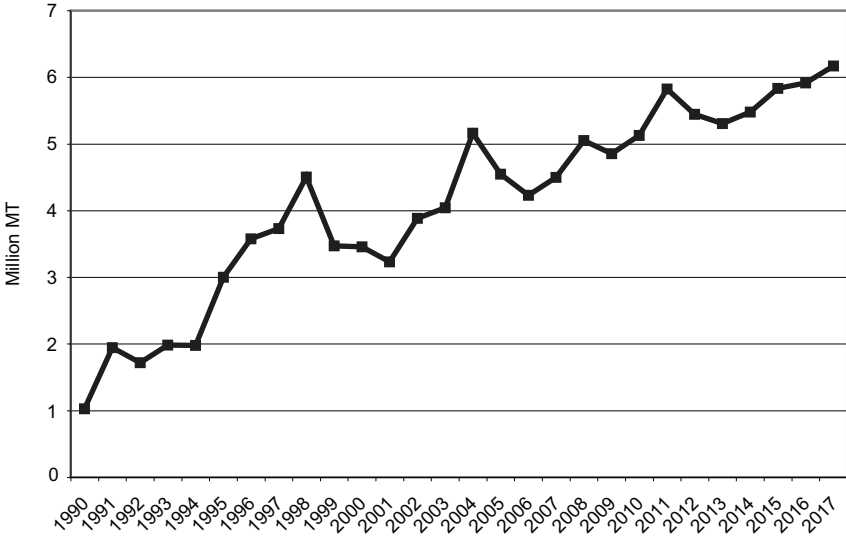


Figure 4.16 Viet Nam: Projections of net exports of milled rice

Source: FAO Trade and Markets Division

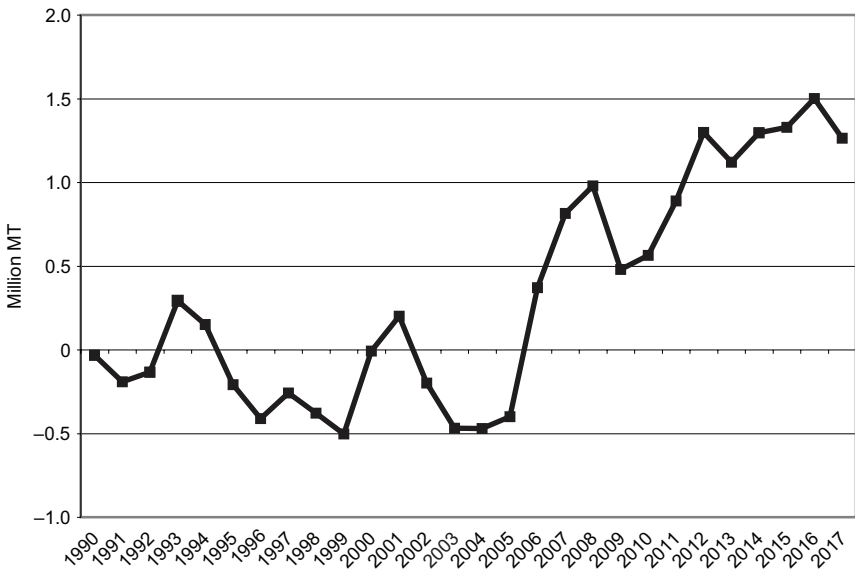


Figure 4.17 Least-developed Asia (Laos, Myanmar, Cambodia, plus nine smaller countries): Projections of net exports of milled rice

Source: FAO Trade and Markets Division

Policies to improve international rice market performance and to assure supplies

It is normal in a period of commodity price spikes for governments and private agents alike to call for policies to assure smooth flows of supplies and avoid commodity crises. It would be better, of course, to discuss and plan for such policies before the actual spikes happen, but spikes, nevertheless, increase public awareness of the inadequacies of existing insurance mechanisms, and hence boost efforts to create and maintain such systems. The real issue, however, is what type of policies and institutions are effective and economical in managing commodity market instability and avoiding price spikes.

There is no doubt that a major aspect of any commodity price spike is a fast and sudden erosion of confidence in the workings of the market, both national and international, with the result that an uncoordinated scramble for individual (by private and public agents alike) protection leaves all worse off. What kind of institution can ensure confidence in global markets and assure smooth flows of supplies? Most proposals call for some kind of market management and control, ranging from coordination of either national or global stocks to indirect market interventions via so-called ‘virtual stocks’ in organized exchanges. However, most such proposals suffer from the fact that any policy that purports to control or manage fundamentals of a commodity market cannot manage the actions of myriads of private market actors, which is a feature of all agricultural markets. It is only in commodities with very few suppliers, such as petroleum, where effective market management is possible, and even then considerable coordination is needed, which is not politically or economically easy and invites non-collaboration or non-participation. The history of international commodity control that was attempted after the commodity boom and subsequent crash of 1973–1975 is not very encouraging and successful, and confined to public market management schemes like those of the European Union, which have proved to be very expensive for implementation at the global level.

Alternatively, the main way to ensure confidence in a particular commodity market is to have an adequate supply of ‘reserves’, much like a national or international financial system needs financial reserves to meet customer needs. The fundamental difference, however, between a global system of financial reserves and management (exemplified by the IMF) and a global system of commodity reserves, is that financial reserves can be created essentially out of nothing and based on the ability of governments to tax their own current and future citizens (this is the basic power of central banks), while commodity reserves cannot be created out of thin air. In fact in all previous commodity booms there were many calls to institute commodity reserves of some form, which, however, were not heeded when prices were low and markets well supplied, and priorities for allocations of public money shifted to other more immediate concerns. Clearly any form of ‘insurance’ is much costlier after a major disaster than before it, but perceptions about the need for insurance are

strongest only after a disaster, not before it. It is this fundamental problem of what psychologists call 'cognitive failure' that must be overcome at a global level if the world is to be assured of an institutional structure that will avoid agricultural commodity price spikes and ensure smooth flows of food to all.

Concerning the rice market, there have been considerable discussions among Asian and the Association of Southeast Asian Nations (ASEAN³) countries and regional analysts concerning food security, and in particular rice market security and assurance of supplies. For instance Bello (2005) indicates that there is enough rice in ASEAN countries to ensure smooth supplies if free trade is allowed among ASEAN member countries. The ASEAN Secretariat has prepared a discussion paper outlining options for an ASEAN integrated food security policy (ASEAN Secretariat, 2008). The basic components of that are an ASEAN Food Security Reserve (AFSR) and an East Asia Emergency Rice Reserve (EAERR), which is basically an expansion of the ASFR to include the three other East Asia countries. As it currently stands the ASFR, which was first established in 1979, is composed of only 87,000 tons, distributed among ASEAN countries, and supposedly to be used in emergencies. However, and as is the case with all multilateral reserve schemes, it is rather hard to define precisely what an emergency is, and specify precise conditions under which stock releases can be made. Furthermore, the amount currently envisioned is very small compared to the possible emergency and other market stabilization needs of ASEAN or ASEAN plus three.

The problem facing many Asian countries, which rely considerably on rice as a basic food security commodity, is that there is no unique policy with which to manage the domestic market for rice. To simplify the conceptual discussion, given that a government has specific rice price objectives for consumers and producers, to ensure food security and satisfy diverse consumer and producer concerns, and given domestic production of rice, one can derive an additional 'supply' of the commodity that is needed to satisfy the domestic objectives. This additional supply can be obtained through either imports and exports or through stock releases and/or accumulation. The basic rice food security problem of the government is how to ensure this additional supply at minimum cost. If imports/exports and stocks are publicly controlled, then the government problem is a more direct one, in the sense that it has to simply decide on quantities of net imports and stock changes. If the rice trade, however, is in the hands of the private sector then the government problem is a more complicated one as the government in this case has to adopt indirect measures to provide the right incentives for the private traders to act in accordance with public policy objectives. Private agents will invariably act in a speculative manner in anticipation of profits from price movements, and this makes the problem of market management and control much more difficult.

Neither of the above two problems is easy, and this is why Asian governments have adopted a mixture of policies to maintain domestic rice market objectives in the face of international price and availability variations. The problem, which became acute in the recent rice price spike, was that each

government acted individually, in order to assure domestic policy objectives, with confidence in the international market breaking down, and these uncoordinated individualistic policies ended up destabilizing the global markets, making national concerns and overreactions further justified. The conclusion is that any system that is to prevent global price spikes must enhance confidence that adequate supplies can be obtained through the international market or through some kind of mutual agreement. The question of how to assure rice food security then is how one can build such a system.

To this end the following suggestions are proposed:

- 1 **An enhanced system of market information.** It is clear that many wrong market policies are adopted because of lack of adequate information about many market variables. In the run-up to the recent food crisis many governments adopted a variety of measures, most of doubtful effectiveness, and some which made the market more unstable and induced further measures by others in an effort to protect individual markets. Apart from information about supplies and flows, a most important source of weak market information concerns the levels of public and private stocks. It is felt that better information about production and especially of stocks could considerably enhance the ability of decision-makers, both public and private, to plan and act accordingly.
- 2 **Enhanced transparency of trade policies.** The current Agreement on Agriculture in the WTO does not prevent governments from reducing or banning exports, or changing trade policy measures such as tariffs in a variable state-dependent manner up to the 'bound' tariff rates. However, what is of considerable concern to trade participants is the unpredictability of trade policy changes. A system of timely advance notice of agricultural trade policy measures affecting the supply of agricultural exports and the demand for imports, and even disciplines on some such measures that may be detrimental to markets could be made a part of the Doha Round agreement.
- 3 **A forum for regular exchange of information and policies** relating to the food market is important for global food security. Such fora exist today as they were created in response to previous crises, but they meet very irregularly and they are not designed for rapid trade policy review. For instance the FAO Committee of Commodity Problems was created exactly for this purpose in the past and meets every two years. The various international commodity bodies (ICBs) and intergovernmental groups of commodities (IGGs) were created even before the previous food crisis of the 1970s and still function today, but with very infrequent meetings. If the need is for fora that can be convened at short notice and meet much more regularly, then some rethinking of the current international commodity architecture is in order. For instance one can think of additional regional or other multi-lateral institutions, and in the Asia region there is a variety of such fora available that could fulfil the need for regular exchange of information and policies among concerned members.

- 4 **A system of mutual assurances of smooth supplies.** The major problem of global food price spikes is that it is basically a problem of breakdown of confidence. One effective way to assure continuity of supplies is by some kind of long-term contract between interested parties. In other words one country could enter into a multi-year, bilateral or multilateral agreement with another country or group of countries for the supply or import of a minimum quantity or a range of quantities of rice. Many countries faced with problems of supply for instance have been seeking to assure themselves of regular supplies with such long-term contracts. Recent newspaper stories have mentioned counter trade barter deals (for instance wheat for petroleum), deals of leasing of land and investment in food production with the commitment to export to the investing country, etc. It is easy to think of such long-term contracts involving the provision of rice by Asian exporting countries to Asian importing countries. The problem with any such international contract is its enforcement. In other words, while within a national territory and legal system, there are normally legal systems to enforce contracts, this is not usually the case when it comes to contracts between sovereign states or governments. For instance a major strength of the organized commodity exchanges is that there exists for every exchange, and sanctioned by law, a clearing house, which basically makes sure that all contracts traded on the exchange are completed and enforced. It is for this purpose, for instance, that to conduct any transaction in an organized exchange both parties to the contract must post a 'bond' in the form of a margin on the amount of the transaction. The accumulation of all these margins by the clearing house ensures that all claims against the various underlying contracts are met. Clearly unless some similar system of enforcement is instituted, it is difficult to envision that any system of international contracts is enforceable. To this end, then the following is proposed.

An international rice food security system

The proposal below stems from the considerations above, as well as from the realization that unless there is some kind of international cooperation, any confidence-building system will not function properly. The following elements could form the ingredients of an international rice food security system (IRFSS).

A system of bilateral or multilateral multi-year agreements or contracts for rice trade

These contracts could be negotiated among interested countries and would provide the framework within which supplies could be assured within certain quantity bands. In other words, the contracts do not have to specify exact quantities and prices but ranges of quantities and state contingent prices, based on some kind of objective criteria. However, such contracts would provide the

framework within which a country could ensure another country of export supplies (to be performed by public or private traders) and similarly another one could assure itself of import provisions. The exact terms of each transaction in a given year, for example price, would be dependent on the state of the then prevailing market, but the contracts would ensure that quantities could be exchanged.

In cases where trade is in the hands of public agencies, the execution of contracts can be ensured. However, in the rice market most trade is done through the private sector. Hence it is difficult to envision 'contracts' between sovereign states unless they can control the actions of the private sector, and this may be impossible. In such cases, the main purpose of such contracts or agreements would be to ensure the markets that there will be no public interventions to prevent trade from occurring. In other words, state-to-state 'contracts' could be negotiated in the form of binding each other to not intervene in the rice trade up to certain levels of quantities or prices. Such agreements, in fact could be entered in some kind of binding commodity arrangement.

There are international examples of such collaborative schemes. For instance the International Energy Agency (IEA) has developed protocols for international collaboration in assuring supplies to an IEA member country whose import market has been disrupted. Such protocols could form perhaps the basis for similar protocols and contracts for rice supply guarantees, under the aegis, for instance of some kind of multilateral institution.

A system of 'reserves' to back the contracts negotiated

Just like in the case of a clearing house in an organized exchange, the bilateral or multilateral contracts discussed above would need to be guaranteed against non-performance by some kind of 'margin'. It is proposed that this role could be played on the one hand by an amount of domestic rice reserves in the case of the exporter who enters the transaction, and on the other hand by an amount of monetary reserves in the case of an importer who is the other party to the transaction. In other words and as an example, if two governments sign a ten-year contract according to which one would accept the obligation to provide the other annually with 200,000 tons of rice at some kind of market-based prices, then the exporting country would commit to keep a certain percentage of this quantity (for instance 5 per cent or 10,000 tons) in storage, as part of the agreement. This stock could provide some guarantee for possible non-performance of the traders of the exporting country. While, of course 5 per cent of the flow export demand held in stock will not satisfy a much larger flow demand in any one year (for example 5000 tons could not satisfy the full 200,000 ton commitment of the exporter), such stocks, which would be held publicly, would be additional to all other privately held stocks and could possibly better smooth the flow of supplies. Furthermore, it would provide some buffer against calls for government intervention to prevent exports in a period of tight markets.

The physical stocks could be kept in the national territory of the exporting country, but could be committed through some kind of warehouse receipt, guaranteed by the government of the exporting country to a multilateral clearing house type of institution. This, in turn could be some regional institution, or secretariat, that would be agreed by all concerned. Similarly the importing country to the contract could pledge a certain amount of 'money reserves', again in the form of some kind of IOU or paper receipt. These IOUs, whether in physical or money form, could become negotiable.

The rationale for such a system comes from the history of the organization of the current nationally organized commodity exchanges. The original impetus to these exchanges was a system of forward contracts that were made between interested parties, backed by a system of warehouse receipts, which in turn became negotiable and evolved into the current system of futures contracts in the various organized exchanges.

An enhanced system of emergency reserves

Such a system currently exists at least in ASEAN and is under consideration in ASEAN plus three. The rationale of such a system is appropriate in the sense that it is not envisioned that it will influence the markets of the relevant rice product. As such, this system is to supplement the market-based system proposed above and is to operate outside such a system. However, in order for such a system to function properly, the nature of emergencies must be specified much more concretely than in the current agreement, and also the rules of release and replenishment must also be worked out in more detail. If such rules remain vague, then the effectiveness of the reserve is compromised. Given that in an emergency situation, and if monetary resources are available, supplies can be obtained relatively fast for delivery to emergency areas, the logic of why one may need additional emergency reserves must be reconsidered. Such a logic, however, has been known for some time (for example see Sarris, 1985) and relies on the idea of timeliness of emergency relief, and whether emergency stocks can improve on this timeliness. Hence, in this case and given that an emergency reserve has already been instituted in Asia, what one needs is further elaboration of the conditions for release and replenishment.

The ingredients of the system proposed above, some of which already exist, would not alter the fundamentals of the rice market, which is one of the main stumbling blocks with most proposals that rely on market manipulation. It relies on enhancing transparency and confidence, while at the same time providing some kind of guarantees for international contract enforcement through international cooperation. It is this lack of international cooperation that was evident in the past and that has been shaken in the recent food crisis. Unless, however, one targets the underlying causes of the breakdown of the system, which as indicated have to do with the breakdown of mutual confidence, one cannot hope to enhance the food security-related performance of the global rice market. The ideas and proposals above are aimed at stimulating an informed debate on the relevant issues.

Notes

- 1 If the year of reference is denoted by T , the price in a period t within a year is denoted by p_t and if the year includes N periods then the formula for the annualized volatility in period T , denoted by V_T can be expressed mathematically as follows:

$$V_T = \sqrt{\frac{1}{N} \sum_{t=1}^N (\Delta \log p_t)^2}$$

- 2 The coefficient of variation (CV) measures deviations from a mean over the period of measurement. In the presence of upward or downward time trends, the CV may be an overestimate of variability, as it would mistakenly identify trends as deviations from an underlying constant mean. One could correct the CV by computing, for instance the Cuddy-Della Valle index (Cuddy and Della Valle, 1978), which is the CV corrected for trend. For the aggregate data utilized here, which use a ten-year period to compute the CVs, and as aggregate production levels have been growing rather slowly, the trend corrections are very small and do not affect the general pattern. In fact, if anything, they would show an even more exacerbated downward trend.
- 3 ASEAN includes Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Cambodia, Laos, Myanmar and Viet Nam. ASEAN plus three includes China, Japan and Republic of Korea.

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Part III

POLICY RESPONSES IN TRADITIONAL IMPORTING COUNTRIES

Volatility in Rice Prices and Policy Responses in Bangladesh

Mahabub Hossain and Uttam Deb

Introduction

In recent times the world has witnessed unprecedented volatility in the prices of major staple foods such as rice and wheat. As a net importer of food grains, Bangladesh was seriously affected by the surge in world rice prices that occurred between September 2007 and April 2008, as rice is the dominant food staple accounting for over 90 per cent of total consumption. The domestic price increased by nearly 65 per cent during 2007–2008. This food price inflation led to considerable erosion in the purchasing power of the poor who spend over half of their income on rice, and has threatened to undermine the progress made toward achieving the Millennium Development Goal (MDG) targets on reducing hunger and poverty. Since September 2008 prices have declined and by April 2009 reached a level lower than the cost of production, threatening farmers' incentives to produce.

This chapter is organized as follows. The next section gives an overview of Bangladesh's achievements in production and availability of food grains, to provide the background behind the surge in rice prices. Then there is a comparative picture of the trend in rice prices in Bangladesh compared to the world market. The chapter subsequently describes the immediate policy response of the government to contain the crisis. The chapter concludes that the govern-

Table 5.1 *Trends in area, production and yield of rice (paddy) in Bangladesh, 1971–1972 to 2007–2008*

	1971–1972	1989–1990	2007–2008
Area (million ha)	9.28	10.41	10.57
Yield (tons/ha)	1.57	2.54	4.08
Production (million tons)	14.59	26.43	43.18

Source: Bangladesh Bureau of Statistics

ment will have to make a fine balance in protecting the interests of low-income consumers and commercial farmers.

Production and availability of food grains

Bangladesh reached its land frontier in the 1960s. The reports of agricultural censuses show a continuous decline in arable land by 1 per cent per year due to alternative use of land for housing, industrialization and infrastructure development. Bangladesh has made good progress in reducing population growth. The 2001 population census recorded a growth of 1.4 per cent per year compared to about 3.0 per cent in the 1970s. But due to the expanded base, the population is still growing by about 2 million every year. The country needs to increase rice production 0.5 million tons annually to meet the growing demand.

Bangladesh has made commendable progress in increasing the production of staple food grains despite an extreme scarcity of land resources. Rice area increased only marginally from 9.3 million ha in 1971–1972 to 10.6 million ha in 2007–2008 (see Table 5.1 and Figure 5.1), but production nearly tripled from 14.6 to 43.2 million tons over this period (see Figure 5.2). The progress was particularly notable since the late 1980s when the government introduced a policy of gradual deregulation of markets and liberalization of trade in agricultural machinery and inputs. The change in policies promoted massive private-sector investment in groundwater irrigation that fuelled rapid diffusion of high-yielding rice varieties. The growth in rice production accelerated from 2.2 per cent per year during 1970–1990 to 3.4 per cent during 1991–2008. Over 80 per cent of the growth in production came from the increase in yield due to technological progress.

There are three different rice-growing seasons in Bangladesh: aus, aman and boro. The aus crop is an upland pre-monsoon crop with low yields, the aman crop is a rainfed monsoon crop, and the boro crop is a dry-season irrigated crop. Most of the increase in production and productivity has been due to expansion of the boro crop, as well as higher yields for this crop. Traditionally, boro used to be grown in extreme low-lying lands in depressed basins, but it has undergone a substantial transformation due to increased tapping of groundwater. The boro area expanded from 0.86 million ha in 1971–1972 to 2.45 million ha in 1989–1990 and further to 4.61 million ha in 2007–2008. The yield of boro increased marginally during the 1980s, but then

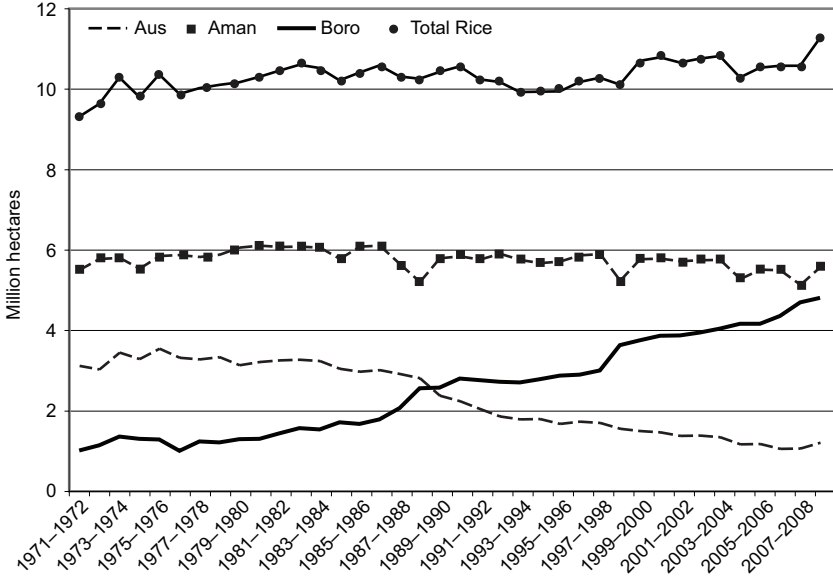


Figure 5.1 Trends in rice area harvested in Bangladesh, financial years 1971-1972 to 2008-2009

Source: Prepared by authors, based on data from Bangladesh Bureau of Statistics

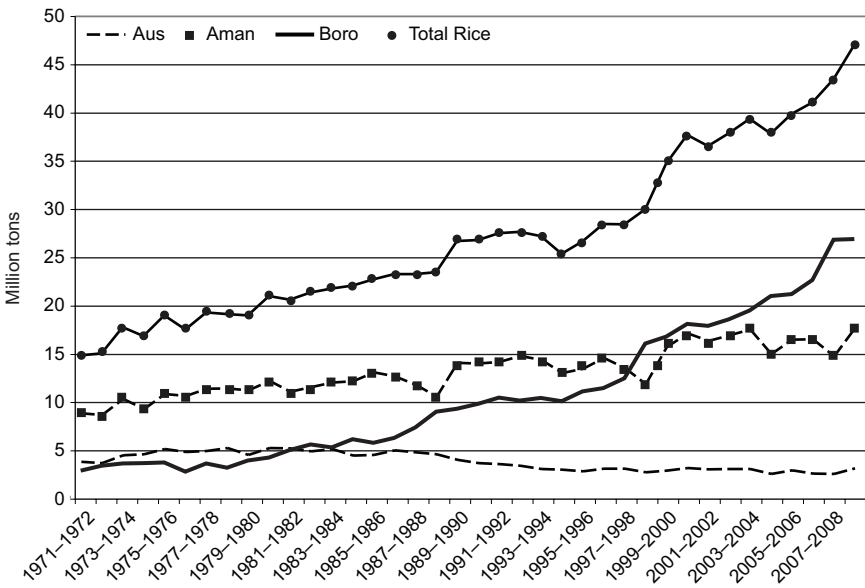


Figure 5.2 Trends in rice (paddy) production in Bangladesh, financial years 1971-1972 to 2008-2009

Source: Prepared by authors, based on data from Bangladesh Bureau of Statistics

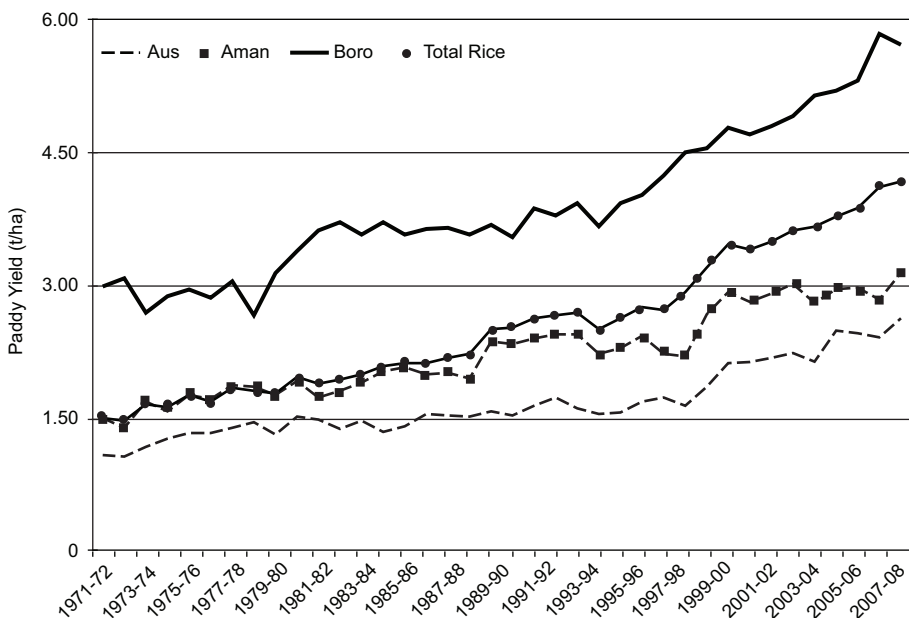


Figure 5.3 Trends in rice (paddy) yield in Bangladesh, financial years 1971–1972 to 2008–2009

Source: Prepared by authors, based on data from Bangladesh Bureau of Statistics

increased substantially from 3.67 tons per hectare (t/ha) in 1994/1995 to 5.78t/ha by 2007–2008 (see Figure 5.3). The recent increase in yield was due to gradual adoption of second-generation modern varieties (MVs) BRRI dhan 28 and 29 that have a 1.0 to 1.5t/ha yield advantage over the first-generation MVs and hybrids. The adoption of these varieties has now almost reached the ceiling. The expansion of boro area and the increase in yield accounted for nearly 85 per cent of the increase in rice production during the 1980–2009 period.

Boro, however, is a highly input-intensive crop. Almost 20 per cent of the value of the crop goes on the payment for irrigation water. For boro cultivation, the farmer uses chemical fertilizers at almost double the amount used in other seasons. With the increase in the price of diesel (used for operating shallow tube wells) and non-nitrogen fertilizers, the unit cost of production of boro rice has increased substantially. As a result, the cultivation of boro has become less profitable than aman, the traditional monsoon-season rainfed rice crop.

Farmers have started adopting hybrid rice in the boro season to further increase yield and reduce the unit cost of rice cultivation. At the farm level, hybrid rice has a 1.5t/ha yield advantage compared to inbred rice varieties. Adoption has remained slow, however, because seed costs are three times higher than inbred rice varieties, and because of inferior grain quality for which the hybrid rice fetches a lower price in the market.

Rice grown in the aman season accounted for nearly 60 per cent of rice production in the 1970s. The growth in yield for this crop variety has remained sluggish. The average yield for the MVs at the farmer's field is about 4.0t/ha in the aman season compared to 5.5t/ha in the boro season. The yield is lower because of high cloud cover and low sunshine levels, which reduces photosynthesis. The high humidity in the monsoon season also exposes the aman plant to insect and disease pressures. The monsoon has become more erratic in recent years due to climate change, exposing the crop to both droughts and submergence from heavy rains, which in turn result in substantial yield losses. Due to the high risks of cultivation, subsistence farmers are discouraged from adopting the input-intensive improved varieties and they use inputs in suboptimal amounts, which further lower yields. Development and diffusion of MVs tolerant to submergence, drought and soil salinity will be needed for further increases in rice production in the aman season.

Food availability is augmented by domestic production and import of wheat, a minor food staple in Bangladesh. Wheat was an insignificant crop at the time of independence with a level of production of only 65,000 tons. Production expanded rapidly since the mid-1970s due to the availability of high-yielding MVs and the low cost of irrigation. The production of wheat reached its peak of about 1.84 million tons in 1999–2000. Since then, wheat has started to be replaced by hybrid maize, another new crop in Bangladesh. The production of maize is more profitable than wheat and is more suitable for agro-ecological conditions in Bangladesh. Maize also has the advantage of an assured market due to rising demand for feed from the fast-growing poultry industry. As a result, wheat production declined to only 0.85 million tons by 2008–2009.

Bangladesh used to get a substantial amount of food aid from developed countries. The availability of food aid fluctuated from 1.5 to 2.0 million tons during the 1970s and 1980s, most of which was wheat. Food aid has declined substantially since the early 1990s in response to the critique that food aid depressed domestic food prices and incentives for farmers to increase production. The private sector has, however, started importing wheat to meet the growing demand from urban consumers, which has partly offset the decline in food aid. In 2008–2009, the import of wheat by the private sector reached about 2.0 million tons.

Despite the favourable trends in domestic production, Bangladesh is not yet self-sufficient in cereal grains. Besides the import of wheat, the deficit in domestic production is met through commercial import of rice. Until the mid-1990s, Bangladesh imported mostly from Thailand, Pakistan, the US and Viet Nam but, since 1995, India has been the main trading partner. Other countries exporting rice to Bangladesh in recent years include Myanmar, Pakistan, Thailand and Viet Nam. Imports from India increased because (1) it is quicker and cheaper to bring rice from India; (2) it is possible for importers to bring in small quantities of rice by road; and (3) India exports parboiled rice, which is preferred by most Bangladeshis (Deb et al,

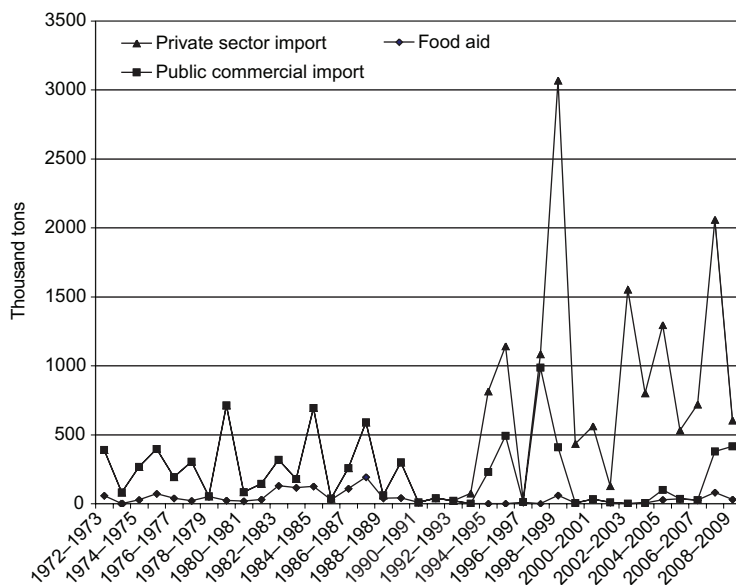


Figure 5.4 Trends in milled rice imports by Bangladesh, financial years 1972–1973 to 2008–2009

Source: Prepared by authors, based on data from Bangladesh Bureau of Statistics

2009). The import of rice increases substantially in years following poor harvests from floods and droughts. Bangladesh imported over 3.0 million tons of rice and wheat during 1987–1988, 1998–1999 and 2004–2005 – all these years followed devastating floods (see Figure 5.4). Rice imports got a boost from a change in policy in 1993 when the government removed the ban on import of rice and wheat by the private sector. The private-sector import of rice reached a peak at 2.6 million tons (nearly 10 per cent of domestic consumption) in 1998–1999, and fluctuates widely from year to year depending on the size of the rice harvest.

The availability and access of food grains, the major elements of food security, have improved substantially over the past two decades. In 2005, the level of rice consumption was 477 grams per person per day in rural areas and 389g in urban areas. At these levels, the poorest in society have exceeded the quantity of rice required for balanced nutrition (see Tables 5.2 and 5.3). In urban areas per capita consumption of rice declined between 1991 and 2005 indicating that the middle- and high-income groups have started reducing rice consumption in favour of a more diversified diet (see Table 5.3). The average level of per capita rice consumption in Bangladesh is one of the highest in Asia.

Table 5.2 *Per capita consumption of rice, 2005*

Income quintile group	Rice as % of consumption expenditure		Per capita consumption of rice (kg/person/year)	
	Rural	Urban	Rural	Urban
First (poorest)	52	42	152	150
Second	46	38	172	156
Third	40	33	179	145
Fourth	34	26	188	143
Fifth (richest)	31	20	196	132
All groups	40	28	174	142

Source: Bangladesh Bureau of Statistics (2005)

Table 5.3 *Consumption of different food items in Bangladesh, 1983–1984 to 2005 (g/person/day)*

Food item	Minimum intake required for balanced nutrition	Rural area				Urban area			
		1983– 1984	1991– 1992	2000– 2001	2005	1983– 1984	1991– 1992	2000– 2001	2005
Rice	390	421	481	479	477	351	416	383	389
Wheat	100	65	42	18	12	79	55	40	28
Veg. & potatoes	225	140	176	193	221	179	209	198	228
Pulses	30	26	17	15	13	22	22	19	19
Oils & fats	20	7	9	11	11	11	16	18	18
Fish	45	29	32	37	40	39	48	42	50
Meat & eggs	34	10	12	14	18	22	20	34	32
Milk	30	22	18	29	32	34	23	32	36

Sources: Bangladesh Bureau of Statistics (series), Report of the Household Income and Expenditure Survey, various years. Bangladesh National Nutrition Council for the norm of minimum food intake required for balanced nutrition, as cited in the unpublished report of the National Commission of Agriculture set up in the late 1990s.

Trends in rice prices

The domestic price of rice in Bangladesh was higher than that on the world market in the 1970s, 1980s and early 1990s. During the early 1970s, the world experienced a similar surge in food prices. The price of rice in the world market increased from \$147 per ton in 1972 to \$542 per ton in 1974. The price in the Bangladesh market rose to even higher levels from \$316 per ton in 1972 to \$826 per ton in 1974. The rapid surge in prices led to severe food insecurity culminating in famine during late 1974. A positive supply response, however, helped prices come down to a more normal level of \$250 per ton in 1976, both in the global and the Bangladesh markets. Since then the rice price in the world market has been fluctuating at around \$300 per ton with a downward trend during the early 1980s and in the late 1990s. The rice market in Bangladesh followed the same trend as in the world market, with prices remaining higher by an average of 40 per cent in the 1980s, and by 20 per cent during the early 1990s. By the late 1990s, however, the domestic price was generally at the

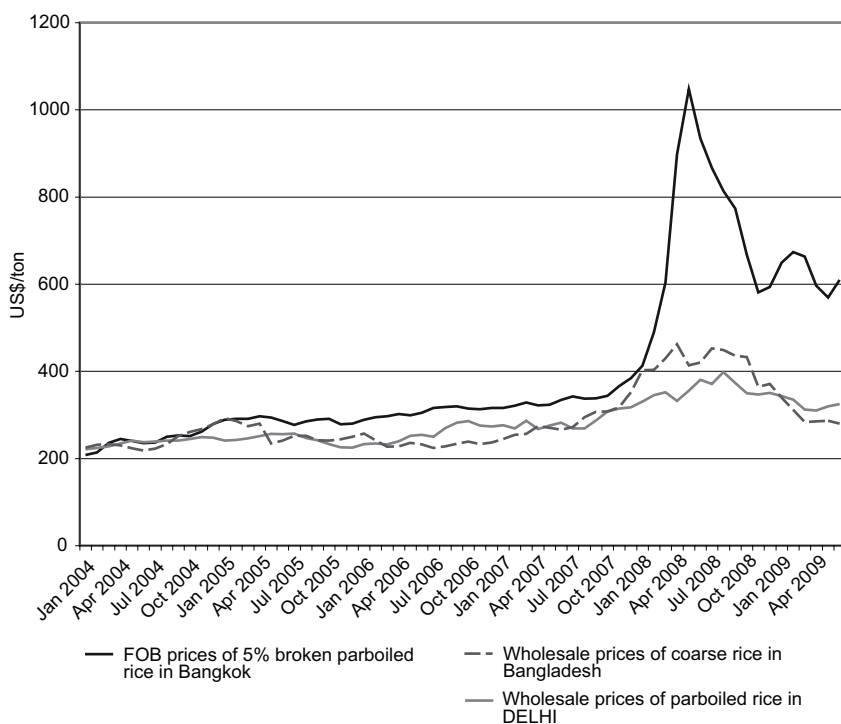


Figure 5.5 Comparison of domestic rice prices in Bangladesh, Delhi and Bangkok, January 2004 to June 2009

Source: Department of Agricultural Marketing, Bangladesh; Thai Rice Exporters Association; Thailand and Ministry of Consumer Affairs, Food and Public Distribution; Government of India

same level as in the world market. The other notable feature of the price trend is that the fluctuation of prices around the trend was less pronounced in Bangladesh than in the world market. Since September 2004, rice prices in Bangladesh have been lower than in Thailand (5 per cent broken rice), which serves as the location for world price quotations (see Figure 5.5). Rice prices in Bangladesh are usually higher than those in India (Delhi), but have shown a mixed pattern in recent years.

The price in the world rice market reached a minimum at \$174 per ton in 2001. Since then the price has been rising due to a slowdown in the growth of rice production. As technological progress reached a plateau in the irrigated ecosystem, the major rice-growing countries in Asia experienced a drastic decline in the growth of rice yields. Since the demand for rice continued to grow, the deficit in demand was met by drawing down rice stocks. By 2004, world rice stocks had reached the lowest level since the food crisis in the 1970s. The depletion in rice stocks along with export restrictions led to an upward movement in prices, with the FOB export price of 5 per cent broken parboiled rice increasing from \$208 per ton in January 2004 to \$384 per ton in December 2007 and then to an all time high of \$1047 per ton in May 2008.

Slayton (2009) observed that international rice prices were directly influenced by trade restrictions and speculative buying by countries such as the Philippines. In Bangladesh's domestic market, the increase in prices was smaller, although still substantial, increasing from \$225 per ton in January 2004 to \$318 per ton in November 2007, and then further to an all-time high of \$462 per ton in April 2008.

Bangladesh still had a substantial deficit in food grains when the recent price hike hit the country in 2007. The technological progress in the irrigated system was approaching the ceiling, with irrigation coverage reaching about two-thirds of cultivated land, and complete adoption of modern varieties on lands with access to irrigation. The expansion of production under the rainfed system was constrained by unfavourable growing environments, the high risk in rice farming due to frequent exposure to natural disasters, and non-availability of technologies tolerant to climatic stresses. In 2007, the deficit from domestic production was accentuated with substantial loss of rice production from two successive floods in July and September, and a devastating cyclone that hit the southwestern coast on 15 November. It is estimated that the loss in rice production from these natural disasters reached nearly 2.5 million tons, nearly 10 per cent of domestic consumption.

A loss of similar magnitude also occurred during the devastating flood of 1998. But during that year the private sector was able to meet the deficit by importing rice from across the border in India. At that time, India had accumulated a substantial stock of food grains and was eager to offload it by encouraging traders to export. The Indian situation with regard to food surplus and rice export policy was different in 2007–2008, however. On 9 October 2007, India's Cabinet Committee on Economic Affairs decided to ban exports of non-basmati rice. On 25 October 2007, the same Committee decided to reverse the export ban, but instead set an MEP of \$425 per ton for export in the global market, a price that was well above then prevailing levels. The MEP subsequently increased to \$505 per ton on 27 December 2007, \$650 per ton on 19 March 2008, and \$1000 per ton for non-basmati rice on 28 March 2008 (at that stage, the MEP for basmati rice was raised to \$1200 per ton). Finally, India introduced a ban on rice exports on 1 April 2008, which was still in force as of late 2009. As India raised its MEPs, Thailand followed suit by raising prices for its exports. Other countries, including Viet Nam, Cambodia and Egypt followed India in banning rice exports. The domestic price of rice in Bangladesh in both retail and wholesale markets increased sharply along with the ever higher MEPs announced by India (see Figure 5.6).

The ban of rice exports by India and the rapid increase in the price in the world market affected imports by the private sector. To the extent that rice was available, traders were apprehensive whether they could make a profit by importing rice at such high prices when the government policy is to keep prices under control through intervention in the food market and subsidized food distribution to the low-income groups. With the Indian border closed, the traders imported small amounts through informal channels from Myanmar,

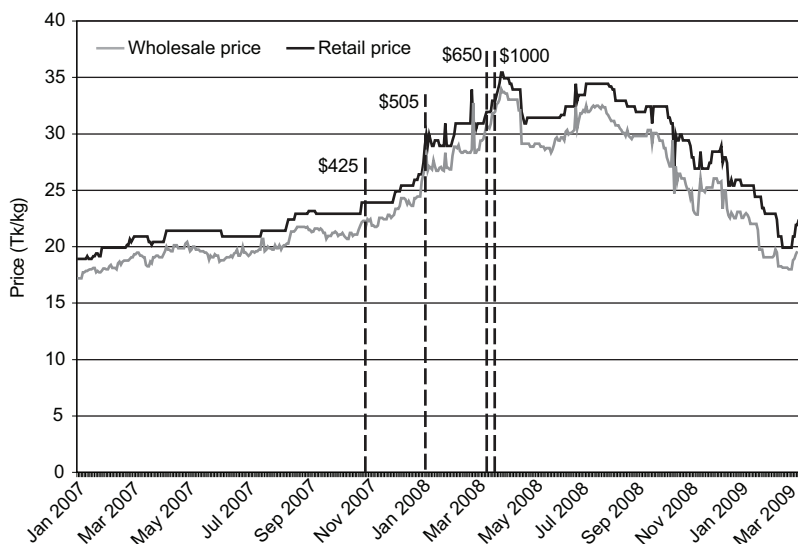


Figure 5.6 Relationship between domestic wholesale and retail price of coarse rice with MEP declared by India

Source: Department of Agricultural Marketing, Bangladesh; Thai Rice Exporters Association; Thailand and Ministry of Consumer Affairs, Food and Public Distribution; Government of India

where the price was still low. The stock of food grains held by the government fell to less than 500,000 tons due to relief operations in the aftermath of the floods and cyclone. The Government of Bangladesh made a special agreement with the Indian government to import 500,000 tons, but it took a long time to agree upon the price. The first lot of imports (about 120,000 metric tons) from India arrived in April 2008 when the bumper boro harvest (due to a massive supply response) was about to reach the market. The rest of the amount (380,000 metric tons) was delivered after July 2008.

The evolution of monthly wholesale and retail coarse rice prices in Bangladesh experienced three main phases between January 2003 and June 2009 (see Figure 5.7). From January 2003 to January 2007, rice prices were relatively steady in real terms, although between September 2004 and April 2005 prices increased 21 per cent. Nevertheless, the price in January 2007 was lower than it was in January 2003. In the second phase (January 2007 to April 2008), prices increased sharply by 79 per cent in real terms. Finally, in the third phase (April 2008 to June 2009), prices collapsed back to the levels prevailing during the first phase. The increase in prices stopped with the arrival of a large boro harvest in April that caused prices to decline temporarily. Prices increased again in July however, before steadily declining for the next year. By June 2009 they had reached the same level as in February 2007 at the start of the surge in prices. In May and June 2009, the farm-gate price of rice was below the cost of production.

Higher retail and wholesale rice prices were clearly transmitted to farmers (see Figure 5.7), and it is evident from the figure that paddy price movements

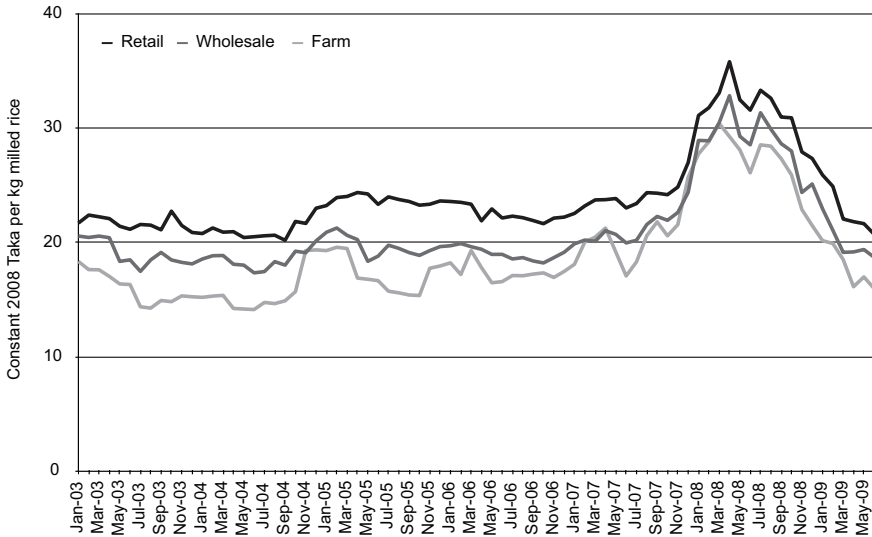


Figure 5.7 Trends in monthly retail, wholesale and farm-level real prices of coarse rice in Bangladesh, January 2003 to June 2009

Note: Prices are adjusted for inflation; farm prices are in rice terms.

Source: Prepared by authors, based on data from the Directorate of Agricultural Marketing

were highly correlated with movements in both wholesale and retail markets. Paddy prices rose throughout 2007, even when the aman harvest arrived in the market, and reached a record level in nominal terms of Taka 19.60 per kg in March 2008. This indicates that farmers benefited from the rise in consumer prices, and the higher prices provided incentives to increase rice production by expanding area and increasing the adoption of improved varieties, including hybrid rice. The increase in the profitability in rice farming led to a bumper boro harvest of 17.8 million tons of milled rice in 2008, compared to 15 million tons in 2007. Although the bumper boro harvest did not immediately lead to a complete rollback of prices, the increased supply was able to stop further price increases.

Trends in the marketing margin of coarse rice in Bangladesh are reported in Figure 5.8. (We define the marketing margin as the difference between the wholesale price and the farm-gate price, in milled rice terms and deflated by the CPI to adjust for inflation.) While the marketing margin fluctuated over time, there is no clear trend, and indeed, the margin seemed to decline slightly during the rapid increase in prices, even becoming negative in some cases. Wholesale and retail coarse rice prices also generally moved together, with no clear trend in this margin over time.

Since rice is a major item in the consumer basket, the rapid surge in price contributed to substantial inflationary pressure in the economy. Bangladesh was enjoying low annual inflation rates of less than 6 per cent during the early years of the 2000s (just 1.9 per cent in July 2001) but inflation exceeded 6 per

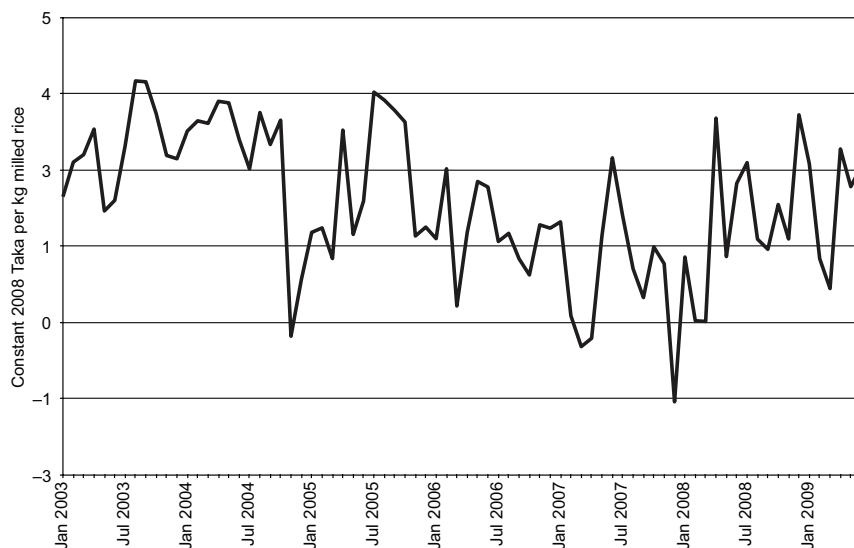


Figure 5.8 Trends in marketing margins of coarse rice in Bangladesh, January 2003 to June 2009

Source: Authors' calculations, based on data from Bangladesh Bureau of Statistics

cent starting in late 2004 (see Figure 5.9). High growth in consumer prices continued and then began to rise steeply by the middle of 2007, continuing into the middle of 2008 due to hikes in the prices of rice, edible oil and diesel fuel, eventually reaching an annual rate of 10.0 per cent in March 2008. Since October 2008, however, general inflation started to decline, and reached 6.7 per cent in June 2009. From July 2001 until October 2003, food inflation at the national level was lower than non-food inflation, but since that time the situation has reversed. The highest rate of food inflation of 12.6 per cent was in September 2008, but this gradually declined to 7.2 per cent in June 2009. The highest rate of non-food price inflation of 7.35 per cent was in February 2008, and this gradually declined to 5.26 per cent in February 2009, after which it rose again slightly.

The inflationary pressure has had an adverse impact on food security through reduction in purchasing power and income erosion. Particularly affected was the fixed-income group, the low-paid government servants and the industrial workers in urban areas. Other low-income groups, such as transport operators, petty traders in the informal market and agricultural labourers were initially adversely affected since they spend almost half of their income on rice. But later they were able to increase their earnings as wages increased. In nominal terms, the agricultural wage rate increased from about Taka111 per day in October 2007 to about Taka148 per day by February 2009, an increase of 28 per cent in real terms (see Figure 5.10). This increase in wages was very important for the poorest of the poor and allowed Bangladesh to avoid the

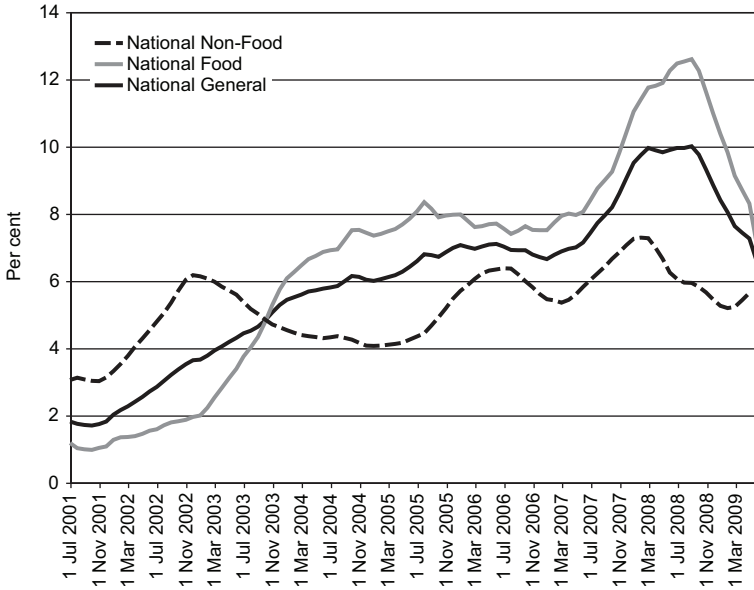


Figure 5.9 Trends in inflation (moving average), July 2001 to June 2009

Source: Bangladesh Bureau of Statistics

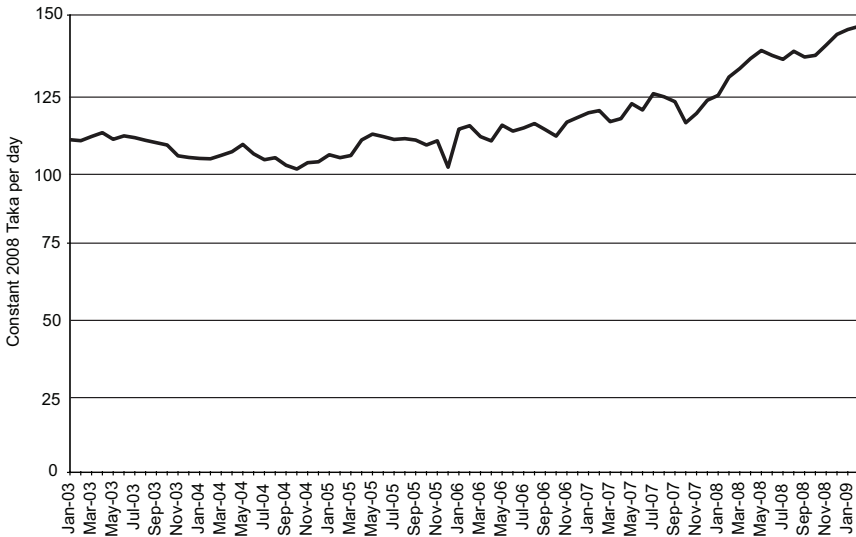


Figure 5.10 Trends in real agricultural wages in Bangladesh, January 2003 to February 2009

Source: Prepared by authors, based on data from Bangladesh Bureau of Statistics

serious food insecurity and famine that many influential civil society personalities thought might occur.

Several studies, however, showed that the increase in food prices contributed to a set back in achieving the MDG targets for reduction in poverty. One analysis of the impacts of high food prices on poverty (Rahman et al, 2008) revealed that 8.5 per cent of the total population, or 12.1 million people, fell below the poverty line between January 2005 and March 2008. Another study by Raihan et al (2008), reported that headcount poverty declined from 40 per cent in 2004–2005 to 39.4 per cent in 2006, but increased to 41.5 per cent in 2006–2007 and increased further to 45.9 per cent in 2007–2008. A joint study conducted by the Food and Agriculture Organization of the United Nations and World Food Programme (FAO/WFP, 2008) quantified the impacts of price hikes on food security in Bangladesh. According to this study, as a result of rising food prices and general inflation, the number of food insecure (those with caloric intake less than 2122kcal/person/day) increased by 7.5 million to reach 65.3 million. Furthermore, the number of people who are severely food insecure (those with caloric intake of less than 1805kcal/person/day) grew by 6.9 million, to reach a total of 34.7 million.

Policy responses

The government has taken several measures to tackle the price hike. These include active participation in food grain markets, expanded operations of existing safety net programmes and provision of incentives for increasing rice production.

The government has long intervened in food grain markets in order to reduce price fluctuations and to provide safety nets to food-insecure people. The government declares a procurement price for rice and wheat at which it procures grains from the market. This is not a floor price, so the government does not purchase unlimited quantities of rice at that price. Procurement is done mainly from surplus-producing areas. As a percentage of total production, it has been very low at less than 4 per cent during the past 15 years. The low procurement made it difficult to influence market prices, but it was helpful to procure rice for the safety net programmes.

The government used to import wheat and rice from world markets to build stocks with which it operated a public food grain distribution system. The objective was to provide relief during natural disasters, distribute subsidized food to special target groups (for example army, police, prison inmates) and operate a safety nets programme for the poor. During the 1980s, the government had a capacity to hold stocks in public sector-operated warehouses of nearly 1.8 million tons of food grains. Over time, however, the government has scaled down these operations with the elimination of the rationing system, a reduced size of the public works programme, and the transfer of responsibility for commercial food grains imports to the private sector. Thus, food stocks

were reduced from about 1.5 million tons in the 1980s to 0.6 million tons in recent years (compared to total consumption of 27 million ton of milled rice, of which about 10 to 12 million tons are transacted in the market). However, the government still maintains several safety net and social protection programmes, and participates in open-market sales at times of abnormally high prices. The government's capacity to influence the market with such small operations is limited, however.

To encourage imports and discourage exports during the period of rising prices, the government took some trade policy measures. On 8 March 2007, the government eliminated existing tariffs on the import of rice, wheat and other essential items (crude edible oil, lentils, onion, matar dal and chola dal). In addition, commercial importers were no longer required to renew value added tax (VAT) registration on an annual basis. The government also banned the export of non-scented rice for six months effective from 6 May 2008, which was later extended for another six months (i.e. up to 6 May 2009). The ban was allowed to lapse momentarily, but it was reinstated for another six months, effective 22 May 2009.

To ensure food security for the lower-income groups who were hard hit by the price hike, the government's main strategy was to increase the allocation of rice and wheat under the Public Food Grain Distribution System (PFDS), which has two channels. One channel, the monetized channel, sells rice and wheat through several programmes: Essential Priority (EP), Other Priority (OP), Large Employee Industries (LEI), Flour Mills (FM), Open Market Sales (OMS) and Fair Price Card (FPC). The other main channel (non-monetized) does not involve sales, but includes targeted safety net programmes such as Food for Work (FFW), Test Relief (TR), Gratuitous Relief (GR), Vulnerable Group Development (VGD), Vulnerable Group Feeding (VGF) and Food for Education (FFE). Because of limited stocks, the government could increase the total PFDS allocation in 2007–2008 by only 6.7 per cent, to 1.56 million tons (see Table 5.4). This amount was too small to have an impact on market prices.

The government also allowed the paramilitary force to operate OMS of essential commodities, including rice, at subsidized prices to urban consumers. However, the amount sold through OMS was just 268,000 tons in 2007–2008, less than the 408,000 tons sold in 2006–2007. Amid concerns over further price increases, the government decided to scale up operation of food distribution in the fiscal year 2008–2009, and kept an adequate allocation for this purpose in the budget. In order to increase stocks, the government aimed to procure 1.2 million tons of rice and 300,000 tons of paddy from the domestic market in addition to importing wheat from the world market. The procurement price was fixed at Taka18 per kg for paddy and Taka28 for rice. Although the cost of production of rice has increased substantially due to higher price of fertilizers, irrigation and labour, a paddy procurement price at this level provided enough incentives for farmers to expand production. As a result, the government was successful in distributing more food grains through the PFDS in 2008–2009. The total amount of distribution increased to 2.13

Table 5.4 *Distribution of food grains under PFDS in Bangladesh, 2006–2007 to 2008–2009 (thousand tons)*

<i>Channel</i>	<i>Financial year 2006–2007</i>	<i>Financial year 2007–2008</i>	<i>Financial year 2008–2009</i>
Priced			
Essential Priority (EP)	260.3	209.5	219
Other Priority (OP)	21.0	20.6	22
Large Employee Industries (LEI)	14.8	12.3	10
Open Market Sales (OMS)	407.9	268.0	195
Flour Mills (FM)	2.0	-	-
Fair Price Card (FPC)	-	-	-
Other	-	-	-
<i>Subtotal</i>	<i>706.0</i>	<i>510.4</i>	<i>446</i>
Non-priced			
Food for Work (FFW)*	121.7	154.3	395
Test Relief (TR)	148.2	75.9	368
Vulnerable Group Development (VGD)	147.3	267.7	279
Vulnerable Group Feeding (VGF)	230.2	187.6	507
Gratuitous Relief (GR)	33.5	38.2	43
VGF (Relief)		231.0**	
Others	73.7	95.1	92
<i>Subtotal</i>	<i>756.2</i>	<i>1049.8</i>	<i>1684</i>
Total	1462.2	1560.2	2130

Note: * includes direct distribution of wheat by World Vision International; ** In 2007–2008, 231 thousand million tons of food grain was distributed as VGF relief (Saudi grant) through non-priced channels.

Source: Food Planning and Monitoring Unit, Ministry of Food and Disaster Management

million, which was 36.5 per cent higher than actual distribution in 2007–2008 (see Table 5.4).

The government also introduced a new programme entitled ‘100 Days Employment Generation Scheme’ in the 2008–2009 budget with an allocation of Taka20,000 million to generate 200 million person-days of employment for the ultra-poor and marginal farmers in rural areas. The programme targeted severe poverty-stricken areas such as the Monga (seasonal food insecure) affected areas in the Northwest, areas prone to river erosion and Char areas (newly emerged areas in the river bed).

Much more effective was the government’s proactive policy to boost agricultural production, which extended to several different inputs: credit, irrigation and fertilizer. The Bangladesh Bank issued a directive to commercial banks to increase disbursement of agricultural credit to meet the working capital needs of small and marginal farmers, particularly targeting areas affected by the floods and the cyclone. Many private sector commercial banks (which did not have their branches in rural areas) channelled agricultural credit through NGOs engaged in micro-credit operations. The disbursement of agricultural credit in financial year 2007–2008 (Taka61.67 billion) was 16.51

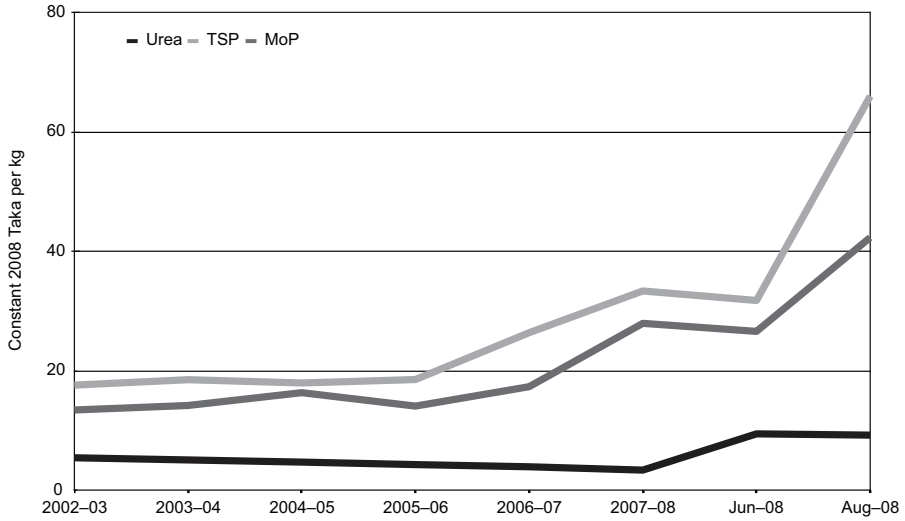


Figure 5.11 Trends in real prices of fertilizers in Bangladesh, 2002–2003 to 2008

Source: Prepared by authors, based on data from Bangladesh Bureau of Statistics

per cent higher than the total disbursement of agricultural credit in 2006–2007 (Taka52.93 billion). The government also provided (for the first time) a subsidy on diesel used in irrigation. It was provided directly to farmers and amounted to Taka2500 million in 2007–2008. The 20 per cent subsidy for electricity used in irrigation was also continued.

The government also maintained a subsidy on urea fertilizers (implemented at the border) despite the rapid rise in its price on the world market. Indeed, the subsidy on urea increased to nearly 80 per cent of the procurement cost, and due to the very high level of subsidy, the government had to ration distribution of urea fertilizer with the help of public administrators (deputy commissioners, Upazila Nirbahi officers, agriculture officers). As a result, domestic urea prices were relatively stable (see Figure 5.11). In contrast to urea, the prices of triple superphosphate (TSP) and muriate of potash (MoP) fertilizer increased rapidly because world prices of these commodities increased sharply and all imports are done through the private sector. The higher prices had a negative impact on use of non-urea fertilizers.

These measures, coupled with high paddy prices and favourable weather (frequent rains saved irrigation costs and eased moisture stress from droughts), led to a nearly 18 per cent increase in the production of rice during the boro season. The additional production compensated for the reduced aman production in the previous season.

Conclusions

The huge surge in rice prices in the world market between October 2007 and April 2008 contributed to higher domestic prices in Bangladesh. The abnormal increase in price was a bane for low-income consumers, but it was a boon to rice farmers who have long suffered from unfavourable terms of trade. Farmers responded positively by adopting improved technology, exploiting excess capacity, and fitting in another crop in the cropping system by adopting shorter maturity varieties and delaying planting of the boro crop. The supply response led to a substantial increase in production despite the increase in prices of some inputs.

Bangladesh experienced successive good harvests not only in the boro 2008 crop, but also in the following pre-monsoon (aus), monsoon-season crop (aman) and then again in the boro 2009 crop. The total harvest reached almost 32 million tons of milled rice, substantially higher than demand even after accounting for seed, feed and waste. The favourable supply situation put downward pressure on prices since December 2008, with paddy prices falling by 30 per cent in two months. Those who held rice stocks in the expectation of benefiting from further price increases started releasing it to minimize losses. This put further downward pressure on prices, and, as a result, the domestic price reached a level in May–June 2009 that was lower than the cost of production. Urgent action is required to ensure a minimum price that will provide at least 10 per cent profit to the farmers. Failure to do this will hamper future production growth. The familiar cobweb problem points to the role of government in maintaining a fine balance in protecting the interests of low-income consumers and commercial farmers. To this end, linking up government procurement programmes with social safety net programmes, particularly the PFDS, will be needed.

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Indonesia's Rice Policy and Price Stabilization Programme: Managing Domestic Prices during the 2008 Crisis

Agus Saifullah

Introduction

Rice in Indonesia is a strategic commodity that deeply influences the economy, social issues, employment, rural development and politics. The rice sector, including production, processing, trade and supporting sectors such as transportation, is a major source of employment. However, the majority of rice producers are subsistence and small-scale farmers. A 2003 survey by Indonesia's Central Statistics Agency (BPS, 2003) estimated the number of farm households at 25.4 million, an estimated 13.7 million of which owned less than 0.3ha of land. Farm households, especially those with a large marketed surplus, are vulnerable to price fluctuations, particularly when paddy prices plunge during the main harvest season. Without sufficient government attention paid to paddy farmers' income, rice production will be disrupted and eventually affect rice supplies from domestic sources.

Poverty and food insecurity are problems that require close attention in Indonesia. Millions of poor families living in rural areas are among the most vulnerable to rice price instability. Within this income group, approximately 63

per cent of their expenditure is on food, of which almost 20 per cent is on rice. In addition, rice still constitutes about 4 per cent of the consumer price index (CPI). Thus, changes in rice prices influence the inflation rate and overall economic growth. This situation underscores the importance of keeping rice prices stable at an affordable level for the people.

The political nature of the rice industry complicates the development of rice policy, which must be carefully implemented by taking into account various interests as well as potential impacts and obstacles (such as the required budget). It is important to strike the right balance between several objectives, such as the protection of small farmers and poor consumers, the impact on other players in the industry (such as millers, retailers and traders), and the effect on economic stability.

This chapter discusses the rice policy and operational activities implemented by the Indonesian government and its efforts to maintain price stability in the domestic market when rice prices soared on the world market in 2007–2008.

Rice policy and price movements

The Indonesian government formulated its rice policy through a Presidential Instruction. The policy is intended to guarantee food security through the availability of an adequate amount of rice, improved physical access through functioning market mechanisms and distribution by the government, and enhanced economic access through improved farmer incomes and consumer purchasing power.

The policy established a strong basis for the development of a government-managed food security system that uses domestic procurement, stocks, distribution for poor households, and government reserves for emergencies and natural disasters. Such a food security system functions as an instrument for protecting farmers and poor families by maintaining price stability and encouraging efficient market mechanisms.

The effectiveness of Indonesia's rice policy was challenged in early 2007 when consumer prices increased by around 25 per cent and in 2008 when international prices jumped significantly above domestic prices. In response, the government made concerted efforts to control domestic price stability and guarantee food for poor households. At the same time, there was a need to provide farmers with production incentives in the light of increased international prices.

One major challenge for the government was to determine the domestic price level that would provide incentives for producers (many of whom are small-scale paddy farmers) but keep rice affordable for consumers. Thus, the price level and the methods used for price stabilization are sensitive issues in terms of rice policy.

One mechanism used to stabilize prices is the government purchase price (GPP). Several factors are considered by the government in setting the GPP, including paddy production costs, the world rice price and market situation,

Table 6.1 *The development of GPP, domestic prices and world rice prices*

Year	GPP milled rice (Rp/kg)	Rice prices at wholesale market IR I (Rp/kg)	5 per cent Thai rice prices (\$/MT, FOB)	Time when GPP is valid
2002	2470	3425	192	January
2003	2790	2935	201	January
2004	2790	2880	213	January
2005	2790	3028	293	March
2006	3550	4357	291	January
2007	4000	5000	317	April
2008	4300	5217	862	April
Changes (%)				
2002–2008	74	52	348	
2002–2007	62	46	65	

Source: Data from BULOG

and possible effects on consumer prices and inflation. The GPP for paddy is usually determined with the aim of giving farmers a 20–30 per cent profit above their production costs. In addition, the GPP has also been set to correspond with international price movements.

Table 6.1 shows that during 2002–2008, the GPP for rice increased by about 74 per cent in nominal value. The rice price at wholesale market (Pasar Induk Cipinang Jakarta) recorded an increase of 52 per cent, while world rice prices (Thai 5 per cent FOB) recorded an increase of 348 per cent. However, if calculated until year 2007 the GPP increase was only around 62 per cent, domestic rice price around 46 per cent and world rice price only 65 per cent.

Over the seven years from 2002 to 2008, domestic rice price fluctuation has stayed within normal boundaries. During this period, as shown in Figure 6.1, nominal domestic rice prices have been relatively stable compared with world prices. The CV of domestic prices for rice variety IR I (in Indonesian rupiah/kg) was 32 per cent, while that for Thai 5 per cent broken (in \$/ton, FOB) was 52 per cent. The CV for the world price calculated in import parity terms (in Rp/kg) was 48 per cent.

Looking at the seasonal cycle, the domestic rice price tends to decrease during the main harvest season from March to May. The price moves up again during the lean season, beginning in October until the next harvest season. However, in 2002–2004, there were irregularities in the seasonal price movement, with prices during the lean season below those of the harvest seasons (see Figure 6.2).

According to Sawit and Lokollo (2007), this phenomenon can be attributed to an import surge during this period. In 2000–2003, the private sector was free to import rice so long as it paid import duties. Total imports reached around 5.27 million tons, or an average of 1.31 million TONS per year. Paddy prices fell below the GPP level about 43 per cent of the time. Meanwhile, rice prices during the lean season were 2–10 per cent lower than rice prices at harvest time.

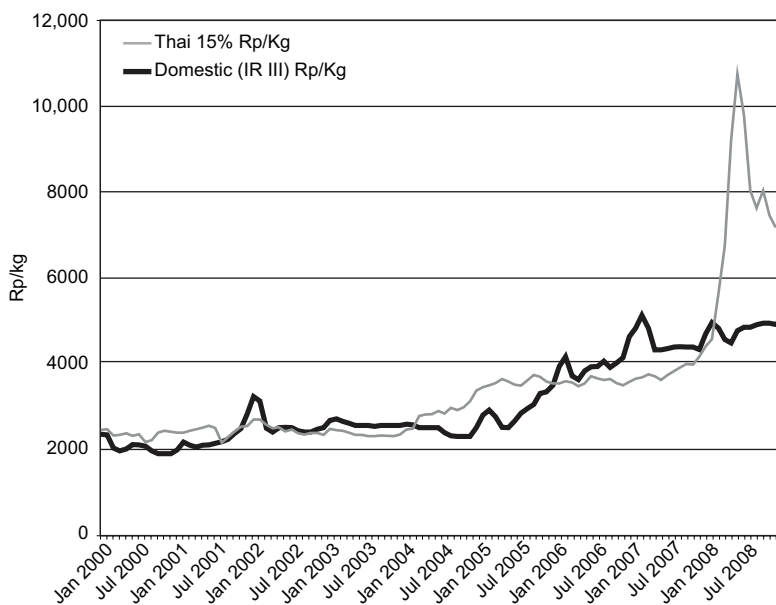


Figure 6.1 *International and domestic wholesale rice prices, 2000–2008*

Note: Domestic wholesale price is price at Pasar Induk Cipinang, Jakarta. Thai 5 per cent import parity price (Rp/kg) = Thai 5 per cent FOB* Exchange rate + Freight & Insurance 7.5 per cent + Tariff + Handling and 5 per cent margin.

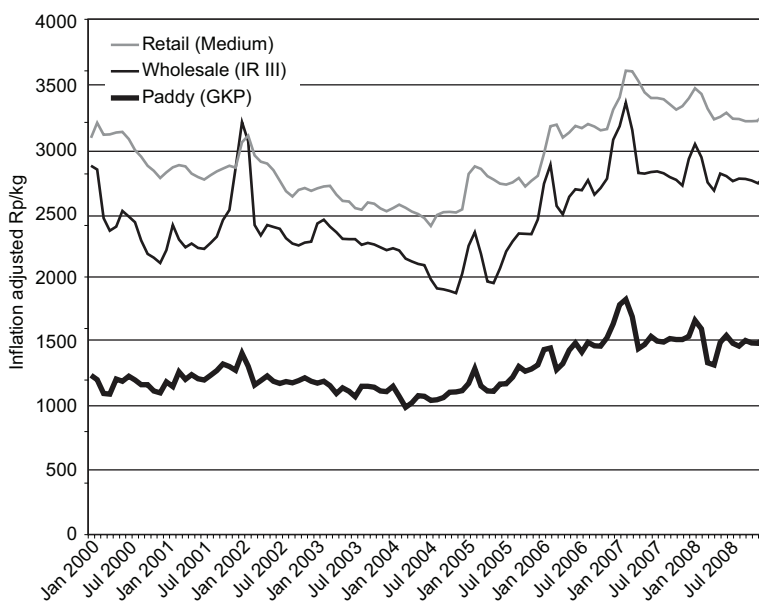


Figure 6.2 *Real rice price movement: Paddy, wholesale and retail 2000–2008 (Rp/kg)*

Note: Price is deflated by monthly CPI, base of June 2002.

The surge in rice imports in 2002–2003 continued to keep domestic rice prices weak until 2004. To reduce the impact of rice imports on prices at the farm level, in 2004 the government imposed an import policy with an open and closed system corresponding to the seasonal cycle. Now, rice imports are strictly limited and can only be executed by Badan Urusan Logistik (BULOG, the Indonesian Bureau of Logistics) following the issuance of import licences by the Ministry of Trade. The private sector has retained permission to import speciality rice varieties, which account for less than 1 per cent of domestic consumption. Under this new import policy, domestic prices increased and paddy prices fell below the GPP during the main harvest season just 15 per cent of the time in 2005 and 10 per cent of the time in 2006–2008.

Managing domestic rice prices

The world rice price crisis started in late 2007 and prices soared until mid-2008. The rapid threefold increase of rice prices from \$325 per tons in October 2007 to more than \$1000 per tons in May 2008 was not predictable. Factors contributing to the price increase included expectations of demand outstripping supply in the long term, imposition of export restrictions by major exporting countries, limited supply of some crops (especially wheat), increasing oil prices, use of food crops for biofuel purposes, the weakening of the US dollar and panic buying and hoarding (Lancon, 2008). Although declining world rice stocks and climate change were not the main factors, they may have influenced the market to a small extent. FAO (2009) estimates good world paddy production of 660 million tons in 2007, increasing further to 683 million tons in 2008.

Initially there were many predictions that rice prices would remain high in the long term. However, world prices decreased sharply for several months after reaching their peak in May. In December 2008, prices were around \$550 per ton for Thai 5 per cent broken and around \$400 per ton for Vietnamese rice (5 per cent broken).

The world rice price increase had different impacts on different countries. Hasan and Yustika (2008) suggest that the varying impacts were influenced by the food security condition in the country, the stabilization policy imposed, the condition of infrastructure and the macroeconomic situation. In most countries, domestic rice prices increased by 20–100 per cent over the period from March 2007 to March 2008, leading to increases in the overall inflation rate and food security problems. However, the impact in Indonesia was relatively benign – rice prices remained stable.

There were three important factors behind Indonesia's stable rice prices in 2007–2008: an appropriate rice policy and policy response to the crisis, a large increase in food production, and the effectiveness of BULOG operations to maintain available rice stocks and provide access for the people.

Government policy

Indonesia experienced a sharp rice price increase during the 1998 Asian economic crisis. At that time, the government implemented several key measures including market operation policies,¹ subsidized rice distribution for poor families (the RASKIN programme²) and an open import policy. The amount of rice distributed by BULOG reached around 300,000 tons per month, or more than 10 per cent of consumption needs. Rice imports were fully open under a tariff system. These measures eventually restored the stability of rice prices at the consumer level.³

Rice price stability was disrupted again at the beginning of 2007 because of a delayed paddy planting season and a reduced level of BULOG rice distribution during the 2006–2007 lean season (November to February) after the government reduced the rice allocation for poor families from 15kg/household (HH)/month in 2006 to 10kg/HH/month in 2007.

The impact was a significant rice price increase starting at the end of 2006 and continuing until the beginning of 2007. The level of BULOG stock (less than 1 million tons) was relatively low, which negatively affected market operations. Meanwhile, rice imports could not be readily executed because they were banned for certain months of the year.

Increasing rice prices during the 2006–2007 lean season pushed the government to try to ensure price stabilization during the 2007–2008 lean season. Accordingly, the government imposed several new policies:

- In mid-2007 the government increased the duration of rice distribution for poor families from 10 months to 11 months. In addition, the government also distributed additional rice targeted to poor families from December 2007 to January 2008. These policies were designed to reduce demand for rice in the market.
- The imposition of a time limit for BULOG rice imports (which were required to be completed by July 2007) was revised. In 2007, imports could be executed freely at any time and directed to ports in rice-deficit areas all across Indonesia. This helped BULOG to distribute its stock as required and strengthened government stocks. Such assured rice imports also helped reduce trader speculation. BULOG rice imports reached about 1.2 million tons in 2007.
- The government made efforts to stabilize the price of other food commodities, such as soybean, palm oil and wheat flour. There was also a programme of direct cash transfers for poor families designed to alleviate the economic impacts of the increase in fuel prices implemented by the government in November 2007.

Relatively stable rice prices at the end of 2007 laid the foundations for stability in 2008. However, to mitigate the global rice price crisis, the government imposed several new policies in 2008. These policies, which also aimed to

strengthen food security and price stabilization, included the following:

- In February 2008, import tariffs for rice were reduced from Rp530/kg to Rp450/kg. Imports were also facilitated for other commodities including soybeans and wheat.
- To guarantee the domestic rice supply, rice exports (which can only be executed by BULOG) were to be allowed only if the availability of rice for domestic uses was deemed sufficient and rice price stability would not be disrupted. Rice trade monitoring at the borders was improved in order to deter smuggling.
- The Presidential Decree on Rice Policy Year 2008 emphasized economic stability as a top priority. Due to the influential role of rice in the inflation rate, maintenance of rice price stability was very important. Nevertheless, the GPP for rice had to be increased in 2008 to give incentive to rice farmers. However, the increase (around 7.5 per cent for milled rice and about 10 per cent for paddy) was kept low enough to avoid large upward pressure on prices for consumers.
- The rice allocation for poor families⁴ was increased twice in response to the world rice price crisis (see Table 6.2). In early January 2008, the rice allocation for poor families was 10kg/HH/month for ten months (about 1.91 million tons per year in total). In February 2008, the allocation was increased to 15kg/HH/month for ten months (about 2.77 million tons per year). As prices jumped even further, the duration of rice allocations was increased in April 2008 to 12 months (3.34 million tons per year).
- To prepare for natural disasters or other emergencies and to maintain stable prices, the government boosted its rice reserves in 2008 from 204,000 tons to 352,000 tons.
- A fuel price increase was delayed until after the main harvest season in order to avoid increases in transport costs that might disrupt marketing of the crop and to facilitate distribution of stocks from surplus to deficit regions. Thus, for example, during the 2008 harvest season, the inter-insular rice trade from the rice-producing area of Pare-Pare (South Sulawesi) increased by 10,000–12,000 tons per month (a 40–50 per cent increase over the previous year). The fuel price increase was eventually announced by the government in May 2008.

Table 6.2 *Subsidized rice (RASKIN) distribution 2006–2008*

Description	2006	2007	2008		
			January	February	April
Total allocation (million metric tons)	1.62	1.74	1.91	2.77	3.34
Number of poor HH (millions)	10.83	15.78	19.10	19.10	19.10
Allocation/poor HH/month (kg)	15	10	10	15	15
Duration (months)	10	11	10	10	12
Budget (Rp000 billion)	5.32	6.28			11.66

Source: Central Bureau of Statistics – Bapenas (various years, 2006–2008)

Increasing domestic rice production

In 2007 and 2008 there were substantial increases in domestic rice production of 5.0 per cent and 5.5 per cent, respectively. When world rice prices reached their peak in April and May 2008, Indonesia was in the midst of its main harvest season. Adequate rice supplies at this time ensured that people remained calm and thus contributed to stable rice prices in the short term. In Indonesia, the global price crisis did not lead to any significant price increases at the consumer level.

On the contrary, BULOG made efforts to absorb large seasonal surpluses so that farm-gate prices did not fall below the GPP. During the January–April 2008 harvest season, rice production increased by about 25.6 per cent over that of 2007 (see Table 6.3). The seasonal surpluses, as well as the fact that the harvest came earlier in 2008 than in 2007, made it easier for BULOG to procure the volumes necessary to maintain adequate stock levels across the country for the entire year.

Some of the last few years' increase in rice production can be attributed to higher domestic prices that have given farmers the incentive to increase their productivity. In addition, the subsidized price of urea fertilizer (Rp1200/kg) was kept constant from 2006 to 2008 (see Figure 6.3). The price in 2004–2005 was Rp1050/kg.

The favourable rice to urea price ratio has contributed to increased urea use in rice farming. An increase in paddy cultivation intensity was also supported by ample water from good rainfall and increased use of high-quality seed. All of these factors contributed to the increase in production.

According to data from the Indonesian Department of Agriculture, there was a considerable increase in 2007–2008 in the use of subsidized fertilizers for food crops and distribution of subsidized high-quality rice seed. In addition, in 2008 the government initiated a gradual change in the distribution of subsidized fertilizers, from appointed retailers who sell fertilizer to farmers to direct

Table 6.3 *Rice production by crop season, 2007–2008*

<i>Year</i>	<i>Variable</i>	<i>January– April</i>	<i>May– August</i>	<i>September– December</i>	<i>January– December</i>
2007	Harvest area (million hectares)	4.89	4.61	2.64	12.14
	Yield (tons/hectare)	4.56	4.79	4.83	4.71
	Production (million tons paddy)	22.33	22.08	12.76	57.15
2008	Harvest area (million hectares)	5.74	4.21	2.39	12.34
	Yield (tons/hectare)	4.88	4.95	4.78	4.88
	Production (million tons paddy)	28.02	20.84	11.42	60.28
Change	Harvest area (%)	17.3	–8.7	–9.5	1.6
	Yield (%)	7.1	3.3	–1.1	3.8
	Production (%)	25.6	–5.6	–10.5	5.5

Source: Central Bureau of Statistics – BPS (2008)

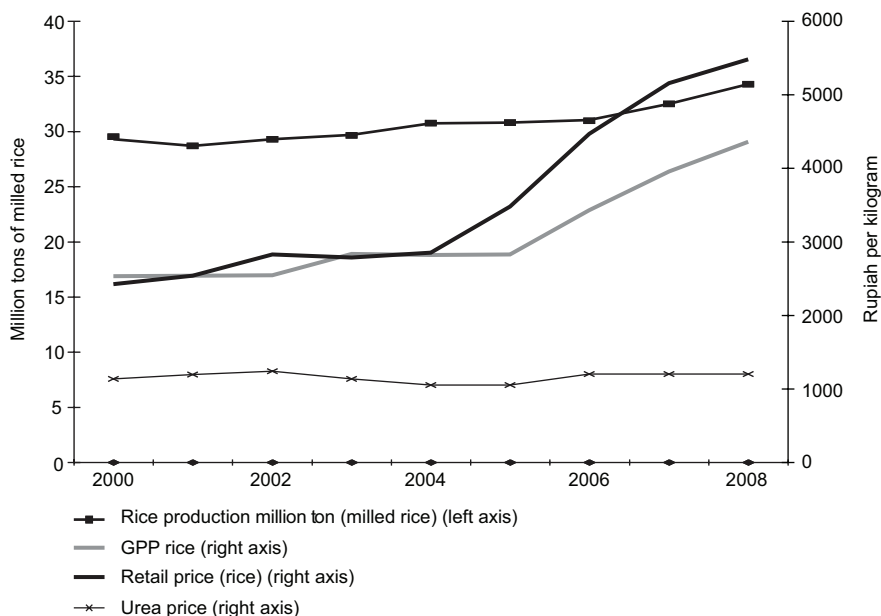


Figure 6.3 Production, rice price, GPP and urea price, 2000–2008

distribution to farmers through farmer associations.

The total amount of fertilizer use (including urea, SP-36, ZA and NPK) during the periods of October–December 2007 and January–September 2008 increased by 13.6 per cent and 7.6 per cent respectively compared with the same periods one year earlier. For compound fertilizers (NPK), the increase during the period of January–September 2008 was 56 per cent. The total amount of fertilizer used from October 2007 to September 2008 was around 6.7 million tons compared with about 6.1 million tons in the same period one year earlier.

In 2008 the government distributed free high-quality seed directly to eligible farmers through farmer associations. The government sets the criteria for eligible farmers entitled to the subsidy. Under this model, farmer associations propose the amount of seed required to local agriculture officers and also give the names of farmers, the farm area and the time of distribution. Local government is responsible for selecting the eligible farmers and appointing farmer associations. The distribution itself is handled by the seed industry (i.e. PT Sang Hyang Seri and PT Pertani), which distributes directly to the fields. Local government is responsible for ensuring that the seeds reach the farmers effectively.

This policy contributed to the increased use of high-quality seeds, which were planted on 55 per cent of the harvested area in 2008. In the years prior to 2008, high-quality seeds were typically used on around 37 per cent of the harvest area. High seed prices and lack of availability in those earlier years meant that many farmers produced their own seed.

Table 6.4 *The distribution of rice production in Indonesia, 2005–2008 (%)*

<i>Region</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
Sumatra	23.4	22.4	23.4	22.5
Java	54.9	55.0	53.3	53.6
Nusa Tenggara	4.8	5.3	5.0	5.3
Kalimantan	6.6	6.9	7.5	7.4
Sulawesi	9.8	9.9	10.4	10.9
Total Indonesia	100	100	100	100
Total production (million tons dry paddy)	54.15	54.45	57.16	60.28

Source: Central Bureau of Statistics – BPS (2008)

Availability of water was another factor contributing to the production increase in 2007–2008. The Meteorology and Geophysics Agency (BMKG) reported that water availability in 2007–2008 was quite good, allowing an improvement in the paddy cultivation index (the number of crops planted per year). Data from the Department of Public Works showed that the water elevation for major basins in the main production areas in Java was generally normal. 8 out of 12 major basins had higher water surface elevation during the dry season in September 2008 compared with September 2007 (the difference ranged between 0.9 and 26.3 metres), while the water surface elevation of the other four basins was lower. With sufficient water, some regions' paddy cultivation index increased from once to twice a year and other regions' index increased from twice a year to five times in two years.

The rate of production increase outside Java was higher than on Java in 2007, resulting in improved distribution and inter-regional availability (see Table 6.4). While Java still accounts for more than half of total production, substantial increases have occurred in other regions including Sulawesi, Kalimantan and Nusa Tenggara (the northern part of Sumatra was an exception, with production falling due to the competition of paddy with the oil palm plantation area). The large production increase in Sulawesi came predominantly from the main producing areas in South Sulawesi; in Kalimantan the increase came mainly from West and South Kalimantan. Production increases in almost every province helped maintain price stability by meeting local demand and supplementing rice supplied by BULOG for the allocation programme and the government rice reserve.

BULOG operational strategy

To ensure food security in the midst of the uncertain world rice situation, the Indonesian government increased the amount of subsidized rice for poor families. The amount of rice distributed under this programme almost doubled from 1.74 million tons to 3.34 million tons to cover all poor families, based on a 2007 BPS survey (Bappenas, various years, 2006–2008) (see Table 6.2). As

the increase covered all regions, it necessitated not only an increase in the amount of total rice supplies acquired by BULOG, but also efficient distribution to all regions.

The actions required according to the new programme were not easy for BULOG. To carry out the tasks and avert possible problems, BULOG had to implement various policies and operational strategies including the following:

- defence of the GPP;
- maintenance of sufficient stocks to meet operational requirements and the government rice reserve for emergency and price-stabilization purposes;
- maintenance of adequate stocks across all regions;
- efficient distribution of rice to poor families every month;
- maintenance of people's trust in the government's ability to guarantee food security and stabilize prices.

Given the uncertain world rice situation at the beginning of 2008, stabilizing prices during the lean season threatened to be a difficult task. To guarantee rice for the poor and to help reduce market pressure, BULOG needed to distribute sufficient rice in a timely fashion. Consequently, BULOG distributed about 664,000 tons of rice – more than double the previous year's total (see Table 6.5). Most of the rice was distributed to the poor under the RASKIN programme and through targeted market operations requested by local government. In February 2008, BULOG distribution reached 281,000 tons or about 11 per cent of monthly rice consumption. Rice was delivered by BULOG to more than 40,000 village distribution points and handed directly to each eligible poor household.

Though rice prices in the lean season were quite stable, BULOG still faced the challenge of fulfilling RASKIN rice distributions that had been increased to about 270,000 tons per month for the whole year. BULOG had to provide enough stock to fulfil the obligation set in February 2008. This was very difficult given that the world rice price was still increasing and domestic rice production in 2008 was uncertain. Under these uncertain conditions BULOG had to secure sufficient rice, maintain timely distribution and keep prices stable.

Over the previous 20 years, BULOG's highest domestic procurement had been 2.5 million tons, a figure reached only a handful of times. Nonetheless,

Table 6.5 *Rice price movements and BULOG rice distribution during lean seasons, 2006–2008*

<i>Period</i>	<i>November (Rp/kg)</i>	<i>February (Rp/kg)</i>	<i>Changes (%)</i>	<i>Total rice distribution November– February (MT)</i>	<i>Average BULOG stock (MT)</i>
2006–2007	4272	4862	13.8	311,953	809,737
2007–2008	4695	4951	5.4	664,039	1,431,269

BULOG had no other choice because relying on imports would be very costly and politically sensitive. Therefore, to maintain regular rice distribution for the poor, BULOG had to increase domestic rice procurement.

Initially the target for domestic procurement was set at 2.43 million tons to meet the subsidized rice allocation determined in January 2008. Preparation for procurement was carried out earlier and in a flexible manner to ensure it was in line with market developments. Consequently, procurement started in February (two months earlier than in 2007). The aim was to reach the targets by July. In April 2008, the government decided to increase the duration of the subsidized rice distribution programme from 10 months to 12 months (taking total allocations to 3.34 million tons). With relatively good harvest progress across all regions, BULOG thus increased its planned procurement to 2.8 million tons.

The expansion of the duration of rice distribution for poor households helped keep rice prices stable in 2008. With the government guaranteeing supply for the poor during the lean season, the potential for speculation was reduced. Therefore the private sector was reluctant to hold stocks in anticipation of a substantial price increase.

To reduce the pressure on warehouse capacity in the main producing areas, BULOG offered price incentives to boost procurement and stock levels in rice-deficit areas. To do this, the buying price in deficit areas was set at around Rp100–300/kg higher than the price in surplus areas. The difference was based on covering transportation costs with the aim of enticing rice into the area. BULOG also purchased high-quality rice in order to minimize future storage losses.

These mechanisms allowed BULOG to surpass its second procurement target of 2.8 million tons and subsequently set a higher target of 3.1 million tons with the aim of achieving this by December 2008 (procurement in many rice-producing areas occurred for most of the year). By the end of December 2008, total domestic procurement was 3.2 million tons. BULOG's heavy procurement added to demand, thereby helping to maintain prices at a profitable level for farmers. Indeed, the average market paddy price during the main harvest season was about 9 per cent above the government purchase price.

The increased procurement that occurred throughout the country increased stocks and improved their spatial distribution. The ratio of procurement to distribution improved in Kalimantan, Sulawesi and eastern Indonesia (Table 6.6). At the national level, BULOG rice stocks in May 2008 reached 2 million tons, compared with 1.57 million tons in January 2008 even though BULOG distributed up to 1.2 million tons of rice over that period.

Since local procurement in deficit areas cannot meet distribution needs for the entire year, local shortages were covered from surpluses in areas such as East Java, South Sulawesi and West Nusa Tenggara. BULOG routinely distributes rice from surplus areas to deficit areas in order to ensure that local stock levels do not fall below the minimum stock requirement (MSR) of three to six months' distribution.

Table 6.6 *Ratio of procurement against RASKIN requirement, 2007–2008*

Region	Procurement (thousand MT)		RASKIN distribution (thousand MT)		Ratio of procurement against RASKIN		
	2007	2008	2007	2008	2007	2008	Change (%)
Sumatra	158.9	208.1	364.4	687.7	0.44	0.30	–30.6
Java	1277.9	2210.2	946.9	1764.8	1.35	1.25	–7.2
Kalimantan	24.8	75.4	92.4	174.4	0.27	0.43	61.0
Sulawesi	269.3	533.4	131.3	250.2	2.05	2.13	4.0
Eastern Indonesia	85.0	178.7	196.8	353.3	0.43	0.51	17.1
Total	1766.0	3205.9	1731.8	3230.3	1.02	0.99	–2.7

The high levels of procurement and rice distribution to poor families delivered considerable benefits to farmers and consumers. With 2008's good main harvest, there was considerable potential for depressed prices at the farm level. Given the high world rice prices at that time, it would have been ironic if farm-level prices in Indonesia were low. In this context, it was crucial for BULOG to defend farm-level prices in order to keep farmers calm and to increase rice stocks by absorbing the surplus harvest. Indeed, during the main harvest season, farm-level prices were maintained at or above the GPP. Another benefit of the high procurement was the multiplier effects of the cash purchases by BULOG, which totalled around Rp14 trillion and stimulated rural economic activity.

In terms of distribution, the ample supplies procured by BULOG later helped ensure smooth distribution to poor families each month and helped keep prices stable during the lean season. Further, having adequate stocks in every region reduced the potential for speculation because it was known that BULOG could intervene in the market at any time.

BULOG also kept the public informed of its operational progress and the level of rice supplies through the print and electronic media and meetings with various organizations. This information dissemination helped people remain calm and not worry about price fluctuations in the midst of the world rice price crisis. In addition, the abundant and early harvest and subsequent procurement made imports unnecessary, thereby avoiding controversy with farmers.

Conclusion

The 2008 world rice price crisis, during which international rice prices tripled within a few months, showed that rice prices are influenced not only by stock and production levels, but also by events outside the rice sector such as oil prices, exchange rates, political decisions and speculation. Fears of rising domestic prices pushed many countries to secure their food requirements in ways (export bans, reduced import tariffs) that placed great pressure on the world rice market.

The world rice market strongly influences food security and rice price stability in Indonesia. Therefore, the world rice market is a key consideration in the formulation of rice policy, especially in determining a GPP that keeps domestic prices in line with world prices in the long run. In addition, world prices need to be considered in determining export and import policies that address both farmers' and consumers' interests. At the same time, to lessen the impact of world rice price instability, domestic food security needs to be improved by increasing domestic food production, distributing rice to the poor and promoting an efficient private marketing system that encourages people to manage their own food security.

Indonesia did not change its policies substantially during the world rice crisis in 2008. Nevertheless, the government increased the amount of subsidized rice distribution to poor families and augmented the government rice reserve for emergency situations and price stability purposes. These policies were effective because they were supported by an increase in rice production (that made imports unnecessary) and effective procurement operations. Information dissemination to the public also reduced the potential for speculation, panic and hoarding.

Notes

- 1 Market operations are non-targeted injections of government-owned rice into the markets in order to stabilize prices.
- 2 RASKIN comes from the words *beras miskin* in Bahasa Indonesia, meaning 'rice for the poor.'
- 3 The import surge placed downward pressure on paddy prices at the farm level, and this continued during 2000–2003. This situation created new problems that caused the government to revise its rice import policy.
- 4 Based on a survey conducted by the Central Bureau of Statistics in late 2007 (Bappenas, various years, 2006–2008), 19.1 million poor families were determined to be eligible to receive rice allocations. BPS provided the name and the address of poor households in every village; before 2008 the number of families receiving assistance was based on data provided by National Board for Family Planning.

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Rice Crisis in the Philippines: Why did it Occur and What are its Policy Implications?

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Introduction

Rice is a commodity of great importance to the Filipino people, not only as a major staple but also as a principal source of livelihood. It is no surprise that a rice crisis, such as that of 2007–2008, poses a serious threat to household food security, most particularly among the destitute, as well as to overall social and political stability.

This chapter describes the evolution of the 2007–2008 rice crisis in the country and aims to answer two basic questions: why did it occur and how can a similar crisis be averted in the future? The chapter is divided into five sections. The first section briefly describes the nature of the rice crisis in the Philippines, particularly the evolution of prices and its implications for consumers and producers. The second section revisits the rice economy from the perspective of the country's objective of achieving food security and reducing hunger and poverty. The third section describes the government's response to the crisis, particularly its aggressive rice importation and intensified rice production enhancement programmes. The fourth section claims that

the country's twin failures to invest in productivity-enhancing measures and to correct the weakness of its rice policy regime have stifled the country's resiliency to food crisis. Finally, the chapter stresses the key policy lessons and recommendations for achieving household food security and reducing the country's vulnerability to rice crises.

The rice price crisis in the Philippines

World prices of grains started a slow ascent as early as late 2006. The rise became relatively rapid beginning in the last quarter of 2007. Wheat prices reached their peak around March and April 2008. For rice and maize, the peak occurred around June and July 2008, respectively. The section that follows presents an analysis of domestic rice price movements during the food price crisis and discusses the comparative changes in rice prices at the farm, wholesale and retail levels.

Domestic price movements

The trends in domestic rice prices for 2007, 2008 and January to August 2009 were broadly similar at farm, wholesale and retail levels (see Figure 7.1 for the trends for regular milled rice (RMR) – the trends for well-milled rice (WMR) are very similar and are not shown). Prices in 2007 were relatively stable: the difference between maximum and minimum weekly RMR prices was PhP1.55/kg for farm prices, PhP2.09/kg for wholesale prices, and PhP2.12/kg for retail prices. This price band increased significantly in 2008 to PhP6.10/kg, PhP12.94/kg and PhP13.49/kg respectively for farm prices, wholesale prices and retail prices. Narrower bands returned in 2009 at PhP2.65/kg at farm level, PhP3.51/kg at wholesale level and PhP3.21/kg at retail level.

Figure 7.1 also clearly indicates that prices have remained at relatively higher levels in 2009 compared to those before the crisis. The average farm price of regular milled rice rose by 32 per cent during the period, from PhP10.75/kg in 2007 to PhP13.39/kg in 2008 and PhP14.21/kg in (January to August) 2009. The proportionate increases in the average wholesale and retail prices of RMR were even higher than those for farm prices, as both registered a 38 per cent increase from 2007 to (January to August) 2009.

Growth rates and price variability

The 2007–2009 period can be divided into three phases: pre-crisis (January 2007 to February 2008); crisis (March 2008 to September 2008); and post-crisis (October 2008 to August 2009). Table 7.1 shows, by phase, the rate of price change over the period and the CV during the period for both RMR and WMR. Growth rates were relatively low during the pre-crisis phase and all prices (farm, wholesale and retail) moved roughly in the same proportion. By the end of the pre-crisis phase, average prices in February 2008 were about 10 per cent higher in nominal terms than in February 2007 at farm, wholesale and retail levels. During the crisis phase, prices rose across the board in just four

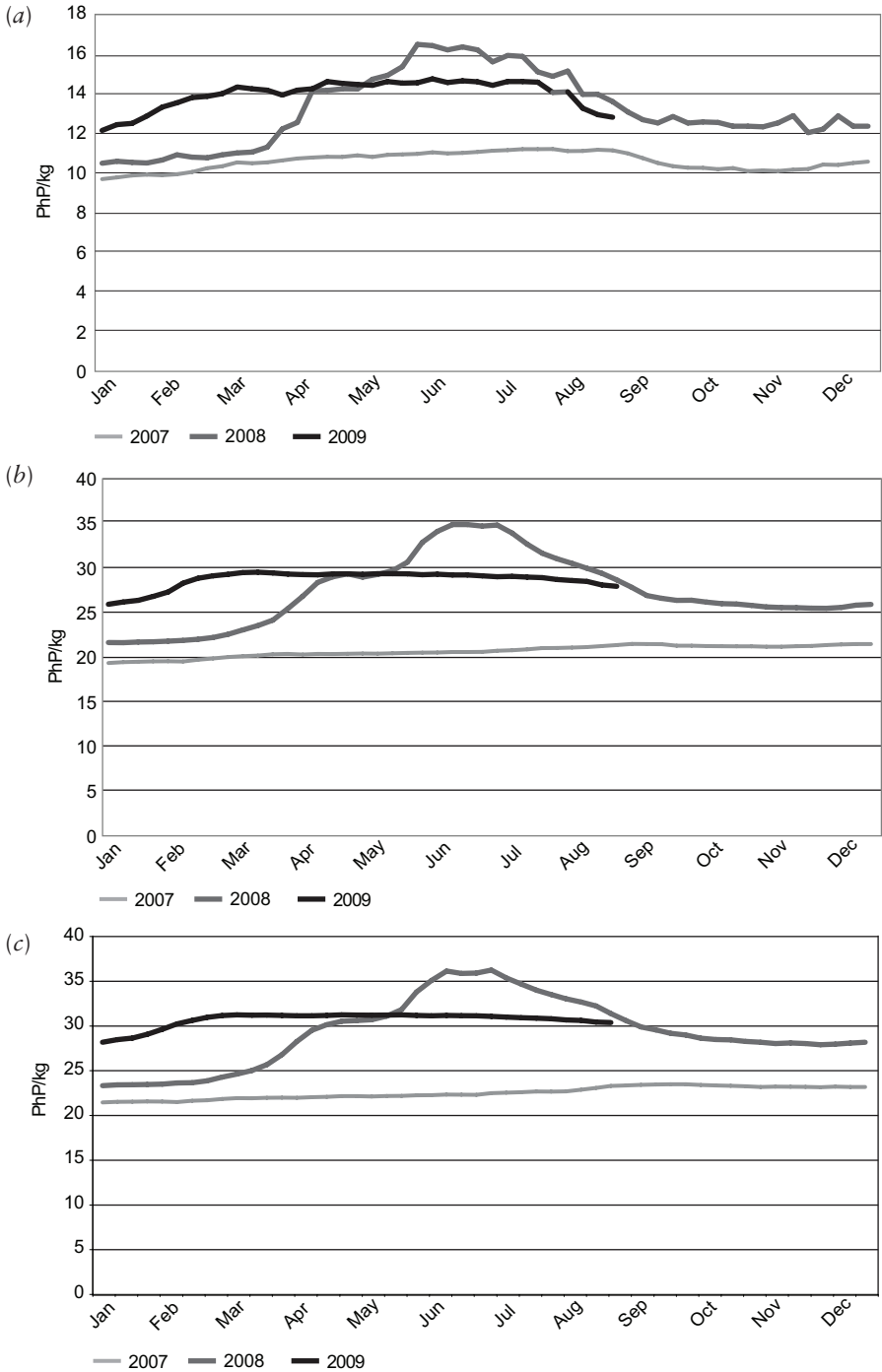


Figure 7.1 Domestic rice prices, 2007, 2008 and January to August 2009, (a) farm, (b) wholesale and (c) retail

Source: Department of Agriculture, Bureau of Agricultural Statistics (DA-BAS)

Table 7.1 *Domestic rice price movements: Growth rates and coefficients of variation*

Farm	Growth rates (% per week)			Coefficient of variation		
	Pre-crisis	Crisis	Post-crisis	Pre-crisis	Crisis	Post-crisis
Palay (dry)/WMR	0.25	0.31	0.19	3.97	11.98	7.29
Palay (ordinary)/RMR	0.18	0.65	0.02	3.94	12.24	6.90
Wholesale						
WMR	0.22	0.73	0.06	3.39	11.17	4.00
RMR	0.23	0.58	0.12	3.37	12.09	5.49
Retail						
WMR	0.18	0.87	0.00	3.22	11.29	2.45
RMR	0.19	0.71	0.09	3.29	11.60	4.55

Source: Raw data from DA-BAS

months – compared with February, prices in June were about 50 per cent higher at all three levels of the marketing system. Prices started a steep drop sometime in July and stabilized in October 2008. However, by the end of the year, price levels were higher than those prior to the crisis. While the peak price increases were similar across farm, wholesale and retail prices, the annual average ratio of retail to farm-gate prices was higher in 2008 than in 2007. All prices rose slightly from October 2008 to the third quarter of 2009.

The CV estimates are similar for all types of rice during the pre-crisis period. Variability increased during the crisis period. The magnitude of the CVs dropped drastically in the post-crisis period, but those for farm prices were still much higher than for wholesale and retail prices.

Three things can be concluded from the analysis of the price movements. First, wholesale and retail prices increased more rapidly than farm prices during the crisis period. While farmers did benefit from price increases, they did not benefit as much as they would have if price changes were the same as they were at retail and wholesale levels. This poor price transmission to farm prices (relative to retail prices) is also indicated in Figure 7.2, which plots price trends of the Thai rice price (25 per cent broken), the Philippine wholesale price of RMR and Philippine farm-gate prices. Second, the greater volatility of farm-gate prices (as indicated by the CVs), especially after the crisis, will definitely have effects on the decision-making processes of farmers. Third, while rice prices stabilized in 2009, they stabilized at a higher level than in 2007 and may stay at this level in the coming years. This will benefit net rice producers (who are relatively few in number) but will harm net rice consumers (those who consume more rice than they produce).

Centrality of rice among Filipinos

The significance of rice in the diet of Filipinos suggests that a rice crisis will have profound effects.

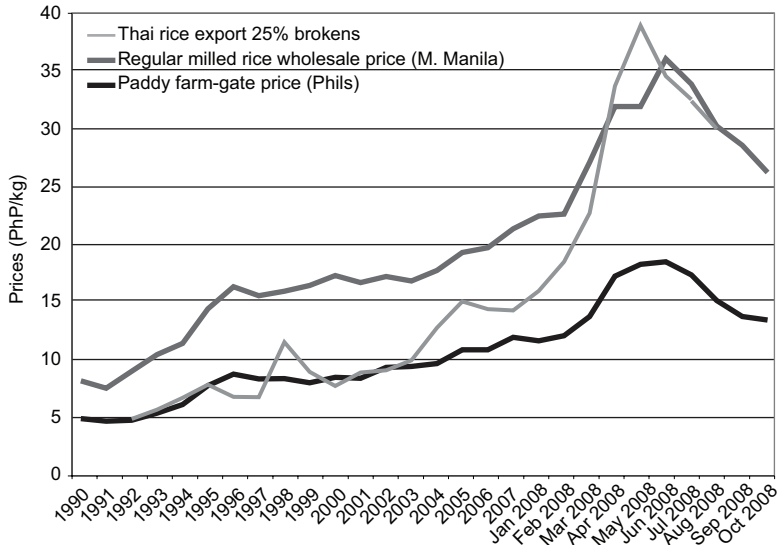


Figure 7.2 Paddy and milled rice annual/monthly average prices in the Philippines, 1990–2008

Source: DA-BAS and FAO database

Rice consumption among Filipinos

Rice remains the country's basic staple food. Total apparent demand, based on the Food Balance Sheet, has risen steadily over time owing primarily to the continued high rate of population growth (about 2 per cent per year) and secondarily to an increasing level of per capita intake, especially since 2000 (see Figure 7.3). Rice production increases have lagged behind apparent demand, necessitating larger imports to make up the difference.

As can be noted from Figure 7.3, annual per capita consumption of rice hovered around 90–92kg in the 1980s and 1990s. It then gradually rose to an average of 113kg per capita at the turn of the century, and has continued to increase in recent years. The rise in per capita rice intake took place despite growth in per capita income (although income growth was relatively slow). Historical consumption patterns in Asia and elsewhere suggest that as income rises, food intake becomes more diversified, usually away from the basic staple (in the case of the Philippines, rice and, in some areas, corn) in favour of bread, pasta or noodles, meat, fish, fruit and vegetables. This does not seem to have happened in the Philippines, however. Figure 7.4 shows trends in daily per capita intake of rice and other foods based on the National Nutrition Surveys (NSO, 2006). Intake of cereals, of which rice forms the bulk, rose in 2003, while intake of other food items, except meat and dairy products, remained roughly constant or even declined.

Two factors account for this trend in the country. One is the continued low level of per capita income. Although real per capita GDP increased by about 25

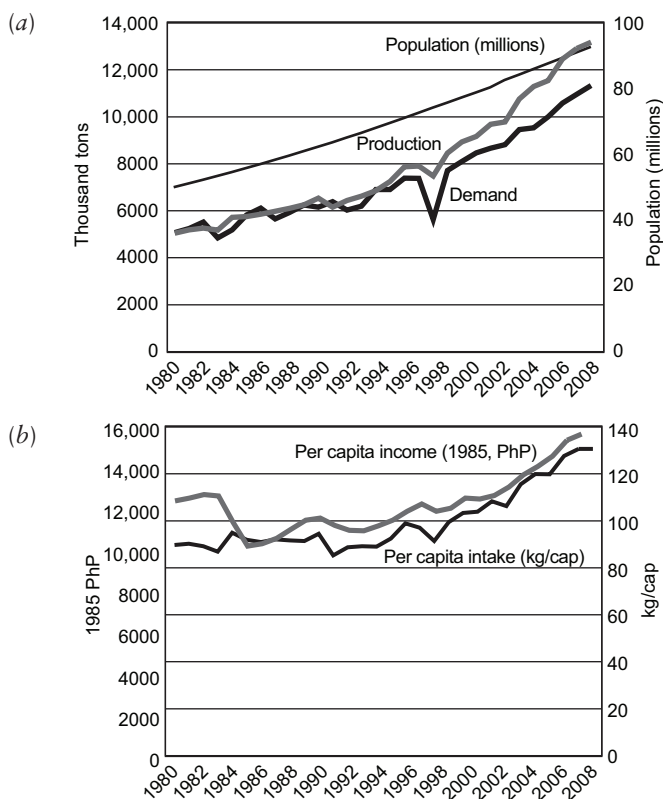


Figure 7.3 Trends in (a) rice production, demand and population, and (b) per capita consumption and per capita income, Philippines

Source: DA-BAS, Philippine Rice Research Institute (PhilRice), National Statistics Office (NSO), National Statistical Coordinating Board (NSCB)

per cent between the early 1990s and mid-2000s, average per capita income (\$2956, in PPP) is still low compared with that of Thailand (\$7061) and Malaysia (\$11,678), where noticeable shifts in food consumption patterns, including a reduction in per capita rice consumption, have taken place. A downturn in per capita rice intake is also evident in Republic of Korea and China, where significant increases in per capita income have been sustained over many years.

The other factor is the relatively high inequality of income and wealth in the Philippines. For low-income families, rice still constitutes the biggest and cheapest source of energy. Figure 7.5 shows that the poorest income group spends a considerably greater proportion of total income on food and on cereals in comparison to other income classes, although in absolute terms the highest income group spends a much larger amount on food. Among the highest income group, expenditures on cereals in 2006 account for only 6 per cent of food expenditures. In contrast, the two lowest income groups spend about a quarter of their food expenditures on cereals.

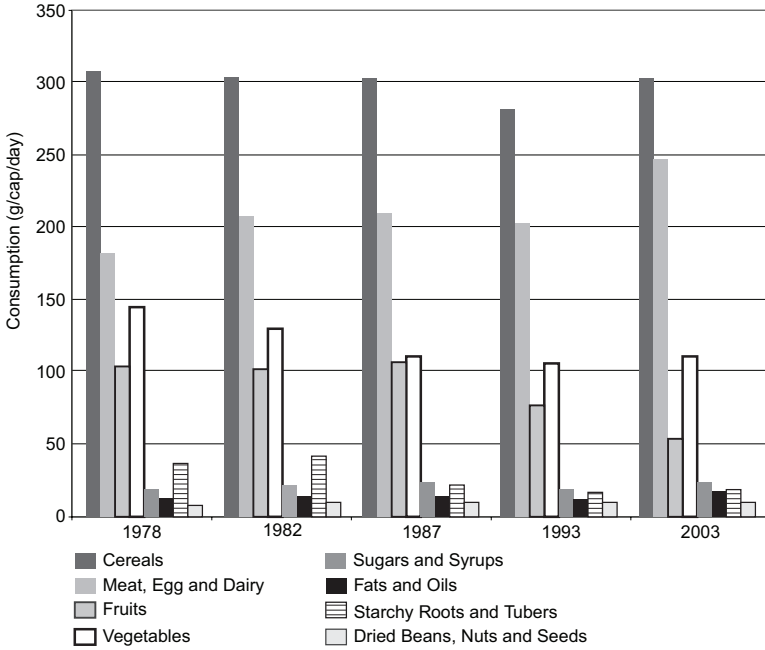


Figure 7.4 Food consumption trends over time

Source: NSO (2006)

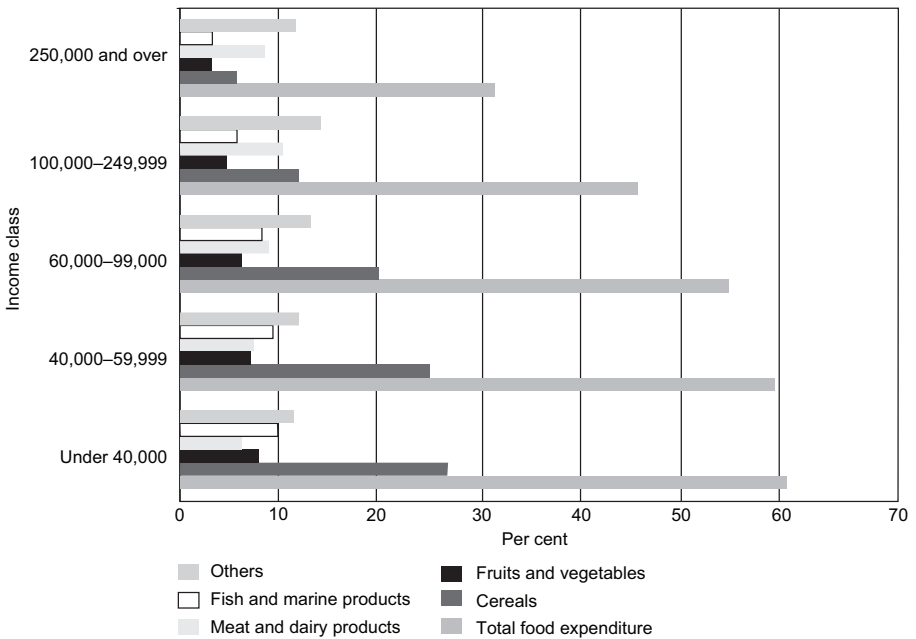


Figure 7.5 Distribution of food expenses by income class, 2006

Source: NSO (2006)

Commoditization of rice

Most Filipinos are net buyers of rice. Based on a household survey by the Social Weather Station, 84 per cent of Filipinos nationwide buy the rice they consume (World Bank, 2001). In urban areas the proportion is 93 per cent, rising to 95 per cent in Metro Manila. But even in rural areas, 71 per cent of households acquire the rice they eat from the market.

Using data from the 1997 Family Income and Expenditures Survey (FIES), Balisacan (2000) estimated net rice consumption as a percentage of total consumption for different deciles of the population ranked by income (the bottom decile is the poorest 10 per cent of the population). If a given decile produces more rice than it consumes, that group will be net producers or, alternatively, will have negative net rice consumption (with the extra rice being sold on the market). Those who are net rice producers benefit from higher farm prices, while net rice consumers are hurt by higher retail prices.

Balisacan (2000) found that the bottom two deciles of the population were net rice consumers, i.e. they consumed more rice than they produced. For the bottom decile (decile 1), the share was approximately +7.5 per cent, whereas for the second decile it was about +2 per cent. The middle of the distribution, that is, deciles 4 to 8, was net rice producers because production exceeds consumption for these groups on average. Because net rice consumers are hurt by higher prices, these data show that the poorest of the poor were hurt by the rice crisis. Net rice producers are helped by higher prices, however, so the middle of the income distribution benefited on average (the benefits accrued to rural rice farmers with a surplus, not the urban middle class).

Persistent poverty, deepening malnutrition and hunger and eroding indicators of human well-being

The Philippines has not made good strides in improving its poverty situation, partly because of the slow pace of economic growth. In addition, poverty incidence has increased in recent years even as the economy grew modestly (see Figure 7.6), suggesting a worsening income distribution. At current expectations of medium-term economic growth and considering ‘business as usual’, the Philippines is unlikely to achieve its MDG targets for poverty reduction.

Balisacan (2001) observed that households that experienced adverse effects from the Asian financial crisis in the late 1990s (increased prices, reduced earnings), as well as the El Niño phenomenon (at least for some regions), came disproportionately from the bottom of the income distribution. These households responded differently to the crisis and to the El Niño event depending on their attributes, the most important of which were pre-crisis living standards and location. His examination of household panel data revealed that the probability of households changing their eating patterns, taking children out of school or increasing their working hours was inversely related to their pre-crisis living standard. It thus appears that an economy-wide shock, such as the food crisis and global financial crisis of the late 2000s, tends to systematically

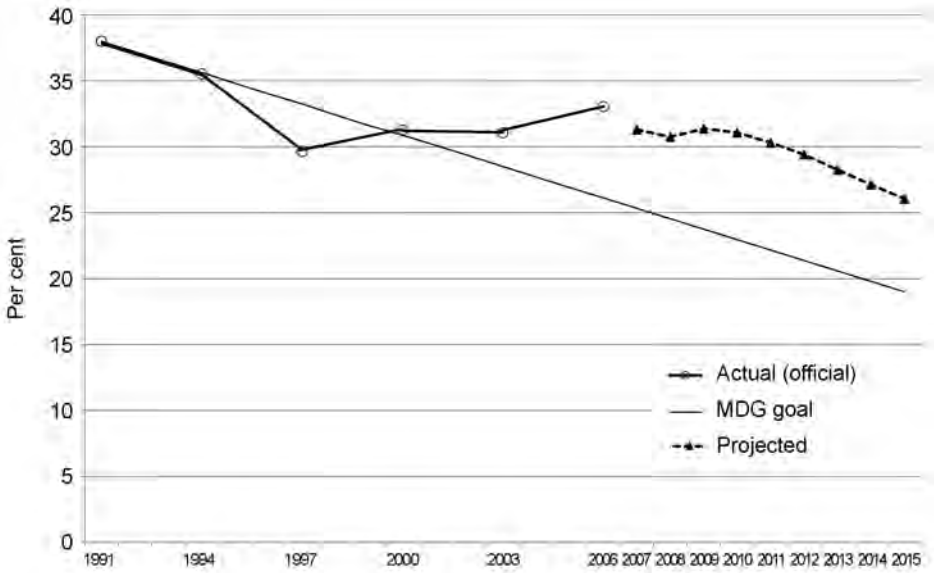


Figure 7.6 Poverty reduction performance versus the MDG target

Source: Mapa and Balisacan (2009)

hit hardest the poorest groups in society. Balisacan (2001) further observed that the probability of receiving assistance/relief from the public sector or from other households was not significantly related to pre-crisis living standards. This suggests that during an economy-wide crisis, social safety nets, whether from formal or informal sources, do not have a pro-poor bias.

In this context, a rise in the price of rice is equivalent to a drop in real income for net consumers of rice, and this drop in income can be especially damaging to the poor. Such a drop in income not only increases the number of poor people but also pushes people deeper into poverty and hunger. With less money available, the poor are forced to spend less on essential needs such as health care and nutritious (protein- and vitamin-rich) food – essential for good health, especially for children and pregnant women. Families may even pull children out of school, thus threatening future generations with ongoing poverty.

Block et al (2004) found that when rice prices increased in the late 1990s in rural Central Java, Indonesia, mothers in poor families responded by reducing their caloric intake in order to better feed their young children, leading to an increase in maternal wasting. Even worse, purchases of more nutritious foods were reduced in order to afford the more expensive rice. In turn, this led to a measurable decline in blood haemoglobin levels in young children and in their mothers. This malnutrition induced by high rice prices increases ‘the likelihood of potentially irreparable developmental damage to young children’ (Block et al, 2004). The same trends seem to be happening in the Philippines, as the results of the National Nutrition Survey conducted in 2003 indicated deepen-

Table 7.2 *Extent of food deprivation in the Philippines, by income level*

<i>Income level</i>	<i>Proportion of households in each quintile who are food deprived (%)</i>
Quintile 1 (poorest)	87
Quintile 2	59
Quintile 3	37
Quintile 4	19
Quintile 5 (richest)	3

Source: NSO (2000)

Table 7.3 *Extent of food deprivation in the Philippines, by occupation*

<i>Items</i>	<i>Proportion of households in each activity/ occupation who are food deprived (%)</i>
Activity	
Agriculture	52
Non-agriculture	30
No activity	30
Occupation	
Government officials	24
Professionals	17
Clerks, service workers, shop sales workers	26
Labourers/unskilled workers	46
Farmers	52
Traders and related workers	37
Plant and machine operators and assemblers	31
No occupation	30

Source: NSO (2000)

ing hunger and malnutrition. The proportion of food-deprived people was estimated at 87 per cent among the lowest quintile and 59 per cent in the next lowest. These people are mostly from the agricultural sector, the farmers in particular who accounted for about 52 per cent of the food-deprived constituents by occupational category (see Tables 7.2 and 7.3). In addition, significant nutrient deficiencies (especially iron, calcium and vitamin A) were noted in the same survey.

Philippine government response to the food crisis

In response to the rising domestic prices, the Philippine government formulated a plan of action to mitigate the adverse impacts of the crisis, and provided funding support of PhP330 billion to implement its Economic Resiliency Program. Some of the actions taken include the scaling-up of quick-disbursing high-impact projects, particularly the Ginintuang Masaganang Ani (a rice production enhancement programme); increasing rice imports to ensure availability and accessibility of the staple food; and enjoining the support of private companies and citizens in cushioning the impact of the crisis.

FIELDS

One of the key programmes launched in the first quarter of 2008 to beef up rice production was the so-called FIELDS (Fertilizer, Infrastructure and Irrigation, Extension and Education, Loans, Drying and other Post-harvest Facilities, and Seeds) programme. Funding for FIELDS of PhP44 billion was to come from the proposed PhP330 billion fiscal stimulus programme that included funding for the hiring of additional teachers, policemen, soldiers and doctors; for repair and rehabilitation of government buildings; for purchase of supplies and equipment; and for the implementation of previously authorized but otherwise unfunded projects. The amount from the stimulus package was supposed to be additional budget over and above what had been appropriated for the agriculture agencies. However, in practice, the programme's initial implementation was sourced from the already-approved budget allocation.

FIELDS was (and is) the government's primary vehicle for attaining self-sufficiency in rice by 2013. Specifically, the FIELDS programme components, and the corresponding budgets, include:

- provision of subsidized fertilizer and micronutrients, PhP0.5 billion;
- rehabilitation and restoration of irrigation facilities, PhP6 billion;
- farm-to-market roads and other rural infrastructure, PhP6 billion;
- extension, education and training, and research and development, PhP5 billion;
- agricultural credit, PhP15 billion;
- post-harvest facilities, PhP2 billion; and
- hybrid and certified seed production and subsidy, PhP9.2 billion.

A recent rapid assessment indicates that the concept of providing farmers the needed support in an integrated manner to increase production growth is sound (Department of Agriculture, 2009). Moreover, with the local government units (LGUs) as conduits, the programme is expected to be responsive to local needs since the LGUs have the familiarity with issues and problems related to their farming sub-sector. There are some weaknesses noted in the implementation of the programme that should be rectified to ensure the attainment of rice production goals. First, sustained implementation may be difficult because the LGUs often cannot come up with counterpart funding. Second, weak coordination among agencies involved in the programme results in slow delivery of the needed support, for example repair and rehabilitation of irrigation facilities, availability of certified seeds, easier access to loans. In addition, there is weak policing and enforcement of regulations, for example ensuring good quality certified seeds. The third weakness is the inefficiency of rice marketing due to poor condition of roads and other infrastructure facilities; ineffective NFA procurement and distribution operations; and domination of private traders that take advantage of the vulnerability of farmers.

Increased importation of rice

In recent years, rice imports to even out supply and stabilize prices have increased. The Philippines is now the world's biggest importer of rice, with average yearly purchases of about 2 million tons in the three years of 2006–2008. For 2010, the government is planning to import close to 3 million tons of rice. The huge volume of imports is prompted by an expected shortfall of domestic rice availability vis-à-vis domestic requirements. There are serious concerns, however, about the accuracy of the domestic supply and demand estimates. These estimates are derived from food balance sheets that incorporate many assumptions about feed, seed, waste and processed non-food use. These assumptions can quickly change, especially with the rapid development of local and global markets (NSCB, 2009). It should be further noted that some of the supply and demand estimates utilize data from censuses, household surveys and special studies, many of which are undertaken on an infrequent basis. Moreover, detailed studies that measure consumption directly are hard to come by.

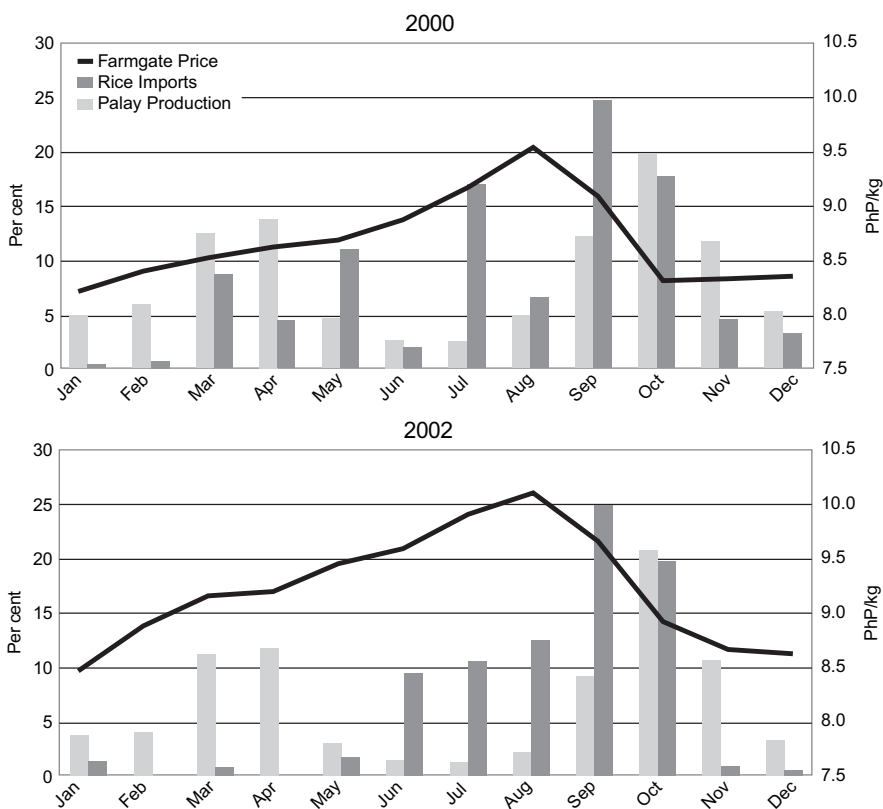


Figure 7.7 Monthly relative distribution of production, imports and farm-gate prices in the Philippines, 2000 and 2002

Source: DA-BAS and ASEAN Food Security Information System (AFSIS) Database

There are also criticisms surrounding the timing of rice imports. In order for rice imports to be effective, they should arrive before or during the lean months of July and August when domestic supplies are scarce (Sombilla et al, 2006). In the 19 years from 1990 to 2008, rice imports were delayed in 9 years and arrived during the subsequent harvest season. In some of these years (for example 2000 and 2002), the delays were particularly serious, and the bulk of the rice imports came in September and October, coinciding with the main paddy harvest season (see Figure 7.7). This timing of rice imports lowered farm-gate prices and disadvantaged farmers.

Other measures undertaken

The government implemented various other measures during the rice crisis. For example, it urged the public to reduce consumption of rice or to eat root crops instead of rice. Restaurants were asked to serve a half-portion of rice to their customers. Big corporations were enjoined to enhance their corporate farming practice, distribute rice to their employees or ensure that employees were given rice subsidies.

The military was ordered to make military trucks and aerial logistics available for the delivery and distribution of rice around the country. Police forces were mobilized to guard against rice smuggling out of the country. The government cancelled the licences of some rice traders to weed out unscrupulous merchants. Agricultural officials conducted spot inspections of rice warehouses to monitor the rice supply in the country. Agricultural colleges were encouraged to increase farm demonstration laboratories to bolster the administration's food security and stability programme.

Why did the rice crisis occur?

Serious students of the Philippine rice economy contend that the domestic rice crisis would have occurred, sooner or later, even in the absence of the global price shock (Roumasset, 2000; David, 2003; Balisacan et al, 2006; David et al, 2009). Indeed, the broad ailments of the rice sector are similar to those affecting agriculture and the rural economy as a whole.

Diminishing sources of productivity growth

A key to the agrarian success and, subsequently, economic success of many countries in Asia was sustained increases in agricultural productivity. However, in recent years, productivity growth in the Philippines has discernibly declined from the level achieved during the Green Revolution era. This happened despite substantial policy changes that were put in place since the mid-1980s to invigorate the agricultural sector. Both land (agricultural GDP per hectare of cultivated land) and labour (agricultural GDP per agricultural worker) productivity grew only slightly over time (see Figure 7.8). Numerous estimates also show much slower growth in total factor productivity (TFP) from the 1980s

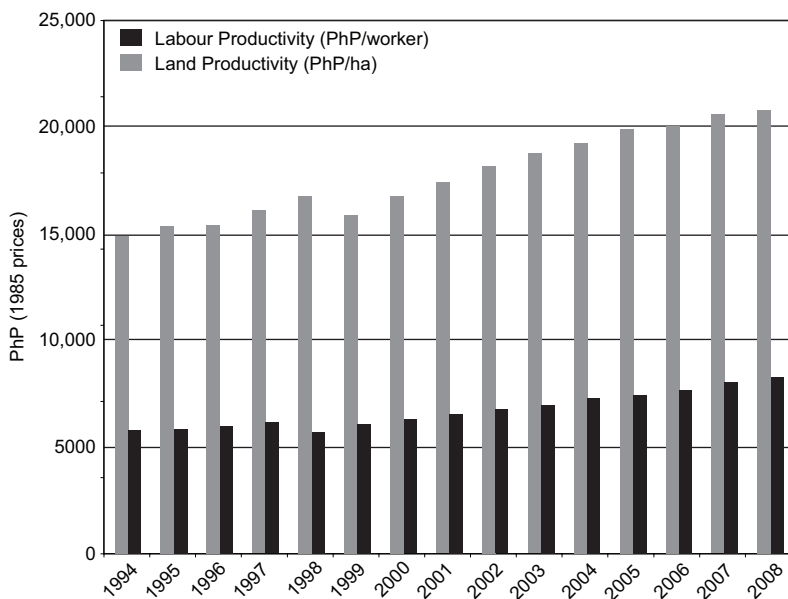


Figure 7.8 Land and labour productivity growth in the agriculture sector

Source: DA-BAS and FAO Database

onward, compared to other countries in the region (see Table 7.4) suggesting that the growth slowdown in agriculture is to a large extent a true productivity slowdown, rather than a shift in resources out of agriculture.

The TFP estimates reported in Table 7.4 suggest that technological change in the Philippines has been limited since the 1980s. This is due to a lack of investment in technologies appropriate to the country's resource constraints, socio-economic conditions and physical environments. The country's investments in agricultural research and related activities, for example, have

Table 7.4 Estimates of TFP growth for selected Asian countries, 1981–2001

	(1)	(2)	(3)	(4)
Philippines	-0.3	0.4	-1.3	0.1
Bangladesh	1.3	1.1		
India	2.4	-1.1		
Pakistan	2.5	2.7		
Cambodia	2.0			
Indonesia	-0.4	-1.1		1.5
Laos	2.5			
Malaysia	1.4	1.5		
Thailand	1.1	1.4		0.9
Viet Nam	3.3	1.0		
China	4.8	3.6		

Sources: (1) Avila and Evenson (2004): 1981–2001; (2) FAO (2004): 1980–2000; (3) Cororaton and Caparas (1999): 1981–1996; (4) Mundlak et al (1997): Philippines 1980–1998, Indonesia 1981–1988, Thailand 1981–1995

remained at a low level of 0.1 per cent of the country's gross value added (GVA) in agriculture over the past ten years. This is far below the 1 per cent level recommended for developing countries and very much lower than the 2 to 3 per cent observed in many countries. In the case of China, whose agricultural productivity has been growing at rates much faster than most countries in Asia, investments in research and development rose from 0.4 per cent of GVA in the 1990s to 0.8 per cent in the mid-2000s (Huang et al, 2006). Likewise, investments in support services have been insufficient, particularly those for developing infrastructure and institutions that would reduce the cost of doing business in rural areas and that would diversify the rural economy.

Slow growth of employment opportunities

Rapid growth of productive employment opportunities outside of agriculture is a typical feature of a vibrant economy. This has occurred in most of the major economies of Southeast and East Asia, but not in the Philippines. Particularly neglected have been the development and growth of labour-intensive industries that can absorb excess farm labour. Neither has the private sector made aggressive investments to support agriculture-based enterprises in rural areas because these are regarded as too risky for the level of profits that can be created. With few employment opportunities outside of agriculture, small farm households have tended to expand farming to more marginal lands. This movement contributes to natural resource degradation, which, in a vicious cycle, makes it more difficult to increase agricultural productivity.

High population growth

The Philippines population growth rate still stands at around 2 per cent per annum, while those of its neighbours have declined substantially to well below 2 per cent a year. From a macroeconomic perspective, this difference in the patterns of population growth between the Philippines and its neighbours is the single most important factor contributing to the much slower income growth and poverty reduction in the Philippines (Mapa and Balisacan, 2004). For rice in particular, the twin forces of rapid population growth and low rice productivity growth have meant that rice consumption growth has increasingly outpaced rice production growth, thereby necessitating increased rice imports.

Key constraints to strengthening the rice sector

Several studies have pointed out the constraints to strengthening the rice sector in the Philippines, including Balisacan et al (2006).

Closing yield gaps

Average gaps in rice yields across the country currently range from about 5 tons per hectare in the wet season to about 6 tons per hectare in the dry season. The gaps are attributable to various factors, including climatic (wet and dry seasons), biological (poor seeds, weeds, pests), physical (soil nutrients, water

Table 7.5 *Potential yield and yield gaps in rice in the Philippines*

Farm condition	Grain yield (tons/ha/season)					
	Wet season			Dry season		
	Hybrid	Certified	Good	Hybrid	Certified	Good
Maximum attainable yield (limited only by climate and variety)	9.20	8.00	7.20	11.50	10.00	9.00
Yield with best nutrient and cultural management (limited only by lodging)	7.36	6.40	5.76	9.20	8.00	7.20
Yield when there are macronutrient (NPK) and water problems	5.52	4.80	4.32	6.90	6.00	5.40
Yield when there are micronutrient (zinc and sulphur), pest and management problems	3.68	3.20	2.88	4.60	4.00	3.60

Note: Maximum attainable yield is based on inherent weather, hydrological (i.e. flooding) and soil (i.e. texture) conditions in the area. It fluctuates from year to year by ± 10 per cent. There is 15 per cent yield advantage in using hybrid compared to inbred certified seeds. There is 10 per cent yield advantage when using inbred certified seeds relative to good seeds.

Source: Sebastian et al (2006)

management) and socio-economic (Table 7.5). Overcoming these constraints could increase yield by as much as 150 per cent and there already exist numerous technologies whereby even small producers can achieve higher yields.

Investment and governance

As stated earlier, rice research and development represented only 0.10 per cent of GVA in agriculture. Similarly, investments for rural infrastructure development and other support services have dwindled from 0.24 per cent of GVA in 1995–1999 to a mere 0.07 per cent in 2000–2005. This is particularly true for irrigation, which contributes about 25 per cent of rice production increases. Accompanying low investment has been a lack of accountability, coordination and programme focus in public spending for agriculture and natural resources.

Rice market policies

The government's rice-marketing policy aims to hit two birds with one stone: the provision of stable and high rice prices for farmers as well as stable and low prices for consumers. It does this through the NFA that is mandated to purchase and distribute rice and other grains across regions and provinces to even out supply and prices. While NFA operations seemingly succeeded in stabilizing retail prices (especially in Metro Manila and major urban centres), they substantially propped up local rice prices paid by consumers, increased the volatility of domestic farm prices, reduced the welfare of both consumers and producers, discouraged the private sector from investing in efficiency-enhancing distribution and storage facilities, and bred corruption and

institutional sclerosis (Roumasset, 2000; AGILE, 2000; David, 2003; Dawe et al, 2006; Sombilla et al, 2006; David et al, 2009). Government spending in terms of financial subsidies to maintain such operations amounted to over PhP6.3 billion in the late 1990s. This expense was far greater than the PhP1 billion provided to agricultural research and development in rice during that same period. In more recent years, the total fiscal cost (direct government outlay) of the NFA rice subsidy, net of tax expenditures, amounted to PhP5 billion in 2007 (roughly 0.08 per cent of GDP) and PhP43 billion in 2008 (0.6 per cent of GDP). These subsidies represented 29 per cent and 70 per cent of the total budget for the country's social protection programmes in 2007 and 2008, respectively (Manasan, 2009). The total effective cost of the NFA rice subsidy programme, as estimated by Jha and Mehta (2008), was actually much higher, at PhP19 billion in 2007 and PhP69 billion in 2008. The authors estimate that for every peso given to the poor, the country spends about two pesos. The cost–benefit ratio was 1.50 in 2007 and 2.21 in 2008.

Land reform

Weak property rights on land have limited farmers' access to the credit needed to obtain inputs for their farm operations. The uncertainties created by the slow implementation of agrarian reform, particularly the negative effects of the Comprehensive Agrarian Reform Program (CARP) provisions pertaining to land ownership ceilings and transferability on land consolidation and the collateral value of agricultural land, have effectively inhibited private investments in agriculture and in the rural areas (World Bank, 2009).

Rural finance

Private commercial banks finance commercial agriculture but avoid funding smallholder agriculture because of perceived risks, information asymmetry, high transaction costs and financially unviable projects. A growing number of microfinance institutions provide loans to small borrowers but they are not keen on extending larger and longer-term loans for investment in machinery and other equipment that enhance labour productivity. Government financial institutions (GFIs), such as the Land Bank of the Philippines and Quedancor, face the huge challenge of becoming more strategic and catalytic institutions in rural financial markets. Thus, smallholder agriculture continues to rely mostly on informal credit markets, which charge high interest rates, to finance their simple investment requirements.

Rice extension

Weak research–extension linkages, absence of adequate technical support by the Department of Agriculture to LGUs with weak technical capacity and a top-down approach to extension delivery have been major impediments to the provision of a client-responsive rice extension system. Weak governance in the provision of agricultural support services by the LGUs due to transitional problems in the decentralization process has aggravated the situation.

Some policy recommendations to secure rice in the Philippines

Long-term food security will remain an important goal for the Philippines regardless of the occurrence of a food crisis. There are both short-term measures to facilitate faster recovery from the crisis and medium- and long-term measures to get agriculture back on track towards more sustainable growth that generates significant welfare improvements, especially in the rural sector.

Short- and medium-term measures

Key short-term measures to help poor and vulnerable households overcome the negative impact of the food price crisis include the expansion of conditional cash transfers (CCTs) complemented with a targeted rice subsidy programme in depressed and conflict areas. The provision of such safety nets and social safety protection measures will help avoid hunger and poverty. These programmes are essential in the short run despite their large fiscal costs.

Another key measure would be to make more grain available by reducing tariffs and bringing in more private traders to participate in the importing and marketing of rice. NFA's responsibility needs to be streamlined to focus on effective buffer stock management and it should abandon the price support policy. More accurate estimation of imports and buffer stocks should be based on data and other parameters that are updated more regularly and handled more carefully.

Long-term measures

Various analyses on the food price crisis clearly suggest that it was the result of a long-term imbalance between demand and supply: production growth has been too slow to keep pace with demand growth, despite the fact that demand growth has slowed due to reduced population growth and trends towards diversification of the diet. As the root cause of the problem is largely on the supply side, the long-term solution requires measures that correct this supply-side problem.

In this regard, the Philippines should enhance its investment in long-term sources of productivity growth, with special attention to:

- continuing development of rice technologies appropriate for local conditions, especially in view of climate change, such as stress-tolerant varieties suitable for cultivation in areas with abiotic problems (for example drought, floods);
- creating incentives for human resource development and maintaining and improving research facilities;
- overhauling the rice extension programmes from their top-down, centrally directed approach to one that is LGU-led and linked to research systems;

innovative mechanisms involving civil society organizations and the private sector can deliver technologies and information more effectively than the usual formal extension systems based on the traditional mode of technology transfer;

- investing in irrigation development but focusing more on the rehabilitation of existing systems rather than on construction of new large-scale irrigation systems, and on small-scale systems including the facilitation of privately owned shallow tube wells;
- reducing the ‘cost of doing business’ by investing in connectivity (transport, electricity, telecommunication) and removing efficiency-inhibiting regulatory measures.

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West African Experience with the World Rice Crisis, 2007–2008

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Introduction

Historically, rice production in Africa has tended to be low-yielding, geographically dispersed and uncompetitive against low-cost Asian imports, even when protected by high freight costs and substantial trade barriers. Skyrocketing prices in world markets, however, were a shock to African consumers, producers and governments alike, and numerous initiatives have been announced to stimulate rice production on the continent (Inter-réseaux Développement Rural, 2008).

Although most African countries produce at least small amounts of rice, we focus here on the rice economy of West Africa and its response to the 2007–2008 food crisis. The West African rice industry has deep historical roots. The West African Rice Development Authority (WARDA) was founded in 1971. The classic commodity-system analysis of the West African rice economy by Pearson et al was published in 1981. The IRRI has undertaken collaborative research on rice varieties suitable for West African conditions for decades.

Despite this long history, the West African rice economy (with the exception of Nigeria) has shown surprisingly little progress over the past

half-century, and has become increasingly dependent on imports to meet rapidly growing consumer demand, especially in urban areas. Although grown efficiently by small farmers, a successful rice *economy* needs sophisticated engagement from governments to develop the economies of scale and scope that permit a low-cost rice system. This engagement has largely been missing in West Africa.

Research and extension, rural infrastructure, a stable marketing environment and a broad base of consumer demand all depend to a greater or lesser degree on effective government investments and policies. Asian governments learned long ago how to provide these essentials if they were to survive and their economies to grow. Not a single West African country has sustained such investments and policies for more than a few years at a time. This lack of investment, along with geographic, technological and market constraints, has resulted in an import-dependent region, where urban demand for cheap rice has overwhelmed local production capacity. Without sustained government investment in West African's rural economy, and its rice economy in particular, rice imports have dominated consumption.

When international rice prices were relatively low, rice imports did not pose economic or political problems for West African governments. Extremely expensive imports reverse that equation. This chapter addresses the response to that reversal. As already noted, farmers, consumers, investors, donors and West African governments have all taken notice of the new price environment. The first response in most countries was to lower or remove import barriers for rice to protect consumers. But this response quickly shifted as Senegal and several of its neighbours announced various strategies to spur domestic rice production in response to high international prices.¹ This might be risky, as the world rice market is notoriously volatile, and the price spike in 2008 has turned out to be quite short-lived. Will West Africa's new-found interest in stimulating local rice production survive a return to cheap rice in world markets?

We address that question in the remainder of this chapter. The next section presents a historical review of trends in the West African rice sector, after which we will assess the impact of world rice prices on domestic prices, primarily at the consumer level. This involves understanding the mechanisms of price transmission from world markets to domestic markets, and the efficiency of domestic rice marketing. Finally, we discuss policy responses to rice price increases, examining how responses to recent fluctuations compare to those of the past.

Recent trends for rice in West Africa²

Rice production in West Africa has doubled since 1985, yet rice consumption has increased even more rapidly, resulting in a growing shortfall of local rice production. This increasing dependence on imports has left West African rice consumers – mainly those located in urban markets – increasingly vulnerable to volatility in world rice markets. Though the extent of import dependence varies

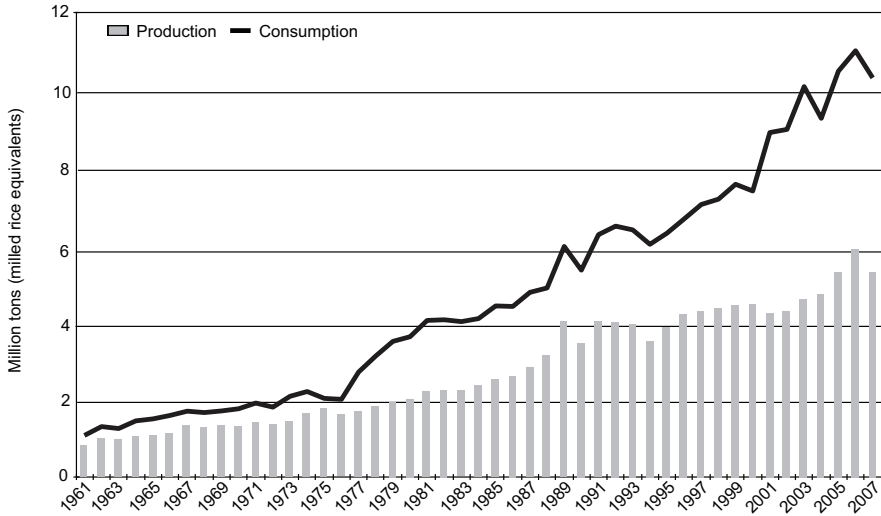


Figure 8.1 Evolution of rice consumption and production in West Africa

Source: FAO (2009)

substantially across the different countries of West Africa, Figure 8.1 summarizes the regional trend.

For the period 2001–2005, rice production in West Africa increased at an average annual rate of 5.06 per cent, as compared with an annual growth rate of 6.55 per cent for rice consumption. Approximately 95 per cent of the increase in rice production resulted from expansion of the area cultivated, suggesting little growth in productivity on average for the region.

The regional trends conceal substantial difference across individual countries. In this chapter, for reasons of data availability, we focus in particular on Benin, Burkina Faso, Niger and Senegal.³ Nevertheless, as poor and primarily Sahelian countries located in sub-Saharan Africa, their experiences with the increase in rice prices in 2008 can be instructive. This section therefore summarizes specific trends in rice production, consumption and trade in our focus countries. Table 8.1 presents figures for area, yield and production. Table 8.1 shows that the growth rates of rice area, yield and production have been highly variable, both across countries and over time within countries. Among our focus countries, Benin and Senegal are the only two in which paddy production grew in each decade since the 1960s; yet Senegal's average rate of productivity growth between 1961 and 2005 was substantially below that of Niger, while Niger was substantially below Benin, which had the highest average productivity growth among these countries. Benin began the period with comparatively little rice production but has rapidly increased its output to levels comparable to Niger. The level of productivity in Niger has been somewhat higher as compared to the other focus countries (though these levels converged somewhat by 2000). Rice yields in these countries, however, remain approxi-

mately one half of the levels common in Asia, though the latter benefits from substantially greater shares of irrigated production.

Table 8.2 addresses trends and levels of rice imports. These data reflect substantial variations over time within countries, as well as substantial variations across our four focus countries. For example, the 1970s saw rapid growth in both the quantity and value of rice imports into Burkina Faso and Niger, followed in the 1980s by falling quantities and values of rice imports in Niger. The clearest pattern to emerge from Table 8.2 pertains to the value of rice imports as a share of total merchandise imports. These figures trend steadily upward in Benin, Burkina Faso and Niger between 1961 and 2007. By 2001–2007, Benin's import share exceeded that of Senegal, which had been higher than in the other countries throughout the period, though with no trend over time.

Table 8.3 summarizes growth rates and levels of rice consumption within these countries, presenting as well the share of caloric intake accounted for by rice and trends in each country's rice self-sufficiency ratio. The yearly averages indicate clearly the dominant role of rice in Senegalese diets. Senegal's per capita rice consumption remains substantially greater than that of our other focus countries. Since the 1960s, per capita rice consumption has increased consistently in Burkina Faso, with particularly rapid increases in Benin, while rice has retained its secondary status among staple grains in Niger (where millet and sorghum dominate) and its primary status in Senegal.

The rice self-sufficiency ratios reported in the bottom panel of Table 8.3 summarize the production, consumption and trade data presented above.⁴ Niger has reported surpluses since 2001. Yet these surplus conditions have been the exception among our focus countries. Senegal, the largest rice consumer in this group, is highly import-dependent, with a self-sufficiency ratio declining from about 25 per cent in the 1960s to nearly 15 per cent by 2006. Similarly, the rapid increases in Benin's rice consumption have outpaced its production growth, resulting in the lowest self-sufficiency ratio among this group of countries. With the exception of Senegal, rice consumption in these countries is primarily focused in the urban centre, and/or in the main growing regions along the river basins.

As reflected in Figure 8.1, the growth rate of West Africa's rice consumption has consistently outpaced its growth in rice production. In our focus countries, nearly all increases in rice production – particularly since 1970 – have resulted from extensification rather than productivity growth. In general, these trends suggest that the rice sector of these countries faces substantial challenges in the foreseeable future. In particular, the growing dependence on imports suggests potentially severe consequences for urban consumers in an era of rapid price increases in world rice markets. Two broad concerns follow: (1) What are the potential welfare effects for consumers and producers of recent dramatic increases in food prices (especially rice)?; and (2) How much of the recent increase in international rice prices has been transmitted into domestic rice markets in the region?

Table 8.1 Area, yield and production of rice in selected West African Countries, 1961–2006

	Annual growth rate					Yearly averages						
	1961– 1970	1971– 1980	1981– 1990	1991– 2000	2001– 2005	1961– 2005	1961– 1970	1971– 1980	1981– 1990	1991– 2000	2001– 2005	2006 est.
Harvested rice paddy area (ha)												
Benin	4.51	10.6	-0.73	13.86	-0.11	6.26	2323	7058	7036	12,636	26,667	26,901
Burkina Faso	-2.6	-0.84	-4.02	9.61	-1.56	0.30	41,807	38,177	24,166	37,014	51,032	106,000
Niger	7.6	3.5	0.97	-4.41	-7.64	0.85	11,359	19,380	21,853	22,307	24,272	23,000
Senegal	2.85	0.92	1.94	0.41	3.02	1.70	82,604	75,384	71,612	74,662	86,067	85,037
Rice paddy yield (tons/ha)												
Benin	14.62	-3.56	4.39	6.01	7.24	5.57	0.68	1.54	1.19	1.71	2.39	2.64
Burkina Faso	5.21	3.74	2.96	1.57	-3.38	2.62	0.86	1.02	1.72	2.1	1.81	1.78
Niger	12.26	-5.43	6.33	2	2.94	3.70	1.83	1.62	2.6	2.93	3.07	2.85
Senegal	-0.74	1.77	2.42	0.57	4.68	1.41	1.27	1.19	1.98	2.35	2.52	2.24
Rice paddy production (tons)												
Benin	19.79	6.67	3.64	20.71	7.13	12.08	1686	10,822	8317	22,953	63,655	70,972
Burkina Faso	2.48	2.87	-1.18	11.33	-4.89	2.90	34,889	38,660	40,783	77,176	92,497	189,176
Niger	20.78	-2.12	7.36	-2.49	-4.92	4.68	22,145	30,547	56,847	63,209	73,480	65,661
Senegal	2.09	2.71	4.4	0.98	7.84	3.13	106,591	92,831	141,131	174,598	218,403	190,493

Source: WARDA (2008)

Table 8.2 Imports of rice in selected West African countries, 1961–2006

	Annual growth rate					Yearly averages						
	1961– 1970	1971– 1980	1981– 1990	1991– 2000	2001– 2005	1961– 2005	1961– 1970	1971– 1980	1981– 1990	1991– 2000	2001– 2005	2006 est.
Quantity of rice imported (tons)												
Benin	4.7	3.4	12.5	–18.7	42.3	11.0	5366	8663	49,448	163,306	382,748	
Burkina Faso	–6.9	51.6	14.5	10.4	–21.6	12.0	2935	11,378	65,418	137,740	164,678	
Niger	–35.5	69.6	–1.1	15.3	2.2	14.9	1090	9205	34,735	58,672	194,650	
Senegal	2.8	7.2	0.6	5.3	3.9	4.3	145,514	223,974	352,561	462,763	831,616	
Value of rice imports (thousands US\$)												
Benin	7.8	7.6	10.9	–19.2	52.1	12.2	872	2301	14,440	49,798	111,988	
Burkina Faso	–9.0	59.5	15.1	7.4	–4.3	13.5	455	4007	20,768	44,471	39,261	
Niger	–23.3	77.6	–5.2	12.0	9.0	16.5	146	3838	14,300	20,382	56,488	
Senegal	5.2	15.1	–0.1	8.9	12.5	6.3	17,027	48,121	79,554	109,689	228,139	
Value of rice imports as a share of total merchandise imports												1961– 2007
Benin							2.2%	1.1%	4.1%	8.4%	12.8%	8.1%
Burkina Faso							1.1%	2.3%	5.5%	8.2%	3.4%	5.0%
Niger							0.4%	1.8%	3.8%	5.1%	7.9%	5.1%
Senegal							9.8%	7.9%	7.6%	8.4%	8.0%	8.1%

Source: FAO (2009); IMF (2009) for data on merchandise imports

Table 8.3 Consumption and self-sufficiency of rice in selected West African countries, 1961–2006

	Annual growth rate					Yearly averages						
	1961– 1970	1971– 1980	1981– 1990	1991– 2000	2001– 2005	1961– 2005	1961– 1970	1971– 1980	1981– 1990	1991– 2000	2001– 2005	2006 est.
Rice and rice product total consumption (tons)												
Benin	7.39	3.41	9.09	-3.06	46.87	8.95	5889	12,613	45,142	93,197	233,964	395,527
Burkina Faso	1.94	11.45	10.22	4.68	-5.91	5.63	23,258	33,588	95,379	158,857	174,200	155,003
Niger	16.08	9.18	4.16	-1.12	-14.24	4.71	13,604	27,082	70,008	65,526	45,962	31,136
Senegal	3.9	7.63	3.6	3.25	0.11	4.10	201,805	271,909	438,061	596,501	818,204	839,844
Rice and rice product consumption per capita (kg/yr)												
Benin	5.31	0.9	5.27	-4.96	32.7	5.08	2.37	4.06	10.71	15.69	31.62	45.7
Burkina Faso	-0.07	8.78	7.39	1.99	-7.87	3.15	4.7	5.32	11.78	15.1	12.99	10.86
Niger	12.51	5.97	0.82	-4.6	-15.85	1.51	3.59	5.46	10.38	7.17	3.54	2.31
Senegal	1.16	4.59	0.33	-0.48	-2.28	0.99	54.59	55.01	66.73	63.73	72.54	68.81
Rice share of caloric intake (%)												
Benin	4.59	0.26	2.92	2.94	27.65	5.45	1.21	2.04	5.05	5.32	11.04	17
Burkina Faso	-1.73	7.87	1.97	3.59	-34.09	-1.19	2.78	3.23	5.57	5.21	4.65	0.47
Niger	10.03	5.22	1.72	-3.69	-16.51	1.12	1.81	2.49	4.78	4.47	4.56	2.97
Senegal	-0.06	4.48	-0.33	2.53	-0.47	1.42	21.66	23.73	28.13	27.96	30.94	31.55
Self-sufficiency ratio (%)												
Benin	11.55	3.15	-5	24.52	-27.06	4.60	18.99	61.76	13.37	18.29	23.22	12.02
Burkina Faso	0.53	-7.7	-10.34	6.35	1.08	-2.36	102	84.19	33.15	31.85	35.73	81.77
Niger	4.05	-10.35	3.07	-1.39	10.87	0.18	105	84.86	54.56	64.5	110.44	141.29
Senegal	-1.74	-4.58	0.77	-2.2	7.72	-0.86	37	24.7	21.76	19.77	17.89	15.2

Source: WARDA (2008)

Attempting to address the first of these questions, a team of researchers at the World Bank, led by Quentin Wodon, has produced a series of country studies on the effects of high food prices on various poverty indicators in West Africa.⁵ These studies, which appeared in September and October 2008, share a methodological approach that extrapolates from household data to simulate the effect of price changes on poverty outcomes. Their simulation results suggest that a 50 per cent increase in the price of rice could increase the headcount index of poverty (in the worst case) by 3.4 percentage points in Senegal, and (in the best case) by 1.2 percentage points in Burkina Faso, where rice plays the smallest role in consumption. Yet even this small increase in Burkina Faso's headcount index of poverty implies an addition of over 122,000 to the population living in poverty. In Senegal, a 3.4 percentage point increase in the headcount index implies an absolute increase of approximately 437,000 people living in poverty. These simulations further suggest that much of the burden of increased food prices would fall on those who were poor to begin with, with the most severe effects falling on the poorest.

Transmission of international prices into domestic rice markets

In practice, the magnitude of the impact of rapid increases in the international price of rice depends directly on the extent to which those increases are transmitted to domestic markets. The previous sections have described the dramatic price fluctuations in global rice markets since 2000, as well as recent trends in the rice sector in West Africa and the potential welfare consequences of high food prices in these countries. It is clear that high food prices have the potential to increase both poverty and perhaps malnutrition in the region. Senegal in particular may be particularly vulnerable to rapid increases in rice prices. Thus, it is critical to assess the extent to which recent fluctuations in global rice prices have been transmitted into domestic markets in West Africa.

The extent of transmission is important for two reasons. First, it is domestic, not world, prices that affect the welfare of poor consumers and farmers. Second, the magnitude of price transmission will influence the extent to which adjustments by producers and consumers help stabilize world price movements. These adjustments (reduced consumption, increased production) will only take place if world prices are transmitted to domestic prices (Imai et al, 2008). Finally, domestic price changes can also have implications for the political stability of governments in West Africa. In fact, numerous demonstrations and riots took place in capital cities of West Africa in response to higher food prices, with large-scale riots taking place in Burkina Faso (22 February 2008; UNOCHA 2008a), Cameroon, Guinea, Côte d'Ivoire (31 March 2008) and Senegal (31 March 2008; UNOCHA 2008b).

The link between rice price increases and conflict is more than a theoretical concern for West Africa. The surge in rice prices in 1979 contributed to Liberia's descent into chaos, sparking riots and a political crisis that led to the

coup that brought Samuel Doe to power and the onset of a decade-long civil war in the 1990s. Liberia and Sierra Leone are both emerging from protracted civil conflicts, and price increases and riots can be risk factors for both countries (UNOCHA, 2008c).

The extent of price transmission is a function of two key variables: (1) the exchange rate at which US dollar prices are converted to domestic currency prices; and (2) trade policies at the border, which restrict (or enhance) the flow of commodities. The time horizon of adjustment is a third factor, as normal marketing lags as well as policy interventions delay the immediate transmission of international prices into domestic economies (though the longer there is a substantial difference between the two prices, the more pressure there is for convergence).

Exchange rate effects⁶

Even before the dramatic surge in prices in 2008, world market prices had increased substantially in real US dollar terms. Comparing the last quarter of 2007 with the last quarter of 2003, world market prices increased 56 per cent for rice, 91 per cent for wheat, 40 per cent for maize and 107 per cent for urea (a primary source of nitrogen in fertilizer). During that time, the US dollar depreciated substantially against the currencies of several large rice-exporting countries, putting upward pressure on world prices quoted in dollars.⁷

Real exchange rate (RER) appreciation vis-à-vis the US dollar, to the extent that it occurs, will neutralize some of the impact of increased prices in US dollar terms. Thus, in assessing the extent to which increases in the international price of rice were transmitted to domestic markets in West Africa, we must first calculate the change in each country's real exchange rate, calculated as:

$$\% \Delta RER_i = \% \Delta e_i + \% \Delta GDPDefl^{US} - \% \Delta CPI_i \quad (1)$$

where RER_i is the real exchange rate for country i , e_i is the country's nominal exchange rate, CPI is the consumer price index and the $GDPDefl$ is the GDP of that country deflated by US prices.

Since each of the focus countries presented in this chapter (Benin, Burkina Faso, Niger and Senegal) is a member of the Communauté financière d'Afrique (CFA; Financial Community of Africa) Zone – thus sharing a common currency that is fixed relative to the euro – they experienced the same 14 per cent nominal appreciation against the US dollar between 2003 and 2007. Since domestic inflation in these countries was both similar across countries (owing to the regulation of monetary policy within the CFA Zone) and approximately equal to the rate of inflation in the US (the change in the US GDP deflator over this period was 12.8 per cent), the price effects essentially cancel out, leaving these countries with a real exchange rate appreciation of approximately 14 per cent (roughly equivalent to their nominal appreciation). Real appreciation over this period thus tended to mitigate the effects of increases in the international price of imports.

Table 8.4 *Cumulative percentage changes in real rice prices, the last quarter of 2003 to the last quarter of 2007*

Country	(1) World price (US\$)	(2) World price (DC)	(3) Domestic price (DC)	(4) World price pass- through from exchange rate = (2)/(1)	(5) Total DC pass through = (3)/(1)
Benin	56	41.5	6.75	74	12
Burkina Faso	56	44.5	8.6	79	15
Niger	56	42	11.0	75	19.6
Senegal	56	41.5	10.6	74	18.9

Note: DC = domestic currency.

Source: IMF, SIMA/Niger, SIM-C Burkina Faso, ONASA/Benin, and OMS-Senegal

The next step in assessing the pass-through to domestic markets of a given real increase in the dollar-denominated international price of rice is to filter that increase through the change in each country's RER, resulting in the real change in the domestic-currency-denominated international price of rice. This effect is presented in column 2 of Table 8.4. For the CFA Zone countries, the real domestic-currency-denominated increase in international rice prices ranged from 41–45 per cent.

Table 8.4 builds on the changes in the world price of rice in domestic currency terms described above (column 2) to then address the extent to which West African governments permitted the 56 per cent increase in the dollar-denominated international price of rice to pass through to domestic consumers. Column 3 uses domestic rice market data from the market information systems of selected countries to show the percentage increase between 2003 and 2007 in the real retail price of imported rice in capital cities.⁸ To the extent the increase in domestic prices (column 3) is less than the domestic-currency-denominated world price (column 2), it reflects government intervention to stem the impact of increased international prices on domestic markets. Clearly, in the four countries for which we have domestic market price data, the combination of RER appreciation and government interventions provided a substantial buffer between international and domestic rice markets in the period leading up to the crisis.

Column 4 presents the proportion of the dollar price increase that remained net of the exchange rate effects, while (for selected countries) column 5 presents the proportion of the dollar price increase that remained net of both the exchange rate effects and the effects of each country's border price interventions. As is evident from the fact that the numbers in column 5 are much less than those in column 4, most of the buffering of domestic rice markets from the dramatic increase in international prices was the result of border price interventions, rather than an artefact of RER appreciation. In each case for which we have domestic price data, approximately two-thirds of the pass-through effect is the result of border price interventions (a topic to which we return below).

Table 8.5 *Levels and changes in nominal prices (CFA) for millet, domestic and imported rice, the last quarter of 2003 to the second quarter of 2008*

	(1) Mean price Q4/2003	(2) Mean price Q3/2007	(3) % change Q4/2003–Q3/2007	(4) Mean price Q4/2007	(5) Mean price Q2/2008	(6) % change Q4/2007– Q2/2008	(7) % change Q4/2003– Q2/2008	(8) Mean quarterly growth rate, Q4/2003– Q3/2007 (%)	(9) Mean quarterly growth rate, Q4/2007– Q2/2008 (%)
Benin									
millet	233.3	256.67	10.0	291.67	350	20.0	50.0	0.64	9.54
imported rice	321.67	345	7.3	388.34	425	9.4	32.1	0.47	4.61
domestic rice	255	345	35.3	368.34				2.04	
Burkina Faso									
millet	111.7 ^a	139.36	24.8	149.88	171.3	14.3	53.3	1.49	6.91
imported rice	247.9 ^a	270.34	9.1	296.67	351.04	18.3	41.6	0.58	8.78
Niger									
millet	125.67	171	36.1	158	205	29.7	63.1	2.07	13.91
imported rice	275	306.34	11.4	343.67	362	5.3	31.6	0.72	2.63
domestic rice	220.67	245 ^b	11.0					0.70	
Senegal									
millet	144.67	217	50.0	236.67	249.34	5.4	72.4	2.74	2.64
imported rice	200	238	19.0	250	300	20.0	50.0	1.17	9.54
domestic rice	190.34	231	21.4	239.67	289	20.6	51.8	1.30	9.81

Note: a = Q1/2004; b = Q4/2006

Sources: Niger: Systeme d'Informations sur le Marche Agricole (SIMA); Benin: ONASA (Office Nationale de la Securite Alimentaire); Burkina Faso: System d'Information sur les Marches Cerealiers (SIM-C); Senegal: Ministry of Agriculture, market surveys

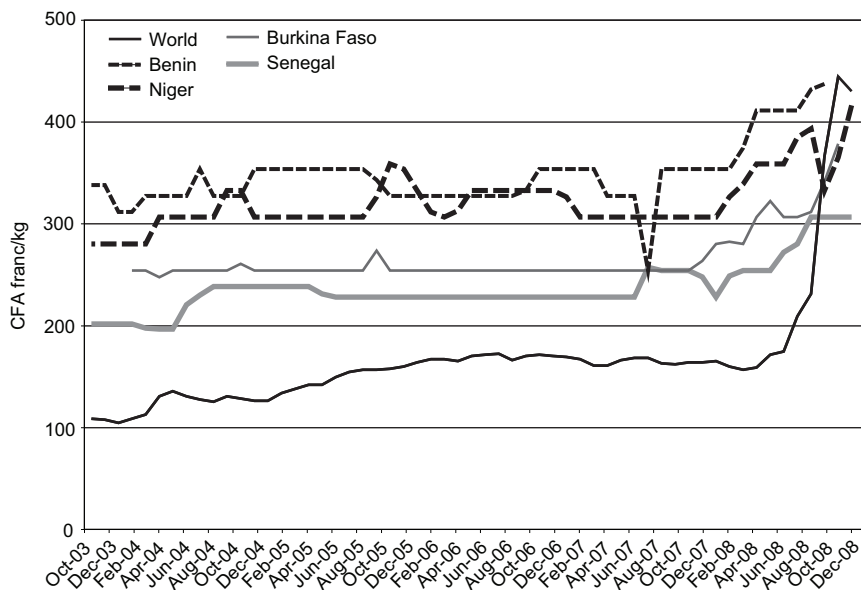


Figure 8.2 *International versus domestic prices of imported rice, October 2003–June 2008 (CFA franc/kg)*

Sources: Niger: Systeme d'Informations sur le Marche Agricole (SIMA); Benin: ONASA (Office Nationale de la Securite Alimentaire); Burkina Faso: System d'Information sur les Marches Cerealiers (SIM-C); Senegal: Ministry of Agriculture, market surveys.

We gain further insights into the nature of commodity markets in our countries and the effects of the crisis by comparing several sets of prices: (1) world versus domestic prices of imported rice; (2) the price of millet versus the price of imported rice; and (3) the price of imported versus domestically produced rice. We begin simply by summarizing the levels and changes in the prices of millet, imported rice and domestic rice before and during the crisis. Table 8.5 presents the data.

For most of the cases presented in Table 8.5, the rate of increase in nominal prices accelerated dramatically between the last quarter of 2007 and the second quarter of 2008 (as compared with the quarterly average growth rate for the 15 quarters from the last quarter of 2003 to the third quarter of 2007). The apparently large role for border price interventions noted above is reinforced by comparing in nominal prices the time series of the international rice price with the domestic prices of imported rice, as in Figure 8.2.

Figure 8.2 shows international rice prices (free on board) as compared with imported retail rice prices in the capital cities of several West African countries: Cotonou (Benin), Ouagadoudou (Burkina Faso), Niamey (Niger) and Dakar (Senegal). While imported rice prices follow international prices, the correlation is not perfect. Average correlations between international and the domestic prices of imported rice in Senegal, Burkina Faso, Niger and Benin were 0.70, 0.67, 0.46 and 0.55, respectively, between 2003 and 2008.

Imported rice prices in these countries have been strikingly stable during this period, primarily due to: (1) import tax regimes; and (2) floor/ceiling prices.⁹ The increases in imported rice prices in 2004–2005 in Burkina Faso and Niger were primarily due to regional droughts and food crises during that year. During that time, staple food prices (millet and sorghum) were the highest on record, and in some cases consumers switched to rice – thereby increasing demand for rice and increasing prices.

On average, imported rice prices in West Africa followed the surge in international rice price increases in late 2007 and early 2008. In many cases, this increase actually preceded the international rice price increase, starting in August/September 2007 in most West African countries, whereas the international rice price increase did not seem to begin until late 2007 or early 2008. One potential reason for this increase in West Africa is the increases in shipping costs. Virtually all of the rice imported into West Africa originates in Asia. During the months from February 2007 to November 2007 (for example the period when we observe increasing domestic prices in advance of the increased international price), the Baltic Dry Goods Index more than doubled.¹⁰ This increase could have reduced the demand for imports, thus contributing to increased domestic prices by reducing available supplies. In any case, it is clear that in the face of the dramatic surge in the international price beginning in late 2007, these countries were unable to afford sufficient import subsidies to protect domestic rice consumers from world markets.

However, these average correlations conceal an interesting break point at the beginning of the rapid increase in world prices. Table 8.6 demonstrates that the West African governments had little trouble stabilizing domestic rice prices during the long period of stable or declining international prices (prior to the last quarter of 2007); yet, the pattern of price correlations changes sharply when international prices surged in late 2007.

The dramatic increases in the correlations between the international rice prices domestic prices for imported rice reinforces the conclusion that most governments in West Africa were either unprepared for, or incapable of containing, the dramatic surge in international rice prices.¹¹ The only exception was Niger, where the correlation actually decreased as compared with the previous period. As Niger has a rice price stabilization scheme, this suggests that the government did not change its price ceiling when international rice prices changed, thereby lowering the correlation between the two.

Table 8.6 *Correlation of international and domestic rice prices before and during the crisis*

	Q4/2003–Q3 2007	Q4/2007–Q2/2008
Senegal	0.32	0.83
Burkina Faso	0.12	0.77
Niger	0.46	-0.07
Benin	-0.01	0.65

Price transmission across commodities within countries

In addition to price transmission between international and domestic imported rice prices, there are two additional questions that are important for assessing the impact of international rice price increases in West Africa: (1) Do fluctuations in domestic prices of imported rice spill over into market prices for staple food crops (such as millet)?; and (2) Do fluctuations in domestic prices of imported rice spill over into market prices for domestically produced rice?

Transmission of price shocks across commodities could result from substitution in both production and consumption. One might posit, for example, that following an increase in the price of rice, consumers would substitute away from rice towards millet. Similarly, producers might substitute away from producing millet towards rice (although in practice, such substitution in production is highly unlikely, as the production systems for both are quite distinct). Millet is a rainfed crop that requires limited amounts of rainfall, whereas rice is either produced in upland or lowland (swamp) areas, requiring substantial amounts of water. Either substitution (consumption being more likely) would tend to transmit the increased rice price into increased millet prices. Figure 8.3 compares millet and imported rice prices for Senegal, Benin, Burkina Faso and Niger.

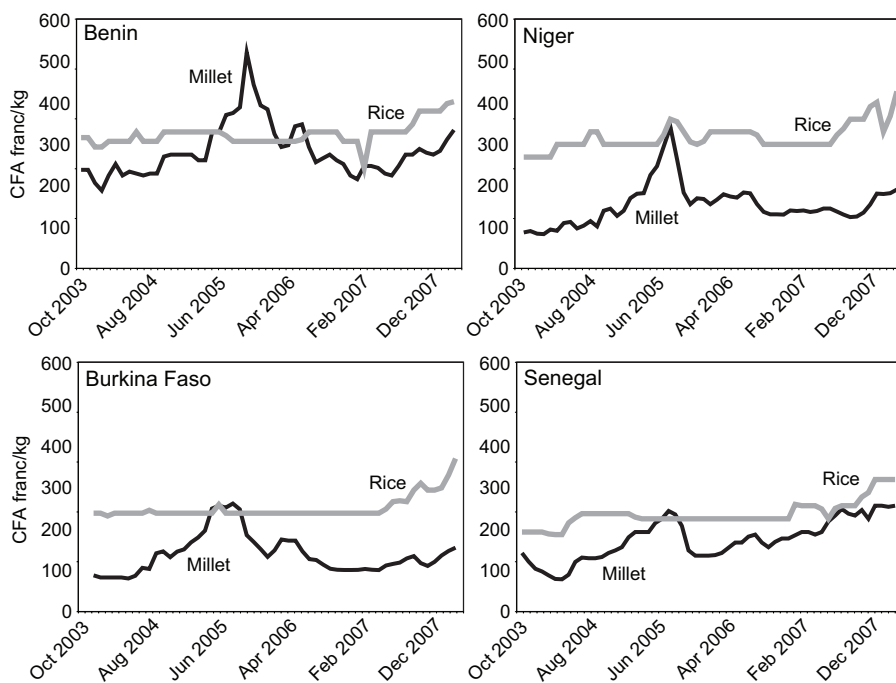


Figure 8.3 Millet versus imported rice prices in selected countries, October 2003–June 2008 (CFA franc/kg)

Sources: Niger: Systeme d'Informations sur le Marche Agricole (SIMA); Benin: ONASA (Office Nationale de la Securite Alimentaire); Burkina Faso: System d'Information sur les Marches Cerealiers (SIM-C); Senegal: Ministry of Agriculture, market surveys.

Table 8.7 *Correlation of domestic millet and rice prices before and during the crisis*

	Q4/2003–Q3/2007	Q4/2007–Q2/2008
Senegal	0.54	0.71
Burkina Faso	0.13	0.72
Niger	0.66	0.52
Benin	–0.04	0.72

Figure 8.3 shows that, in general, there is not a strong correlation between imported rice and millet prices in these countries. Millet prices fluctuate highly on an inter- and intra-annual basis (coinciding with the harvest), and appear to be highly correlated across the Sahelian countries (Burkina Faso, Niger and Senegal). While each of these countries experienced drought and a millet production shock in 2004–2005, this only appears to have affected rice prices in Burkina Faso and Niger, where millet is relatively more important for producer and consumer welfare. It is notable, however, that rice prices have been consistently above millet prices in all four countries, with the exception of 2004–2005 in Benin.

Similar to our previous analyses, we also find a structural break in the pattern of correlations between rice and millet prices in these markets before and during the rice price crisis. Table 8.7 illustrates the substantial increases in the correlations of millet and rice prices in domestic markets – again with the exception of Niger – before and during the crisis. These data are retail rice and millet prices in the capital cities, where consumers may have greater opportunities to substitute across commodities. Thus, the increased correlations during the crisis suggest that urban consumers may have substituted towards millet when rice prices surged, thus driving up millet prices, as well.

Figure 8.4 addresses the question of whether fluctuations in domestic prices of imported rice spill over into market prices for domestically produced rice (comparing within the same local markets in Senegal and Benin).

Figure 8.4 suggests a greater degree of correlation in general between local and imported rice prices within countries as compared with correlations between millet and imported rice. This seems plausible, as local and imported rice are much closer substitutes in consumption than imported rice and millet. Yet, here too, we find a substantial difference in these correlations before and during the crisis, as illustrated in Table 8.8.

Comparing levels, rather than correlations, imported rice acts as a price

Table 8.8 *Correlation of domestic and imported rice prices before and during the crisis*

	Q4/2003–Q3/2007	Q4/2007–Q2/2008
Senegal	0.62	0.98
Benin	0.66	0.86

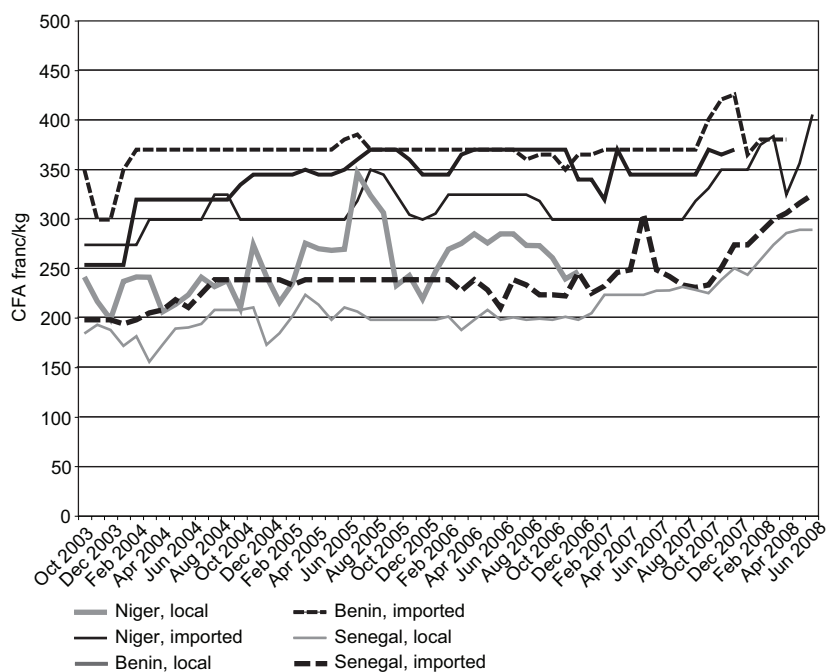


Figure 8.4 Local vs imported rice prices in selected countries (CFA franc/kg)

Sources: Niger: Systeme d'Informations sur le Marche Agricole (SIMA); Benin: ONASA (Office Nationale de la Securite Alimentaire); Burkina Faso: System d'Information sur les Marches Cerealiers (SIM-C); Senegal: Ministry of Agriculture, market surveys.

ceiling on local rice in Niger, Senegal and Benin. This suggests that border price interventions on rice may be a powerful tool in shaping incentives facing domestic rice producers in these countries, although they may not be sufficient to increase rice yields and production.

Historical trade policy responses to rice price fluctuations

In examining the policy implications of the recent surge in world rice prices, it is useful to review countries' border price policy reactions to past fluctuations in world prices. A new data set, recently released by the World Bank's Distortions to Agricultural Incentives Project, includes nominal rates of assistance (NRAs) for rice for a broad cross-section of countries since the early 1960s (World Bank, 2009). Among our focus countries, this data set includes only Senegal. The NRA is the percentage difference between the domestic price and the border price of a commodity. Positive NRAs indicate that governments are intervening to protect domestic producers of the import-competing commodity by taxing imports; negative NRAs indicate import subsidies to protect consumers by lower domestic prices below border prices.

Figure 8.5 illustrates the trade policy responses of governments in Senegal to historical fluctuations in the price of rice on world markets. The left-hand

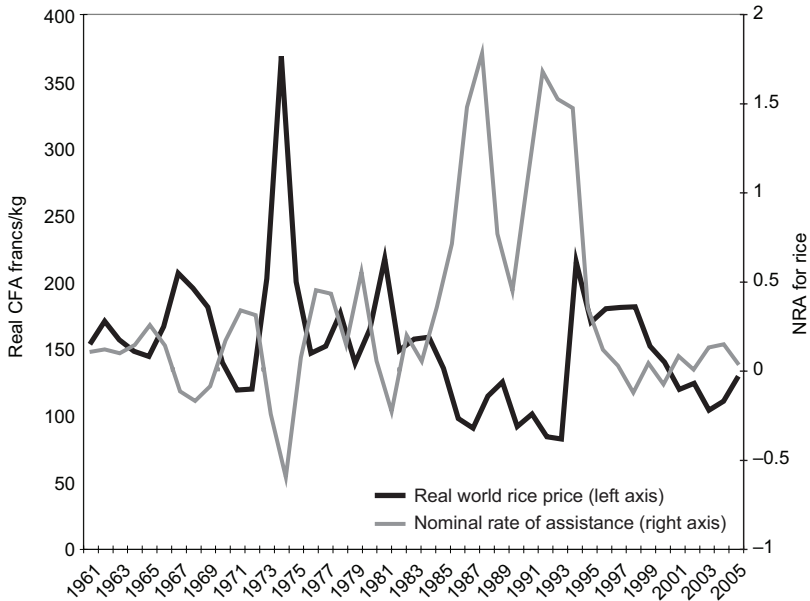


Figure 8.5 Rice trade policy and world prices in Senegal

Source: Source: Rice prices from International Rice Research Institute; nominal rate of assistance data are from Anderson and Valenzuela (2008)

axis scales constant world rice prices (the export price for 5 per cent broken Thai) in CFA Zone francs, and the right-hand axis scales the NRA for rice. It is clear that Senegalese governments have generally used trade policy to counteract fluctuations in world rice prices, thus tending to stabilize domestic prices. The most striking example of this tendency occurred in response to the global food crisis of 1973, during which time world rice prices tripled. In response, Senegal dramatically altered its rice trade policy. In 1972, Senegal was taxing rice imports at the rate of nearly 29 per cent. In response to the 1973 price spike, Senegal subsidized rice imports, reducing them to 60 per cent below world prices, clearly using trade policy as a tool to help stabilize domestic markets for its staple grain.

The sudden increase in the CFA-denominated world price of rice in 1994 reflects primarily the 100 per cent devaluation of the CFA franc that year. The devaluation acted as a substitute for import tariffs, which fell simultaneously. Subsequent to 1995, the fluctuations in Senegal's rice tariffs were substantially reduced relative to the previous period. This may relate to economic reforms in Senegal. Until 1995, the state's price stabilization fund maintained a monopoly on rice imports. Subsequent to 1995, rice imports in Senegal were privatized.

Despite these historical precedents for using border price interventions to counteract international price fluctuations, it appears that the recent upsurge in international rice prices was simply too great for the governments of West Africa's rice-importing countries to contain. This failure reflects the new

dependence of West Africa in particular and sub-Saharan Africa more broadly on rice imports to meet rapidly rising demand. With imports now a significant share of total consumption, as Denning and Gajigo (2009) document, it is no longer logistically or financially possible for most African countries to isolate themselves from the world market. Although this dependence grows out of the cheaper rice available in the world market compared with domestic production, and is thus good for consumers, it does come with the added cost of exposure to price fluctuations in the world market. Most of these fluctuations must now be passed on to domestic consumers and, with considerable lags and variation, to domestic rice producers.

Policy responses to recent rice price increases

West African governments reacted to the rapid increase in international rice prices in a variety of ways, none of which appears to have been greatly effective in mitigating the impact of international price increases on their domestic markets.¹² The most common response was to eliminate pre-existing tariffs and value-added taxes on imported rice. Senegal initiated rice import subsidies beginning in 2008, adding to the fiscal strain caused by eliminating a significant source of government revenue. As public anger mounted in the face of continued increases in rice prices (along with the prices of other commodities), governments in Guinea, Mali, Burkina Faso and Senegal reacted by attempting to fix consumer rice prices, and by prohibiting exports (though, in practice, their ability to implement this policy was limited).

In addition to trade policies, governments across the region (Burkina Faso, Mali, Niger and Senegal) attempted to use the rice price crisis of 2008 as an opportunity to reinvigorate domestic rice production, as higher international prices appeared to increase the competitiveness of their domestic producers. In Senegal, for example, the government initiated the Big Agricultural Offensive for Food and Abundance (GOANA), promising to dedicate over two-thirds of the programme's \$792 million budget to subsidizing the purchase of fertilizers, seeds and pesticides. GOANA's target was to produce in the next season 500,000 tons of rice – 2.5 times more than the current production. Similarly, the Malian government implemented a 'Rice Initiative', which provided input subsidies for rice. Finally, the Emergency Rice Initiative for Africa was launched in late 2008, providing assistance to rice-growing countries in Africa in four major areas: seed; fertilizer; best-bet technologies; and post-harvest and marketing. This initiative was launched jointly by the Africa Rice Center (WARDA), FAO, IFDC, Catholic Relief Services (CRS) and International Fund for Agricultural Development (IFAD) (AllAfrica.com, 2008). Nevertheless, these initiatives focus primarily on increased production, rather than processing and marketing, which are important determinants of domestic rice prices. In addition, the rapid decline in international rice prices during late 2008 calls into question the sustainability of these initiatives.

Summary and conclusions

Rice consumption in West Africa has increased rapidly over the past decade, substantially outpacing the growth rate of local production. The importance of rice in local consumption and production varies widely across countries in the region. Coastal countries in particular, have been largely dependent on low-cost Asian exports to meet the growing gaps between production and consumption. For those countries in which per capita rice consumption is substantial (Senegal in particular, but also Mali and Benin), the rice crisis of 2007–2008 was a severe shock, with potential consequences for both under-nutrition and poverty.

In recent decades, governments in the region tended to intervene in trade with the goal of buffering consumers from international market price fluctuations. This objective presented little challenge during the long period of stable or declining international rice prices. Between 2003 and 2007, rice consumers in Senegal, Benin, Burkina Faso and Niger saw only a small share of the gradual increases in international prices. However, the dramatic surge in international rice prices during 2007–2008 undermined these efforts, as governments in the region had neither the financial nor the physical capacity to provide sufficient quantities of rice to consumers at pre-crisis prices.

Governments across West Africa responded to the crisis, first by reducing or eliminating rice import tariffs. Several countries also responded by prohibiting cereals exports. Though costly to the governments, these efforts were insufficient to buffer domestic consumers from the increase in international prices. Senegal went further, subsidizing rice consumption in 2008. In addition, Senegal and other countries announced plans to reinvigorate domestic rice production in the face of high prices. While these initiatives have taken different forms in different countries, the steep decline in international rice prices in late 2008 calls into question the sustainability of these efforts, however well intentioned by the governments.

Notes

- 1 Senegal's response to the crisis, dubbed the Big Agricultural Offensive for Food and Abundance (GOANA), promised to dedicate over two-thirds of the programme's \$792 million budget to subsidizing the purchase of fertilizers, seeds and pesticides. Similarly, the Malian government implemented a 'Rice Initiative', which provided input subsidies for rice.
- 2 This section draws heavily on WARDA (2008).
- 3 These countries, collectively, account for approximately 10 per cent of West Africa's total rice production (excluding Nigeria) in 2001–2005. The two other countries with significant rice production and consumption are Mali and Nigeria.
- 4 The self-sufficiency ratio is defined here as the share of locally produced rice in total rice supply.
- 5 This series of studies is summarized in Wodon et al (2008).
- 6 This section draws on Dawe (2008) for its methodology.

- 7 In fact, this depreciation is one cause of the recent high commodity prices.
- 8 These prices are either the domestic price of imported rice or the price of local rice in the market nearest to the urban centre. They are not national averages.
- 9 As members of UEMOA (West African Economic and Monetary Union), these countries share a common external tariff, although in practice the tariff for rice varies across countries.
- 10 The Baltic Dry Goods Index is a global index of freight costs.
- 11 This is consistent with the conclusion reached by Inter-réseaux Développement Rural (2008).
- 12 This discussion is based on reporting by analysts from Oxfam and Fewsnets in Inter-réseaux Développement Rural (2008).

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Rice in Africa: Will Imports Continue to Grow?

Ousman Gajigo and Glenn Denning

Introduction

Rice is becoming an important food staple in Africa. Over the past decades, its consumption has grown rapidly not only in the Western African region where it has long been a traditional staple food, but also in other sub-regions. The growth rate of production has not kept up with consumption. Paddy rice production went from 3.7 million metric tons in 1965 to approximately 17 million tons in 2007 (around 11 million tons in equivalent milled rice), following an average annual growth rate of 3.8 per cent (<http://faostat.fao.org>, 2009). Consumption, by contrast, went from 2.5 million tons in 1965 to 15 million tons milled rice in 2006, following an annual growth rate of 4.8 per cent. This growth in consumption has been driven mainly by population growth, increasing urbanization rates and rising incomes. As a consequence of these differences in levels and growth of production and consumption, the region has become a major rice importer in the world market. In 2006, sub-Saharan Africa imported 8 million tons and accounted for about one-third of global rice imports.

The region's low production and relatively high imports greatly expose it to fluctuations in the global food market. This was brought into sharp focus during the recent global food crisis. Virtually all countries in the region registered precipitous increases in food prices in general and rice in particular. For

example in Kigali, rice prices increased by about 43 per cent and in Nigerian cities by about 40 per cent. Several countries in Western Africa even experienced some social unrest in urban areas.

The food crisis has forced a re-examination of investment plans and policies by governments, donors and other stakeholders. The trend for rice import growth in the region will depend largely on how production changes in coming decades. Specifically, investments made and policies adopted by individual countries will be the major determinants of whether the region will continue to be acutely affected by price surges in exporting countries (mainly in Asia) in the future.

In this chapter we examine the factors that are most likely to affect the future pattern of rice imports to sub-Saharan Africa. The next section provides an overview of the trends in rice production and yield in all sub-regions of sub-Saharan Africa. We then provide information on consumption and its major determinants. This section leads to the analyses of sub-regional imports and their trends. Given the major significance of the region in the global rice trade, we discuss some of the policy responses to the recent food crisis. Our last section provides some forecast scenarios on rice imports, given regional trends in consumption and production.

Production

There was a fourfold increase in paddy rice production in sub-Saharan Africa¹ between 1961 and 2007 from approximately 3.14 million tons to 17 million tons. This represents an average annual growth rate of about 3.7 per cent for sub-Saharan Africa over this time period (4.7 per cent for Western Africa, 2.7 per cent for Eastern Africa, 4.5 per cent for Southern Africa and 3.6 per cent for Central Africa).²

While the overall regional growth rate is impressive relative to Asia (the average annual growth rates of paddy rice production of East and Southeast Asia between 1962 and 2003 are 2.2 per cent and 3.1 per cent respectively), it started from a low level relative to other regions.³ Rice production in the entire continent never exceeded that of either Thailand or Viet Nam in any given year over this time period. As a share of total world output, the sub-Saharan Africa paddy rice production went from 1.5 per cent in the 1961 to 2.6 per cent in 2007.

Within the continent, there are significant sub-regional variations both in level and growth rates of production (see Figure 9.1). Rice production by Central and Southern Africa is minor compared to Western and Eastern Africa. These latter sub-regions had comparable levels of production in the 1960s and 1970s but production in the Western sub-region began to expand at a far higher rate than all other sub-regions beginning in the 1980s.

The top rice producers in Western Africa from 2000–2007 were Nigeria, Guinea, Mali, Côte d'Ivoire and Sierra Leone (see Table 9.1). In 2007, these countries accounted for approximately 88 per cent of the rice production in

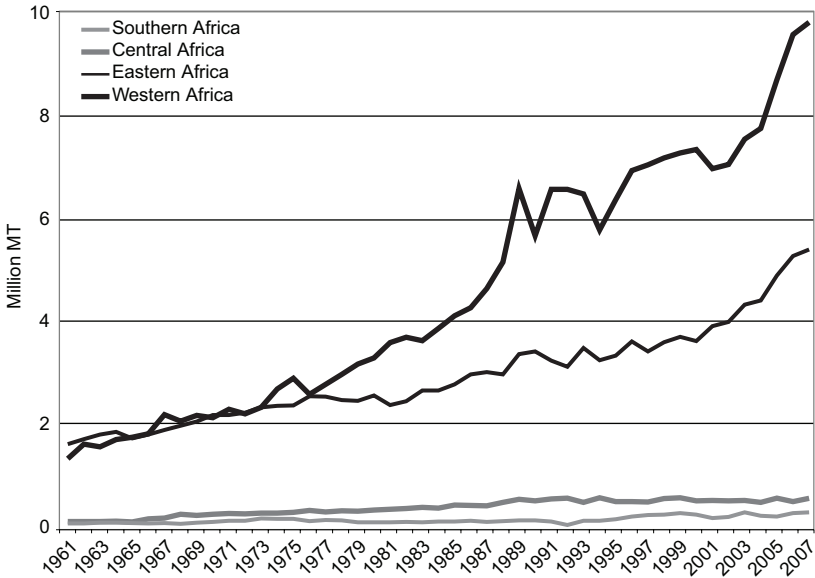


Figure 9.1 Paddy rice production in sub-Saharan Africa by sub-region

Source: <http://faostat.fao.org>, 2009

Western Africa amounting to a total of 8.4 million tons of paddy rice. Within this group of countries, Nigeria experienced the fastest average annual growth while Sierra Leone showed the lowest.

Madagascar is the most important rice producer in Eastern Africa, accounting for about 70 per cent of the sub-region's production in 2007 (3.6 million tons). This country showed an average annual growth rate of production of about 2 per cent between 1962 and 2007.

In Central Africa, the Democratic Republic of Congo is the largest rice producer. The country produced 315,000 tons in 2007, though this is a significant drop in production from the 1990s. Between 1962 and 2007, the country had an average annual growth rate of 4.5 per cent.

Mozambique is by far the largest producer in Southern Africa. In 2007, it produced about 196,000 tons, representing about 86 per cent of the sub-region's total rice production. While experiencing wild swings in growth rates, mainly as a result of civil conflict, the average annual growth was 5.4 per cent between 1962 and 2007.

Farming in the region is largely rainfed. This fact implies a major constraint on the level of production of all cereal crops since rainfall is erratic and unpredictable. Drought occurrence in the region is frequent. Therefore, the presence of irrigation technology is a significant factor in explaining variation in rice production in the region. Most recent estimates show that only 2 per cent of agricultural land area in sub-Saharan Africa is equipped for irrigation (<http://faostat.fao.org>, 2009),⁴ which corresponds to a little over 4 per cent of

Table 9.1 Rice producers in sub-Saharan Africa

	Production (metric tons) 2007	Average annual growth of production 1962–2007 (%)	Area (ha) yield 2007	Yield (ton/ha) 2007	Average yield (ton/ha) 2000–2007
WESTERN AFRICA	9,525,004	4.72	5,706,924	1.67	1.58
Nigeria	4,677,400	11.40	3,000,000	1.56	1.43
Guinea	1,401,592	4.42	788,771	1.78	1.74
Mali	955,300	7.10	377,000	2.53	2.17
Côte d'Ivoire	677,000	4.05	345,000	1.96	1.93
Sierra Leone	650,000	3.44	630,000	1.03	1.03
Ghana	242,000	7.53	120,000	2.02	2.12
Senegal	215,212	10.18	79,718	2.70	2.49
Liberia	154,800	3.10	120,000	1.29	1.07
Burkina Faso	123,000	5.74	50,000	2.46	1.98
Guinea-Bissau	88,700	3.63	65,000	1.36	1.40
Benin	78,800	13.76	27,000	2.92	2.45
Mauritania	77,000	16.77	18,000	4.28	4.30
Niger	70,000	6.87	22,435	3.12	3.25
Gambia	40,000	5.21	19,000	2.11	1.93
Togo	74,200	6.51	45,000	1.65	2.09
EASTERN AFRICA	5,237,500	2.72	2,162,300	2.42	1.96
Madagascar	3,596,000	2.07	1,300,000	2.77	2.41
Tanzania	1,240,000	9.66	665,000	1.86	1.95
Uganda	162,000	15.84	119,000	1.36	1.45
Burundi	69,500	11.94	21,000	3.31	3.26
Kenya	66,000	4.24	18,500	3.57	3.65
Rwanda	44,000	71.20	10,000	4.40	3.73
Sudan	30,000	27.55	7600	3.95	2.95
Comoros	17,000	1.58	14,000	1.21	1.21
Ethiopia	13,000	2.48	7200	1.81	1.82
CENTRAL AFRICA	537,700	3.58	568,900	0.95	0.94
Congo, D.R.	315,000	4.48	418,000	0.75	0.75
Chad	129,000	17.13	80,000	1.61	1.28
Cameroon	49,000	11.57	40,000	1.23	1.68
Central African Republic	33,000	8.70	15,000	2.20	1.96
Angola	9300	7.58	13,500	0.69	1.05
Congo	1300	-0.34	1900	0.68	0.68
Gabon	1100	8.34	500	2.20	2.03
SOUTHERN AFRICA	309,787	4.48	272,200	1.14	1.02
Mozambique	196,000	5.44	204,000	0.96	0.91
Malawi	91,500	12.93	52,500	1.74	1.57
Zambia	18,317	21.01	14,000	1.31	1.29
South Africa	3200	0.78	1400	2.29	2.29
Zimbabwe	600	13.71	250	2.40	2.36
Swaziland	170	-1.29	50	3.40	3.40

Source: <http://faostat.fao.org>, 2009

Table 9.2 *Regression results with paddy rice production (columns 1 and 2) and rice yield (columns 3 and 4) as dependent variables*

	Fixed effect 1	Random effect 2	Fixed effect 3	Random effect 4
Proportion of agricultural land irrigated	3468993.00*** (598690.20)	2183738.00*** (458770.40)	95.52*** (12.46)	39.79*** (5.92)
Area harvested for rice	1.47*** (0.02)	1.49*** (0.01)	-0.0000002 (0.0000002)	-0.0000001 (0.0000002)
Real GDP per capita	-8.49*** (2.63)	-5.85** (2.40)	0.0001** (0.00003)	0.0001*** (0.00003)
Constant	-2983.40 (6073.11)	-2453.64 (16210.57)	0.97*** (0.11)	1.33*** (0.17)
R ² (within)	0.87	0.87	0.05	0.05
R ² (between)	0.93	0.95	0.37	0.39
R ² (overall)	0.92	0.93	0.17	0.18
Observations	1428	1428	1395	1395
Countries	36	36	36	36

Note: *significant at 10 per cent, **significant at 5 per cent, *** significant at 1 per cent. Standard errors are in parentheses. Only sub-Saharan African countries are included and the data covers the period 1961 to 2005. Production is in tons; yield is in tons per hectare.

Source: Raw GDP data from Penn World Table (2008). All other data from FAO (2009)

arable land. Since rice is especially dependent on water, irrigation not only allows countries to expand the area planted but also the yield per hectare.

We carried out a simple regression to further estimate the impact of irrigation technology on rice output and yield in sub-Saharan Africa. The panel data regression output is presented in Table 9.2. Controlling for rice area harvested and per capita income, both total rice paddy production (in metric tons) and yield (tons/ha) are significantly correlated with the proportion of agricultural land equipped for irrigation. For example, a doubling of average proportion of the area irrigated (that is, going from 2.5 per cent to 5 per cent) can increase paddy rice production by 54,593 tons to 86,724 tons and yields from 1 to 2.4 tons/ha, holding area harvested and income per capita constant.

Rice yields have not increased greatly across the region over the past four decades (see Figure 9.2). Our analysis shows that 70 per cent of production growth came from expansion in area harvested, while the rest came from yield growth. Western Africa showed the highest rate of annual increase in area harvested (3.5 per cent) and Eastern Africa the lowest (2.1 per cent) between 1962 and 2007. The average yield (tons/ha) in the region between 2000 and 2007 is 1.67 (1.56 for Western Africa, 0.92 for Central Africa, 2.25 for Eastern Africa and 1.07 for Southern Africa) (see Figure 9.3). In contrast, average rice yields between 2000 and 2007 for Asia, China, India, Myanmar, Pakistan, Thailand and Viet Nam are 4.06, 6.23, 3.03, 3.61, 3.04, 3.74 and 4.66 respectively.

The low rice yield is a specific example of generally unimpressive cereal productivity in the region. The introduction of high-yielding varieties and the application of fertilizers in some Asian countries resulted in high increases in

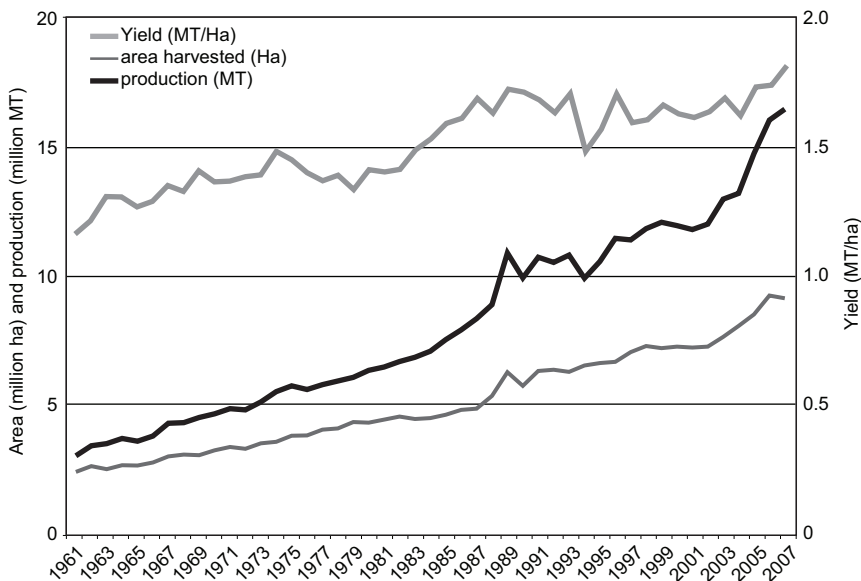


Figure 9.2 Paddy rice production, area harvested and yield in sub-Saharan Africa

Source: <http://faostat.fao.org>, 2009

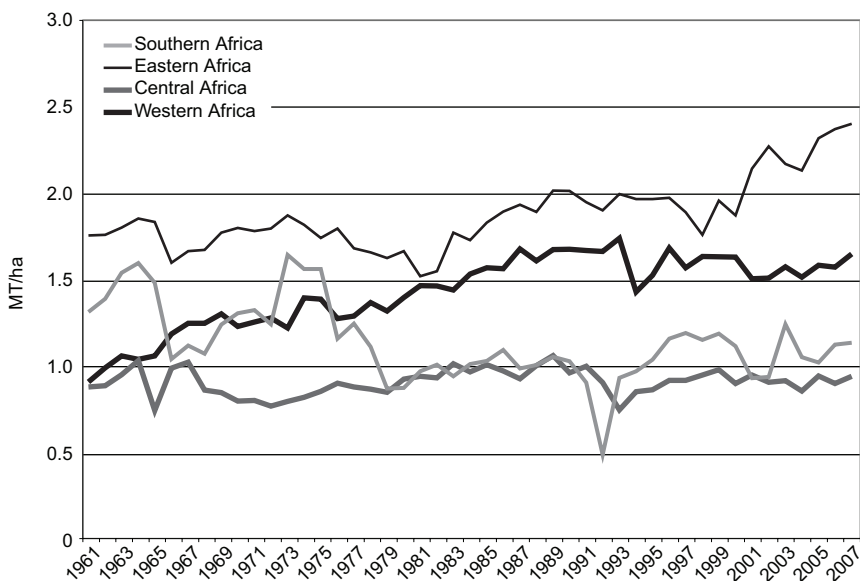


Figure 9.3 Paddy rice yield (metric tons/ha) by sub-region

Source: <http://faostat.fao.org>, 2009

yield in cereals such as rice, wheat and maize. Total fertilizer consumption ($N+P_2O_5+K_2O$) in the region in 2006 was 1 million tons compared to 67 million tons in Asia (FAO, 2009).

While new varieties of rice (NERICA) that are considered to be adapted to local conditions have been introduced by WARDA, the distribution of this new variety only started in 1996 in Guinea and Côte d'Ivoire (WARDA, 2006). In a survey of 1,500 farmers in Côte d'Ivoire, Diagne (2006) found that only 4 per cent of the sample adopted NERICA varieties. Among those exposed to the new variety, the adoption rate was 27 per cent. Recently, there has been a push to accelerate the dissemination of NERICA varieties in the region. The Africa Rice Initiative (ARI) was created in 2001 within WARDA to serve as the channel for NERICA promotion. The pilot countries for this initiative are Benin, Ghana, The Gambia, Guinea, Mali, Nigeria and Sierra Leone.

Consumption

Much more striking than the growth in production is the growth in rice consumption in sub-Saharan Africa. As a result, rice production levels in the region are increasingly lagging behind consumption levels. As in production, there is a lot of variation within the sub-region in terms of both the level of consumption and its growth rates.

Western Africa has the region's highest level of consumption (see Figure 9.4). The five largest rice-consuming countries (in absolute terms) in the sub-region are Nigeria, Côte d'Ivoire, Senegal, Guinea and Mali and combined they represent 77 per cent of the sub-region's total consumption in 2003 of 8.5 million tons (milled rice). The average annual growth rate of consumption levels was 5.6 per cent between 1962 and 2003 in the whole sub-region. Western Africa also has the highest per capita rice consumption: 44kg in 2003. The top five rice-consuming countries in the region from 2000–2003 (see Table 9.3) were Guinea Bissau (86kg/person), Sierra Leone (83kg/person), Guinea (76kg/person), Senegal (74kg/person), and Côte d'Ivoire (60kg/person). Rice consumption is not high in all of Western Africa, however, and rice calorie supply as a percentage of total calorie supply is highly variable in the sub-region. Between 2000 and 2005, the top five countries in this category were Sierra Leone (44 per cent), Senegal (32 per cent), Guinea Bissau (31 per cent), Guinea (28 per cent) and Côte d'Ivoire (27 per cent). During this time period, Niger had the lowest percentage at 2 per cent.

Eastern Africa is second to Western Africa in terms of consumption levels. In this sub-region, Madagascar, the largest rice producer, is also the largest rice consumer, accounting for about 61 per cent of the sub-region's consumption. It also has the highest per capita rice consumption in sub-Saharan Africa, with the average person consuming 97kg per year (see Table 9.3), comparable to per capita rice consumption in Asian countries such as the Philippines and Thailand, where it is slightly over 100kg per person per year. The above figure for Madagascar fell from per capita consumption of over 120kg/year in the

Table 9.3 *Countries with highest per capita rice consumption*

<i>Countries</i>	<i>Per capita consumption (kg/year) Average 2000–2003</i>
Madagascar	97
Guinea-Bissau	86
Sierra Leone	83
Guinea	76
Senegal	74
Côte d'Ivoire	64
Mauritius	61
Comoros	57
Liberia	54
Cape Verde	50

Source: FAO (2009)

Table 9.4 *Average consumption growth rates by sub-region (%)*

	1962– 1970	1970– 1980	1980– 1990	1990– 2000	2000– 2003	1962– 2003
Central Africa	9.1	5.9	6.2	1.5	7.8	5.8
Eastern Africa	3.2	4.2	3.7	3.1	4.8	3.4
Southern Africa	2.4	5.5	3.7	5.0	10.7	5.3
Western Africa	6.4	8.2	4.7	3.7	4.5	5.6
Sub-Saharan Africa	4.9	6.5	4.3	3.4	5.2	4.8

Source: <http://faostat.fao.org>, 2009

1970s and 1980s. The sub-region's average growth rate of consumption was 3.4 per cent between 1962 and 2003 (see Table 9.4).

Central and Southern Africa had almost identical levels of overall rice consumption between the 1960s and 1990s. While the production level of Southern Africa overtook that of Central Africa in the early 1990s, the per capita consumption of the latter is now higher, driven by large consumption growth in Cameroon and Gabon. The largest per capita rice-consuming countries in Southern Africa are the island countries of Mauritius (59kg per person in 2003) and Seychelles (33kg per person in 2003). The average annual growth rates of consumption for Central and Southern Africa between 1962 and 2003 were 5.8 per cent and 5.3 per cent respectively.

While most of the rice grown in the region is the Asian type (*Oryza sativa*) and increasingly the new NERICA varieties,⁵ Western Africa also has a native rice species (*Oryza glaberrima*). Archaeological and linguistic evidence point to its domestication around 3000 years ago (Porteres, 1970), somewhere in the area between the modern-day Mali, the Senegambia⁶ region and the Guinea Coast. The Asian type was introduced by Portuguese traders around the 16th century (Linares, 2002). This was around the same time that groundnuts were introduced (Brooks, 1975). This latter development did not dramatically alter the quantity of rice consumption at the time. Its consumption changed when industrialization in Europe created demand for groundnuts as a raw material

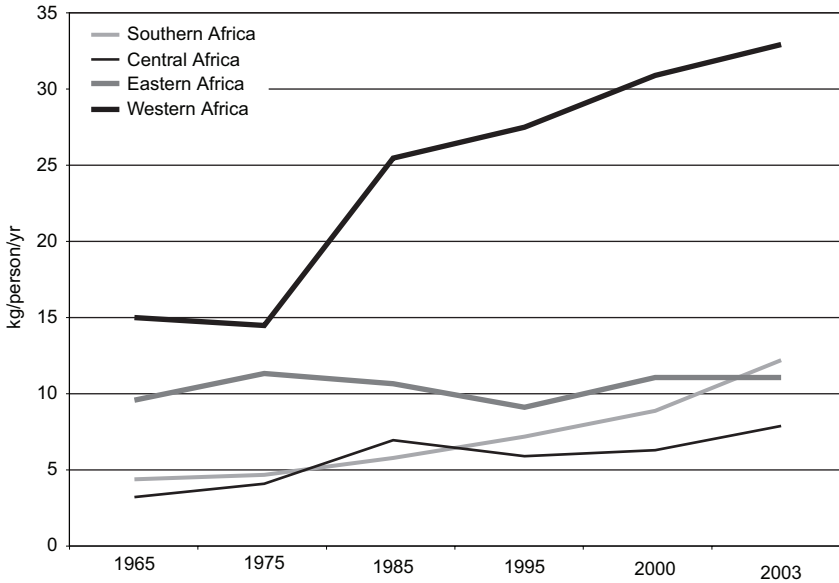


Figure 9.4 Average per capita milled rice consumption, weighted by population

Source: <http://faostat.fao.org>, 2009

in the manufacturing of soap in the 19th century. While introduced by the Portuguese, France was initially the biggest recipient of groundnut exports from the area including territories that were colonized by Britain. Unlike many soap manufacturers in Britain that relied primarily on palm oil (mainly from Nigeria) to make soap, the French manufacturers depended more on groundnuts (mainly from the Senegambia area). Groundnut became the most important cash crop in the sub-region, especially among the Sahelian countries as its demand grew (Burkhill, 1901; Weil, 1984).⁷ The widespread adoption of groundnut came at the expense of local cereals such as millet and sorghum (Lançon and Benz, 2007). Historical accounts on the production of groundnut show a steep increase in the middle of the 19th century. For example, groundnut (with shells) exports from The Gambia went from 47 metric tons in 1835 to 11,095 tons in 1851 (Brooks, 1975). Since millet and sorghum were not widely traded internationally, there are no available records of their production and trade going that far back. However, given the rapid increase over such a time period in production in groundnut in response to demand, it seems likely that agricultural land was reallocated from other crops (principally millet and sorghum) rather than expansion into new farmlands. To ensure that food security was not compromised, the French facilitated rice imports from their colonies in Southeast Asia. The importance of groundnuts as a cash crop and the continued increase in rice consumption continues to this day in many West African countries. For example, Senegal today is one of the largest rice consumers and groundnut exporters in the region.

Many other factors became important starting around the period of independence (from the mid-1960s) that increasingly determined the continued growth in consumption of rice in sub-Saharan Africa. Among them, urbanization has long been recognized as the key variable in driving rice consumption (Leon and Curonisy, 1981; Senauer et al, 1986). Consumption preferences shift towards rice and away from other local grains as households move to urban areas. As Figure 9.5 shows, the urbanization rates across the sub-Saharan African region are increasing with an increasing number of countries exceeding 50 per cent urbanization rate. These urbanization rates are comparable to Asia though much less than the Americas and Europe (see Table 9.5). The primary reason usually advanced for the shift towards rice in urban areas is that relative to other locally grown cereals, rice sold to final consumers is easier to prepare. For example, households purchase rice that is already milled while a lot of millet sold in the West African sub-region is not milled⁸ (even when milled, millet preparation is still more time-consuming than rice). Therefore, as households move away from the farm into cities and engage in non-agricultural activities, the higher opportunity cost of time biases consumption towards less time-consuming cereals such as rice and wheat. Evidence across several African countries shows strong differences between rural and urban areas in rice consumption. Reardon (1993) shows that the difference in urban versus rural rice consumption (rice share of cereal consumed) is 41 per cent versus 1–6 per cent in Burkina Faso, 57 per cent versus 4–8 per cent in Mali and 55 per cent versus 1–17 per cent in Niger.

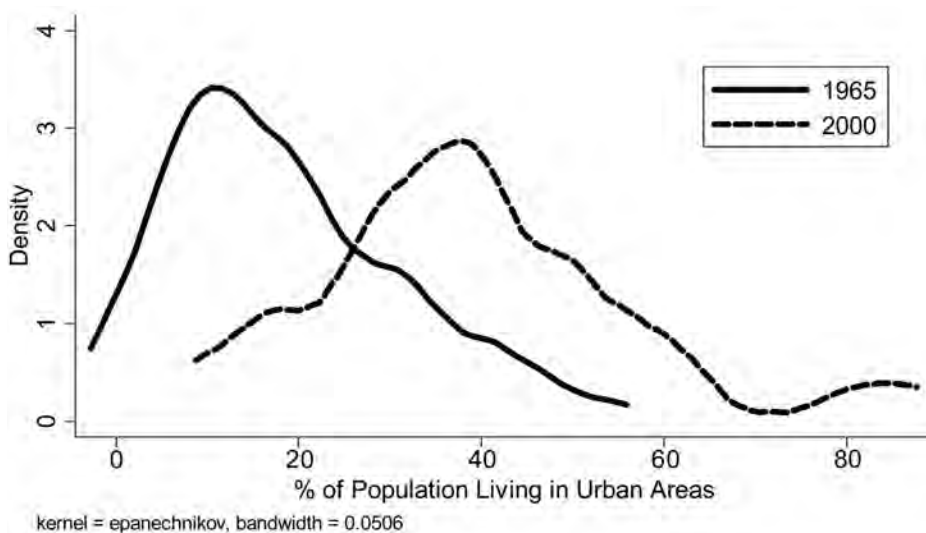


Figure 9.5 *Distribution of urbanization rates in sub-Saharan Africa in 1965 and 2000*

Note: The density on the y axis can be interpreted as the frequency.

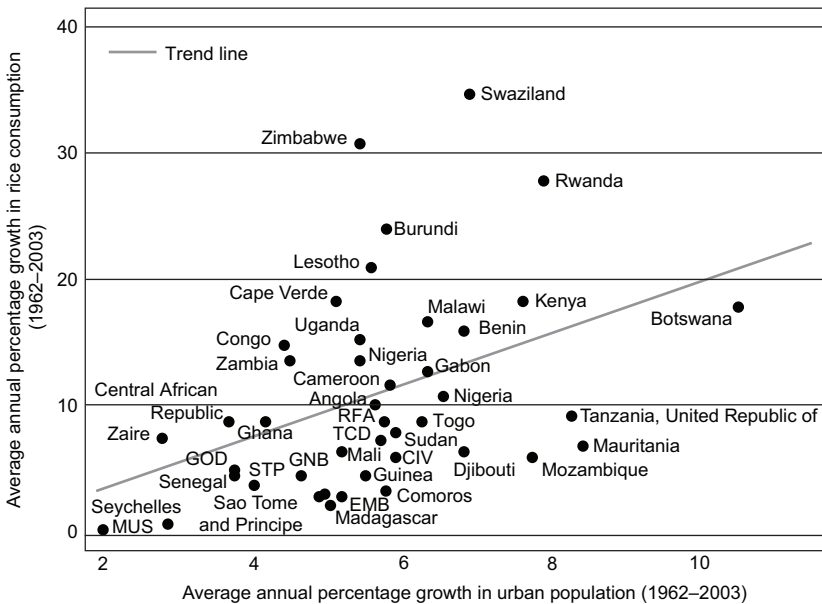
Source: National level data from FAOStat

Table 9.5 *Urbanization rates in other regions (%)*

	1965	1975	1985	1995	2005
Africa	21	25	30	35	40
Americas	62	67	71	75	79
Asia	21	23	29	34	40
Europe	59	65	68	72	73

We present some graphical evidence that illustrates the relationship between urbanization and rice consumption. In Figure 9.6, we can observe the positive correlation between the growth rates of consumption and the urban population between 1962 and 2003. The positive effect of urbanization on rice consumption also shows up in a regression of growth in per capita consumption on growth in the urban population (analysis not shown).

To further analyse the relationship between urbanization and rice demand, we run a simple panel data regression that allows us to control for other important variables such as national income since an increasing portion of rice consumed is imported. The regression uses panel data covering all sub-Saharan African countries from 1961 to 2003. Our dependent variable is per capita consumption (kg/person/year). In this parsimonious regression, we also

**Figure 9.6** *Total consumption growth and urbanization*

Note: Excluded countries are Ethiopia, Eritrea and Namibia for lack of data. The equation for the trend line is $y = -2.55 + 2.32x$ and the R^2 is 0.16.

Source: <http://faostat.fao.org>, 2009

Table 9.6 *Regression results (sub-Saharan African countries) for the determinants of per capita rice consumption*

	Fixed effect 1	Random effect 2
Total population	0.0001* (0.00003)	0.00001 (0.00004)
Per cent urban	0.43*** (2.80)	0.43** (2.78)
Real GDP per capita	-0.0001 (0.0002)	-0.0001 (0.0002)
Constant	13.04*** (0.78)	12.54*** (4.67)
R ² (within)	0.17	0.17
R ² (between)	0.02	0.02
R ² (overall)	0.03	0.03
Observations	1699	1699
Countries	43	43

Note: Ethiopia, Eritrea and Somalia are not included in the analysis because of missing data points for many years. *significant at 10 per cent, **significant at 5 per cent, ***significant at 1 per cent. The dependent variable is per capita rice consumption (kg/person/year). Standard errors are in parentheses.

Source: <http://faostat.fao.org>; Penn World Table, 2008; <http://esa.un.org/unpp/index.asp>

included total population. The results are presented in Table 9.6 (both fixed and random effect estimates). Both estimations show a statistically strong and significant relationship between urbanization and consumption. Specifically, a one percentage point increase in urbanization rate is associated with an increase of per capita rice consumption by 0.43kg per person per year holding other variables constant. Therefore, a 10 percentage point increase (for example, going from 40 per cent to 50 per cent urbanization rate) in urbanization rate increases per capita consumption by 4.3kg per year. The effect of per capita income levels is not statistically significant. The size of the country, in terms of total population, also does not have strong effect on per capita rice consumption once we control for urbanization and per capita GDP.

Not surprisingly, the effect of urbanization varies significantly across sub-regions. When the regression (fixed effect estimation) is done by sub-region, we find that the a percentage point increase in urbanization increases per capita consumption by 0.42kg, 0.05kg, 0.17kg and 0.50kg in Central, Eastern, Southern and Western sub-regions respectively.

In addition to urbanization, income is likely to play a role in the increased consumption of rice. In most of the region, crops such as millet, sorghum, maize and cassava provide the bulk of the calorie supply among rural subsistence farmers. But as incomes increase from surplus production, these households tend to diversify their diets by purchasing imported rice (Ross, 1982).

Imports

When local production falls short of consumption, imports must fill the gap. The preceding discussion on consumption and production and their growing divergent trends gives an indication of the importance of imports (see Figure 9.7). Total rice imports in sub-Saharan Africa went from about half a million tons in 1961 to 8 million tons in 2006 (see Figure 9.8). This represented an average annual growth rate of about 8 per cent. Sub-Saharan Africa's role in the international rice market is out of proportion to its relative size in global trade in general. The region's share of world imports increased from 9 per cent in 1961 to 31 per cent in 2006.

Sub-regional patterns in imports are similar to that of consumption. Western Africa is by far the largest rice importer accounting for 60 per cent of sub-Saharan Africa's imports in 2005 (70 per cent in 2001). The leading importers in this sub-region (in order) are Nigeria, Senegal, Côte d'Ivoire and Ghana (see Table 9.7). Together, these countries accounted for about 60 per cent (3.1 million tons) of the sub-region's total imports (5.2 million tons). The average annual growth rate of imports in the sub-region was 10 per cent from 1962 to 2005, though this growth rate has fallen to 5 per cent since 1980.

South Africa is the biggest importer in the Southern Africa sub-region with a little over 0.8 million tons of imports in 2006, which represented about 59 per cent of the area's total imports that year. Other significant importers in the

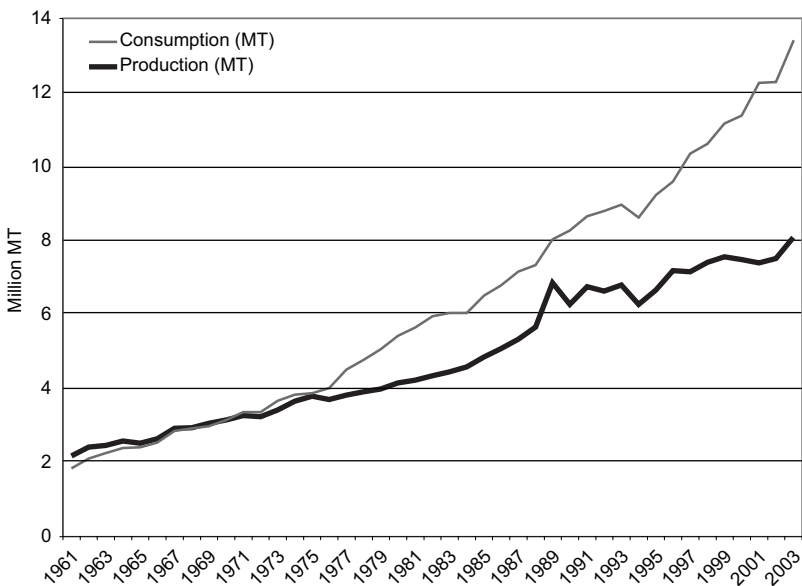


Figure 9.7 *Production and consumption of milled rice in sub-Saharan Africa, 1962–2005*

Note: To get equivalent milled rice, we used conversion factor of 0.67 from paddy to milled rice.

Source: <http://faostat.fao.org>, 2009

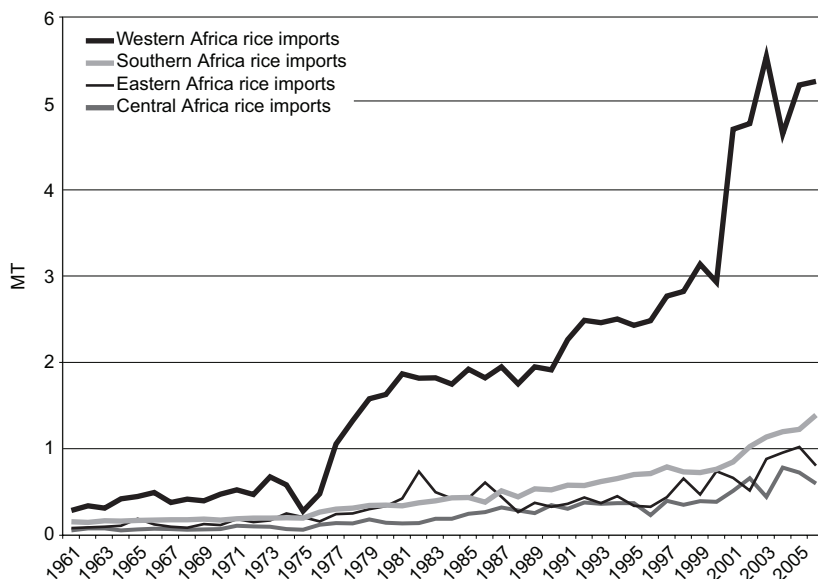


Figure 9.8 Rice imports in sub-Saharan Africa

Source: <http://faostat.fao.org>, 2009

sub-region are Mozambique and Mauritius. The average annual growth rate of imports in the sub-region between 1962 and 2006 is 5.7 per cent, which is only slightly below that of the consumption growth rate.

The two low-importing sub-regions are Central and Eastern Africa. The biggest importer in Central Africa by far is Cameroon, accounting for about 75 per cent of the sub-region's rice imports. The two big importers in Eastern Africa are Madagascar and Kenya. Between 2000 and 2006, these two countries recorded almost identical volumes in rice imports, representing 53 per cent of imports in the sub-region in 2006. All sub-regions show significant upward trajectories in imports, suggesting continued growth in the future.

Table 9.7 Imports (milled rice terms in metric tons)

Countries	Average 2000–2005
Nigeria	1,329,836
Senegal	763,274
South Africa	702,741
Côte d'Ivoire	677,125
Ghana	347,678
Cameroon	285,858
Kenya	250,309
Guinea	220,102
Madagascar	193,417
Burkina Faso	182,408

Source: <http://faostat.fao.org>, 2009

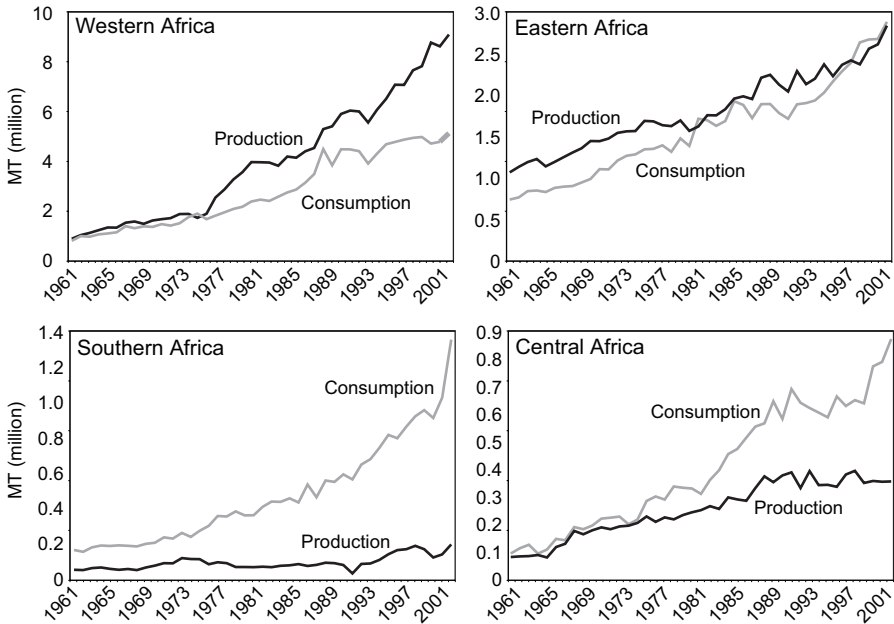


Figure 9.9 Production and consumption of milled rice by sub-region

Note: To get equivalent milled rice, we used conversion factor of 0.67 from paddy to milled rice.

Source: <http://faostat.fao.org>, 2009

Figure 9.9 shows a clear picture of the time path of production and consumption in the different sub-regions. Between 1961 and the mid-1970s, imports in Western Africa were low as consumption and production were almost equal. And from the late 1970s to the mid-1990s, imports while high, did not show high growth rates. The proximate reason for the high growth rate of imports over the past 15 years was the result of consumption greatly outstripping production during this time period. The situation in Central Africa is quite similar to that of the Western sub-region, except that the volume in the former is just a fraction of the latter. Southern Africa has always been an importer over this time period, as Figure 9.9 shows, but the sub-region also began to experience some growth in imports beginning in the mid-1970s. The sub-region that has a different experience is Eastern Africa. For the most of the period under consideration, the area's production has exceeded consumption. The main reason behind this is the high level of production by Madagascar and the relatively low per capita rice consumption of other countries. Madagascar is also the only country in this sub-region with the capacity to export any significant amount of rice and the main destination of its exports are the neighbouring island countries of Comoros, Mauritius and Seychelles. However, even this sub-region is beginning to see imports, and consumption has overtaken production.

Determinants of rice imports

It is highly likely that the upward trend in imports will continue, as consumption will continue to rise with population growth and urbanization. Other factors will also contribute, including the persistence of habit formation that makes the demand for rice relatively price-inelastic, the lower quality of locally grown rice compared to imported rice, non-competitiveness of other locally grown cereals, poor infrastructure and exchange rate policies. While per capita rice consumption has started to decline in some Asian countries (Ito et al, 1989), that does not appear to be happening in Africa, nor is it likely to in the future, as per capita incomes in Africa are still well below those at which per capita consumption started to decline in countries such as Japan and Republic of Korea.

Lack of responsiveness to price

The lack of responsiveness to price in the region was demonstrated when the CFA franc was devalued from 50 to 100 CFA francs per French franc in 1994. With the exception of Guinea, all former French colonies in Western and Central Africa use the CFA currency,⁹ which is currently pegged to the euro (it used to be pegged to the French franc). Some of the biggest rice-consuming countries (Senegal and Côte d'Ivoire, for example) in the region are CFA member countries. A massive devaluation of the currency means that the price of imported rice is substantially increased. One would therefore expect that the importation of rice would be significantly reduced in the relevant countries either due to reduced demand because of a shift to locally grown cereals and/or higher local rice production. However none of the CFA countries experienced any significant drop in rice imports with devaluation. What seems to have happened was that the composition of a typical urban food basket changed. Specifically, the consumption of meat and other items were reduced while the consumption of rice barely changed (Diagana et al, 1999). It is true that some policies implemented at the time moderated the adverse effect of the currency devaluation on consumers. For example, Senegal reduced its import duties on rice when the currency devaluation went into effect. However, the degree of the devaluation was so large that imports in CFA countries should have shown a noticeable decline as long as the demand for rice was not completely inelastic. Furthermore, with the exception of Mali, no CFA country showed a significant increase in production of locally grown rice. It therefore appears that once shifts of preferences and taste towards rice occur, the habit becomes almost impervious to even large policy shocks.

The price inelasticity of demand for rice is not restricted to CFA countries. In a case study of rice imports in Ghana, Nigeria and Senegal, Lançon and Benz (2007) found that the international price of rice is not a major determinant of changes in rice imports even in Ghana and Nigeria.

Lower quality of locally grown rice

The level of post-harvest handling or processing of locally grown rice does not always produce rice equal in quality (at least to local consumers) to imported rice from Asia. Not only is the quality likely to be relatively low, but it is also unpredictable (WARDA, 2006). A survey of rice consumers in Nigeria shows cleanliness, taste and grain shape, among other attributes, as reasons many consumers prefer imported rice over domestically produced rice (Lançon et al, 2003). Thus, increasing the quantity of locally grown rice is only part of the task in making the region less reliant on imports. Quality must be improved as well to increase the competitiveness of local varieties.

The importance of this factor is hard to quantify, however, because there are many varieties produced locally across different countries and different types of rice varieties are also imported. Indeed, imported rice is not always preferred to local rice. Some countries may be at an advantage because of local affinity for certain local varieties independent of the level of post-harvest handling or processing. For example, both Mali and Guinea produce a local variety of rice that receives a price premium (WARDA, 2006). Similarly, in Nigeria, consumers who prefer domestically produced rice cite taste as one of the reasons for their choice (Lançon et al, 2003).

Therefore comparing prices between imported and domestically produced rice must be done very carefully in order to be informative. In The Gambia, for example, the price of imported rice (CIF) exceeded the price of domestically produced rice between 1990 and 2000 on average by 6 per cent, while between 2001 and 2004 the price of domestically produced rice was higher by 8 per cent (Ministry of Agriculture, 2007).

Poor infrastructure

The demand for a product is partly a function of the price of its substitutes. While it is true that other locally grown cereals such as sorghum, millet and maize are far from perfect substitutes for rice, they have the potential to be more serious competitors to rice than they are currently. One of the main reasons for this lack of competitiveness concerns the state of infrastructure in the region. The lack of good roads creates a 'tax' on the locally grown crops, even though the actual distance between production sites in rural areas and the main consumption areas in urban centres is small. In some cases, this 'tax' is so high that some crops effectively become non-tradable within the country. While the removal of this infrastructural tax would not necessarily make many of these cereals as important as rice among urban consumers, it no doubt has an effect beyond just the margin. For example, one can observe significant price differentials between cities separated by only a few hundred miles. For example, the average price of maize in Eldoret, Kenya in December 2008 was \$230/ton while the average price in the same month in Mombasa was \$336/ton (www.ratin.net/priceinfo.asp; in December 2008, \$1=Ksh79). And in Nigeria,

the price difference in rice between Dekina and Ilorin, at a distance of 200km, is 20 per cent (Akpokodje et al, 2001).

Exchange rates

Since rice commodity trade is denominated in US dollars, the exchange rate between a country's currency and dollars will determine the import bill for and the effective price faced by the country (Lançon and Benz, 2007). Unlike many sub-Saharan country currencies, the CFA franc has been mostly appreciating against the US dollar because its value is pegged to the euro. Consequently, the domestic currency price of imports has increased less rapidly in CFA countries than in some other countries in the region or on the world market. If the euro (and thus the CFA franc) continues to appreciate against the dollar, then import bills will rise less rapidly than they otherwise would have. However, these exchange rate movements may have little effect on demand, as it was argued earlier that rice demand seems to be price-inelastic in the region.

Global food crisis, social unrest and policy responses

Given the increasing reliance of the region on rice imports, it is not surprising that sub-Saharan Africa was especially hard-hit during the global food crisis. In Tanzania (Dar es Salaam), the price of rice went from \$435 per ton in July 2007 to \$746 in July 2008. In Uganda (Kampala), the same quantity went from \$504 to \$1062 over the same time period. In Rwanda (Kigali), rice price went from \$764 to \$1209 over the same period (RATIN, 2008). Countries in other sub-regions registered similar increases in prices over the same time period.

Not surprisingly, social unrest erupted in early 2008 in several urban centres in the region because of the heavy dependence of urban dwellers on imported rice. In February, riots occurred in Burkina Faso, Cameroon and Mozambique. The following month, riots occurred in Senegal (UNOCHA, 2008a). Social unrest would have spread to more countries and increased in magnitude in the above countries had many of them not come up with policies to address the precipitous increase in food prices. The policies taken differ on the basis of existing policies at the time and the capacity of local production. Because of the large number of affected countries in the region, we focus here only on major rice-consuming and rice-importing countries: Nigeria, Mali, Madagascar, Burkina Faso, Senegal and Cameroon.

As prices started to soar, the Government of Nigeria committed N80 billion (\$678 million) to increase importation of rice from Thailand in early 2008. In addition, the government made the decision to release 11,000 tons of rice from the country's Federal Government Strategic Reserve to augment an earlier release of 40,000 tons. Import duties on rice, which at the time stood at 50 per cent, were suspended for six months (May to October 2008) (Government of Nigeria, 2008). However, the cabinet also approved the doubling of the Strategic Grain Reserve to 600,000 tons by the end of 2008.

Building up stocks during time of crisis, or even announcing the intention to do so, increases demand and puts upward pressure on prices.

In addition to the above short-term measures, the Nigerian government planned the disbursement of about N10 billion (\$85 million) from the rice levy as loans to farmers in order to boost local production. This loan programme was planned to have a repayment period of 15 years with an annual interest rate of 4 per cent. Furthermore, the government also announced that it was putting aside N200 billion (\$1.7 billion) for the development of a National Food Security Program for the period 2008–2011 to further boost the production of grains in the country. These are medium- to long-term plans, and it remains to be seen if there will be any significant effects on production.

The country with one of the biggest potentials to increase rice production in sub-Saharan Africa is Mali. In 2008, the Government of Mali instituted a national programme called *Initiative du Riz* (The Rice Initiative) in response to the food crisis (Ministère de l'agriculture, 2008). The plan called for increased rice production through intensification by improving irrigation technology and easing farmers' access to improved seeds and fertilizers.

The main irrigated rice areas of the country are in areas along the Niger River and the government agencies in charge of them are Office du Niger (ON) and Office Riz-Segou (ORS).¹⁰ ON is a much bigger project than ORS (104,000ha versus 35,400ha).¹¹ Together, these areas account for about a third of total cultivated rice area in the country. Average rice yield in 2008 was 5 tons/ha in ON areas and 1.95 tons/ha in ORS areas (Office du Niger, 2008a, b). This difference in yield between the two areas is mainly attributed to the difference in irrigation technology.¹² The rice intensification plan in ORS areas included upgrading irrigation technology from flood irrigation to controlled irrigation through the installation of pumps and easing access to fertilizer for farmers. ON already has advanced irrigation equipment so the government's intensification plans in this area mainly focus on making fertilizer accessible to farmers.

Similar to Nigeria's agreement with Thailand, the Senegalese government announced that it entered into a bilateral agreement with the Government of India to guarantee imports of 600,000 tons of rice annually for six years. The Government of Senegal chose the six-year timeframe to allow it to develop a plan for self-sufficiency in rice. Senegal also signed a deal with Cambodia to import 120,000 tons in 2009. Like Nigeria, Cameroon also announced the lifting of import taxes (5 per cent at the time) on rice in March 2008 (UNOCHA, 2008b).

Some countries in the region that have large local production capacity, some of which are normally exported to neighbouring countries, decided to ban exports. These countries were Madagascar and Mali (and to a much smaller extent, Burkina Faso). In the case of Mali, the enforcement of the export ban was not successful because of its long borders and limited administrative capacity. The government estimated that large quantities of rice were exported to Senegal, Guinea and Niger in 2008 (Ministère de l'agriculture, 2008).

With the exception of Nigeria's National Food Security Program and its long-term credit scheme and the Government of Mali's Rice Initiative, it appears that none of the highlighted countries' policy responses extended beyond emergency short-term measures. Relaxation of import duties, export bans and bilateral agreements to guarantee imports do not address long-term food deficits. Lack of policies that are designed to increase local production suggests that sub-Saharan Africa will remain a major rice importer in the coming decades.

Forecasting regional imports for the next two decades

Based on what we know about production and consumption in sub-Saharan Africa, it is possible to make a crude forecast of the region's rice imports for the next two decades. Because of the small size and heterogeneous nature of different countries, predictions at the level of individual countries are not likely to be informative. We therefore provide our forecast by sub-region.

We used historical rates of production growth to forecast future production for the next two decades. Key factors that influence production (for example irrigation) are not registering significant growth in the region. For example, the proportion of agricultural area irrigated has slightly fallen in Western and Southern Africa between 2000 and 2005 and has only increased marginally in Central and Eastern Africa. Considering (1) the slow pace of official development assistance growth in sub-Saharan Africa, despite the Gleneagles commitments to double aid to Africa, (2) the high capital cost of irrigation development, and (3) the current global economic downturn resulting in reduced government revenues and foreign direct investment, it is reasonable to assume that expansion in irrigation will be low over the coming ten years, and that future growth of production will not accelerate substantially beyond rates of historical growth.¹³

To forecast the growth of consumption, we first forecast urban population because urbanization is one of the biggest determinants of rice consumption. Based on historical urbanization rates, we forecast urbanization rates for the four sub-regions of sub-Saharan Africa. We then used UN population forecasts (UN, 2009) to forecast urban populations.

Next, we forecast the ratio of total consumption to urban population. We used this ratio rather than per capita consumption (the ratio of consumption to total population) because it is the urban population that determines rice consumption across countries and over time. The ratio of rice consumption to urban population has been relatively constant in sub-regions with relatively high consumption (Western and Eastern Africa¹⁴) and is forecast to remain so in the future. In Central and Southern Africa, where consumption is relatively low, this ratio is increasing slowly, and we forecast that it continues to do so in the future at the same rate as in the past. Multiplication of the forecasted urban population by the forecasted ratio of consumption to urban population thus gives forecasted consumption. While the urban population is not the only

determinant of rice consumption, the relatively stable ratio of total consumption to urban population allows us to make a simple and clear forecast.

Our projections in all sub-regions suggest faster growth in consumption than in production. This difference implies strong and continued growth in imports of rice in all sub-regions in the next two decades. Our projections (see Figure 9.10) of rice imports were obtained by taking the difference between consumption and production in each sub-region. While this may seem too crude, it is important to note that most countries in the region do not export rice. Among the few countries that do, they are likely to export only to neighbouring countries. Therefore estimates of sub-regional imports can be approximated by taking the difference between consumption and production. We estimate 19.6 million tons (milled equivalent) of imports by 2030. This would represent an average annual growth rate of 5.3 per cent between 2007 and 2030.

The volume of imports in Western, Central, Eastern and Southern Africa were 4.9 million tons, 0.69 million tons, 1.47 million tons and 1.18 million tons respectively in 2006, the latest year for which we have data. To keep imports at this level for the next two decades, the various sub-regions would require very high production growth rates, assuming consumption follows historical trends. For Western Africa, paddy rice production would have to exceed 27 million tons in 2030, which is significantly higher than the forecasted volume of 18 million tons. This would require a sustained annual growth rate of at least 5 per cent between 2008 and 2030. And to make the sub-region self-sufficient (zero rice imports), production would have to increase at an annual rate of 6 per cent for the next two decades if consumption follows the forecasted level. In Central Africa, production would need to be 3.1 million tons versus the forecasted level of 0.77 million tons to keep imports unchanged from 2005. And the average annual growth rate of production would have to be 9 per cent for the sub-region to be self-sufficient if consumption stays at the above forecasted level. In Eastern Africa, production would have to reach 13.1 million tons instead of the forecasted 8.1 million tons for imports to remain unchanged from 2005. In Southern Africa, paddy rice production would have reach 1.9 million tons instead of 0.58 million tons.

Unprecedented growth rates in production would have to be sustained in all sub-regions for such production levels to be realized. Southeast Asian countries such as Thailand and Viet Nam sustained average annual growth rates of rice production of 2.7 per cent and 3.0 per cent respectively from 1962 to 2007 starting from much higher levels of production. Considering the current level of fertilizer usage, irrigation technology and the fact that an increasing amount of land being used is marginal, the growth rates needed to maintain the current import levels or achieve self-sufficiency are very likely to be out of reach in all sub-regions. Thus, the international rice trade will be of continued importance for sub-Saharan Africa for at least the next two decades.

At the same time, just because the above growth rates are unprecedented does not mean they are unattainable in some specific settings. The dependence

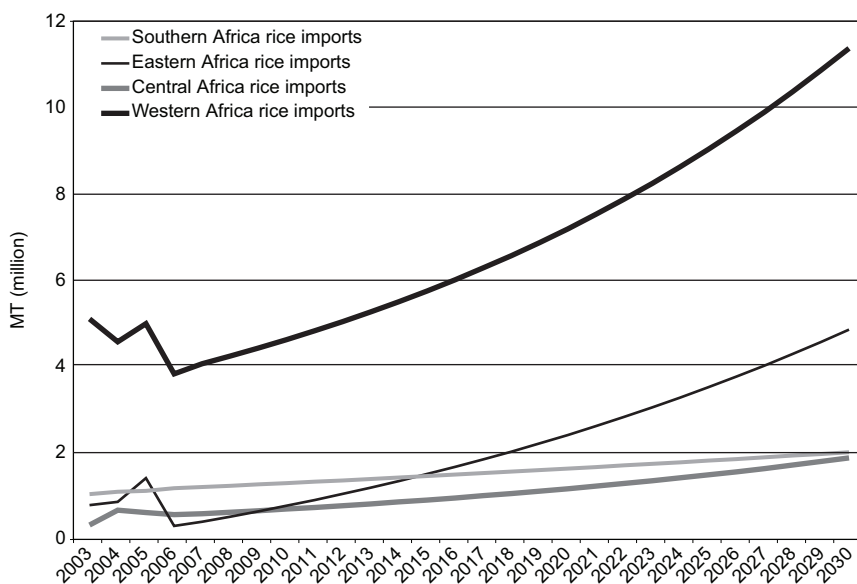


Figure 9.10 Rice imports forecast by sub-region (milled rice equivalent)

Source: <http://faostat.fao.org>, 2009

of rice production and yield on irrigation and fertilizer use and the relatively low presence of both technologies suggest that production could increase substantially in some settings. With appropriate policies, some countries may be able to make progress towards self-sufficiency. In Western Africa, Mali appears to have the political will and the agro-ecological potential to expand irrigated rice production drawing on the Niger River. Likewise, Malawi has announced plans for a ‘Green Belt’ to expand rice production by drawing on water resources in and adjacent to Lake Malawi. Mozambique has the potential to expand rainfed production through an expansion of the area planted to rice. However, outside of a few specific cases, it appears unlikely that the production–consumption gap can be significantly narrowed.

Summary and conclusions

We have provided an overview of the current rice situation in sub-Saharan Africa. While local production shows an upward trend, it lags significantly behind consumption. Our main conclusions are as follows:

- Demand for rice in sub-Saharan Africa continues to grow with population and urbanization.
- Production is also growing steadily, mainly through area expansion (which was responsible for 70 per cent of growth over the past four decades).
- But production growth is falling short of demand growth; hence imports are growing.

- Sub-Saharan Africa imports 31 per cent of the world's traded rice (2005), 60–70 per cent of which goes to Western Africa.
- Low irrigation coverage, high fertilizer costs and poor transport infrastructure constrained the supply response to recent higher rice prices.
- Public and private investment in irrigation showed no signs of increasing greatly even before the current financial crisis. Investments, if they materialize, will be costly and there will be long lags before production increases.
- The production growth rates required to hold imports at current levels are very high. To reduce imports at the regional or sub-regional level, highly improbable growth rates would need to be achieved.
- Even with optimistic projections of a strong supply response in sub-Saharan Africa, the region will remain a major market for Asian rice for the foreseeable future.

Notes

- 1 We include South Africa in our sub-Saharan Africa category because its pattern of rice consumption, production and imports do not greatly differ from neighbouring countries. Sub-Saharan Africa explicitly excludes several North African countries, including Egypt, which is a major rice producer and consumer.
- 2 Central Africa is comprised of Angola, Cameroon, Central African Republic, Chad, Republic of Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon and Sao Tome. Eastern Africa is comprised of Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Somalia, Sudan, Tanzania and Uganda. Southern Africa is comprised of Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Zambia and Zimbabwe. Western Africa is comprised of Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.
- 3 In the FAOStat database, as of time of writing, production and area data go from 1961 to 2007, consumption data go from 1961 to 2003, trade data (imports and exports) go from 1961 to 2006, and population data go to 2006.
- 4 The proportion of rice cultivated area that is irrigated is much higher than this figure. According to WARDA (2006), 17 per cent of cultivated rice area is irrigated compared to 57 per cent in Asia.
- 5 New Rice for Africa (NERICA) is an inter-specific cultivar of rice developed by WARDA. NERICA was created by crossing *O. glaberrima* and *O. sativa*.
- 6 Senegambia is the area within Western Africa covered by the modern nation states of The Gambia and Senegal.
- 7 Groundnut is not an important crop in all West African countries. The agro-ecological zone best suited to groundnut production in the sub-region is the area between the Sahel and Guinea Savanna (8 to 13 degrees North latitude) (Ndjeunga et al, 2000). As a consequence, groundnut production in southern Nigeria, Benin, Togo, most of Ghana, southern Côte d'Ivoire, Liberia, Guinea Bissau and Sierra Leone are much smaller relative to other West African countries. These areas fall mostly south of the optimal agro-ecological zones.
- 8 In most traditional processing methods, millet must be ground into millet flour before it is ready for cooking. However, millet flour cannot be stored long because

it has a tendency to turn rancid quickly due to chemical changes when the hull or bran is removed (FAO, 1995). For example, experimental evidence in Nigeria showed that the quality of millet flour deteriorates after only two months of storage due mainly to chemical changes (Ocheme, 2007). By contrast, threshed millet that is still protected by the hull, shows no changes and registers no change in quality beyond three months of storage (Ocheme, 2007).

- 9 The two sub-regions are served by different central banks. Though both currencies are called the CFA franc, they are different. They are convertible one-to-one.
- 10 ON was created by the French colonial government in 1932 and ORS was created by the Malian government in 1972 (Ministère de l'agriculture, 2008).
- 11 The total potential rice area under ON is 2 million hectares but there are no medium-term plans to expand the area irrigated beyond 104,000ha because of funding limitations.
- 12 ON uses control irrigation, while ORS uses flood irrigation with limited control.
- 13 For example, despite the fact that the potential irrigable area under ON in Mali is 2 million hectares, the Government of Mali has no medium-term plan that involves expansion of irrigated area from the current 104,000ha due to financing constraints.
- 14 The trend of the ratio of total consumption to urban population depends on the time period considered for the East African sub-region. From 1961 to 1992, this ratio fell steadily from 129 to 45. It has, however, held steady at this value since then. We base our forecast on the steady trend since 1992.

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Part IV

POLICY RESPONSES IN TRADITIONAL EXPORTING COUNTRIES

The Political Economy of Thai Rice Price and Export Policies in 2007–2008

Nipon Poapongsakorn

Introduction

The rice price spike in the first five months of 2008, which resulted in panic and food riots in many poor countries, was triggered by the export bans of two major rice-exporting countries (India and Viet Nam) and aggravated by the Philippines' buying behaviour (Dawe and Slayton, Chapter 2, this book). Since Thailand, the world's largest rice exporter, did not impose any export restrictions, its rice exports surged to record levels of more than 0.9 million tons per month for the first seven months of 2008.

Despite the surge in world prices, the Thai government did not exploit the opportunity to sell a portion of its 2.1 million tons rice stock. It also decided to increase the guarantee price for its paddy pledging programme to a record of 14,000 baht per ton for the 2008 dry-season crop. This chapter explains the rationale behind the government decisions and qualitatively assesses the impact of these policies.

After this introduction, the second part briefly discusses the history of rice price and export policies before 2007. The paddy pledging programme, which was the main rice price policy since 2001–2002, and its impact is qualitatively

analysed in the third part. The fourth part describes rice price and export policies in 2007–2008, followed by an analysis of their impact in the following section.

Brief history of rice price and export policies

The major change in government agricultural policy occurred in 1986 when a pro-consumer policy was replaced by a pro-producer policy (Siamwalla and Poapongsakorn, 1995; Poapongsakorn and Isvilanond, 2008). The export taxes and restrictions that penalized farmers were eliminated, resulting in a more or less neutral nominal rate of protection for exportable crops, although some import-competing crops such as oil palm retain some protection (Warr and Kahpaiboon, 2007). Since then the government has increased agricultural subsidies through the agricultural pledging programme,¹ with the paddy pledging programme as the most important instrument in terms of budget. The government has also attempted to implement an export cooperation policy with several major rice-exporting countries.

The paddy pledging programme

The paddy pledging policy was first introduced in the 1981–1982 cropping season. Its main objective was to provide soft loans for farmers who wanted to delay sale of their crops. Since 2001–2002, the objective has been changed ‘to support price and increase farmers’ income’.

Objective and operation of the programme

The programme allows the farmers who want to delay sale of their crops to obtain a soft loan from the Bank for Agriculture and Agricultural Cooperatives (BAAC) using their paddy (unmilled rice) as the collateral (or ‘pledge’). In the initial years of the programme, before 2001–2002, farmers could borrow less than 100 per cent of the paddy target price, which was supposed to be the market price during the harvesting period. Up until the loan is due, farmers can choose to either redeem or forfeit their collateral paddy, depending on the level of the market price relative to ‘the pledging price’.

There are two ways to borrow: (1) farmers can borrow directly from BAAC and keep the pledged paddy as the ‘pledge’ (or collateral) in storage facilities on their own farms (barn-house pledging); or (2) farmers who do not have storage facilities can also borrow by bringing their paddy to ‘central warehouses’. This is the so-called ‘warehouse deposit slip’ paddy pledging scheme that is handled by the Public Warehouse Organization (PWO) and the Farmer Central Market Organization (FCMO).

The government provides the interest subsidy for the farmers and also subsidizes the operation of the paddy pledging programme and rice sales as follows:

- The interest charged by BAAC is 6.0–7.0 per cent (minimum lending rate² (MLR)+1 for the barn-house pledging and MLR–1 for the warehouse deposit slip pledging). If farmers forfeit their crop, the government pays BAAC the interest cost; if not the farmers pay only 3 per cent and the rest is absorbed by the government. The government also reimburses BAAC operation cost at the rate of 3.0 per cent of the loan for the barn-house pledging and 0.5 per cent for the warehouse deposit slip pledging.
- The government, through the Farmer Assistance Fund (FAF), also subsidizes other operational expenses of the programme. These subsidies include 100 baht per ton for the operation and overhead expenses of PWO and FCMO; the storage cost (216 baht/ton/six months) for rice and 20 baht per month for a ton of paddy that stays in stock longer than three months; the milling and rice mixing cost (400 baht per ton); and the financial loss of rice sales. However, some operational costs of the agencies concerned, especially personnel costs, are embedded in the normal budget of each agency.

The organization, committees and agencies that are responsible for the paddy pledging programme are shown in Figure 10.1.

The last 29 years saw several major changes to the nature and objectives of the programme. First, in 1993–1994, the second type of pledging, i.e. the warehouse deposit slips scheme, was introduced in addition to the barn-house

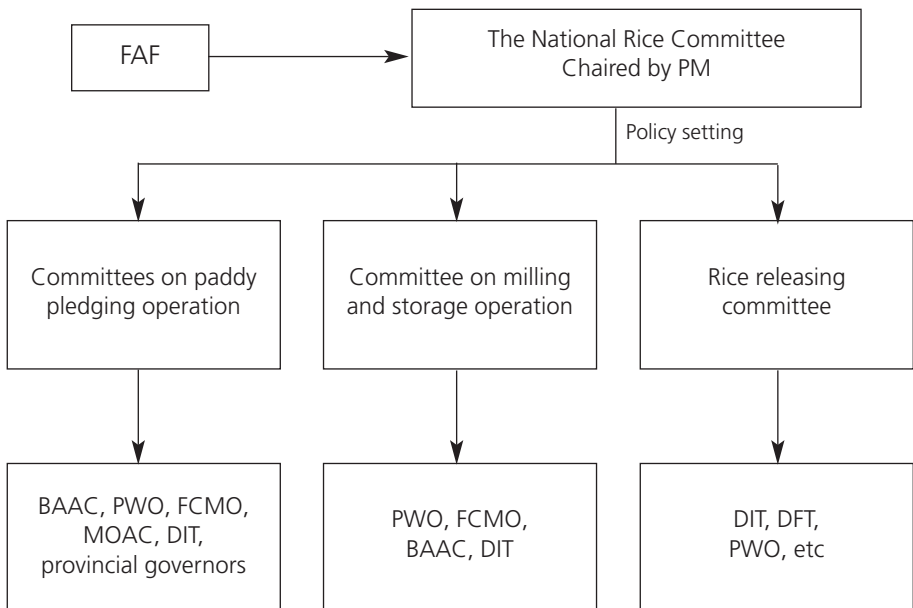


Figure 10.1 *The organization of the paddy pledging programme*

Note: FAF = Farmer Assistance Fund; MOAC = Ministry of Agriculture and Cooperatives; DIT = Department of Internal Trade; DFT = Department of Foreign Trade.

Source: Authors' compilation from the documents of the National Rice Committee in 2008

pledging programme. The change not only benefited farmers who did not have barn houses, but also the rice mills that had paddy warehouses. The programme was extended to cover dry-season paddy in 2001, benefiting both the well-to-do farmers and the rice millers in the irrigated areas. The third change – and the most important one – was the increase in the pledging price. Though the loan rate was increased gradually from 80 per cent of the target price to 90 per cent in 1990–1991 and 95 per cent in 1998–1999, the major shift occurred during 2001–2002 and 2005–2006 when the Thaksin government increased the loan to 100 per cent of the target price. In addition, the pledging price has been raised to 120–130 per cent of the market price. The programme, therefore, has been changed to a ‘de facto price support’ programme, although its name and the pledging procedure have remained the same. Thus, in practice, most farmers sell their paddy to the government.

However, the military-appointed Surayud government that came to power following the September 2006 coup temporarily switched the programme to the traditional paddy pledging programme in 2006–2007 by lowering the pledging price by 8.5–12 per cent from 6700–7100 baht per ton in 2005–2006 (*Matichon Daily*, 2006).

Performance of the paddy pledging policy

The volume of pledged paddy increased from a few thousand tons in the early years to 8.65 million tons in the wet season of 2004–2005 (see Table 10.1). Dry-season pledging peaked in 2008 when the pledging price was set at the record of 14,000 baht per ton. In the early years when pledging prices were below market prices, the share of pledged paddy in total production was relatively small, ranging from 2.9 per cent to 8.2 per cent, with the only exception being 1992–1993. The share surged after 2001–2002 and peaked at 38 per cent for the 2004–2005 wet-season paddy and 44.8 per cent for the 2007–2008 dry-season paddy. Consequently, the government’s rice stock has jumped markedly (as is discussed later), and the government has recently become the country’s largest rice trader.

The export cartel policy

In the past, most officials at the Ministry of Commerce (MOC) believed that rice exporters adopted a ‘price-cutting strategy’ with each other, resulting in export prices of Thai rice that were too low. The government thus adopted a measure that ultimately forced the exporters to collude for many years. Every Wednesday, the Chamber of Commerce Subcommittee on Rice fixed the ‘export price’ at which all exporters had to sell. Any exporters who failed to sell at such prices would not receive an export licence from the MOC. Although all exporters quoted the posted price for their rice, they rebated the price difference to their buyers in the black market (Na Ranong and Triamworakul, 2002). Therefore, the measure was totally meaningless.

Low export prices of rice in more recent years (for example 1997–1998) were claimed to be evidence supporting the MOC’s hypothesis that Thai

Table 10.1 *Planted area, paddy production and volume of paddy under the pledging programme*

	<i>Production of paddy (Million tons)</i>	<i>Wet-season paddy under the pledging programme (Million tons)</i>	<i>Paddy under the pledging programme (%)</i>	<i>Production of paddy (Million tons)</i>	<i>Dry-season paddy under the pledging programme (Million tons)</i>	<i>Paddy under the pledging programme (%)</i>
1988–1989	17.88	0.52	2.9	3.38	-	-
1989–1990	18.48	1.08	5.9	2.12	-	-
1990–1991	14.9	0.8	5.4	2.29	-	-
1991–1992	17.52	1.06	6.1	2.88	-	-
1992–1993	17.3	3.38	19.6	2.62	-	-
1993–1994	16.48	1.2	7.3	1.96	-	-
1994–1995	18.16	1.4	7.7	2.95	-	-
1995–1996	17.73	1.18	6.7	4.29	-	-
1996–1997	17.78	0.87	4.9	4.55	-	-
1997–1998	18.79	0.79	4.2	4.79	-	-
1998–1999	18.66	0.68	3.6	4.34	-	-
1999–2000	19.02	0.7	3.7	5.16	-	-
2000–2001	19.79	1.62	8.2	6.06	0.1498	-
2001–2002	22.41	4.3	19.2	5.62	1.0708	-
2002–2003	21.57	3.59	16.6	6.43	2.04	31.7
2003–2004	23.14	2.54	11.0	6.33	0.86	13.6
2004–2005	22.65	8.65	38.2	5.89	0.8	13.6
2005–2006	23.36	5.3	22.7	6.75	2.17	32.2
2006–2007	22.84	1.29	5.6	6.8	1.64	24.0
2007–2008	23.31	0.24	1.0	8.79	3.93	44.8
2008–2009	23.71	4.55	19.2	-	-	-

Source: Office of Agricultural Economics (www.oae.go.th) and Department of Internal Trade (www.dit.go.th)

exporters were involved in price cutting. As a result, the Thaksin government introduced the rice export cooperation strategy in October 2002. The government invited ministers from five major rice-exporting countries (Viet Nam, India, Pakistan and China, as well as Thailand) to a meeting and established a Council on Rice Trade Cooperation (CRTC) – effectively intended as a rice cartel.

The objectives of the Council policy were to exchange information and opinions on the world rice situation so that the governments could adopt appropriate policies (such as setting reasonable minimum export prices) to stabilize rice prices. However, there were no agreements on measures to limit production and planting area in member countries. The Thai MOC announced at a press conference that the cooperation would enable Thailand to sell rice at prices at least 30 per cent higher than they otherwise would be.

Except for occasional information exchange, the intended cooperation never materialized, which was not surprising given that economic theory suggests that such a policy is unlikely to work. Unlike OPEC, which can effectively regulate oil supply, the Thai government cannot regulate their farmers, let alone the supply response of farmers in other countries. A rice cartel cannot

have much monopolistic power because of the high price elasticity of world demand. In addition, although Thailand is the world's largest rice exporter, its share in world production is only 5 per cent.

Impact of the paddy pledging programme

There are six possible ways to assess the paddy pledging programme:

- 1 the financial cost of the programme;
- 2 the extent to which it helps poor farmers;
- 3 the impact on rice prices, especially seasonal price movements;
- 4 the impact on the structure of the rice market;
- 5 the political economy of rice policy and rent-seeking behaviour; and
- 6 the effects on the competitiveness of rice exports. The first five of these are discussed here, while the last issue is discussed later.

Costs of the programme

Data limitations make it extremely difficult to measure the financial costs of the programme. Although the Farmer Assistance Fund is responsible for a consolidated financial report to the government, the report has never been made public. Each responsible agency has its own report system and financial reports, most of which are not publicly disclosed. Thus, a rigorous estimate of the financial costs of the paddy pledging programme is beyond the scope of this chapter. Instead, estimates will be quoted from various sources.

The financial costs consist of:

- 1 the difference between the paddy pledging price and the rice selling price (when the government releases the rice);
- 2 the interest subsidy for farmers' loans and lending operations by BAAC;
- 3 the subsidy of the rice sale operation that includes storage and milling costs and overhead cost of the PWO; and
- 4 other minor operational expenses incurred by the responsible government agencies.

Previous studies estimated that the annual costs of the paddy pledging programme were 10.1–18.3 billion baht during the 2004–2005 to 2006–2007 period (Isvilanond, 2007). A newspaper columnist reported the financial cost for the 2004–2005 to 2005–2006 cropping seasons in Table 10.2.

It is not clear what kinds of costs are included in the above estimates. However, the estimates clearly confirm that the cost depends on the pledging prices relative to the target (or market) prices. The cost in the 2004/05 wet season was higher than that in 2005/06 because the volume of pledged paddy was 3.3 million tons higher in 2004/05, thanks to the higher pledging price which began in 2001/02. Since the pledging price was higher than the targeted (or market) price, the farmers pledged more paddy and had less incentive to

Table 10.2 *Cost of the pledging programmes, 2004–2006*

<i>Year/season</i>	<i>Cost (million baht)</i>
2004–2005 wet season	9574
2005 dry season	904
2005–2006 wet season	5994
2006 dry season	1811

Source: WootSara2000@yahoo.com

redeem their crop when the loan fell due. This also explained why the budget for the programme jumped from 3.3 billion baht in 1999 to 30 billion baht in 2001.

So far there is no reliable estimate of the loss from government rice sales. A Special Committee on the Study of the Paddy Pledging Program in 2007 (Department of Internal Trade) estimated that the monetary cost of the 2005–2006 programme was 4901.74 million baht or 935.4 baht per ton of paddy,³ and the loss from rice sale was 5,663.7 million baht, for a total monetary cost to the taxpayers of 10,565.44 million baht. These estimates were incomplete because they did not include the cost of milling paid to the millers in a form of in-kind payment of 1,310.54 million baht and the interest cost of the government's outstanding debt. In addition, the government had not yet sold all the rice obtained in 2005–2006 at the time of the study.

In November–December 2008, the government decided to sell 2.696 million tons of the old stock acquired between 2004 and 2007. An informed source at PWO told the newspapers that the loss from the sale could have been as high as 30 billion baht in 2008.

The author's estimate of the economic cost of the 2005–2006 pledging programme (which included the 42,300 million baht loan value for the 5.2478 million tons of pledged paddy) was 51,758.26 million baht as of 31 March 2009.⁴ According to PWO and BAAC, revenue from rice sales as of 31 March 2009 was 25,254.62 million baht, revenue from paddy sales was 7208.13 million baht, and the market value of the residual stock was 165.51 million baht. Therefore, the loss after sales was 19,130 million baht,⁵ or 3645.3 baht per ton of paddy. Note that the farmers in the pledging programme receive a price subsidy (the difference between the pledging price and the market paddy price) of 1360 baht per ton (equal to about 37 per cent of the loss). Therefore the programme is very costly. In addition to the price support subsidy (1360 baht per ton), the taxpayers incur an additional expense of 2285.29 baht per ton to run the intervention programme.

Does the paddy pledging programme benefit poor farmers?

One rationale for the paddy pledging programme is that it helps poor farmers. A study by Poapongsakorn and Isvilanond (2008) argues that this is a myth because only 4.5 per cent of the benefit (measured by the value of the paddy pledged by the farmers) was received by the poorest two deciles of farm house-

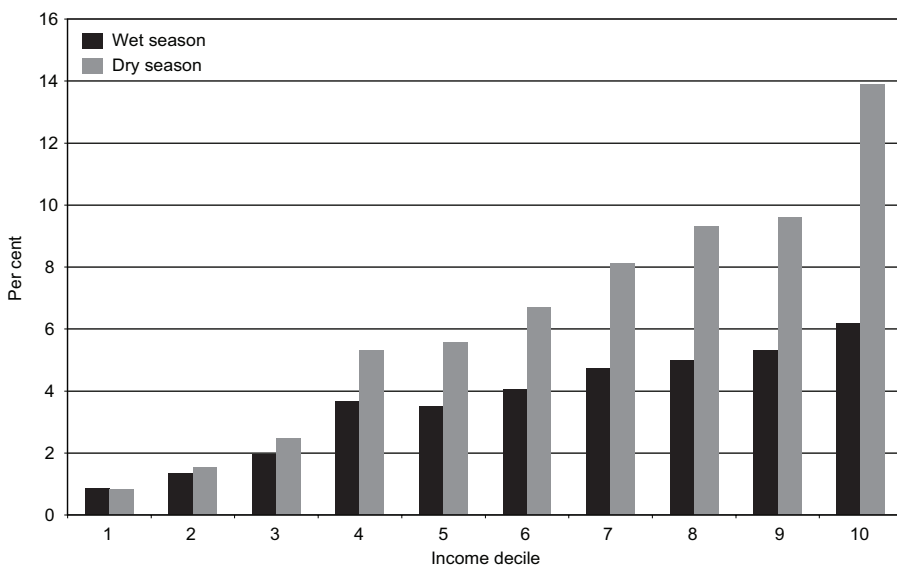


Figure 10.2 *Percentage of the benefits of the paddy pledging programme accruing to farm income deciles, 2006–2007*

Note: The assumption is that the benefit that each farm household receives from the pledging programme is the same as its share of marketable surplus of paddy.

Source: Calculated from National Statistics Office's Socio-economic Survey, 2006

holds in 2006. The richest 20 per cent of farm households received as much as 35 per cent. The distribution of the programme benefits are particularly skewed in favour of well-to-do farmers in the dry season (see Figure 10.2).

There are two reasons why most benefits of the programme are captured by the rich farmers. First, the poor farmers, especially those in the Northeast, have little surplus rice to sell as most rice production is for their own consumption. Only those who have a marketable surplus benefit from the programme, and most of the marketable surplus is owned by the wealthier farmers. Second, the benefits of the dry-season paddy pledging programme only go to the rich farmers in the irrigated areas, most of which are in the Central Plains and Upper North. Only 5 per cent of irrigated areas are in the poor northeastern region.

Impacts of the paddy pledging programme on farm prices

Theoretically speaking, the paddy pledging programme should increase the farm price in the harvest period and depress the market price later in the season when the government releases the rice in the market. The programme should also raise the overall level of prices because the target price is set above the market price.

Studies in the 1990s found that, except for a few years, the programme did not have any significant impact on farm-gate prices because the intervention was too small (Siamwalla, 1994; Sriboonjitta, 1998). However, there has been

no study that assesses the impact of the higher pledging price since 2001–2002. This chapter uses the seasonal price index method to assess this impact, using farm price data obtained from the Office of Agricultural Economics. Estimates are made for three periods: 1984–1991, which covers the period before the introduction of the paddy pledging programme in 1987 and the early years of the programme when the intervention was very small; 1992–2000, when the pledging price was below market prices; and 2001–2008, when the pledging prices were higher than market prices (except in the 2006–2007 season). Three types of paddy in the wet season are analysed: 5 per cent paddy, 25 per cent paddy and *Hom Mali* (or jasmine) paddy. Two sets of estimates are presented, one using nominal prices and one using real prices (nominal prices adjusted for inflation using the consumer price index with a base year of 2000).

Price trends

In nominal terms, paddy prices were increasing until 1998, after which they started to fall for a few years before resuming their upward trend. In real terms, paddy prices reached a trough in 2001, after which they began to trend upwards before soaring to a 25-year high during the crisis (see Figures 10.3a and 10.3b). Several factors may explain the upward trend since 2001, but perhaps the most important one is the increase in pledged paddy prices that started at that time. In terms of price variability, the CV of prices for the 2001–2008 period was higher than that in the 1984–1991 and 1992–2000 periods. The uncertainty over the government's policy on selling its rice stocks from the pledging programme may contribute to the greater price fluctuations in recent years.

Seasonality of prices

According to Figure 10.4 the seasonality pattern has changed markedly over time. First, the month with the seasonal peak has changed.⁶ In the past (1984–2000), paddy prices reached their peak in the month immediately before the new harvest, August or September. In recent years, however, the peak has been in April. Second, the slope of the seasonal price movement has flattened, resulting in smaller seasonal price movements, which can be seen in Figure 10.4 and is confirmed by the lower CV of seasonal factors in the most recent time period (see Table 10.3).

There are two main reasons for the changing seasonality of prices. First, the spread of high-yielding rice varieties and an increase in cropping intensity has resulted in paddy harvests being spread more evenly over the year, except for February to April. Second, the paddy pledging programme may also have had an influence. April is the last month of the pledging programme (except in the Southern region, where little rice is grown), and by this time most of the supplies of pledged paddy are in the hands of the government. Since the government does not typically plan to sell its rice right after the end of the pledging programme, there is a relative tightness of supplies, leading to higher prices around April.

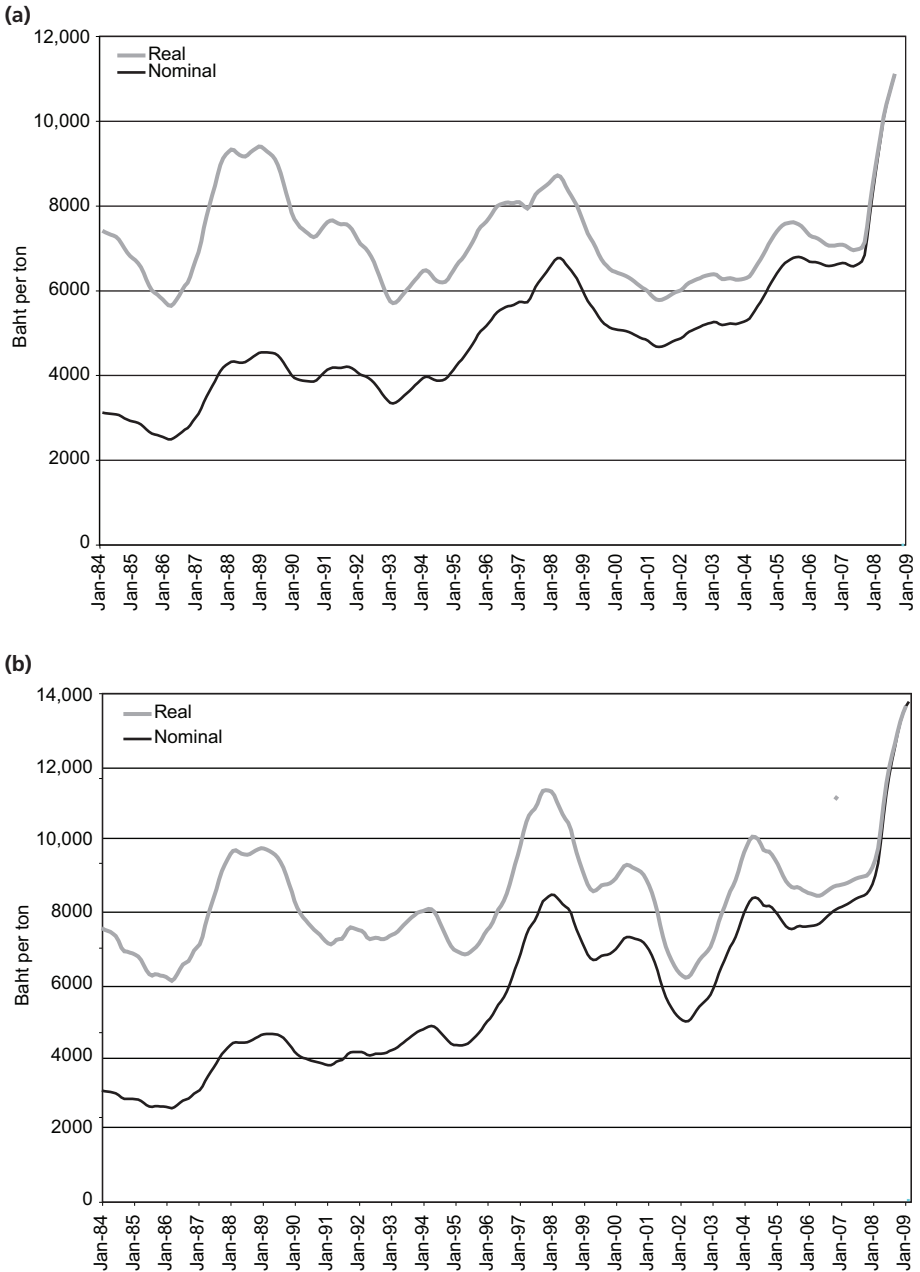


Figure 10.3 Trends in (a) paddy 5% prices and (b) Hom Mali paddy prices (centred moving averages)

Source: Office of Agricultural Economics

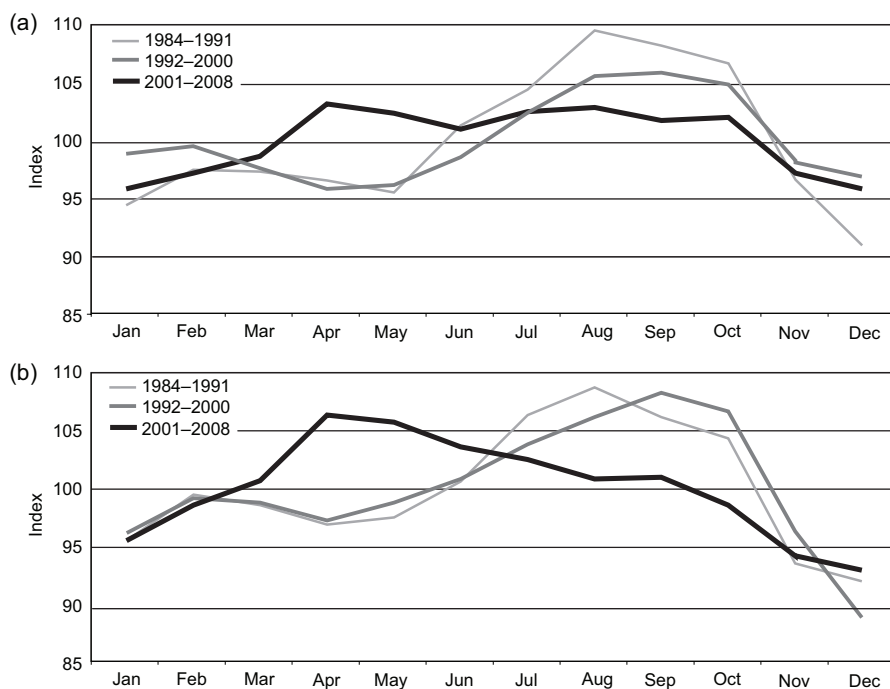


Figure 10.4 Seasonal price indices of (a) paddy 5% brokens and (b) Hom Mali

Source: Office of Agricultural Economics

Impact on the structure of the rice market

The higher pledging price has resulted in an increasing government role in the rice sector. It not only increases the budget for the programme, but also results in an increasing amount of rice that the government has to store, mill and sell. According to Table 10.1, the amount of pledged paddy was as high as 38 per cent of wet-season paddy production in 2004–2005 and 44 per cent of dry-season production in 2008. The government, therefore, is now the country's largest buyer and seller of rice, leading to at least three consequences.

Table 10.3 Seasonal price indices

	Paddy 5%			Khao Dok Mali (KDML)		
	1984–1991	1992–2000	2001–2008	1984–1991	1992–2000	2001–2008
Peak month	August	September	April	September	February	April
Trough month	December	April	December	November	December	December
(Max–min) of seasonal factors	17.9	9.8	8.3	16.2	18.2	13.1
CV of seasonal factors	5.9	3.7	2.9	5.3	5.3	4.2

Source: Data from Office of Agricultural Economics

First, the rice markets are now less competitive. The increase in the share of pledged paddy has reduced the supply of paddy to be handled by the market, thus reducing the number of local rice traders and central paddy markets operated by private operators (Isvilanond and Naiwikul, 2006).

Second, the government lacks the necessary facilities to handle several million tons of rice and thus relies upon the services of the rice mills and exporters, paying attractive fees for storage and milling services. Since the government needs only 500–600 out of more than a few thousand medium- and large-scale mills,⁷ rice millers who want to participate in the programme must lobby hard with government officials. By paying high rates for milling services, the pledging programme has distorted the market and created an uneven playing field in the milling business. Although comprehensive data are difficult to obtain, it appears that the milling industry has become more concentrated. Certainly, the rice export sector has become more concentrated in the hands of four to six large exporters. In 2005, only one exporter was able to win government rice sales, and the real owner of the company is believed to be the wife of an influential politician.

Political economy of the paddy pledging programme: a qualitative impact assessment

The paddy pledging programme has generated huge economic rents, especially in recent years. Before 2001–2002, the rent was limited because the volume of pledged paddy was small. The large increase in pledging prices since 2001–2002 has not only resulted in a larger subsidy for the farmers, but also higher rent for those involved in the pledging programme, especially the rice millers, exporters and politicians. This section argues that the real motive of the paddy pledging programme is to increase the rents that accrue to please various interest groups and help politicians get re-elected.

Rents accrue through several channels. Farmers receive the interest subsidy, as well as the difference between the market price and the target price. Rice millers receive milling fees and do not need to borrow money to procure paddy, since the government does it for them. Exporters receive storage fees, as well as the difference between the export price and the successful bidding price offered for government rice. Since 2001, all of these rents increased substantially after pledging prices were set at a level higher than market prices. These rents are typically captured by well-to-do farmers, farmer associations and cooperatives, and large millers and exporters. Of course, some of these rents are shared with politicians.

It was shown earlier that most of the benefits from the difference between the market price and the pledging price of paddy go to well-to-do farmers in irrigated areas. But the high pledging price also benefits the rice millers as well as farmer cooperatives who engage in the warehouse deposit slip pledging programme (which accounts for 70 per cent of the total amount of pledged paddy). They reap substantial benefit from the difference between the pledging

prices and the market prices by purchasing the paddy from the farmers at the market price before the programme starts or from the small farmers who find it inconvenient to sell their paddy to the programme. The large farmers and millers then obtain loans from the pledging programme using the farmers' identification. Other benefits to the millers include the fees for their storage, milling and rice-mixing services for the programme. There is also evidence that some of the rice millers and warehouse owners who provide the storage service for the programme illegally sold the government paddy and rice from the stock and refilled their warehouses later when the government wanted to sell rice. Hundreds of rice millers were sued by the PWO based on such claims.

The large economic rents available have led to much wasteful spending. For example, the rice millers who want to participate in the programme must meet minimum requirements for milling and storage capacity, and thus need to invest in order to meet these requirements. Titapiwatanakun (2006) finds that between 1987 and 2005, the investment per rice mill increased from 0.86 million baht to 1.62 million baht, while the investment to labour ratio increased from 0.4 million baht to 0.73 million baht. This over-investment is very wasteful of scarce resources – indeed, if the pledging programme were to be eliminated, hundreds of rice mills and silos would go bankrupt.

In addition to lobbying to join the programme, some rice mill owners have established a network of rice mills that holds greater bargaining power with the government. This explains why there are only 400–600 millers (out of 39,887 rice mills in 2005) who have registered to join the programme. In addition, some non-participating rice mills lobby to ship paddy to participating mills in another province, which can lead to wasteful expenditure on transport. The programme also has a negative impact on rice quality, which is discussed more below.

The rent that goes to rice exporters who win the auction of government rice is the difference between the export prices and the bidding price. There are several tactics that the exporters employ to maximize rents. Secretive bid collusion among the bidders is one common tactic, and it can be inferred from the following facts: (1) the winner of the big lots always comes from the same small group; (2) the bidding prices of all bidders are unrealistically low relative to export prices; and (3) there were occasional news reports that the duration between the bid announcement and the closing date for bid submission was too short (*Matichon Online*, 4 November 2008). Some exporters lobby the government to change its terms of sale after the bid. Another tactic is to bid for rice from old stocks at low prices. Such bids allow exporters to make large profits by bribing the officials who control the stock for access to the better quality rice from the new stock. Since the sale contracts usually give the bid winners up to six months to pay for the rice, this amounts to a free loan for several months. Finally, some bureaucrats and politicians involved in the programme also capture parts of the rent by changing the regulations or granting special exemptions to certain rice millers and exporters.

The paddy pledging programmes are plagued with corruption charges every year. In 2006, there were more than 200 millers who were charged by the

PWO for violation of contracts and fraud, and 50 millers were blacklisted. Yet there were attempts to pardon some of them, arguing that without them there would be too few rice mills to carry out the paddy pledging programme. An exporter who won the biggest rice bid in 2005–2006 and defaulted on its loan from the commercial banks was sued by the PWO for violation of contract. In 2008, the company changed its name and successfully bid again for government rice. This is not surprising because it is well known that the rice millers and exporters who do business with the government have strong political ties or are politicians themselves.

Despite the widespread corruption and negative effects on the rice industry, there has not been strong public opposition against the policy. Most taxpayers ignorantly support the policy because they believe that the policy helps poor farmers – when the reality, as we have seen, is quite the opposite. In addition, the public has never been informed of the magnitude of the actual costs and losses of the programme. The politicians have incentives to make the programme as opaque as possible because it has become one of the most effective means of using public money to win re-election. Ultimately, since the rents are distributed to many participants in the rice trade at the expense of dispersed taxpayers who do not have full knowledge of the programme, there are no reasons for politicians to eliminate the pledging policy.

The rice price spike and responses by the Thai government: Price and export policies in 2007–2008⁸

Rice prices were relatively stable until the beginning of 2008 when a dramatic spike occurred (see Figure 10.5). There are three possible reasons that explain this spike. First, a supply shock in the wheat market in 2006, caused by several consecutive years of Australian drought, led to effects in the rice market because rice and wheat are substitutes, especially in India and China. Wheat prices surged in October 2006 and almost reached the same level as the rice price in October 2007 (see Figure 10.5). Second, export bans in India and Viet Nam led to a large reduction in supplies on the world market. Third, strong buying by the Philippines fuelled speculation and hoarding around the world (see Chapter 2 of this book for more details on the world rice crisis). As supplies dried up from other origins, Thailand responded with record levels of exports. To understand the performance of Thai exports, one needs to examine the different policies adopted by the two different Thai governments between 2006 and 2008. Below, we argue that without the minimal intervention policy implemented by the Surayud government in 2006–2007, the rice price spike might have lasted longer than the five months it did.

The 2006–2007 policy of the bureaucracy-led government

After the military coup in September 2006, the bureaucracy-led government reverted to the traditional price pledging policy by reducing the pledging price

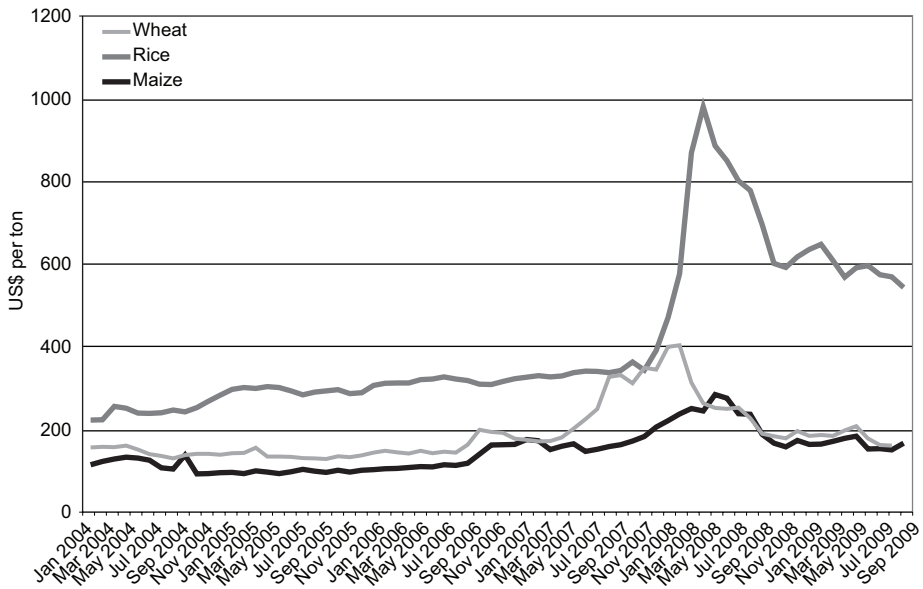


Figure 10.5 World prices of rice, wheat and maize

to a level that was lower than the target price. As a result, the amount of paddy that farmers pledged to the government declined substantially from 7.5 million tons in 2005–2006 to 2.9 million tons in 2006–2007 and 0.24 million tons for the wet season of 2007–2008 (see Table 10.1).

In addition, the MOC also implemented a clear policy to reduce the huge government stockpile of rice (estimated at 5.178 million tons in January 2007). It managed to sell 1.47 million tons of rice in 2006 and 2.86 million tons in 2007. The MOC also experimented with a pilot project to trade the government rice, called basis trading, in the Agricultural Futures Exchange of Thailand (AFET). The objective was an attempt to boost the volume of trading in AFET.

The export policy of the elected government in early 2008

After the promulgation of the 2007 constitution and the general election in December 2007, the elected government (which admitted to being the nominee of former Prime Minister Thaksin Shinawatra) took office when the world price of rice started to surge in January 2008. Unlike the Indian and Vietnamese governments, Thailand did not impose any measures to restrict rice exports. However, the inexperienced minister of commerce made a serious error by giving incorrect information to the press – namely that there were many export orders for the government rice at very high prices.⁹

The prime minister (PM) subsequently assumed responsibility for the export policy. The National Rice Committee, which is chaired by the PM,

established a new subcommittee to handle rice exports, replacing the old committee that had been under the responsibility of the MOC. The PM appointed a senior official from his own office as chairman and one of his closest aides to be a key member of the subcommittee.

There were several attempts by the PM, Mr Samak Soonthonravej, and his aide to sell government rice. First, Samak offered to sell rice to the Philippine government. According to senior officials, the PM wanted the Philippine government to buy Thai rice without participating in an open auction. Since the Philippine government is required to sign an MOU with any country that wants to sell rice to the Philippines, the Philippine Secretary of Agriculture began negotiations and the drafting of an MOU (which needed approval from the Philippine cabinet) with senior Thai officials. For unknown reasons, the MOU was never submitted for approval. One possible explanation is that while the senior officials attempted to organize a group of five major Thai exporters (who always won government rice auctions) to negotiate a rice export deal with the Philippine government, the PM's aide wanted another exporter to sell the government rice. This may explain why Thailand ultimately failed to sell rice to the Philippines. Another possible explanation was that the Thai private exporters could not obtain the sovereign guarantee required by the Philippines, because Thai laws prohibit the Thai government from guaranteeing private business dealings.¹⁰

Next, the PM's aide pushed for a G-to-G rice sale by the PWO but again failed because the Chairman of the Rice Release Committee, who was also the permanent secretary of the PM's Office, and the PM's aide did not have the experience required to successfully carry out a G-to-G sale without help from experienced senior MOC officials – who were excluded from the deal. The committee could not rely on the PWO, which lacked a board of directors and chief executive officer at the time.¹¹ Unhappy with such failure, the PM publicly criticized in parliament the performance of some senior MOC officers.¹²

In April 2008, the Malaysian government also wanted to buy 500,000 tons of rice from the Thai government. The PM agreed to sell it at a 'friendship' price. Since the senior official at the Department of Foreign Trade did not want to sell rice to Malaysia at a low price, the Department encouraged private exporters to negotiate directly with the Malaysian government. These exporters successfully exported only 250,000 tons before the world rice price started to decline in May and the Vietnamese government lifted the export ban.

Aside from the Philippine and Malaysian rice deals, Thailand did not have a rice export policy during the tenure of the Samak government (which ended in September 2008). It was not clear why the government failed to capitalize on its 2.1 million tons of rice stock by selling rice to Thai exporters when world prices were extremely high. One possible reason is that the government was worried about high domestic rice prices. Had all the government stock been exported, the domestic rice price would have surged even more than it did and reinforced prevailing inflationary pressure (Thailand experienced inflation of

8 per cent in the first six months of 2008). In response, the MOC tried to reduce the inflationary pressure of high food prices by selling cheap rice under the so-called 'blue flag programme'. Nevertheless, it managed to sell only a few thousand tons of rice in the domestic market in mid-2008 before the inflationary pressures subsided.

The paddy pledging programme for the 2008 dry-season and 2008–2009 wet-season crops

In addition to PM Samak's direct control of exports, another major change in the rice policy was that the PM also took over the 2008 dry-season paddy pledging programme from the MOC. As mentioned above, the lack of a board of directors and chief executive officer of the PWO (a state enterprise under the supervision of the MOC) had serious impacts on its operations, especially its capability to perform the warehouse deposit slip paddy pledging programme.

Frustrated with the MOC and the widespread fraud by the rice mills in the paddy pledging programme operated by the PWO, the PM assigned the BAAC responsibility for handling both the farm barn-house pledging programme and the warehouse slip programme for the 2008 dry-season crop. Needing to maintain its integrity as a prudential and sound financial institution, the BAAC made a major effort to prevent fraud and corruption in its operation of the pledging programme. According to the millers, the BAAC operation was almost corruption free. At the end of the programme, all pledged paddy that was not redeemed went to the PWO for milling, storage and release.

While BAAC operation of the paddy pledging programme was a success, reintroduction of the Thaksin government's high paddy pledging prices was damaging. The government set a price of 14,000 baht per ton for 2008 dry-season paddy, which was as high as the record market price in April–May 2008.¹³ It is not clear why the government set such a high pledging price, given the fact that the farmers could sell paddy at the highly profitable price without any price intervention. One hypothesis is that the minister of commerce made another political blunder by promising publicly that farmers could sell the paddy at 14,000 baht per ton. In fact the 14,000-baht price was observed in only two local markets in the Central Plains for one week in April 2008. After that the paddy price started to decline rapidly. The second hypothesis, which is more plausible, is that the 14,000-baht price was a part of populist government policies designed to please protesting farmers in some provinces in the Lower North. Yet the most convincing hypothesis, according to some rice millers, was that the high pledging price was in response to lobbying by rice millers who incurred heavy losses from stock procured at high prices after the unexpected rice price spike in early 2008. After April 2008, however, the rice price fell sharply. In addition to this back-door lobbying, some informed sources claimed that millers hired farmers to demand a high pledging price. Regardless, the high pledging price made it possible for some rice millers to mitigate their loss by disguising their acquired paddy stock as the paddy pledged by the

farmers, using farmers' identities.

As a consequence of the high pledging price, 3.93 million tons (44.8 per cent of the 2008 dry-season paddy) went into the pledging programme, the highest percentage on record. Government rice stocks swelled to more than 4 million tons in October 2008, one month before the harvesting of the wet-season crop. There were also news reports that some traders smuggled paddy from Cambodia, Laos and Myanmar to take advantage of the high prices in Thailand, meaning that some of the subsidy was given to farmers and traders in those countries. The recorded volume of dry-season pledged paddy in 2008 had a negative impact on Thai exports because almost half of the dry-season crop went into government stocks (see below for more details).

Policies in late 2008

In September 2008, PM Samak was forced out of office by the constitutional court verdict on a conflict-of-interest charge. Mr Somchai Wongsawat, from the same party as Samak, was elected by the parliament as the new PM. The new minister of commerce successfully asked the new PM to transfer the responsibility of running the wet-season pledging programme back to the PWO and the authority for rice sales back to the MOC. However, there were conflicts between the commerce minister, who wanted to maintain the high pledging price, and the new deputy prime minister, who supervised the economic ministries, including the Ministry of Finance.

The minister of commerce pushed for the pledging price of 14,000 baht per ton for the 2008–2009 wet-season crop. There was a rumour that the politicians tried to make deals with some rice mill owners by offering them contracts to participate in the pledging programme in exchange for 2000–3000 baht for every ton of pledged paddy. The 3000-baht bribe was possible only if the pledging price was set at 14,000 baht per ton, given the market price of 9000–10,000 baht. But the National Rice Committee decided to set the pledging price at 12,000 baht per ton, thanks to the insistence of the deputy prime minister, a former banker, who was highly concerned about the huge fiscal cost of the programme.

The pledging price of 12,000 baht was still attractive relative to the declining market price, however. Many rice millers lobbied politicians to allow them to procure paddy under the pledging programme from nearby provinces that had few mills. As a result, about 4.55 million tons of paddy were pledged, accounting for 19.2 per cent of the 2008–2009 wet-season crop, the largest wet-season quantity in three years.

By the third quarter of 2008, the Farmer Assistance Fund ran out of funds because, while the amount of dry-season pledged paddy surged to 3.93 million tons, the government failed to sell any rice from its stock. Since the BAAC did not obtain any debt repayment from the Farmer Assistance Fund, it did not have additional capital to lend to the farmers in the 2008–2009 wet-season pledging programme. The government, therefore, was forced to ask the BAAC

to borrow money from commercial banks to finance its intervention programme in the wet season of 2008–2009. The loan was 110 billion baht from four commercial banks in which the government was the largest shareholder, at the interest rate of MLR–1.5, and guaranteed by the government.

In October and November, however, the minister of commerce decided to release government rice, which was very unusual because it was the harvesting period and thus the sale could have negatively affected the market price of paddy. On 5 November, the government decided to sell 1.59 million tons to the highest bidders. A second authorization to approve further sales of 1.106 million tons came on 28 November, a few days before the constitutional court ruling to disband four government coalition parties. The average bidding price was substantially lower than the existing FOB price (8100 baht versus 20,904 baht per ton), resulting in heavy losses as discussed above. The press also reported that there were irregularities in the bidding procedure (*Matichon Daily*, 2008). Six exporters were awarded contracts. One of them, believed to be the same company that won the single largest export bid in 2006, breached the contract and defaulted on loans from several commercial banks. Other irregularities surfaced later.¹⁴ The Ministry of Commerce set up a committee to determine whether there were any irregularities in the bidding process. The investigation involved only some senior officers at the PWO.

The deputy PM also proposed a new policy measure to induce the farmers in the pledging programme to sell their rice on the AFET. This policy was not implemented because the government was forced out by the court decision to disband three parties on 2 December 2008.

The impacts of government policies and the rice price spike

Because of the spike of world rice prices in early 2008 and the export restrictions in Thailand's two major competitors (India and Viet Nam), Thailand was able to export more than 10 million tons in 2008. How did Thailand manage to export so much rice? This section also assesses the impacts of the pledging programme and government stocks on the competitiveness of Thai rice exports, as well as the impact of higher world rice prices on supply response and agricultural wages.

How did Thailand manage to export 10 million tons of rice in 2008?

Despite the failure of the Samak government to sell rice to the Philippine government and the lack of a clear policy to release rice from its stocks, Thai rice exports reached a record level of more than 0.9 million tons per month in the first seven months of 2008, with total annual export of more than 10 million tons (see Figure 10.6). This was in large part due to the policy of the previous government led by General Surayud Chulanont. In June 2007, the

government began releasing its rice stock, reducing it from more than 5.2 million tons to 2.1 million tons in December 2007.¹⁵ Normally, the exporters who successfully bid for the government rice would gradually sell the rice, since they are allowed at least six months to pay the government. This means that some of the stock that was auctioned in late 2007 was exported in early 2008 when the rice price began to surge. In addition, the Surayud government did not intervene heavily in the main wet-season crop (which totalled 23.31 million tons) because it set the pledging price slightly lower than the market price. Therefore, farmers pledged only 0.237 million tons of rice, compared with 5.3 million tons in the 2005–2006 season.

In addition to Thai domestic policies, Thailand was also able to export a large amount of parboiled rice because of India's export ban, and exports of parboiled rice accounted for 25 per cent of total rice exports in 2008.¹⁶ These factors explain why Thailand was able to export 0.9 million tons of rice per month for seven months, with total exports of 10.216 million tons in 2008 (see Figure 10.6).

However, had the Thai government decided to release some of its 2.1 million tons of rice stock for export in early 2008, and had it not set the pledging price for the dry-season crop at 14,000 baht per ton, Thailand would have exported several million tons more in 2008, an issue that is discussed below.¹⁷

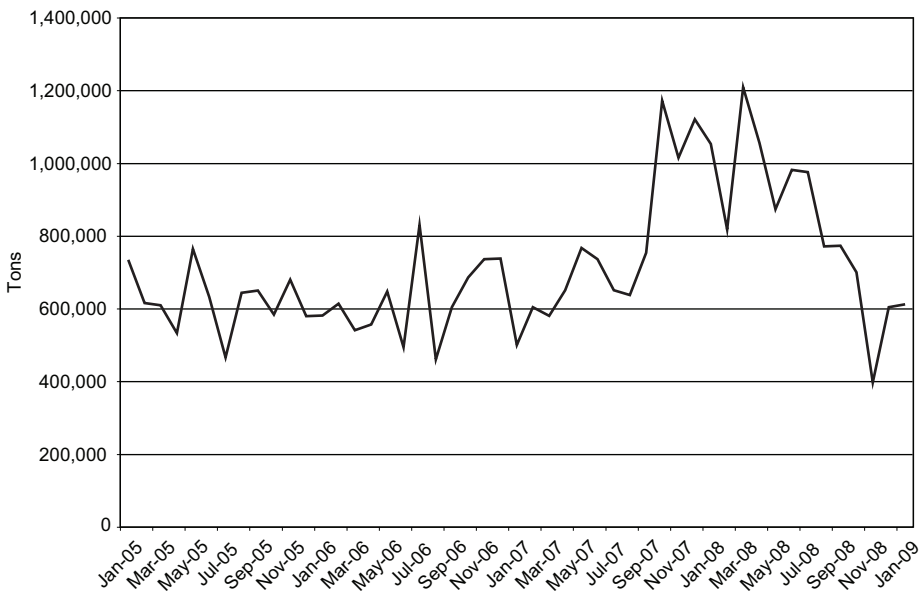


Figure 10.6 *Volume of monthly rice exports, January 2005–January 2009*

Source: Office of Agricultural Economics

Impact of the paddy pledging programme on rice quality and export competitiveness

The paddy pledging programme affects the competitiveness of Thai rice exports in three ways. First, since 2001 the higher pledging prices have made Thai rice more expensive than Vietnamese rice (see Figure 10.7; notice that the price gap between Thai and Vietnamese rice declined in 2007 when the pledging programme offered lower prices relative to the market). Second, stock and release policies also affect competitiveness. As shown in the previous section, the seasonal price index reaches its peak in April, two months after the harvest, because most rice is still in government stock and at this time the government does not want to release rice, fearing that it will depress the market price. The high domestic price in the first quarter coincides with the winter–spring harvest in Viet Nam (the crop that provides most of its exportable supplies), giving Vietnamese exporters an advantage at this crucial time. Third, the paddy pledging programme also affects the quality of Thai rice. For decades, Thai rice has been of higher quality than that of its neighbours because the Thai rice industry has been exposed to the competitive pressures of the world market for centuries and has been subject to a lesser degree of government intervention. Thus, it has in the past been in the interest of farmers, traders and exporters to sell high-quality rice and so receive the highest possible prices (*Thai Rice*, 2008). The pledging programme has gradually reduced the incentives to provide high-quality rice as now farmers and traders are able to produce and

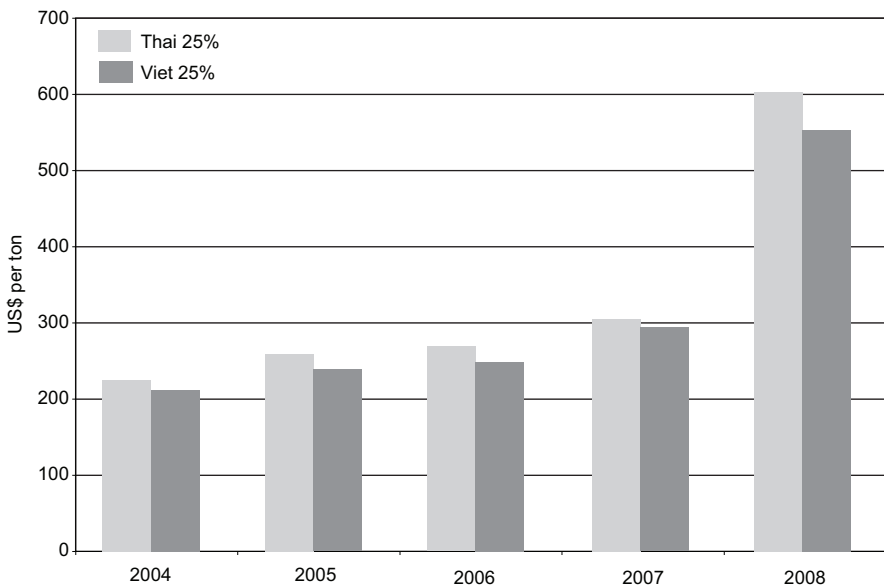


Figure 10.7 *Export prices of Thai and Vietnamese rice*

trade low-quality paddy to the government at high prices. The government is now the largest trader in the rice market, and its impact on the market should not be underestimated.

The impact of government stock on rice exports

Because of the increasing volume of pledged paddy (see Table 10.1), the government rice stock has swollen, displacing private stocks. The pledged paddy for both wet and dry seasons jumped to 8.45 million tons in 2004–2005, declined slightly to 7.47 million tons in 2005–2006, but increased again to 8.48 million tons in 2008–2009. Normally the stock will rise during the pledging periods, i.e. November–April and May–July, and fall thereafter as the government begins releasing rice from its stock. But in 2005 the commerce minister put a brake on rice sales, resulting in rice stocks that were nearly four times higher in 2005 than in 2003. This situation raised two interesting questions: What is the government’s strategy for releasing rice from its stock? And how does the government stock affect rice exports?

It can be argued that the objective of the rice release policy is for the government to minimize its loss from rice sales by releasing rice from its stock when the world rice price is high.¹⁸ In addition, the government will not release rice during the harvest period or when the world rice price is low. Yet, if it does not release rice, the stock will accumulate, affecting the liquidity of the Farmer Assistance Fund which is responsible for the financing of the pledging programme. However, sometimes the government is willing to hold more stock even if it has to borrow more money for the pledging programme, as was seen in 2008–2009.

The decision to release rice from the stock is the responsibility of the minister of commerce, with final approval coming from the National Rice Committee. Before 2007, the bureaucracy-led subcommittee was responsible for the rice auction, although decisions had to be approved by the minister and the National Rice Committee. In 2007, the minister of commerce took charge of the auction process, thus blurring the separation of power between the bureaucrats and the politicians. However, the deputy minister successfully sold several million tons of rice in a transparent and corruption-free process, although there were some irregularities in the October–November 2008 rice bids.

The existing rice release and stock policies have two major consequences. First, the decision process is tedious and time consuming. Sometimes the government is reluctant to release rice despite unreasonably high levels of stock, possibly because both the politicians and bureaucrats responsible for rice sales are under public pressure not to sell rice at too low a price. Keeping rice in stock is politically safer than selling it at a low price and incurring a loss. As a result, some of the stock will be kept for so long that it deteriorates completely, which will affect both the quantity and quality of rice exports. Second, the policies create conflict between the bureaucrats who are responsi-

ble for rice bidding and the minister who not only has the power to authorize the sale but also controls the subcommittee on rice release.¹⁹

How does the rice stock affect rice exports? One hypothesis is that an increase in government stock, which displaces private stock, will have a negative effect on exports, and vice versa. For example, after the government finalized the sale contract of 2.7 million tons of its rice stock in November 2008, the monthly rice export jumped from 0.437 million tons in November and 0.598 million tons in December 2008 to 1.02 million tons in January 2009.

To test this hypothesis, we estimated a simple regression, using the level of government stock to explain rice exports. Indeed, there is a strong negative correlation between government stocks and exports (see Figure 10.8). In the short term, a 10 per cent increase in stock will decrease exports by 6.4 per cent. Of more serious concern is that, in the long term, the 10 per cent increase in stock reduces exports by 13 per cent, implying that the stock policy is a waste of real resources as rice quality deteriorates to the point that it has no value.

One implication is that the pledging programme, together with the stock policy, will affect the welfare of Thai consumers and consumers in rice-importing countries. For example, in the first six months of 2008 when world rice prices were exceptionally high, the Thai government failed to release its 2.1 million tons of rice stock. Moreover, the additional stock of 4.5 million tons of pledged paddy from the 2008 dry season also had an adverse effect on rice exports in the last four months of 2008. Exports dropped sharply from 0.89

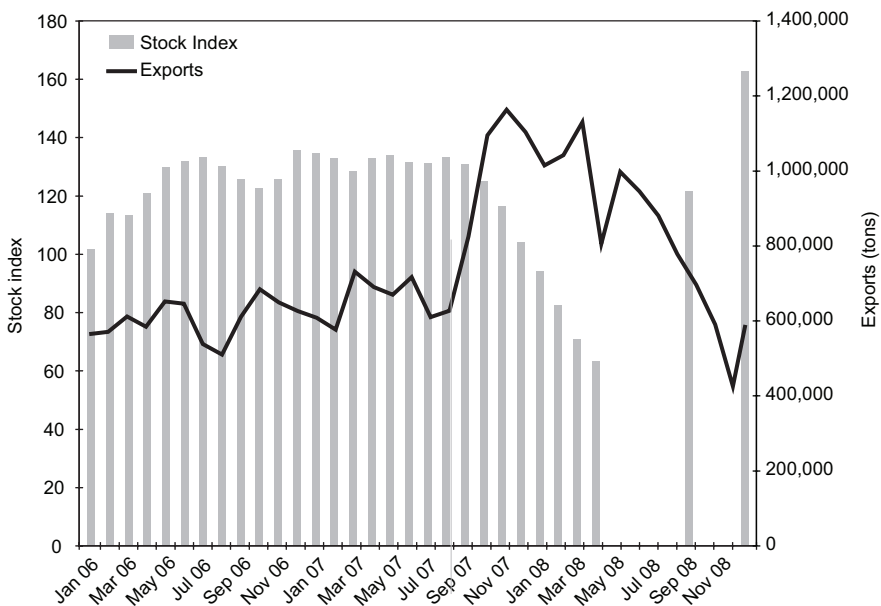


Figure 10.8 Rice export and index of government rice stock

Source: Department of Foreign Trade, Thailand and Public Warehouse Organization, Ministry of Commerce, Thailand

million tons in July to 0.437 million tons and 0.598 million tons in November and December 2008, respectively (see Figure 10.6). Such policy worsens both global welfare and that of the Thais.

The impact of higher rice prices on supply response and agricultural wages

A key short-term impact of the higher rice prices in early 2008 was an increase in planted area. Dry-season planted area in 2008 increased by 27 per cent, while wet-season planted area in 2008–2009 increased by 0.8 per cent. However, part of the increase in production in the 2008–2009 wet-season crop may be attributed to farmers' expectation that the government will maintain the high price of paddy pledging. In mid-2008 there was political pressure for the government to set the pledging price at 14,000 baht per ton, the same price as had been set for the dry-season crop (eventually, the price was set at 12,000 baht per ton, as described earlier).

The high price of rice also had a visible effect on agricultural wages in the first half of 2008. The nominal agricultural monthly wage jumped from 3319 baht the last in quarter of 2007 to 3639 baht in the first quarter of 2008 (an increase of 9.6 per cent), although it then fell slightly to 3600 baht in the second quarter of 2008.

Summary and conclusions

This study analysed rice price and export policies in 2007–2008 and provided a quantitative and qualitative assessment of the impacts of Thailand's paddy pledging programme. After an abolition of agricultural export taxes in 1986, the paddy pledging policy has become the cornerstone of Thailand's agricultural policy. The increase in pledging prices to levels higher than those of the market has not only resulted in a huge fiscal burden, but also altered the pattern of seasonal price movements; negatively affected the competitiveness of rice exports; reduced incentives for farmers, millers and exporters to enhance rice quality; distorted the rice market; and induced widespread rent-seeking activities among farmers, rice millers, exporters and politicians, which in turn has generated much waste of valuable resources. The pledging programme has had some positive impact on farm prices during the harvesting season, thus benefiting farmers who do not participate in the programme. However, the benefits to farmers are not expected to offset the high financial and social costs discussed in this chapter.

After reviewing the 2007–2008 pricing and export policies, the study assessed their impact on exports. The Samak government failed to capitalize on the rice price spike of 2008, despite the existence of sizeable government stocks. Instead, the government chose to increase the pledging price of paddy to a record of 14,000 baht per ton for the 2008 dry-season crop in order to please politically influential farmers and rice millers at a huge fiscal cost to the public. The record pledging price also negatively affected domestic rice prices

and thus Thai rice exports in the last four months of 2008. The study also found that increases in government rice stocks, which are a direct consequence of higher pledging prices, are negatively correlated with exports.

Nevertheless, Thailand was one of two major rice-exporting countries that were able to meet world demand during the 2008 rice price spike, thanks to the minimal intervention policy of the bureaucracy-led government in 2006–2007 and the release of rice from government stock in late 2007.

The high rice prices in early 2008 also had a significant impact on agricultural wages, dry-season paddy production in 2008, and wet-season production in 2008–2009. The record high ‘pledging price’ policy raises serious concerns about the possibility of future reform of the price policy, e.g. the proposal of option insurance to replace the pledging programme. The high pledging prices are now perceived by farmers as an entitlement, and have raised demands by farmers who grow crops other than rice for unrealistically high pledging prices for their products. It will be difficult for any government, even fiscally conservative ones, to resist the political pressure to maintain high pledging prices. The fact that the paddy pledging programme has increasingly been abused by politicians as a means to provide financial and political support for their re-election also serves to make reform more difficult.

Notes

- 1 The programme is similar to the US government loan-rate programme.
- 2 The MLR is similar to the prime lending rate, and indicates the rate at which banks lend to preferred customers.
- 3 Note that the monetary cost does not include the total value of loans provided to the farmers who pledged their paddy. Only the interest cost to the government is included.
- 4 The costs include (1) the pledging paddy loan provided by BAAC; (2) the expenses for BAAC’s operations (3 per cent for the barn-house pledging and 0.5 per cent for the warehouse deposit slip pledging); (3) the overhead expenses for PWO; (4) the costs of paddy storage, milling, mixing and transportation paid to the rice millers; (5) the rental cost for rice storage and the loss of rice value as a result of storage; and (6) the costs of farmer registration and campaigning.
- 5 Note that the sale price was very low compared with the FOB price in the month of auction, resulting in high economic rent for the bid winners and a greater loss for the pledging programme. For example, the winning bid price for 5 per cent white rice in the November 2008 auction was 11,236.5 baht per ton, while the equivalent export price at that time (the FOB price adjusted appropriately for the marketing margin) was 18,044 baht per ton. The rent (6807.5 baht per ton), which is the difference between the two prices, is shared between the bid winners (exporters) and the politicians and bureaucrats who are responsible for the rice bid.
- 6 It is interesting to note that the month with the lowest paddy price (December) has not changed. This is because it is the month with the year’s largest harvest.
- 7 In 2005, there were 39,887 rice mills in Thailand, most of which were very small.
- 8 This section is drawn heavily from Siamwalla (2009) and Poapongsakorn (2010).

- 9 In fact, the correct information provided by a senior officer was that there were a large number of orders for Thai rice received by Thai exporters.
- 10 There was a rumour that Thai politicians might have had an implicit deal with Philippine politicians not to out-compete the Vietnamese bid.
- 11 The commerce minister failed to appoint a new board of directors of PWO to replace the old board, most of whom resigned in February 2008. The absence of a board affected the operation of PWO in at least two important ways. First, the PWO could not appoint a new chief executive officer to replace the one who resigned in February 2008. Second, without the board, the operation of PWO was severely limited to routine functions. Most policy-related work has to be authorized by the board.
- 12 One of his groundless criticisms was that some senior officers might have obtained personal gain by helping the exporters to export rice.
- 13 Both the decision to give BAAC responsibility for the pledging programme and the setting of a high pledging price were supported by the minister of finance, who was the most influential minister in the cabinet.
- 14 According to an informed source in the National Rice Committee, in its February 2009 meeting an MOC official reported that the amount of rice loss (due to quality deterioration) rose sharply from 5 per cent of total stock as reported in late 2008, to about 40 per cent in February 2009. One plausible explanation is that some of the 2009 dry-season rice stock was exported in place of the 2005–2006 rice that was listed on the export bids. This is because most of the rice stock older than two years would have totally deteriorated.
- 15 The bureaucracy-led government sold 1.476 million tons of rice in 2006 and 2.864 million tons in 2007. The sale in 2007 consisted of 2.15 million tons of white rice and 0.694 million tons of *Dok Mali* (jasmine) rice. Most of the rice sold in 2007 was that procured through the 2004–2005 and 2005–2006 intervention programmes.
- 16 The Indian ban had a strong impact on the FOB price of parboiled rice, which jumped from 12,326 baht per ton in January 2008 to a peak of 28,068 baht, and remained at more than 22,063 baht until November 2008 when it declined to 18,532 baht.
- 17 The high pledging prices of paddy (as well as cassava and maize) resulted in an increasing flow of these products from Thailand's neighbouring countries including Cambodia, Laos and Myanmar. But there is no estimate of the volume brought illegally into the programme, so it is difficult to say how much of Thailand's rice exports in 2008 came from other countries.
- 18 Even rent-seeking politicians are under public pressure to sell rice at the highest possible prices.
- 19 In the 2008 rice bids, a senior official at PWO was accused of wrongdoing despite acting as she was instructed.

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The Vietnamese Rice Industry During the Global Food Crisis

Pham Hoang Ngan

Governance of and recent trends in the rice sector in Viet Nam

Institutions

Of all Viet Nam's agricultural products, rice is the most important and politically sensitive consumption good. Thus, the government monitors both international and domestic rice price movements and uses trade policy to maintain tight control over rice exports and input subsidies (for example fertilizer, insecticide). Although the nation's economy is now driven largely by the 'invisible hand', it is agreed that government interventions are needed in this area in order to ensure social stability. This was especially deemed to be true during the turbulent period of the global rice price crisis in 2008.

In Viet Nam, the Ministry of Agriculture and Rural Development (MARD), Ministry of Industry and Trade (MOIT) and Viet Nam Food Association (VFA) play key roles in the rice industry. In addition, two state-owned enterprises – the Northern Food Corporation (Vinafood 1) and the Southern Food Corporation (Vinafood 2) – play key roles in rice marketing.

The VFA is an organization of enterprises involved in producing, processing and trading of food and agricultural products. Although membership in VFA is voluntary and its operations are funded by members' profits, the

Association is authorized to issue regulations on registration and implementation of rice export contracts¹ and is responsible for setting a floor price on export contracts.

Normally, MARD and MOIT are responsible only for overseeing the rice industry's smooth operations and providing forecasts on prices, demand and supply. In 2008, however, the two ministries intervened boldly when they banned rice exports from late March to June. In the context of a global food crisis, the ministries explained that such decisive movement was necessary for the nation's food security.

Overview of food security policies

Significant recent developments in the world rice market and Viet Nam's development have placed the country's rice industry in a new position. First, the country's average rice export prices soared, reaching a high of around \$1000/ton in June. As a result, Viet Nam's domestic rice prices increased sharply, to a high of about 20,000 Vietnamese dong (VND)/kg (\$1.3/kg) in late April 2008, thus lowering the living standards of the poor. Second, there has been increased competition for land and water between rice production and industrial crops as well as industrial and urban development. Between 2001 and 2007, more than 500,000ha of farmland were converted into industrial parks. In 2008 alone, more than 125,000ha of rice fields were lost. On 18 April 2008, the Vietnamese prime minister issued Decision No 391/QD-TTg on the review and inspection of the management and use of land for five years, with a focus on rice fields. Third, the cost of farm inputs for rice production has increased significantly, adversely affecting farm incomes and rural financial performance. MARD has been assigned the task of developing policy aimed at ensuring national food security and managing rice land.

Since the beginning of reforms in 1986, food security policies went through two phases. In the first phase, emphasis was placed on striving to ensure sufficient food supplies at the national level. In the second phase, an effort was made to ensure that food supply was greater than domestic demand to allow for exports. Important policies implemented during this phase include the 1993 land law, which assigned responsibility to various authorities for administering land use. Rice cultivation area increased quite rapidly due to multi-cropping (i.e. higher cropping intensity). Increased food production targets were also achieved through policies encouraging expansion of land area, supporting higher yields through greater use of inputs and mechanization, and investing in infrastructure for irrigation and rural transportation.

Current food security policies have been established at three different levels (national, regional and household) and include:

- allowing free trade and establishing distribution systems for rice transactions nationwide;
- maintaining 4 million hectares of rice cultivation land to meet food demand based on population growth;

- creating conditions that help farmers in mountainous areas to diversify activities and widen their agricultural commodity production;
- balancing production and domestic demand in order to estimate rice-exporting targets from the beginning of the year;
- banning or restricting rice exports if necessary to ensure food security;
- extending rice import–export rights for domestic private traders.

Trends in rice production

Viet Nam's rice area changes from 1976 to 2007 can be divided into three phases. In the period 1976–1989, planted area and production of paddy remained stable at a low level: paddy planted area was less than 6 million hectares (see Figure 11.1), and production was lower than 19 million tons (see Figure 11.2). In the period of *Doi Moi* (Renovation) from 1990 to 1999, planted area and production of paddy grew dramatically, from 6 million hectares in 1990 to 7.66 million hectares in 1999, which at that time was a record high. In 1998, Viet Nam's production of paddy exceeded 30 million tons for the first time – an increase of nearly 60 per cent compared with 1990's 19 million tons.

From 2000 to 2007, paddy planted area generally decreased but annual paddy production managed to increase slightly due to increased yields, and production hovered around 36 million tons from 2004 to 2007. Over this period, planted area of paddy fell by nearly 300,000ha, with declines in all parts of the country except for the Northwest Highlands and Central Highlands. Planted area declined the most in the Red River Delta (RRD), down 105,000ha, followed by the Mekong River Delta (MRD) with a reduction of 62,000ha. This reduction in planted area was mostly caused by a fall in the area planted to the *mua* crop (the third crop of the year), as farmers shifted out of this season due to its low yields (see Figure 11.3). Among the three crops, yield of the winter–spring crop has always been the highest. The yield of the *mua* paddy crop has generally been the lowest, but it has improved considerably in recent years, and in 2006, *mua* yields were slightly higher than those of the summer–autumn crop.

Although farmers' profit from rice planting has improved, in the range VND8–10 million/ha per year depending on locality, it is less profitable than many other crops. Therefore, MRD farmers have adopted crop rotations on paddy soil. Several crops or fish are grown in rotation with rice: fish, shrimp, vegetables and fruit. These rotations, which help to break the monoculture of rice planting, reduce pests and diseases in the field and have achieved high economic returns of VND15–70 million/ha per year.

The paddy–fish rotation has achieved income of VND40–45 million/ha per year and profit of VND20–25 million/ha per year. The paddy–shrimp rotation is adopted on saline soils where it is difficult to irrigate in the dry season but there is abundant water in the rainy season. This rotation achieves annual income of VND45–55 million/ha and annual profit of VND25–39 million/ha.

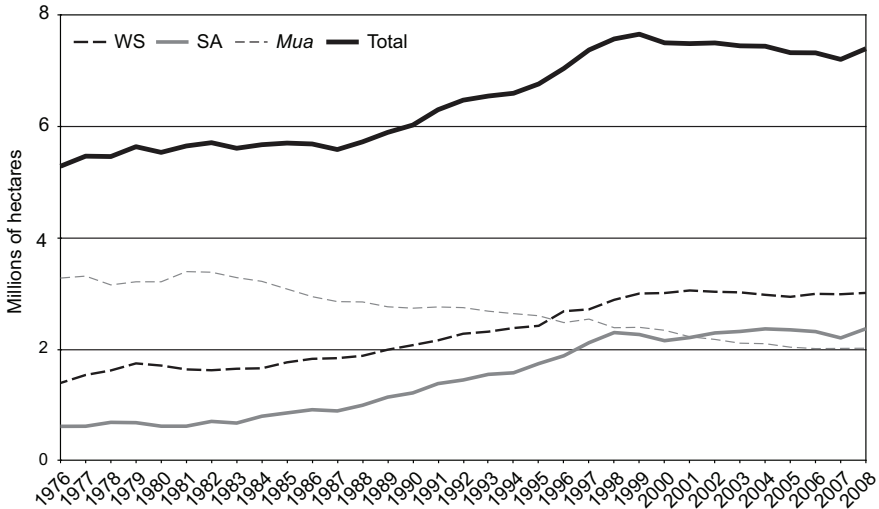


Figure 11.1 Viet Nam's paddy planted area, million ha, 1976–2008

Note: WS indicates winter–spring crop; SA indicates summer–autumn crop; *Mua* is the third crop.

Source: Raw data from www.agro.gov.vn

In the rice–vegetables/fruit rotation, farmers cultivate crops such as watermelons, cucumber or pumpkin after harvesting the winter–spring rice crop and before planting the summer–autumn rice crop. This model achieves annual income of VND35–70 million/ha and annual profit of VND15–40 million/ha.

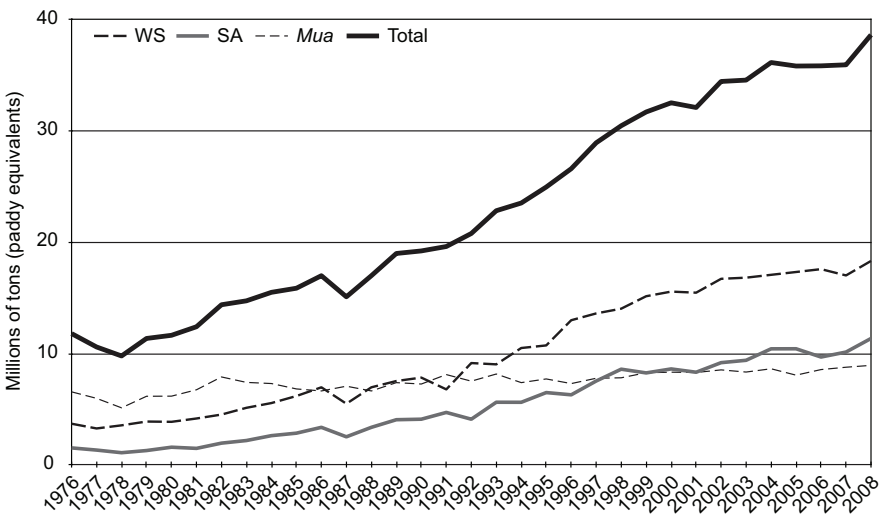


Figure 11.2 Viet Nam's paddy production, million tons, 1976–2008

Note: WS indicates winter–spring crop; SA indicates summer–autumn crop; *Mua* is the third crop.

Source: Raw data from www.agro.gov.vn

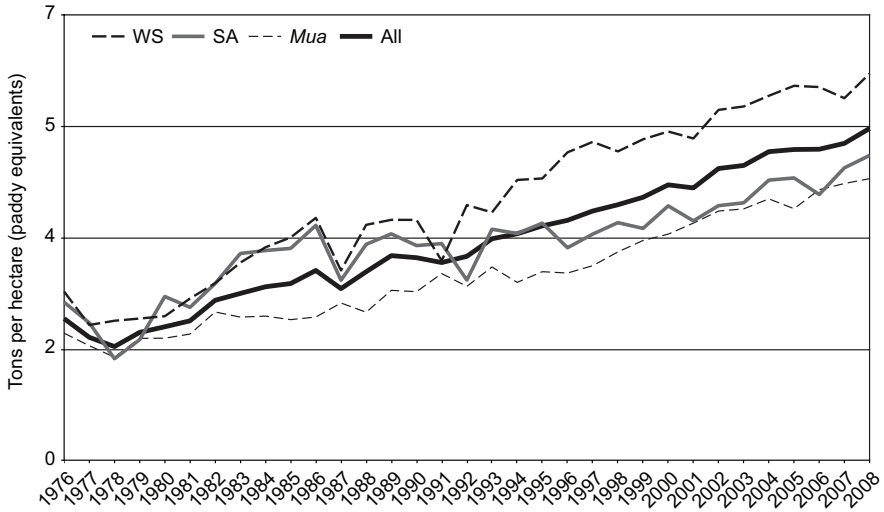


Figure 11.3 Viet Nam's paddy yield, ton/ha, 1976–2008

Note: WS indicates winter–spring crop; SA indicates summer–autumn crop; *Mua* is the third crop.

Source: Raw data from www.agro.gov.vn

Rice shock in 2008: Policies, exports and domestic prices

Viet Nam's export policies and trends in domestic rice prices and exports

In the first six months of 2008, VFA and MOIT regulated rice exports as normal by setting up export targets for the whole year as well as per quarter² and setting guidelines on minimum export price and volume for each month.³ VFA also registered and assigned rice export volumes and prices for rice-exporting companies. From January to the middle of March 2008, domestic rice prices were relatively stable in the MRD at around VND6600/kg (see Figure 11.4), although there was a relatively small increase in February because of the Lunar New Year celebrations. In the RRD market, ordinary rice price followed the same general trend, standing at about VND6225/kg in January and increasing to VND7225/kg in February for the Lunar New Year. In the first two months of the year, Viet Nam exported 459,000 tons of rice worth \$190.1 million at an average price of \$414 per ton (see Table 11.1).

World rice prices gathered further momentum in March, increasing to over \$600/ton by the end of the month, up from \$385/ton in January. Ordinary rice prices in Viet Nam's domestic market also began to increase more substantially in March, although the increases were less than those on world markets. The ordinary rice price in Can Tho in the MRD increased slightly to VND7400/kg, VND600/kg higher than in February. In the RRD, the ordinary rice price increased to nearly VND9000/kg, VND1000/kg more than in February. It was

Table 11.1 *Viet Nam's monthly rice exports, 2008*

<i>Month</i>	<i>Export quantity (thousand tons) (1)</i>	<i>Export value (million US\$) (2)</i>	<i>Average export unit value (US\$/ton) (3)</i>
January	131	51.0	389
February	328	139.1	424
March	558	255.0	457
April	657	371.2	565
May	560	444.1	793
June	210	211.1	1005
July	350	339.9	971
August	361	289	801
September	442	259	586
October	300	144	480
November	287	135	470
December	437	180	412
Total	4621	2818.4	610

Source: (1)–(2) General Department of Viet Nam Customs, (3) = (2)/(1)

in March that Viet Nam made a series of changes to rice export regulations. MOIT directed the VFA to reduce the export target to 3.5–4 million tons for the whole of 2008, compared with the earlier target of 4.5–5 million tons. MOIT also decided to temporarily halt the signing of new rice export contracts with the aim of ensuring domestic food security, especially given a long period of cold weather in the first two months of the year that damaged winter–spring crops in the northern provinces.⁴

In late April 2008, domestic rice prices in the MRD became extremely volatile, doubling over the course of a weekend and then falling back to some extent (although not to their original level). A key reason for the price rises was hoarding and speculation based on anticipated higher prices, and the ensuing panic buying by worried consumers. Some rice outlets halted sales and many people not usually in the business of trading rice became involved, such as vinegar and coffee merchants and warehouse owners. Even the owners of fishing boats collected and sold rice illegally in neighbouring countries. The state did not have the tools and institutions to regulate rice purchases and distribution, or to implement effective policies to stabilize the domestic market. At the same time, the private sector neglected to invest in and build its retail system.

On 27 April 2008, the prime minister promulgated a decision (Official Note 612) to guide rice purchases according to the government's plan to ensure sufficient rice for both domestic consumption and exports, to stabilize rice supplies throughout the country, and to avoid shortages in the domestic market. Supermarket chains such as Coop Mart and Big C supplied an additional 200 tons of rice to its supermarket affiliates in Ho Chi Minh City, Bien Hoa, Da Nang and Hanoi at prices that were slightly lower than the prices reached during the peak of the panic. Despite these measures, rice prices increased by

about 50 per cent from the end of April to the end of May, from VND7400/kg to more than VND11,000/kg. Farm prices also increased substantially during this time, from VND5100/kg to about VND6500/kg. This is a large increase in just one month, but it was less than the increase in retail prices.

In May and June, Viet Nam's freeze on the signing of new rice export contracts continued, although there were 770,000 tons of rice exports during these months that were due to earlier contracts. These exports brought the total rice export volume for the first six months of 2008 to 2.4 million tons. The peak average export unit value was \$1005 per ton in June, but the quantity of exports delivered in this month was less than the quantities exported in March and April (see Table 11.1). Note that the monthly export unit values for Viet Nam typically correspond to world prices about two months earlier, as there is a lag between negotiation of the contract (when the price is set) and delivery of the physical rice. During the crisis, despite the export restrictions, there were strong connections between world prices and domestic prices, especially those in the MRD. Indeed, the temporary ban on new rice export contracts from 25 March to 30 June failed to lower Viet Nam's domestic prices.

Beginning in early June, domestic rice and paddy price began to decline as world prices started to fall and it became clear that harvests of the winter–spring crop in the country's two key rice-producing regions were plentiful. On 21 July, the government announced a progressive export tax, ranging from a minimum VND500,000/ton (around \$30/ton at prevailing exchange rates) for an export price of \$600/ton, to a maximum VND2.9 million/ton (\$175/ton) for export prices of \$1300/ton and higher. This announcement, made in the context of decreasing world rice prices, served to slow purchases by export companies and thus rapidly pulled down domestic prices. In the first half of August, paddy prices in the MRD reached about VND4500/kg, down about 30 per cent from the peak in late May, indicating that rice farmers were affected more than any other industry players by the new tax policy.

As prices continued to fall from 21 July into early August, the Ministry of Finance decided to stimulate prices for the farmer, and on 15 August raised the minimum taxable price to \$800/ton. It also expanded credits and preferential interest rates for business enterprises to make rice purchases. Thus, government spending on rice exporters increased at the same time that the tax paid by rice-trading enterprises fell. In the wake of the reduction in export taxes, farm prices did improve in the MRD, from around VND4500/kg in the middle of August to VND5000/kg by the end of the month, an increase of more than 10 per cent. The increase in farm prices was short-lived, however, and by the end of September prices were back to the levels prevailing before the reduction in export taxes.

In November 2008, in order to strengthen exports, the government announced a 'rescue policy', which abolished the rice export tax and liberalized exports (traders were no longer required to register exports with the VFA). But in the wake of the US financial crisis and falling commodity prices on

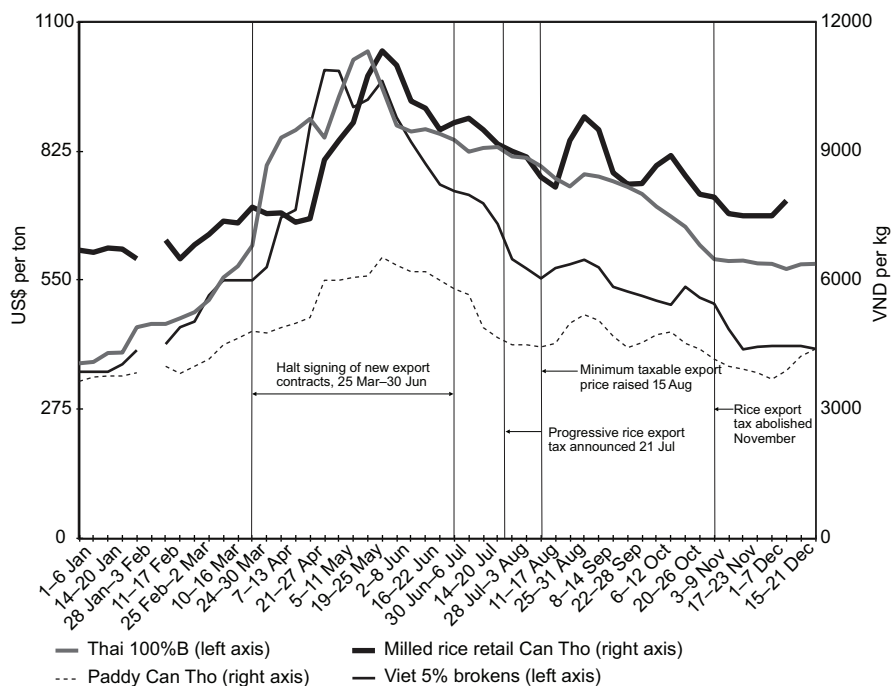


Figure 11.4 MRD ordinary paddy and rice price movements and world rice prices, 2008

Source: AGROINFO, www.agro.gov.vn

world markets, the new policy failed to increase prices. Trading enterprises found it difficult to access new markets and establish new contracts. In the domestic market, new harvests combined with slow purchases resulted in a sharp increase in the quantity of rice that needed to be stored. By the end of 2008, farm prices were roughly in line with levels prevailing in March.

Trends in domestic fertilizer prices

World market prices for urea, the most important fertilizer for rice farmers, increased steadily beginning in 2003. By 2006, prices were 50 per cent higher in real terms than in 2003. Prices then surged in 2007 and 2008 – between August 2007 and August 2008, prices nearly tripled for both urea and diammonium phosphate (DAP). They then declined sharply beginning in September.

These international price movements affected Vietnamese domestic prices (see Table 11.2). For urea, prices increased by 70 per cent in real terms between March 2006 and the peak in July 2008. Given the lag between price movements on international and local markets, Vietnamese agricultural materials suppliers started lowering fertilizer prices substantially at the end of October.

Table 11.2 Urea prices in An Giang province, MRD, Viet Nam, 2003–2008

Month	2003	2004	2005	2006	2007	2008
January	3000	3000	3300	3975	4920	6050
February	3000	3000	3425	4200	5000	6350
March	3000	3000	3746	3800	4725	7000
April	3000	3250	3700	3900	4700	7650
May	3000	3300	3700	4080	4960	7800
June	3000	NA	3700	NA	5000	8000
July	3000	NA	3450	NA	5000	9000
August	3000	NA	3400	NA	5050	8500
September	3000	NA	3400	NA	5200	8300
October	3000	NA	3400	NA	5200	7250
November	NA	NA	3400	NA	5575	6000
December	NA	NA	3400	NA	5800	5833

Source: AGROINFO, IPSARD-MARD, www.agro.gov.vn

At the same time that urea prices were increasing, so were paddy prices. Thus, the price ratio of urea fertilizer to paddy fluctuated around a generally flat trend during 2007 and 2008. When the price ratio is constant while paddy prices are rising, this leads to greater profits for farmers because material inputs such as fertilizer account for only a fraction of total crop revenue. Indeed, Table 11.5 shows that farm profitability for the winter–spring crop in An Giang increased in 2008 despite a decline in yields of 5 per cent. However, fertilizer prices soared at the onset of the 2008 summer–autumn crop, and by the time farmers harvested that crop, paddy prices had declined sharply. Thus, for that crop, farmers were caught between high urea prices at planting time and low paddy prices at harvest time.

What happened to farmers during the crisis?

Supply response

The increasing paddy prices in 2008 encouraged farmers to plant more crops, especially in the MRD (Viet Nam's largest producer of rice for export). The planted area of the MRD's summer–autumn and *mua* (autumn–winter) crops increased by 8 and 4 per cent respectively, compared to 2007 (see Tables 11.3 and 11.4). In some MRD provinces, such as An Giang, this increase was supported by local authorities, which provided funds for irrigation channels to cover an additional 1000ha of autumn–winter crop. In other key rice-producing provinces of the MRD, such as Dong Thap, Tien Giang, Vinh Long and Bac Lieu, local farmers actively expanded autumn–winter rice crops onto land they had previously used for other cash crops and aquaculture.

However, as noted earlier, the implementation of the rice export tax regulations coupled with declining prices on world markets resulted in a sharp drop in paddy and rice prices in the MRD beginning in July 2008. The record summer–autumn crop strained the available storage space, and the export tax encouraged trading enterprises to cut their purchases. Domestic paddy prices

Table 11.3 *Paddy production, planted area and yield, Viet Nam, 2005–2008*

	2005	2006	2007	2008
Production (thousand tons)				
Winter–spring	17,332	17,588	17,024	18,324
Summer–autumn	10,436	9694	10,141	11,361
<i>Mua</i>	8065	8567	8778	8946
Total	35,833	35,850	35,943	38,631
Area (thousand ha)				
Winter–spring	2942	2996	2988	3013
Summer–autumn	2349	2317	2204	2369
<i>Mua</i>	2037	2012	2016	2018
Total	7328	7325	7207	7400
Yield (ton/ha)				
Winter–spring	5.89	5.87	5.70	6.08
Summer–autumn	4.44	4.18	4.60	4.80
<i>Mua</i>	3.96	4.26	4.36	4.43
Average	4.89	4.89	4.99	5.22

Source: GSO (2008)

Table 11.4 *Paddy production, planted area and yield, MRD, 2005–2008*

	2005	2006	2007	2008
Production (thousand tons)				
Winter–spring	9077	8998	9072	9833
Summer–autumn	8797	7839	8291	9272
<i>Mua</i>	1425	1392	1315	1577
Total	19,299	18,229	18,679	20,682
Area (thousand ha)				
Winter–spring	1479	1500	1507	1527
Summer–autumn	1975	1910	1799	1940
<i>Mua</i>	372	364	377	392
Total	3826	3774	3683	3859
Yield (ton/ha)				
Winter–spring	6.14	6.00	6.02	6.44
Autumn–winter	3.83	3.83	3.49	4.02
<i>Mua</i>	4.45	4.10	4.61	4.78
Average	5.04	4.83	5.07	5.36

Source: GSO (2008)

fell from mid-July until mid-August, when they reached around VND4400/kg — about the same as in late February–early March 2008. Given the high input prices, average production costs in August were about VND3000–3500/kg. The low paddy prices, high input costs and sluggish sales due to weak export demand prevented MRD farmers from expanding the autumn–winter crop to meet the target of 470,000ha, although the planted area of 392,000ha was still the highest level in the MRD in the previous four years.

Total area planted to rice for all of 2008 reached 7.4 million hectares, or 200,000ha more than in 2007 (an increase of 2.7 per cent). The national

average yield was 5.22 tons/ha, up 4.7 per cent from 4.99 tons/ha in 2007. The combination of expanded rice area and increased yield in 2008 resulted in an all-time record for rice production of 38.6 million tons, up 2.7 million tons (7.3 per cent) from 2007. This was more than 2 million tons higher than the original target of 36 million tons and was much faster than the rate of population growth of approximately 1.2 per cent. As a result, Viet Nam was able to achieve both food security and export targets in 2008.

The winter–spring crop is the most important crop in the country, accounting for nearly half of annual production. In 2008, winter–spring rice area, yield and production for the whole country all increased in comparison with 2007, although the increase in area was very small. The yield of winter–spring rice surged substantially, averaging 6.1 tons/ha, an increase of 6.8 per cent. The higher yields made the major contribution to a production increase of 1.3 million tons, a 7.6 per cent gain compared with the previous year.

The total 2008 area of summer–autumn rice was 2.4 million hectares, nearly all of which is in the southern part of the country. For the 2008 summer–autumn crop, many farmers strictly followed the process of ‘3 decreases, 3 increases’,⁵ resulting in high yields and production. This contributed to an increase in yields of 4.2 per cent. Coupled with an expansion in area of 7.5 per cent, total production for the country in 2008 reached 11.4 million tons, up 1.2 million tons (12 per cent) over that of 2007. Southern provinces produced 10.5 million tons and northern provinces contributed the remainder.

The area planted to the third-crop, or ‘tenth-month’, rice for the whole country in 2008 totalled 2.0 million hectares, with an average yield of 4.4 tons/ha. These figures represented increases of 0.1 per cent and 1.8 per cent compared with 2007. Sown areas in the 2008 third crop in the MRD increased substantially, reaching 392,000ha. This represented an increase of 15,000ha over 2007 as farmers expanded rice area in response to rising prices during the first months of 2008.

Rice production cost and profit: The case of An Giang Province, MRD

Rice production in Viet Nam utilizes a lot of labour and few machines. Expenditure on labour usually makes up the biggest proportion of the total cost of rice production (about one-third for the An Giang winter–spring crops of 2005–2006, 2006–2007 and 2007–2008; see Table 11.5). The share of labour would be even higher if unpaid family labour were included in the costs according to its opportunity cost. A study using data from the late 1990s (Moya et al, 2004) found that family labour input in the MRD was six times hired labour input. In the RRD, it was nearly 25 times hired labour input.

Agricultural wages have been increasing in recent years, as large-scale migration from rural areas to urban areas has reduced the supply of labour. Furthermore, MRD farmers have recently been seeding immediately after

Table 11.5 *Winter–spring paddy production cost in An Giang province, MRD, 2006–2008*

No	Item		2006	2007	2008
I	Physical cost		5,033,800	6,680,650	10,568,674
1	Seed	VND/ha	435,000	483,600	936,000
2	Fertilizer	VND/ha	2,043,800	3,269,050	6,691,390
3	Pesticide	VND/ha	1,460,000	1,710,000	1,758,517
4	Irrigation cost	VND/ha	495,000	528,000	576,000
5	Other cost in cash	VND/ha	600,000	690,000	606,767
II	Labour cost (excluding household labour cost)	VND/ha	2,799,000	3,116,000	4,764,667
III	Total cost	VND/ha	7,832,800	9,796,650	15,333,341
IV	Average yield	Kg/ha	5900	6100	5792
V	Paddy production cost	VND/kg	1328	1606	2647
VI	Paddy price	VND/kg	2050	2350	3700
VII	Profit	VND/kg	722	744	1053
	Profit	VND/ha	4,262,200	4,538,350	6,097,059

Source: An Giang Department of Agricultural and Rural development

harvest in order to avoid epidemic diseases in paddy. As a result, labour for cutting paddy has become scarcer and wages paid to workers have increased sharply. During the harvest of the 2007 winter–spring crop, the payment for workers cutting paddy in An Giang was VND900,000/ha – almost twice as much as that of the previous crop. In 2008, this figure increased further to VND1.2–1.4 million/ha. Many provinces have thus increased the level of mechanization used in paddy harvests.

In the MRD, farmers usually use four types of fertilizer: urea, DAP, K fertilizer and NPK that combines all three macronutrients. Farmers typically apply 400kg/ha of fertilizer or more during the winter–spring crop. Fertilizer expenditure has tended to increase in recent years due to rising prices. The high fertilizer prices of 2007 and 2008 meant that fertilizer costs overtook hired labour as the biggest expense for farmers (again, ignoring the value of family labour). For the 2008 winter–spring crop, fertilizer costs accounted for 43 per cent of total cash costs.

For the 2008 winter–spring crop, the average paddy price was VND3700/kg, 57 per cent higher than in the same period in 2007. Average production costs were around VND2650/kg, 64 per cent higher than in 2007. Farmers recorded an average profit of about VND1050/kg – more than 40 per cent higher than in 2007 (around VND740/kg). Profits account for about 30 per cent of gross revenues, with expenditures accounting for the other 70 per cent.

Lessons

The government's biggest success in managing the domestic rice market in 2008 was in ensuring national food security at the same time as reaping

commercial profits from international rice trading by taking advantage of soaring world prices in May and June. Viet Nam's economy and farmers competed actively in world markets and reacted quickly to international market events.

In general, market mechanisms are applied to paddy production but not to trading. Indeed, a number of governmental agencies direct and manage rice trading in Viet Nam, including the Prime Minister's Office, MOIT, MARD, Ministry of Finance, the Viet Nam Food Association and the State Bank of Viet Nam. These authorities, which set rice export volumes and determine other related policies every quarter, can intervene in the functioning of the market in response to changes in international markets. However, at times their decisions are not well informed due to a lack of market analyses and reliable forecasts. These weaknesses are caused partly by a lack of financial and human resources, but the current regime of rice trade management in Viet Nam is also a key factor.

The VFA leads all rice export enterprises but focuses mostly on large contracts signed at governmental levels. In this way, export volumes and prices are planned from the beginning of the year. However, this way of doing business tends to be inefficient for both state-run and private companies, especially medium and small enterprises, and makes it difficult to react to changes in market conditions. Exporters pay most of their attention to their annual export quotas and export contracts signed by the government, and not to market analyses and forecasts. In addition, paddy producers lack good market information and are unable to participate knowledgeably in volatile markets.

Viet Nam's rice trade needs improved market research, analysis and forecasts, in conjunction with better monitoring of paddy supplies and world supply–demand balances. While rice-exporting countries such as Thailand took advantage of increased export prices, Vietnamese enterprises remained passive because of short-term decisions to restrict exports and vary rice export taxes. This style of management prevents market players from developing and executing well-planned strategies and capturing business opportunities. The government prefers to subsidize large enterprises (most of which are state-owned) through bank credits. Such policies have little effect on improving the lives of farmers working in their paddy fields. In addition, these policies encourage enterprises to look for handouts rather than increase their competitiveness.

The large rice trading enterprises also do not invest in domestic retail distribution systems, making markets more vulnerable to speculation. When rice prices peaked in 2008, several enterprises held large volumes of rice (more than 10,000 tons were held by the Binh Tay Food Company, 9000 tons by the Satake Company, 150,000 tons by the Northern Food Corporation and 446,000 tons by the Southern Food Corporation). Yet, without their own distribution systems, they were not able to provide rice to consumers on time.

Notes

- 1 Decision No 5/QD/HHLTVN issued on 26 March 2008.
- 2 Document 1746/MOIT – Import and Export Guidelines for Viet Nam’s rice export in 2008 – was signed by Mr Nguyen Thanh Bien, Deputy Minister of MOIT on 5 March 2008. Under these guidelines, MOIT entrusted the VFA to implement rice exports in quarters: Quarter I/2008 export 700,000–800,000 tons; Quarter II export 1,300,000–1,500,000 tons; Quarter III export 1,300,000–1,400,000 tons and Quarter IV export 700,000–800,000 tons.
- 3 In January, 2008, the minimum prices for rice-exporting contracts were \$385/ton for 5 per cent broken rice and \$360/ton for 25 per cent broken rice. Prices in March 2008 were more than \$400/ton for 5 per cent broken rice.
- 4 Prime Minister Nguyen Tan Dung released document 78/TB-VPCP, signed on 25 March 2008.
- 5 ‘3 decreases’ are decreases in expenditure per unit of area, fertilizer use, and the number of pesticide applications; ‘3 increases’ are increases in yield, quality and profit.

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Rice Production in Cambodia: Will Exports Continue to Grow?

Sushil Pandey and Humnath Bhandari

Introduction

The food crisis of 2008 has renewed the interest of countries in increasing rice production to meet domestic needs and to gain from the opportunities for expanded exports. In the Mekong delta, Thailand and Viet Nam are well-established rice-exporting countries and are the two top rice exporters in the world. Cambodia, which is situated in the Mekong basin between these two major exporters, also has the potential to participate in the export market in a significant way, although its export performance in the past four or five decades has been poor due to several constraints. Indeed, in the 1950s, Cambodia was one of the world's leading rice exporters. In the wake of the food crisis, the Royal Government of Cambodia is renewing its efforts to re-establish the country as an important exporter of rice.

The main objective of this chapter is to provide an initial analysis of the future rice export potential of Cambodia. After a long period of low production and shortages of rice spanning over two decades, Cambodia became self-sufficient in rice in 1995. Cambodia started exporting rice in 2002 after being absent from the rice export market for over 25 years. Current rice exports are estimated by USDA (2009) to be about 0.5 million tons of rice in milled equivalent, although some government sources indicate exports to be about 1.4 million tons in milled equivalent (AFSIS, 2010).

The basic approach taken in this chapter is to examine the potential for export in terms of supply-side considerations. The lack of reliable data on the quantity of export, export destinations and the prices received necessitates such an approach. In addition, a substantial proportion of export from Cambodia is informal, with rice flowing across the borders to Thailand and Viet Nam. This private trade takes place mainly in the form of rough rice (unmilled) soon after the harvest. The Cambodian rice market is closely linked with the rice markets of Thailand and Viet Nam due to this informal export.

The chapter is organized as follows. The major features of the Cambodia rice economy in relation to those of its neighbouring exporting countries are first discussed. This is followed by an analysis of the rice production and export trends of Cambodia. The structure of the rice marketing systems and marketing costs, and trends in prices are subsequently discussed. Estimates of the exportable surplus under three alternative scenarios on production growth are then presented. The final section consists of a discussion of major constraints to future export growth and strategies to address those constraints.

Characteristics of the Cambodian rice economy

Cambodia is a small country situated in the Mekong delta between Thailand and Viet Nam. The economy of Cambodia is closely linked with that of these countries. Of the three countries, it has the lowest population of 14.7 million and the lowest population density of 79 persons/square kilometre (see Table 12.1). However, the Cambodian population is increasing quickly and the growth rate is 1.7 per cent per annum. It is also the poorest of the three countries in terms of per capita income and has the highest poverty ratio.

Rice is an important crop of Cambodia and it occupies over 90 per cent of the total cultivated area. Overall, agriculture contributes 29 per cent to GDP and employs 75 per cent of the total labour force (World Factbook, 2009). In terms of rice production, the total rice output of Cambodia is relatively small (see Table 12.2). Production is about a fifth relative to Thailand and a sixth relative to Viet Nam. This difference in production arises from both smaller area and lower yield. The average rice yield in Cambodia (2.5t/ha) is about a half of that in Viet Nam (4.9t/ha). It is interesting to note that despite the lower

Table 12.1 *Basic indicators, selected ASEAN countries*

<i>Indicators</i>	<i>Unit</i>	<i>Cambodia</i>	<i>Thailand</i>	<i>Viet Nam</i>
Total population ^a	Million	14.7	64.3	88.5
Population growth ^a	% annual	1.7	0.7	1.3
Population density ^b	Persons/sq. km	79	123	268
Per capita rice production ^c	Kg/person	461	489	429
Average farm size ^d	ha/HH	1.33	3.16	0.71
Per capita income ^e	US\$/person (2007)	550	3400	770
National poverty ratio ^b	% (2005)	34.7	9.8	19.5

Sources: Data from ^a UNFPA (2008); ^b ADB (2008); ^c USDA (2009); ^d FAO (2009b); ^e World Bank (2009).

Table 12.2 *Rough rice average area, yield, and production, selected ASEAN countries, 2005–2007*

Rice	Unit	Cambodia	Thailand	Viet Nam
Area	1000ha	2499	10,034	7277
Yield	t/ha	2.53	2.96	4.93
Production	1000t	6326	29,731	35,853

Source: Data from USDA (2009)

Table 12.3 *Percentage rice area, by ecosystem, selected ASEAN countries*

Ecosystem type	Cambodia	Thailand	Viet Nam
Irrigated	8	22	54
Rainfed	90	77	40
Upland	2	1	6

Source: Data from IRRI (2006)

yield and smaller rice area, rice production per capita (461kg rough rice) in Cambodia is quite similar to that of Thailand and Viet Nam. Such a high level of current per capita production is an indication of Cambodia's promising potential for rice export.

Relative to its neighbours, almost all (92 per cent) of the rice area in Cambodia is rainfed (see Table 12.3). The irrigated area accounts for only about 8 per cent of the total rice area in Cambodia. This contrasts with Viet Nam where irrigated area accounts for over 50 per cent of the total rice area.

The above brief comparative analysis highlights important contrasts between Cambodia and the two major rice-exporting countries. An expansion of rice area and/or an increase in yield would have to be the major determinants of the future rice export potential of Cambodia. Rising food demand from the relatively small but rapidly growing population of Cambodia could be a factor constraining future export potential.

Rice production systems and production trends

Rice is grown in both the wet and dry seasons in Cambodia. Wet-season rice is planted in July/August and harvested in December/January and accounts for over 80 per cent of the total rice area. With the spread of modern photoperiod insensitive rice varieties, there is now some expansion of area under the early wet season (planting in July/August followed by harvest in October/November). No official data are available on the area under early wet season but it has been estimated to be approximately 400,000ha (Young et al, 2001).

Dry-season rice is grown under irrigated conditions mainly during January/February to May/June. However these planting/harvesting periods are not clearly demarcated with considerable overlaps due to diversity of rice sub-ecosystems and the farmer practice of staggered planting (Javier, 1997). In

2007, rice area in the dry season was approximately 344,000ha or about 13 per cent of the total rice area. The share of dry-season rice in total production was about 20 per cent due to its slightly higher yield than that of wet-season rice. The yield of dry-season rice in 2007 was 3.96t/ha or 64 per cent higher than that of wet-season rice (2.41t/ha).

The provinces growing most of the rice in Cambodia are located in the northwestern and southeastern parts of the country. Banteay Meachey and Battambang are the two major northwestern provinces that account for about 22 per cent of the total rice area in the country. These provinces are located along the Thai border. In the southeastern areas bordering Viet Nam, the major rice-growing provinces are Kompong Cham, Kandal, Preyveng and Takeo. The production of dry-season rice is mainly located in the southeast with these four provinces accounting for over 70 per cent of the total dry-season rice area.

The rice production trend in Cambodia has undergone important changes during the past five decades. There are four distinct trends (see Figure 12.1). Between 1960 and 1970, rice production was on an upward trend but with high year-to-year variability. During this period, the rice area was more or less constant at around 2 million hectares, with yield growth being the main contributor of the production growth. Rice production decreased sharply during the 1970s as much of the rice land was left uncultivated during the Khmer Rouge regime. Rice production picked up slowly after the fall of the Khmer Rouge regime and continued to increase at a modest rate up until 1994. The main source of production growth during 1980–1994 was growth in rice area while the yield remained below 1.5t/ha.

There was a major break in the trend in 1995 with the production growth increasing at the average rate of 5.7 per cent per annum during 1995–2008 (see

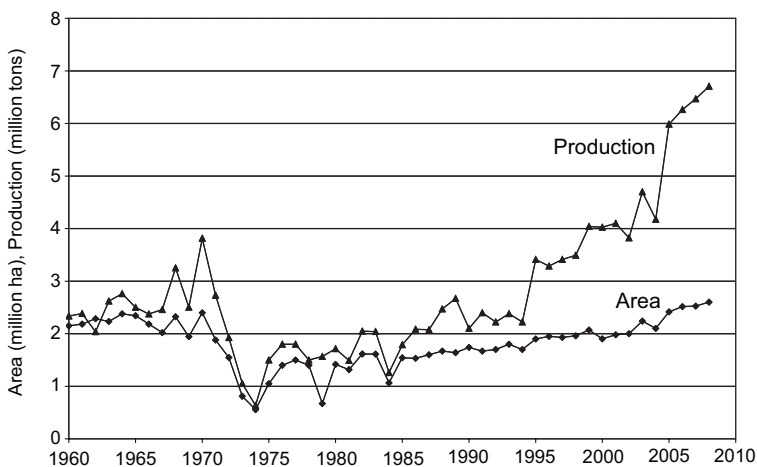


Figure 12.1 Trends in area and production of rough rice, Cambodia, 1960–2008

Table 12.4 *Percentage annual growth rates of rice area, yield and production, Cambodia, 1960–2008*

Period	Area	Yield	Production
1960–1994	-1.05	0.58	-0.46
1995–2008	2.5	3.2	5.7
1960–2008	0.4	1.5	1.9

Source: Data from USDA (2009)

Table 12.4). Overall, the yield growth rate increased from 0.6 per cent per year during 1960–1994 to 3.2 per cent per year during 1995–2008 (see Figure 12.2).

A number of factors contributed to this impressive growth in production, the major one being technological. Photoperiod-insensitive improved varieties such as IR66 were increasingly adopted, especially in the early wet season and the dry season. Similarly, the adoption of higher-yielding traditional Cambodian varieties identified through pure-line selection spread rapidly during this period. The use of better-quality seeds, expansion of dry-season rice area, and increased extension efforts were some of the other major reasons for this rapid increase in production (Young et al, 2001). Dry-season production increased at the rate of 8.4 per cent per annum driven mainly by the area growth (see Table 12.5). Expansion of irrigation facilities and the availability of improved photoperiod-insensitive varieties were the main reasons for the expansion of dry-season rice. Almost all of the dry-season rice area now is under improved photoperiod-insensitive varieties (see Table 12.6). Such

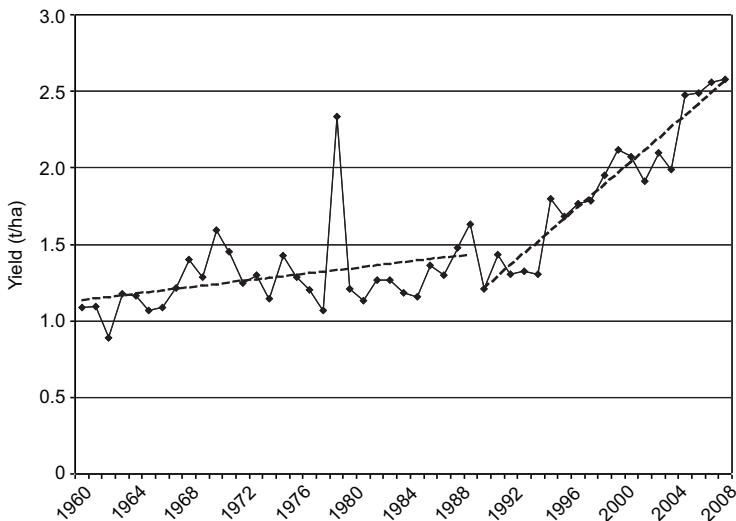


Figure 12.2 *Trends in yield of rough rice, Cambodia, 1960–2008*

Source: Data from USDA (2009)

Table 12.5 *Percentage annual growth rate of rice area, yield, and production, by season, Cambodia, 1998–2007*

Season	Area	Yield	Production
Wet season	2.9	3.4	6.4
Dry season	4.9	3.5	8.4
Total	3.2	3.6	6.8

Source: Data from MAFF (2009)

Table 12.6 *Percentage rice area under improved varieties, Cambodia, 2002*

Crop season	Area under improved variety (%)
Wet season	14
Dry season	97
Early wet season	88
Total	48

Source: Agrifood Consulting International (2002)

improved varieties (mainly IR66) are also grown widely in the early wet season. However, photoperiod-sensitive traditional varieties are predominant in the main wet season.

The trend in per capita rice production follows the trend in total rice production. After a dramatic drop to below 100kg of rough rice per capita in 1974, it is now approaching the pre-Khmer Rouge level of around 450kg of rough rice per capita (see Figure 12.3). Although Cambodia exported rice during 1960s, the export ceased completely as rice production dipped below the domestic requirement. Cambodia ceased rice exports for almost 25 years during 1975–2001. With the rise in per capita production over time, Cambodia

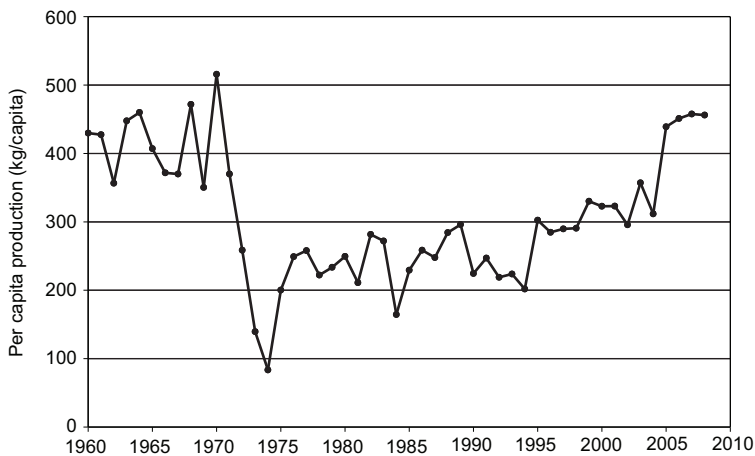


Figure 12.3 *Per capita production of rough rice, Cambodia, 1960–2008*

Source: Data from USDA (2009)

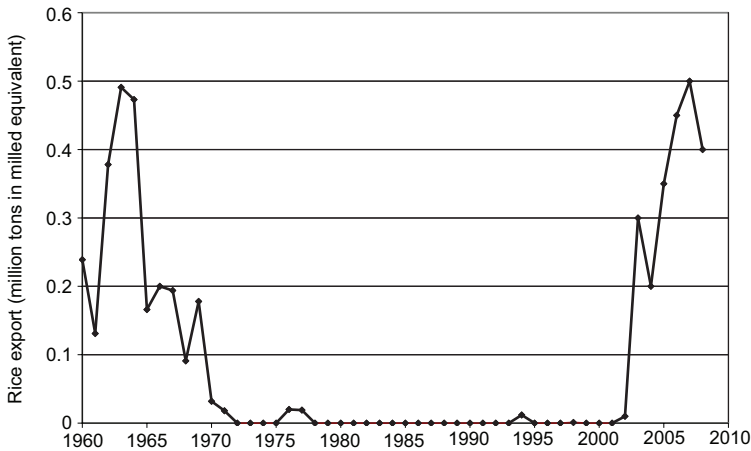


Figure 12.4 Rice exports (in milled equivalent) from Cambodia, 1960–2008

Source: Data from USDA (2009)

emerged as an exporter again in 2002 and has been expanding the export quantity (see Figure 12.4).

Rice marketing systems

The rice marketing system of Cambodia has some unique features resulting from several factors. These factors include a close integration of the Cambodian rice market with the markets of Thailand and Viet Nam, limited facilities for rice drying and milling, poorly developed transportation infrastructure, small marketable surplus of farmers, and grain quality differences between the northwestern and southeastern production zones. Some of these major features of the Cambodian rice markets are summarized below.

Cambodia is connected to the global market mainly through informal channels, although some trade takes place through formal channels. Cambodia has a long history of an informal cross-border rice trade with Thailand and Viet Nam. This trade takes place mainly in the form of paddy rice through a network of local paddy collectors and paddy brokers. This informal trade has continued to thrive as it provides an important flexible outlet for surpluses. In the northwest region, paddy rice is transported overland to neighbouring Thai provinces. In the southeast region, paddy rice is similarly transported to Viet Nam but mainly on barges and boats. The main reason for export in the form of paddy rather than as milled rice is the limited and poorly developed post-harvest facilities (drying, storage and milling) in Cambodia. After milling across the border, part of this rice is imported back into Cambodia. Due to the informal nature of this market, reliable estimates of the quantity traded are not available. Regulation and formalization of this long-established market operated mainly by paddy collectors and brokers is difficult along the porous Cambodian borders.

Cambodia also has a small formal rice export market oriented towards exporting high-quality organic rice to niche markets. This export trade is dominated by large well-connected exporters who export high-quality milled rice mainly to Singapore, Malaysia and Europe, where Cambodian rice commands a price premium. Even for this formal export that takes place mainly through the ports of Phnom Penh and Sihanoukville, inconsistencies in data collected by various agencies involved makes it difficult to derive a reliable estimate. The quantity of this formal export, estimated to be around 50,000 tons in 2002 (Agrifood Consulting International, 2002) is now probably around 200,000 tons of milled rice.

Local paddy collectors who collect paddy from farmers are important players in the supply chain. They collect small quantities of paddy from farmers and sell subsequently either to paddy brokers or to commercial rice mills. Paddy brokers in turn sell to Thai/Vietnamese rice traders. Commercial rice mills process paddy into rice for sale to wholesalers and retailers, mainly for the domestic market. Often, commercial mills also act as brokers and sell their paddy stock directly to Thai/Vietnamese traders.

Farmers mostly sell small quantities of rice to local collectors soon after harvest. The average quantity sold per farmer (for those who have marketable surplus) has been estimated to be around 1.6 tons (Agrifood Consulting International, 2002). A consequence of bulking of these small quantities by collectors is that the paddy collected is often of mixed varieties resulting in more broken grains and lower grain quality during milling. Much of the wet-season rice sold commercially is hence classified as 'mixed variety'. Only varieties such as Somali, Phkar Khney, Neang Minh and IR66 are marketed on a specific-variety basis.

The trade flow of rice and paddy is described schematically in Figure 12.5. Good quality rice such as Somali, Phkar Khney and Neang Minh that are mostly grown in the northwest region find their way into Thailand as paddy through informal channels. Some of these varieties are also milled locally and transported by road to Phnom Penh and other centres of population in the east of the country. In addition, unofficial imports of Thai jasmine rice also find their way into Phnom Penh through the same route. Informal exports from the southeastern province to Viet Nam are dominated by IR66, which is grown mainly in the dry season. This variety finds an easy market in Viet Nam. The official export of milled rice from Cambodia is channelled through the ports of Phnom Penh and Sihanoukville.

The informal rice market linking Cambodia with the two large markets of Thailand and Viet Nam means that Cambodia is essentially a price taker. The price of Cambodian rice is basically set by market forces outside its borders in Thailand and Viet Nam. The price received by farmers for paddy is based on the derived demand taking into account the marketing costs. The regional variations in price for rice varieties that are exported informally are mainly explained by the marketing costs.

Table 12.7 *Marketing margin of paddy from farmer to trader, Cambodia*

<i>Items</i>	<i>% of total marketing margin</i>
Profit margin of collector/broker	44–49
Transport cost	22–34
Labour	13–14
Materials	6–9
Fees (official and unofficial)	7–9

Source: Data from Economic Institute of Cambodia (EIC, 2008)

12.7. Although the share of fees (official and unofficial) estimated in the survey by EIC seems reasonable at less than 10 per cent, other reports have indicated that these costs (especially the informal fees) can be much higher, accounting for as much as 50 per cent of the total marketing costs (Agrifood Consulting International, 2002).

The data presented indicate that the net profit margin of trader and transport costs combined account for 65–85 per cent of the total marketing costs. As Cambodia is a price taker in the export market to Thailand/Viet Nam, farmers are likely to gain from improvements in marketing systems that reduce these costs.

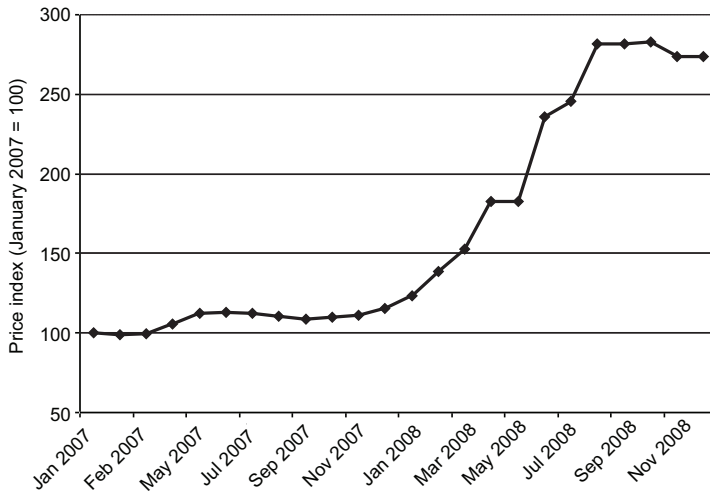
Cost of production and comparative advantage

Although the rice prices increased in the early part of 2008, the input costs also increased quite sharply. The cost of fertilizers almost tripled between January 2008 and November 2008 (see Figure 12.6). This led to a substantial increase in the nitrogen–paddy price ratio, despite the rise in the price of rice (see Table 12.8). The retail price of diesel, commonly used for powering agricultural machinery, increased by 80 per cent between January 2007 and May 2008 (MoC, 2008). In Cambodia, the cost of power for land preparation and the cost of fertilizers account for over two-thirds of the cash cost of production (DAI, 2008). Hence, increases in these costs would have reduced the gains in profitability of rice production resulting from the price rise, although the overall profitability after the price rise is most likely higher than before as purchased input costs typically account for a small proportion of the gross revenue.

Table 12.8 *Nitrogen–paddy price ratio, Cambodia, 2004–2008*

<i>Year</i>	<i>Nitrogen price (Riel/kg)</i>	<i>Paddy price (Riel/kg)</i>	<i>Nitrogen–paddy price ratio</i>
2004	2227	547	4.1
2005	2718	620	4.4
2006	2821	588	4.8
2007	3088	741	4.2
2008	6321	1094	5.8
All	3435	718	4.8

Source: Data from Ministry of agriculture, forestry and fishery (MAFF, 2009)



Source: Data from MAFF (2009)

Figure 12.6 Monthly nitrogen fertilizer price index, Cambodia, 2007–2008

Table 12.9 Cost of rice production, Cambodia and Thailand

Paddy production cost	Cambodia	Thailand	% difference
Cost (\$/ha)	168	220	-31
Cost(\$/t)	89	105	-18

Source: Konishi (2003)

The flow of informal trade from Cambodia to Viet Nam and to Thailand is an indication of a relatively low cost of production in Cambodia. A comparative analysis of costs of production data indicates that the cost of production in Cambodia is substantially lower than in Thailand (see Table 12.9). There are no explicit subsidies on inputs/outputs on rice production and Cambodia has adopted a floating exchange rate with no major trade barriers. Hence, in the absence of any major distortions in the market, these comparative cost differences are also likely to reflect the economic comparative advantage of rice production in Cambodia. In fact, estimates of domestic resource costs indicate a clear comparative advantage of Cambodia in rice production (Agrifood Consulting International, 2002). The low cost of labour in Cambodia is likely to be the main source of this comparative advantage.

Rice price trends and impact of price rise on the poor

The market price of paddy varies according to location, variety and time. There is a seasonal effect, with the price of paddy being lowest during the main harvest months December/January and picking up slightly during the lean

months of June/July. The paddy and rice prices also are spatially highly correlated across the production zones indicating that transportation/processing costs determine the price differences. Price differences between provinces are small and the correlation of the Cambodian price with Vietnamese and Thai prices is high (Chan et al, 2007).

Price of milled rice also varies according to location, variety and time. In June 2008, the average wholesale price of the highest grade rice (Somali, Domali) in Cambodia was 75 per cent more than that of the lowest grade (IR66). As IR66 is mainly grown in the southeastern province and Somali/Domali in northeastern provinces, the spatial price differences can be explained to a certain extent by the grain quality factor.

Taking the price of high-quality Somali rice in Phnom Penh as an example, there has been an upward trend in rice price over time, with the price increasing substantially in 2008 in response to the food crisis (see Figure 12.7). The nominal price of Somali rice increased by 90 per cent in May 2008, relative to its price in May 2007. The price came down subsequently but the rice price in November 2008 was still 30 per cent higher than the corresponding price in November 2007. Depending on the rice quality, the price increases in the Phnom Penh market between May 2007 and May 2008 were in the range 90–120 per cent (CDRI, 2008).

Price increases in the provincial markets were much smaller than in Phnom Penh. According to a survey conducted by CDRI, increases in the price of milled rice in provincial markets were in the range 25–40 per cent between November 2007 and May 2008 (CDRI, 2008). The prices in the provincial markets refer mainly to poorer quality rice such ‘mixed variety’ or IR varieties.

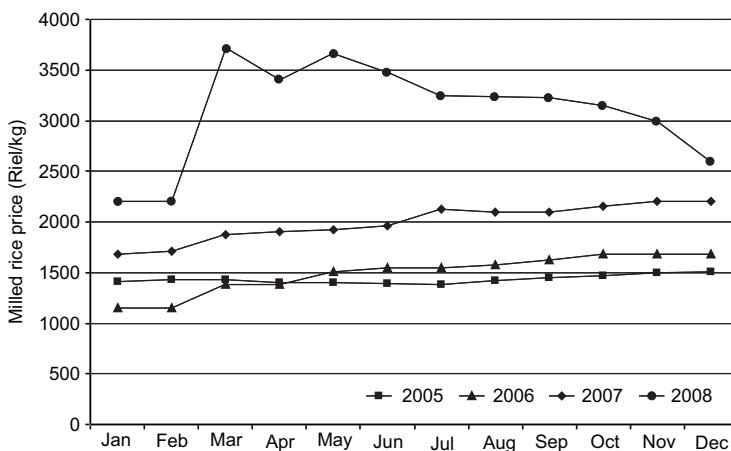


Figure 12.7 Monthly wholesale price of high-quality milled rice (Somali), Cambodia (rice store Oreusey), 2005–2009

The prices have now come down from these peak levels with the cooling-off of the international market. However, the January 2009 prices for good quality rice (Somali and Phkar Khney) were still 30–50 per cent above the January 2008 prices. This gap is much smaller in the case of the poor quality rice.

There is no question that the sharp rise in rice prices during 2008 would have had a major adverse impact on poverty in 2008. The increase in the wage rate by 35–67 per cent during 2008, as compared to 2007, lessened the impact of such price rise to a certain degree. Daily wages increased from 6000–10,000 riels in 2007 to 10,000–13,500 riels in 2008 (CDRI, 2008). Nevertheless, not all poor people were able to benefit from wage rate increases due to limited employment opportunities. Those who were unable to increase their total real income in proportion to the rise in rice price were adversely affected.

The poor in Cambodia, like in several other poor rice-consuming countries of Asia with low per capita incomes, spend a substantial amount of their income on purchased food. Food consumption (including own production) accounts for about 70 per cent of the total expenditure for the bottom quintiles in Cambodia (FAO, 2009a). Small farmers, rural landless labourers and the urban poor belong mostly to this income quintile. The expenditure share of purchased food in total food consumption among the bottom income quintile is 64 per cent (MoP, 2007). For the poor, rice is a major food item purchased. Assuming that purchased rice accounts for about 75 per cent of the total cost of the purchased food, the total expenditure share of purchased rice will be about 34 per cent. A 50 per cent increase in the price of rice is thus equivalent to about 17 per cent drop in real incomes. This is a substantial drop for people who have a very low income to start with. Based on the poverty elasticity estimates for Cambodia provided in Ivanic and Martin (2008), a 50 per cent rise in rice price translates into an increase in poverty incidence by 2.5 percentage points (or an increase in the number of poor by 400,000). This is a substantial increase in poverty, even if some of these poor people may have moved back above the poverty line with the subsequent fall in rice prices.

A field-based analysis of the impact of the rice price rise in Cambodia conducted in June 2008 points to various mechanisms deployed by households to cope with the price rise (CDRI, 2008). Households were reported to have cut back their food intake. This threatens their nutritional status and worsens their health, leading to potential chronic adverse impact.

The rise in rice prices, of course, benefited those farmers who had marketed surplus to sell. Even for these farmers, the gain in income from the price rise was eroded by a substantial increase in input costs, mainly that of the fuel and fertilizers. It is likely that farmers who invested in these costly inputs for the wet-season rice production of 2008 in the hope of making gains from higher rice prices lost out due to the substantially lower price of rice at harvest.

Table 12.10 *Parameters used in the food balance equation, Cambodia*

<i>Parameters</i>	<i>Unit</i>	<i>Value</i>
Milling ratio ^a	%	60
Seed rate ^b	kg/ha	100
Post-harvest loss ^c	%	15
Per capita consumption (milled rice) ^d	kg/yr	143
Population growth rate ^e	%/yr	1.7

Source: Data from ^aIRRI (2009), ^bFAO (2000), ^cAgrifood Consulting International (2002), ^dFAO (2009c), ^eWorld Bank (2009)

Potential for export from Cambodia

It is believed that Cambodia currently exports around 0.5 million tons of milled equivalent in terms of paddy rice. The largely informal nature of the export across the border to Viet Nam and Thailand makes it difficult to get a reliable estimate of exports.

For estimating the future export potential, the approach taken here is to project the *exportable surplus* based on a food balance equation. Exportable surplus is defined as the quantity of rice (expressed in milled rice) that could be exported after satisfying the domestic consumption needs, setting aside a quantity for use as seeds and taking into account post-harvest losses (losses during post-harvest operations, including the milling). The exportable surplus (ES) in a given year is estimated using the following equation:

$$\text{ES} = \text{Production} - \text{Consumption} - \text{post-harvest losses} - \text{seeds kept for next year}$$

For estimating the ES, the beginning and ending stocks are not considered, as any stock accumulated could be potentially used for exports.¹ The parameters used in the food balance equation are presented in Table 12.10. These data represent the best guesstimates of the parameters applicable to Cambodia and were culled from various publications.

As mentioned earlier, rice production has been increasing quite rapidly especially in recent years. Three scenarios for production growth were assumed, low (2 per cent per year), medium (4 per cent per year) and high (6 per cent per year). The production growth may result from a combination of area and yield growth.

The scenario on the growth of ES is presented in Figure 12.8. The ES by 2020 would be about 2.7 million tons of milled rice for the medium-growth scenario. Cambodia will have the exportable surplus of 4 million tons only if a high production growth rate of around 6 per cent per year can be maintained. However, if the production growth is modest at 2 per cent per year, Cambodia will have about 1.5 million tons of ES by 2020. Roughly, the ES increases by about 1 million tons for each 2 percentage point growth in production. Thus,

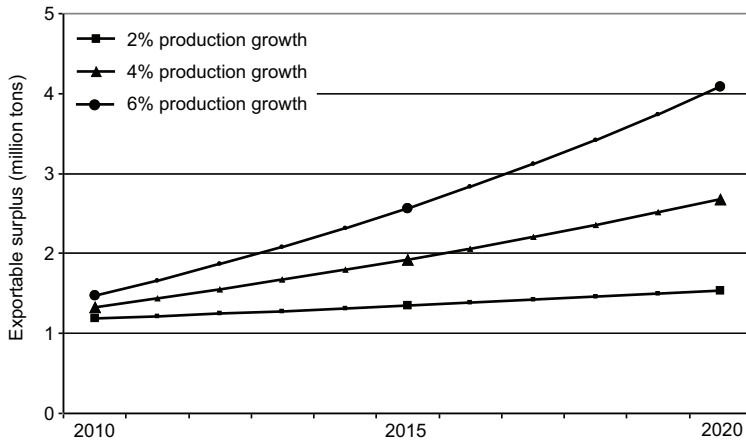


Figure 12.8 Scenario analysis of the growth of exportable surplus in Cambodia, 2010–2020

Source: Author's estimation

Table 12.11 Required yield levels by 2020 under assumed area growth rates, Cambodia

Area growth rate (% per year)	Required yield levels by 2020 (t/ha)		
	Low exportable surplus	Medium exportable surplus	High exportable surplus
1	2.9	3.7	4.6
2	2.6	3.3	4.1

progress in technological improvement in rice production/processing will be the key to growth in future export potential of Cambodia.

The production growth mentioned above may be achieved by a combination of area and yield growth. Yield levels that need to be achieved by 2020 are estimated under two alternative area growth rates. For a lower area growth rate of 1 per cent per year, the required yield levels in 2020 are 2.9t/ha, 3.7t/ha and 4.6t/ha, respectively for generating low, medium and high levels of exportable surplus (see Table 12.11). If the area growth rate of 2 per cent per year can be maintained, the corresponding yield growth rates will need to be lower. Obviously, a more aggressive programme of research and development would be needed to increase the ES when the anticipated area growth is modest.

Constraints to and strategies for rice export growth

The rice export industry of Cambodia is basically at an early stage of development. There have been very few policy-induced distortions in the market and

Table 12.12 *Infrastructure development status, selected ASEAN countries*

<i>Infrastructure</i>	<i>Cambodia</i>	<i>Thailand</i>	<i>Viet Nam</i>
% paved road (2001)	16	98	25
Railway density (km/1000 square km)	3.5	7.9	7.8
Port traffic (million metric tons)	2	163	89

Source: MoC (2006)

the major constraints are infrastructural, institutional and technological.

The current practice of exporting paddy, rather than milled rice, to Thailand and Viet Nam has evolved mainly due to inadequacy of infrastructures needed for post-harvest operations such as drying, storage and milling. These facilities are well established across the border in Thailand and Viet Nam. As a result, there is a natural tendency to export wet paddy across the border soon after harvest. In addition to physical losses in the grain and quality deterioration that takes place in the process, Cambodia also loses out on the opportunity for potential gains from value additions.

There are two major milling systems in Cambodia. Commercial mills process paddy primarily for domestic and export markets. The capacity of these mills varies from 500–700kg/hour to over 1200kg/hour. Custom mills are small operations in the villages that process paddy primarily for local consumption. These custom mills account for almost 70 per cent of the total milling capacity in the country (JICA, 2001). The technology used by these custom mills is old with much equipment being obsolete, resulting in high milling losses. In addition, the overall cost of milling in Cambodia is high due to high energy costs, as Cambodian mills operate mostly using diesel or diesel-generated electricity.

Another major infrastructural constraint is poor transport and handling facilities. In comparison to Thailand and Viet Nam, Cambodia fares poorly in terms of the road quality, railway facilities and port traffic (see Table 12.12). Decades of war and a lack of investments have resulted in deterioration of the transport infrastructures although rehabilitation of major highways in recent years is improving the situation. The cost of transport is still a major component of the marketing cost as described earlier.

The handling/loading facilities in the ports in Phnom Penh and Sihanoukville are also limited and the costs are high. It has been reported that the vessel loading charges in Sihanoukville are more than double that in Yangon (Konishi, 2003).

Major institutional constraints to development of the rice export industry are related to the overall weak governance of the public institutions, overlapping institutional jurisdiction, poor coordination and lack of transparency (MoC, 2006). These institutional weaknesses increase the transaction costs to rice exporters substantially. In addition, informal costs throughout the export process (transporting from mill to the port and final loading in the vessel) can be quite substantial and informal payments have been estimated to be as much

as 50 per cent of the transportation cost from the mill to the ship (Agrifood Consulting International, 2002). The indirect cost of entry into the formal export industry can also be quite substantial, thus restricting the entry to a few well-connected traders.

In the context of rice exports, an important constraint is the difficulty in establishing a brand name in the face of well-established competitive export industries of Thailand and Viet Nam. The total formal volume of export from Cambodia is quite small relative to those of Thailand and Viet Nam. Given the weaknesses in the supply chain mentioned above, it is difficult for Cambodia to establish a brand name and ensure a regular and stable supply of high-quality rice to international markets.

Technological constraints relate to the supply-side issues. Although rice production increased rapidly during the past decade, the overall rice yield is still quite low, indicating that improved technologies are not yet widely used. Constraints may be biophysical, with rice production suffering from drought, submergence and other related factors. Despite some increases in investment in irrigation, rice production is mainly rainfed with production having high spatial and temporal variability. Agricultural research and extension capacity is constrained due to low investments, although there have been some improvements in recent years.

The constraints discussed above suggest several strategic thrusts that are needed to strengthen and expand the rice export industry of Cambodia. Keeping the production growth high to continue to increase surplus for export has to be a key component of the strategy. Cambodia can potentially export between 3 and 4 million tons of milled rice by 2020 if the production growth rate of 4–6 per cent per year can be achieved. Clearly, substantial increases in investments will be needed in agricultural research, technology development, agricultural infrastructure and extension to achieve such an expansion in exports.

A two-pronged strategy for promoting rice export could help Cambodia benefit from the structure of its export market. The first prong of this strategy consists of establishing a brand name for Cambodian rice in European and other markets where high-quality organic rice commands a price premium. There is some brand recognition for Cambodian rice in this regard in the European markets already and Cambodia could enjoy preferential treatments for its export under the EU policy of 'Everything-but-Arms'. Establishing such a brand name will effectively create a niche market for Cambodian rice in the face of stiff competition from major rice exporters in Thailand and Viet Nam. Suitable standards and certification systems need to be established for this, in addition to institutional reforms to improve the functioning of the supply chain.

The second prong of the strategy is to improve the returns from the existing trade in medium- and low-quality rice. Currently, Cambodia is not able to benefit from potential value addition due to the practice of exporting paddy soon after the harvest. Being a small producer, the existing market linkage with

Thailand and Viet Nam will continue to remain important for Cambodia. But Cambodia can gain substantially from value addition through investments in paddy drying, storage and milling technologies, and marketing infrastructure. While some of these investments are within the purview of the private sector, the role of the public sector is to create an enabling environment through clearly defined and enforceable rules and regulations, and the provision of information.

Improvements in the overall institutional set-up for transparency and better governance throughout the rice value chain system are critically important to reduce the transaction costs, and thereby promote the rice industry in general and the rice export market in particular. Such institutional reforms will also facilitate formalization and better management of the border trade in rice with Thailand and Viet Nam.

Conclusions

Cambodia has re-emerged as an important rice-exporting country after a long absence of over 20 years from the export market. Its re-emergence as an exporting country was driven mainly by the rapid production growth made possible by the spread of improved rice technology. Given the current low yield, considerable opportunity exists for Cambodia to further expand rice production and generate more exportable surplus, provided adequate investments are made in agricultural technology and infrastructures.

A two-pronged long-term strategy for the development of the rice export industry is needed as Cambodia currently has two major types of export markets. A firm establishment of the Cambodian brand name in the niche market for high-quality organic rice can provide a major competitive advantage relative to neighbours. This could be a major avenue for future growth in export earning as demands for such organic products are likely to increase over time. In addition to technological support for production of such rice, credible and efficient grading and certification standards need to be established. The second prong consists of gaining from Cambodia's traditional export of medium- to low-quality rice to Thailand and Viet Nam through increased value addition along the supply chain. Substantial investments in paddy drying, storage and milling technologies, and marketing infrastructures would be needed for such value addition. In addition, institutional reforms are needed to reduce transaction costs and make the whole process of rice transport, processing and trade an efficient one. Given current low income levels, poor infrastructure, limited investment capacity of the public sector, and a poor governance capacity, these are major but not insurmountable challenges.

Note

- 1 Stock data are not currently available for Cambodia to enable inclusion of stock accumulation or depletion in the food balance equation.

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Part V

POLICY RESPONSES IN
CHINA AND INDIA

How China Stabilized Grain Prices during the Global Crisis

Cheng Fang

Introduction

China has been transformed from a largely centrally planned economy into a market-driven economy since the early 1980s. While markets and market forces have become increasingly important to China's grain and rural economy, government intervention remains significant in agriculture. The Government of China places self-sufficiency in food and/or food security as top national priorities (Lohmar and Gale, 2008). The major food policy objectives of the Chinese government in recent years include food (especially rice, wheat and maize) production, stabilization of prices, a secure urban food supply and higher farm incomes.

Price stability has always been important to China's government, and many Chinese people remember the devastating hyperinflation at the end of World War II. When the objective of price stability conflicts with other objectives, China's leaders usually choose to pursue price stability.

China experienced a trend of rising food prices and overall inflation beginning in 2007. In December 2007, the CPI was 6.6 per cent higher than a year earlier, and food prices were 17 per cent higher (see Figure 13.1). The prices of meat and eggs increased particularly rapidly in 2007, by 31.7 per cent and 21.8 per cent respectively. Among different types of meat, pork (the staple meat in

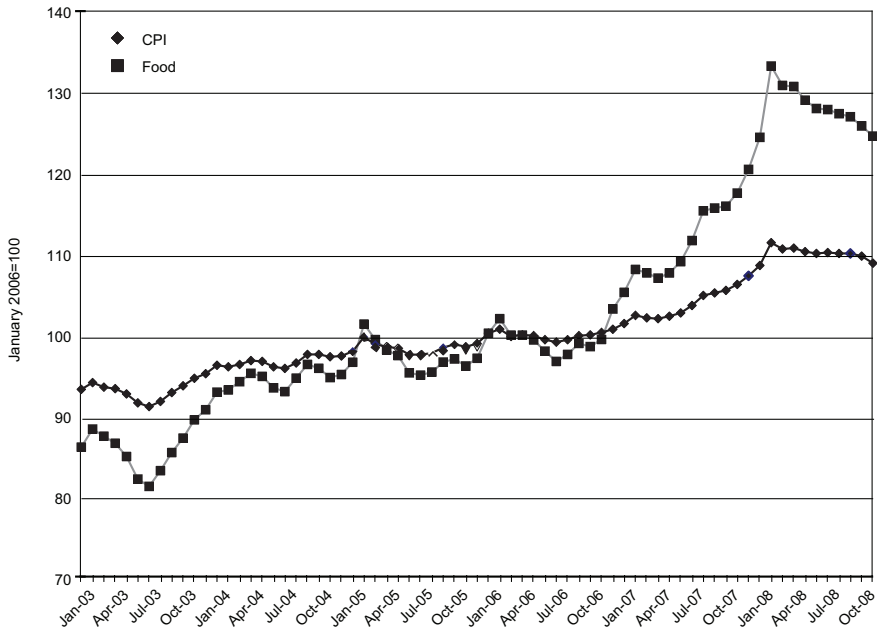


Figure 13.1 *China's CPI and food price index, January 2003 to November 2008*

Source: China National Bureau of Statistics

China) prices rose significantly during the third quarter of 2007 compared to the same period in 2006, with increases of up to 98 per cent in Liaoning province, 81 per cent in Sichuan province and 62 per cent in Guangdong province (FAO/GIEWS, 2007). The pork price increase was a result of a substantial reduction in China's 2007 pig numbers due to an outbreak of the porcine reproductive and respiratory syndrome (PRRS) disease, also known as blue ear disease in China.

In international markets, wheat prices increased particularly sharply beginning in May 2007 and spilled over to rice markets as India placed export restrictions on rice (see Chapter 14). Rice prices then began to rise during the last quarter of 2007 and surged in the first half of 2008 (see Chapter 2).

Large increases in international food prices have become a key concern for policymakers in China, especially as China's economy becomes more open in the aftermath of its WTO accession in 2001. Despite the declining importance of the agricultural sector to the overall economy, food still accounts for a large share of total expenditures in China (36 per cent of urban budgets and 43 per cent of rural budgets in 2007).

Faced with soaring international food and fuel prices and inflationary pressures in 2007, the central government intervened to increase grain production and stabilize domestic grain prices. These interventions can be grouped into three main categories:

- 1 policies to support grain production and farmers' income, including higher minimum procurement prices for rice and wheat, increased subsidies (direct payments, seeds, farm machinery, fuel and fertilizers), and revised plans to develop grain-based biofuel production;
- 2 tightened grain and fertilizer export policies, including withdrawal of rebates of VAT that encouraged maize and rice exports and biofuel production, introduction of temporary export taxes on grains and fertilizers, and introduction of a grain export licence;
- 3 grain stock and marketing interventions, including an increase in state-controlled grain reserves through temporary procurement of rice and maize and transportation subsidies to move surplus grains from the north-east provinces to deficit areas of the country.

These policy measures stabilized domestic grain prices and increased grain availability in China. However, these measures were costly for China and distorted world markets. The following sections of this chapter provide the details of these measures and their impacts on markets and food security. Some lessons learned from China's experience are discussed.

Grain production support programmes and supply response

Table 13.1 provides a summary of China's major agricultural domestic and trade policies since 2001. Some of these (for example tariff rate quotas) were implemented in response to WTO accession, but many of the policies listed in Table 13.1 were initiated in response to a 2.8 per cent annual decline in China's grain area (rice, wheat and maize) from 1998 to 2003. In 2003, wheat output declined to its lowest level since the mid-1980s, and the area harvested fell to its lowest level since 1950. These developments led to importation of 10 million tons of wheat in 2003. In response, China implemented a series of policies including the elimination of taxes on agricultural land, direct payments to grain farmers and adjustments to price support programmes in 2004. In 2005, a subsidy for the purchase of farm machinery was implemented and a direct subsidy for farm use of fuel and fertilizers was added in 2006. With rising food prices, earlier policies were intensified and new policies were added.

Price support increased in 2008

In response to a general decline in cereal production since 1998 and sharp rises in grain prices in late 2003, the government initiated a minimum price scheme in 2004 as an incentive to increase production of rice and wheat. The minimum prices in 2004 for early rice and japonica rice were announced at RMB1400 per ton and RMB1500 per ton respectively, and remained unchanged in 2005, 2006 and 2007. However, in 2008, the central government increased the floor price by RMB100 per ton for early indica rice, RMB140 per ton for japonica

Table 13.1 *China: Domestic agriculture and trade policies, 2001–2008*

<i>Policy/effective year</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
Accession to WTO	x							
Tariff rate quotas	x	x	x	x	x	x	x	x
Seed subsidies	x	x	x	x	x	x	x	x
Direct payments to grain farmers				x	x	x	x	x
Price support programmes				x	x	x	x	x
Elimination of taxes on agricultural land				x	x	x	x	x
Subsidy for the purchase of farm machinery					x	x	x	x
VAT exemption for farm use of seed and fertilizers						x	x	x
Direct subsidy for farm use of fuel and fertilizers						x	x	x
Elimination of the 13 per cent VAT rebate on ethanol exports							x	x
Elimination of VAT rebate on grain exports								x
Grain export taxes								x
Fertilizer export duties								x
Grain domestic transportation subsidies								x

rice, RMB100 for white wheat, and RMB160 for red/mixed wheat as compared to the previous year. In 2009, the government announced a further increase of rice and wheat floor prices, by 15 and 16 per cent respectively (see Table 13.2).

Non-price government support programmes doubled in 2008

Non-price government support programmes include direct payments, seed subsidies, subsidies for farm machinery, and subsidies for farm use of fuel and fertilizers. The funds allocated to support these programmes are summarized in Figure 13.2. The support levels have been increased substantially year by year

Table 13.2 *Government floor price for grains in 2004–2009 (RMB per ton)*

	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>
Rice						
Early indica (paddy)	1400 (\$173)	1400	1400	1440	1540	1800
Japonica (paddy)	1500 (\$186)	1500	1500	1500	1640	1900
Wheat						
White wheat	no	no	1440	1440	1540	1740
Red/mixed wheat	no	no	1380	1380	1440	1660

Source: USDA (2008, 2009)

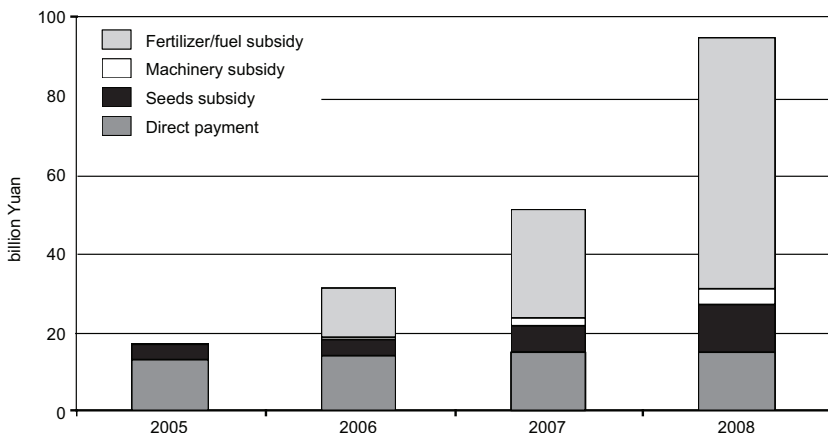


Figure 13.2 Non-price government support, 2005–2008

Source: Based on data from MOA of China and USDA/FAS

to sustain grain production. Total aggregated subsidies in these programmes in 2008 reached RMB95 billion (approximately \$4.8 billion), double the previous year and over 3.5 times the amount granted in 2006. On a per hectare basis, total subsidies increased from \$51 per hectare in 2006 to \$166 in 2008 and on a per ton basis, they increased from \$10 in 2006 to about \$33 in 2008.

Direct payments to grain farmers

Direct payments to farmers were initiated on a trial basis in 2002 in the major grain-producing provinces of Anhui, Henan, Hubei and Jilin, and implementation began nationally in 2004. Implementation varies by province, with some providing the subsidy based on planted area and others based on quantity produced. The payment rates vary across provinces, but in 2004 the average programme payment was 150RMB/ha with total payments estimated at RMB11.6 billion. By 2008, the total grain direct payment had increased to RMB15.1 billion in 2008.

Seed subsidy and farm machinery subsidy

With the objective of increasing production, China has subsidized farmers for the cost of purchasing improved quality soybean seeds since 2002. This scheme was extended to wheat, maize and rice in 2004. The combined value of the seed subsidy for wheat, rice, corn and soybean was RMB12.1 billion in 2008, up 80 per cent from 2007.

The government programme to subsidize the purchase of farm machinery is implemented at the provincial level, and local governments decide on the types of machines and models eligible for the subsidy. Total subsidies in 2008 were estimated at RMB4 billion, double the level in 2007.

Comprehensive subsidy on fuel and fertilizer

Started in 2006, this programme intends to partially compensate farmers for price increases in fuel, fertilizer and other agricultural inputs. In 2007, the comprehensive subsidy on fuel and fertilizer for grain farmers totalled RMB63.8 billion, up 130 per cent from the previous year.

Agricultural subsidies and the WTO

Following 15 years of negotiations, China became a WTO member in December 2001. The Uruguay Round Agreement on Agriculture (URAA) classified price supports as an 'amber-box' trade-distorting policy, the use of which should be limited. As part of its WTO commitments, China agreed that the value of its trade-distorting amber-box support for agriculture would not exceed 8.5 per cent of its total value of agricultural output (China's *de minimis* exemption). The 8.5 per cent annual threshold based on China's crop output value in 2001 amounted to \$14 billion (Fang et al, 2002), and subsidies in 2008 were close to this level.

However, the URAA placed no limits on 'green-box' subsidies, which do not directly distort trade. These subsidies include government-supported research, disease control, infrastructure and policy subsidies for certain grain marketing and promotion services. The green-box category also includes income support payments made directly to farmers that do not stimulate production, assistance to help farmers restructure agriculture, and environmental and regional assistance programmes. In China, infrastructure services (a major part of general services) and public stockholding for food security purposes account for the two largest components within the green box. China's direct payments can also be classified as 'green-box' subsidies, so it seems that China did not exceed the *de minimis* limit in 2008. Further, as world fuel and fertilizer prices declined in late 2008 and 2009, the value of these subsidies will also decline.

Grain output has been steadily rising for several years

The increased prices and government subsidies have encouraged farmers to plant more rice, wheat and maize. The total grain (rice, wheat and maize) area in 2008 reached 81.9 million hectares, 3.9 per cent above the previous five-year average. Output of the three grains in 2008 reached a record of 406.7 million tons, 17.6 million tons or 4.5 per cent above the previous year, marking the fifth consecutive year that output increased. Higher grain production was achieved in spite of natural disasters and difficult domestic and international economic environments.

Out of the total grain output in 2008, rice accounted for 132 million tons, with an increase of 4.8 million tons from the previous year, reflecting both larger area and higher yields per hectare. As with total grains, rice output has been steadily rising (see Figure 13.3), especially in northeast China, the major rice surplus region in the country. Output of wheat was 112.5 million tons in 2008, 2.6 million tons over that in the previous year, while maize output was 162 million tons, 10.2 million tons larger.

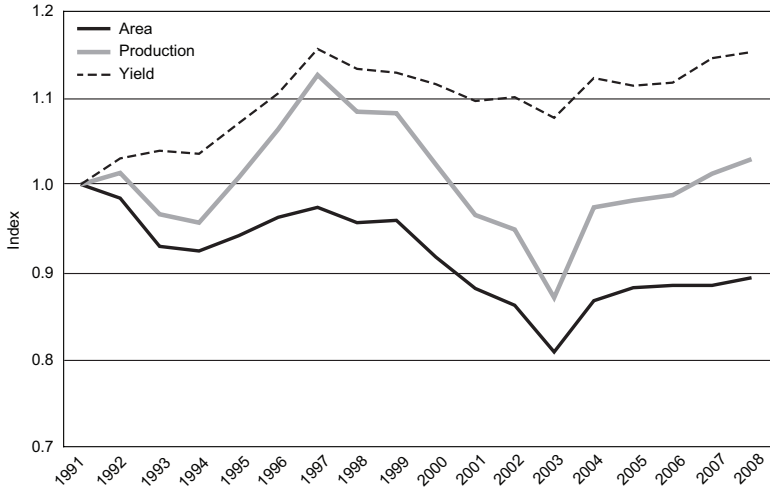


Figure 13.3 China's rice area, yield and production index, 1991–2008

Note: 1991 = 1.

Source: Raw data from FAO/GIEWS (2009b)

The increases in grain production have been sufficiently rapid to generate surpluses over domestic utilization. In 2007, the surplus of production over domestic utilization (including food, feed, seeds, waste and other uses) was 2.7 million tons of rice, 9 million tons of wheat and 7 million tons of maize (see Figure 13.4 for rice). In 2008, the surpluses were 6.5 million tons of rice, 10.5 million tons of wheat, and 9.5 million tons of maize.

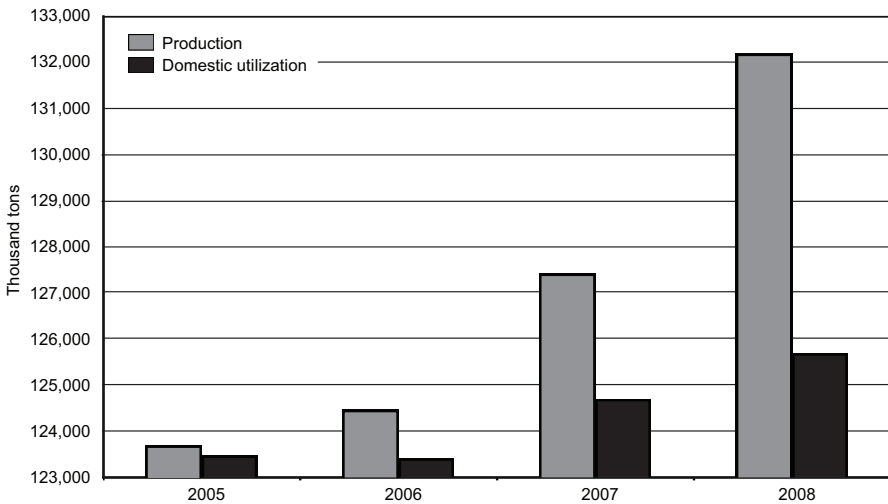


Figure 13.4 Rice production and domestic utilization, 2005–2008

Source: Raw data from FAO/GIEWS (2009b)

Grain and fertilizer export restrictions and trade response

Although grain production had increased for four straight years, and although grain prices were not a factor in the surge of domestic food prices in 2007, China implemented a series of trade policy measures to restrain grain and fertilizer exports. These measures included removal of VAT rebates that encouraged exports of maize, rice and biofuel products, the introduction of temporary export taxes on grains and fertilizers, a ban on grain export licences, and special duties on fertilizer exports.

Removal of the VAT rebate on cereal exports

A VAT for domestic products was introduced in 1994 under the taxation reforms. The VAT rate for agricultural products is 13 per cent, 4 percentage points lower than the VAT rate generally applied to other products. VAT is not collected from the primary producers of agricultural products, but from the primary purchasers of agricultural products. The VAT liability is calculated as ‘output VAT’ (13 per cent of the sales value of agricultural products) minus the ‘input VAT’ (10 per cent of purchase value of agricultural products).

The export rebate (or VAT rebate) has been part of tax incentive policy implemented to encourage exports of all categories of commodities since the 1980s. Over the years, the Chinese government made adjustments to the tax category to control the trading of certain categories of commodities. Prior to 20 December 2007, exports of wheat, paddy rice, milled rice, corn, other cereals, soybeans, and their derived flour by-products were entitled to a 13 per cent rebate of their declared export value at the port. This export subsidy constituted the bulk of the profit for grain traders. On 20 December 2007, however, the Chinese government removed the export rebate on these products. (The VAT rebate for export of vegetable oils was also eliminated on 13 June 2008.) These adjustments were aimed at containing food price inflation that otherwise might have been transmitted to the domestic economy from world markets.

The removal of the rebate reportedly severely cut traders’ profit margins except for a few commodities in some high-end markets with comparatively high profit margins. In the case of average quality rice exports to the developing world, the loss of the rebate severely affected traders’ profits. For wheat flour, the removal of the rebate made flour exports to Southeast Asian countries significantly less price competitive.

Export taxes on grains and their flour products

Prior to becoming a WTO member, China provided export subsidies for maize and rice as a means of easing the downward pressure on domestic prices, which was brought about by large domestic production surpluses. China was obliged to cease all export subsidies in 2002 in line with its WTO accession commitments.

Effective in January 2008, provisional export duties on wheat, buckwheat, barley and oats were imposed by the central government to further discourage exports. The export tax rates ranged from 5 per cent to 25 per cent, with the rates for wheat and wheat flour at 20 per cent and 25 per cent, respectively. The export tax rate for maize, paddy rice, milled rice and soybeans was 5 per cent and the rate for flour products from corn, rice and soybean was 10 per cent.

State trade and export licence management

Since 1990, China has used a system of state trading for exports of certain commodities, aiming to maintain stable prices of strategic agricultural commodities and ensure adequate supplies of inputs to state-run processing industries. State trading was permitted to be retained for rice, maize, soybeans, tea, cotton and silk in China's WTO accession agreement. Through the use of state trading for exports, China was able to control exports of rice, maize and soybeans during the global food price crisis in 2007–2008.

Exports of wheat, maize and rice flour products were subject to export licence management beginning January 2008. The licence regime is intended to cap the export volume of such products in case flour product exports were still viable despite the high export tax rate. China also imposed export quotas on flour made of wheat, maize and rice. Figure 13.5 shows the timing of these grain export measures relative to international rice price trends. The export controls were imposed right before the surge of world rice prices and effectively insulated China's domestic rice market from the world markets. In addition to control of exports, China also stepped up wheat and maize sales from state reserves to prevent domestic prices from rising.

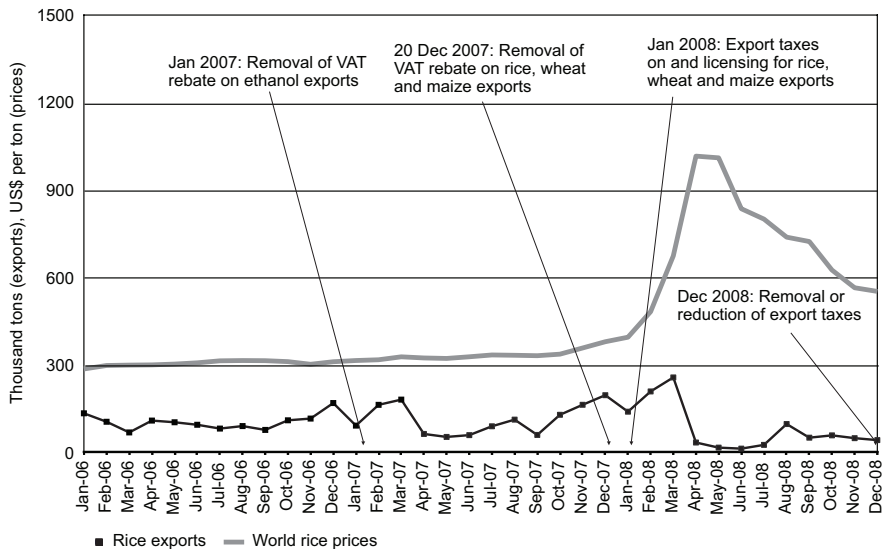


Figure 13.5 World rice prices, China's grain export policies and rice exports

Source: Raw data from EST/FAO (2009) and FAO/GIEWS (2009b)

Table 13.3 *China's international trade in cereals and soybeans, 2004–2008 (thousand tons)*

	2004	2005	2006	2007	2008
Rice exports	896	672	1237	1340	970
Maize exports	2318	8612	3074	4848	252
Wheat exports	1223	755	1681	3251	535
Soybean imports	20,178	26,590	28,284	30,818	37,431

Source: Raw data from FAO/GIEWS (2009b)

From 2004 to 2007, China was a large maize exporter. During 2008, however, maize exports stopped almost entirely, as did exports of rice and wheat (see Table 13.3). As a result, China lost commercial profits from the international trading of maize and rice. At the same time, soybean imports continued to increase.

Duties on fertilizer exports

Fertilizer producers in China do not receive direct subsidies, but do enjoy sizeable discounts on energy inputs (such as electricity), transportation and raw materials (for example natural gas). The vast majority of fertilizer produced in China is destined for domestic use. China was a net fertilizer importer for more than two decades, but since 1995, imports have been declining while exports increased. From 1995 to 2006, imports of chemical fertilizers decreased from about 20 million tons (natural weight) to about 11 million tons. During the same period, exports increased from 1 million tons to 5.4 million tons. In 2007, China became a net exporter of chemical fertilizer with import at 11.67 million tons and export at 13.38 million tons.

In order to reduce exports and satisfy domestic demand, the government progressively increased chemical fertilizer export taxes several times in 2008 (see Figure 13.6).¹ From 15 February, export taxes of 30 per cent were imposed. As world fertilizer prices continued to soar, the tax was raised to 100 per cent in June and 150 per cent in September. On 1 December, after world urea and phosphate prices collapsed, the export taxes were reduced.

These taxes were effective at controlling trade. From a peak of more than 2 million tons per month in December 2007 and January 2008, exports declined substantially and stabilized at about 1 million tons per month. With the tripling of the export tax in June, exports plunged and continued to fall to almost zero in October and November. In December 2008 and January 2009, with the reduction of export taxes, exports began to recover somewhat.

Looked at on an annual basis, the export duties were effective at reducing fertilizer exports in 2008 to 9.3 million tons, 31 per cent below that in 2007. China's fertilizer imports were also reduced to 6.18 million tons from 11.67 million tons in the previous year. In terms of value, exports of chemical fertilizers reached \$4.32 billion, a 16.6 per cent increase over the previous year.

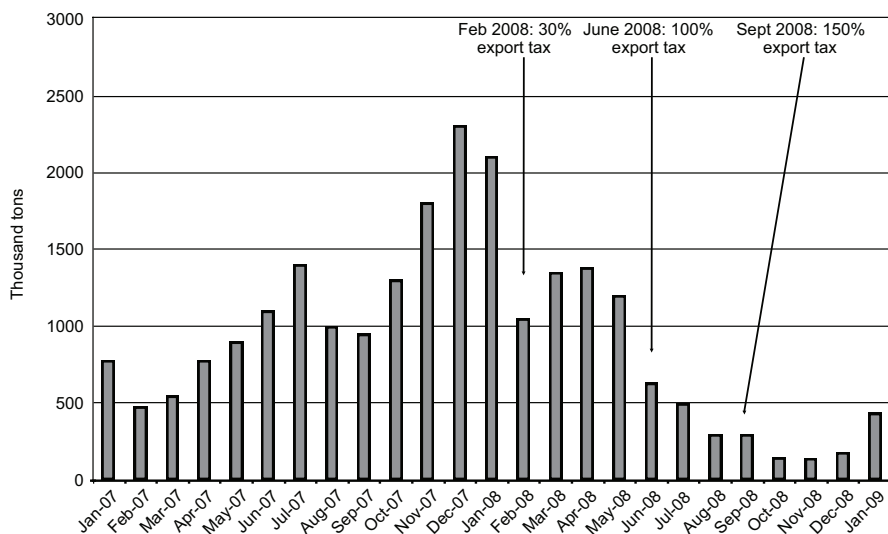


Figure 13.6 *Fertilizer exports and trade policies*

Source: Raw data from CGAC (2009)

Grain stock and marketing interventions

The Government of China operates a grain floor price programme, whereby farmers in designated provinces may sell their output to SinoGrain² when market prices drop below the price floor. In the past several years, many wheat farmers sold wheat to the government since the market price fell below the floor price at harvest time. During the three years from 2006 to 2008, the state-designated grain storage companies purchased on average 34 per cent of total wheat production. The procured volumes of rice and maize were much smaller than those for wheat, however. In 2008, SinoGrain purchased 11.8 million tons of rice (paddy) and 8.5 million tons of maize in the northeastern provinces, approximately 5–6 per cent of total national production in both cases.

As a result of five straight years of bumper harvests and export restrictions, China's grain ending stocks in 2008 increased significantly. They increased by 5.4 million tons of rice, 8.6 million tons of wheat and 7.1 million tons of maize from levels that were already relatively high compared to the previous few years. From 2004 to 2009, the ratio of ending stock to domestic utilization in China increased from 45 per cent to 54.5 per cent for rice and from 48 per cent to 76 per cent for wheat (see Figure 13.7). These ratios are over three times as large as those for the rest of the world, highlighting the importance the Government of China places on national food security.

Many countries pursued similar strategies of building up stocks during the crisis. Such a strategy will tend to put upward pressure on prices, but China

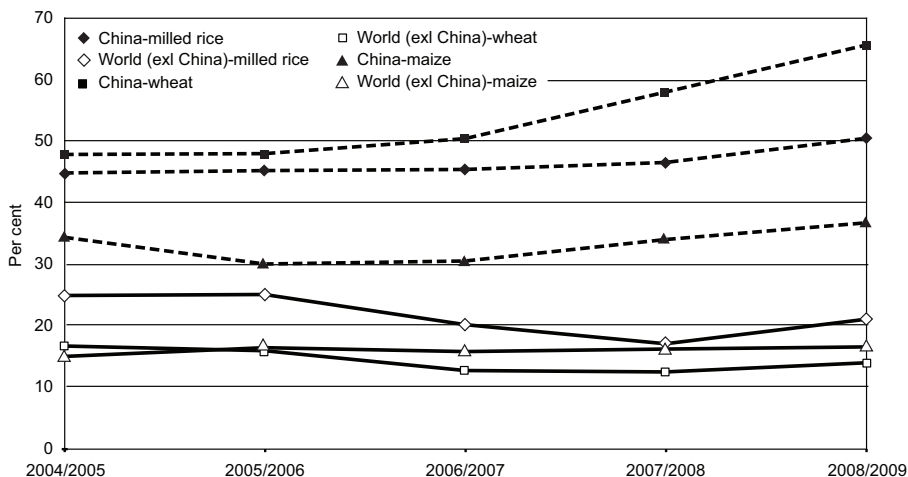


Figure 13.7 Ratio of ending stocks to domestic utilization

Source: Raw data from FAO/GIEWS (2009b)

was able to avoid substantial domestic price increases (see next section) due to the fact that output has been increasing for several years and because of export restrictions that prevented the grain from flowing to world markets.

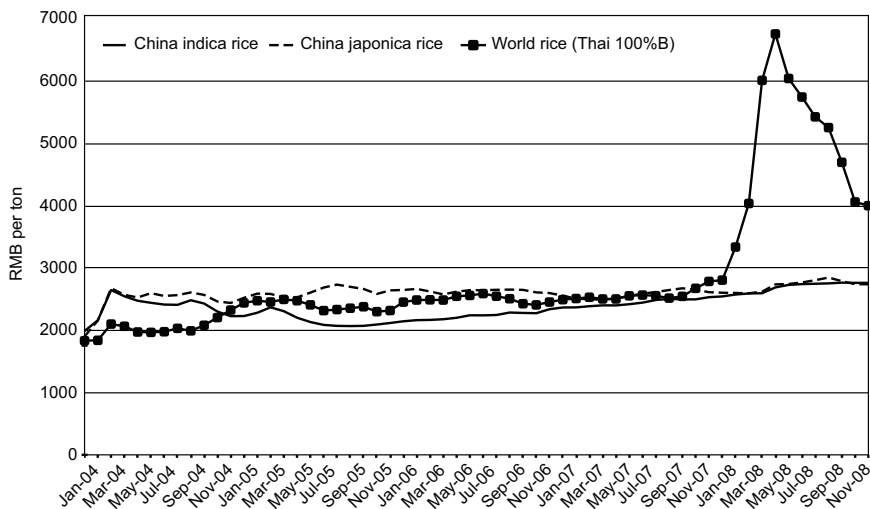


Figure 13.8 Domestic and world prices of rice, January 2004 to December 2008

Note: World prices are for Thai100%B. Indica rice price is the average of wholesale prices in Hunan, Hubei, Jiangxi and Anhui. Japonica rice price is the average of wholesale prices in Heilongjiang and Anhui.

Source: Raw data from FAO/GIEWS (2009a)

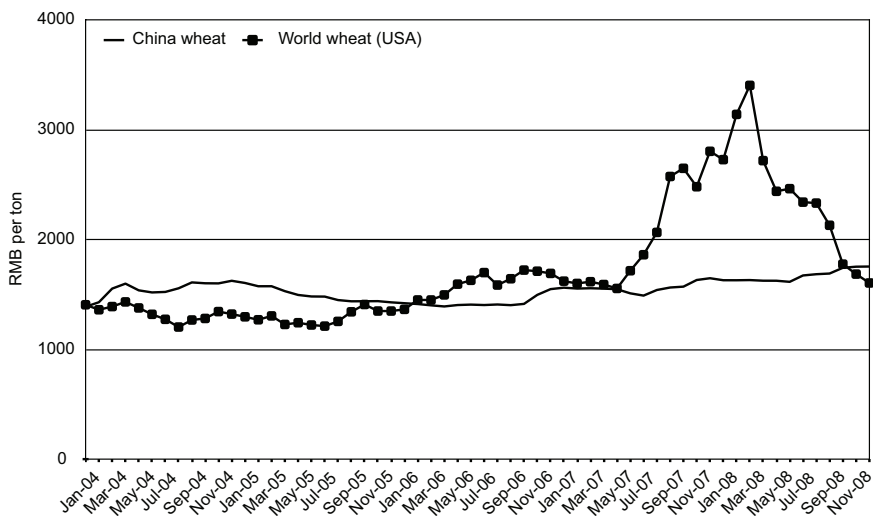


Figure 13.9 Domestic and world prices of wheat, January 2004 to December 2008

Note: World prices are for US No 2, Hard Red Winter ordinary protein, FOB US Gulf. Domestic price is average of wholesale prices in Hebei, Shangdong, Anhui and Henan.

Source: Raw data from FAO/GIEWS (2009a)

Domestic grain prices stabilized, agricultural trade balance worsens

After two decades of historically low prices, grain prices surged from 2006 to 2008. For rice, the price of Thai 100%B second grade, FOB Bangkok (the benchmark price for rice in international markets) in May 2008 reached a monthly peak of \$963/ton, about 2.5 times as high as its level in January 2008 and almost triple its level in May 2007. By contrast, the domestic price of rice in China rose by only 9 per cent (in nominal terms) for japonica and 12 per cent for indica rice from May 2007 to May 2008 (see Figure 13.8). While rice prices in China in May 2007 were almost the same as that for the Thai 100%B (FOB price), they were only about 40 per cent of Thai prices in May 2008.

China also avoided domestic price surges for wheat and maize (see Figures 13.9 and 13.10), even though world prices of those food commodities increased considerably. Average domestic prices for wheat and maize were only 17 and 23 per cent higher, respectively, in 2008 than in 2006, compared with increases of 51 and 61 per cent on world markets (in Chinese yuan terms).

In contrast, the soybean market in China is integrated into the world market and soybeans trade was not controlled. Therefore, the domestic soybeans price in China experienced a similar surge as that on the world market, as can be clearly seen in Figure 13.11. Domestic soybean prices rose by 86 per cent from 2006 to 2008, while world soybean prices (US No 1, Yellow, US Gulf) price increased by 75 per cent in Chinese yuan terms.

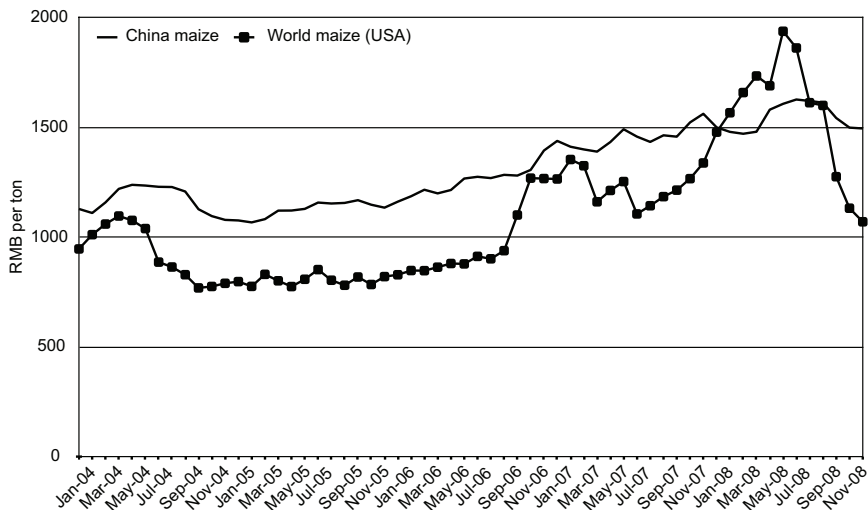


Figure 13.10 Domestic and world prices of maize, January 2004 to December 2008

Note: World prices are for US No 2, Yellow, FOB US Gulf. Domestic price is for yellow maize, average of wholesale prices in Liaoning, Jilin, Heilongjiang and Inner Mongolia.

Source: Raw data from FAO/GIEWS (2009a)

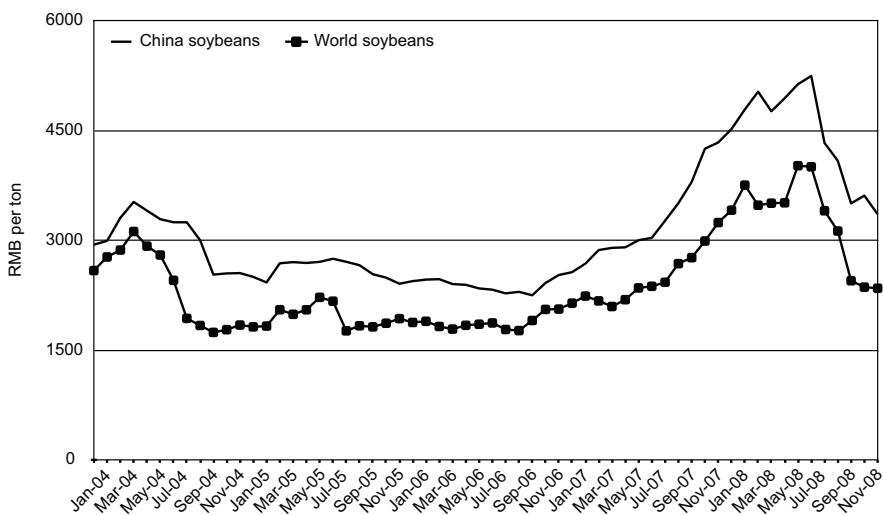


Figure 13.11 Domestic and world prices of soybeans, January 2004 to December 2008

Note: World prices are for US No 1, Yellow, FOB US Gulf. Domestic price is the average of wholesale prices in Liaoning and Heilongjiang.

Source: Raw data from FAO/GIEWS (2009a)

The restrictions on grain exports resulted in a loss of fiscal revenue and export earnings, especially given the high prices on world markets. At the same time, soybean imports increased in quantity terms even though world prices increased. Total oilseed and vegetable oils imports increased over 100 per cent, while pork imports increased by 1300 per cent during the first half of 2008. As a result, China experienced a negative trade balance in agriculture for the first time in years (USDA, 2008a).

Profitability of crop production increased

Table 13.4 presents the national average cost of production, subsidies and net returns in paddy production in China from 2003 to 2008. The table is based on data from annual farm household surveys conducted by China's Price Bureau in cooperation with many other agencies, including the Ministry of Agriculture and Ministry of Domestic Trade.

Subsidies for paddy production increased from 240 yuan per hectare in 2006 to 344 yuan in 2007 and 690 yuan in 2008, an increase of 450 yuan per hectare in two years. During the same two years, however, input costs increased by 1122 yuan per hectare. Furthermore, grain prices were stable during this period, as shown above.

Nevertheless, profitability increased during this time due to increased yields per hectare. In 2008, the average paddy yield was a record 6.93 tons per hectare, 6.4 per cent above that in 2006. The higher yields led to higher gross returns and higher profits. Net returns increased from 3043 yuan per hectare in 2006 to 3371 yuan in 2007 and 3630 yuan in 2008. A similar conclusion holds on a per ton basis: net returns per ton increased from 465 yuan in 2006 to 499 yuan in 2007 and 521 yuan in 2008.

Farmers' profits increased for rice, wheat and maize during the global price surge in 2007 and 2008, but the profitability of producing soybeans

Table 13.4 *Average production costs, subsidies and profits in paddy rice production (real terms, deflated by CPI 2000 = 1), 2003–2008*

	2003	2004	2005	2006	2007	2008
Per hectare (yuan/ha)						
Value of output	7641	10,585	9643	9979	10,364	11,239
Total cost of production	6195	6506	6934	7177	7336	8299
Income without subsidies	1447	4079	2709	2803	3028	2940
Subsidies	-93	102	124	240	344	690
Income with subsidies	1354	4181	2832	3043	3371	3630
Per metric ton (yuan/ton)						
Value of output	1246	1565	1492	1525	1535	1614
Total cost of production	1010	962	1073	1097	1086	1192
Income without subsidies	236	603	419	428	448	422
Subsidies	-15	15	19	37	51	99
Income with subsidies	221	618	438	465	499	521

Source: Raw data from China National Development and Reform Commission (NDRC)

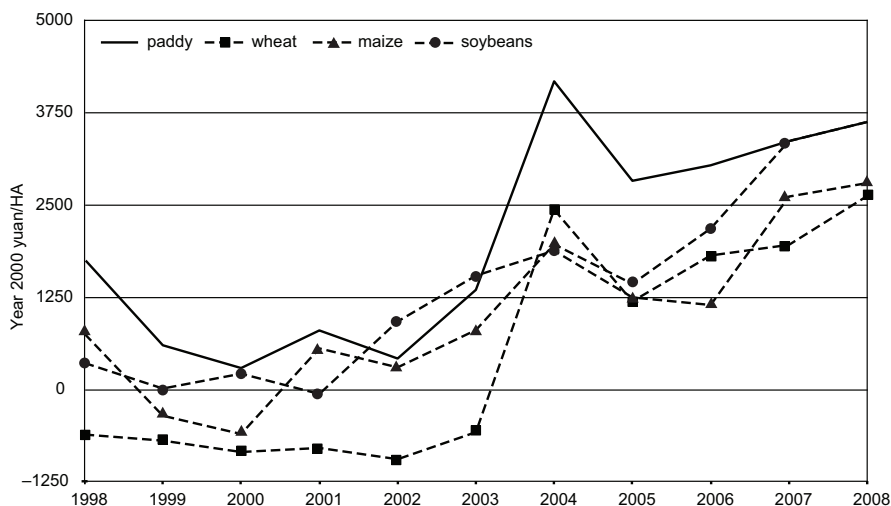


Figure 13.12 *Income (including subsidies) per hectare (real Chinese yuan)*

Source: Raw data from China National Development and Reform Commission (NDRC)

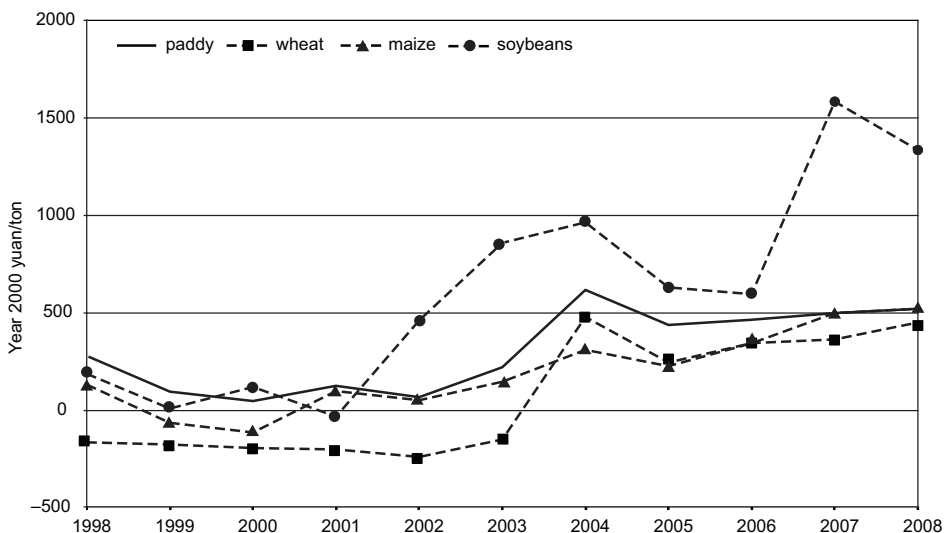


Figure 13.13 *Income (including subsidies) per ton (real Chinese yuan)*

Source: Raw data from China National Development and Reform Commission (NDRC)

increased even more because domestic soybean prices increased substantially. Compared to that in 2006, profit per hectare in 2008 increased by 19 per cent for paddy, 44 per cent for wheat, 66 per cent for maize and 144 per cent for soybeans (see Figure 13.12). On a per metric ton basis, the increase was 12, 31, 52 and 124 per cent respectively for paddy, wheat, maize and soybeans (see Figure 13.13).

Lessons learned

The major factor that contributed to grain market stability in China during the world food crisis was a long-term policy of support for grain production. After experiencing a wheat shortage in 2003, China implemented a series of production programmes to protect farmland and to promote agricultural productivity and farm incomes. During the global food price surge, China significantly increased support to grain production and achieved a fifth consecutive year-on-year increase in grain production in 2008. China's experience has clear policy implications for food security: the government should increase investment in the agricultural sector, including expansion of rural infrastructure, to promote agricultural productivity. Despite increased costs of production, especially for fertilizer, Chinese farmers' net income in producing rice, wheat, maize and soybeans increased due to both increased productivity and significantly increased subsidies.

Strong export controls imposed by China on grains and fertilizers were another key factor in stabilizing China's staple grain prices during the world food crisis. Although such controls did not violate WTO rules (Cheng, 2008; Sharma and Konandreas, 2008), they were not without cost to both China and the world. These short-run trade policies may limit the scope for longer-term agricultural development since farmers were not able to take advantage of higher food prices. World grain prices would not have increased as much if China had participated more in world grain trade during the crisis, especially given China's large grain stocks relative to domestic utilization. China also gave up financial benefits by not taking advantage of soaring world prices.

An enhanced market information and early warning system will be very important for China to make timely and effective policies. The recent global food price crisis exposed the weaknesses of China's statistical information, database and warning/monitoring system on food security. Improving China's agricultural information system and enhancing its ability to monitor and analyse markets is essential for policymakers and stakeholders in China to develop strategies that prevent instabilities in domestic food supply and adapt to trends in international grain markets. In addition, the core policies that China uses to promote food security – agricultural production support, trade policies and grain reserves – are intended to protect all consumers, especially those in urban populations, and are not well targeted to the poor. Safety net programmes targeting people vulnerable to food insecurity are urgently needed.

Enhanced regional and international collaboration are critical in addressing the problem of high world food prices (Brahmbhatt and Christiaensen, 2008). The G8 leaders statement on Agriculture and Food Security, adopted at the G8 meeting of agricultural ministers in Cison di Valmarino (Italy), 18–20 April 2009, highlighted the importance of rejecting protectionism and encouraging the development of local, regional and international integrated agricultural markets. China is the world's largest

agricultural producer and consumer of major staple foods and has become an increasingly important player in world food markets since its accession to the WTO in 2001. As a large country, China could play an important role in regional and global cooperation to take collective action to deal with regional/global food crises.

Notes

- 1 The tax covered most fertilizers, but did not include organics or high-value fertilizers.
- 2 SinoGrain is a state enterprise (including provincial counterparts) responsible for holding grain reserves.

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Rice Policies in India in the Context of the Global Rice Price Spike

Ashok Gulati and Monica Dutta

Backdrop and key issues

The volcanic eruption in rice prices (see Figure 14.1) in the global market, rising from \$385/ton¹ (January 2008) to \$962.6/ton (May 2008) and then declining to about \$582/ton (December 2008), has aroused keen interest among policy analysts and policymakers regarding the reasons behind such a roller-coaster ride of rice prices. Was this just a one-time blip or was it a part of the so-called ‘global food crisis’ that many experts predicted will stay with us for years to come?² Was it due to a sharp drop in production at the global level or have there been any structural changes in the rice demand–supply equations over time in the world? Several scholars have been trying to understand this phenomenon and respond to the underlying factors that led to this type of a situation. Rice was not the only commodity to have experienced such a high volatility in prices, but it showed the highest peak (an increase of 150 per cent from January to May 2008) as compared to other commodities such as wheat and maize.³

A wide range of studies have been conducted by several international organizations such as International Food Policy Research Institute (von

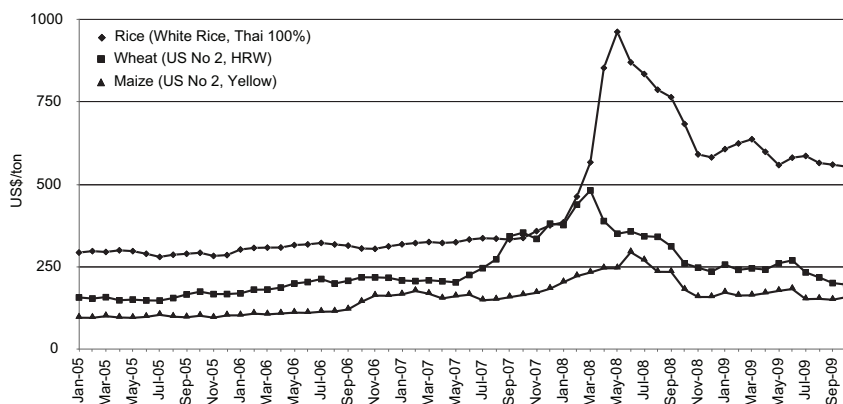


Figure 14.1 Spike in the global rice price

Source: FAO (2008)

Braun, 2008c), Asian Development Bank (ADB, 2008a), OECD-FAO (2008), Abbott et al (2008) and the World Bank (2008), which look at the issue of rising food prices. The reasons cited by these consist of both the demand-side factors (such as rising fuel prices, changing dietary patterns, rising demand for biofuels, and income and population growth) as well as the supply-side factors (such as agricultural production shocks, restrictive market and trade policy, lack of technological innovation in agriculture and declining stocks of food grains).

This chapter attempts to see whether this abrupt price rise was driven by any structural change in demand and supply factors, with a focus on India; or was it just a result of certain policy actions such as export bans by India, China and Viet Nam? The restrictions on exports were undertaken as a knee-jerk reaction to the uncertainty and fear that gripped the policymakers in response to reports coming from several institutions of the impending food crisis that is likely to stay for a longer period ahead,⁴ and this fear got multiplied several times by the vibrant media across the world.⁵ The focus of this chapter is India; and in trying to understand why India put an export ban on rice (Gulati and Gupta, 2007), which presumably triggered a chain reaction leading to a sharp spike of rice price in the international market, an understanding of the political economy and the psyche of the policymakers of India is essential. For this, one needs to dig a little deeper in the rice economy of India within the context of overall importance of food grains, especially wheat and rice, and the need to feed a population of 1.1 billion.

Accordingly, the next section introduces the Indian rice market in the backdrop of a global context, giving its relative share in production, trade etc. Then the chapter provides a view of the global rice market. We then delve deeper into the nature of government policies and intervention in the rice markets in India. These rice policies, which range from minimum support price

(MSP) for the output, levy on rice millers and huge subsidization of inputs such as fertilizer, power and water, create a complex structure of incentives for the farmers. Government also intervenes by heavy procurement, stocking and distributing rice at subsidized rates through the Targeted Public Distribution System (TPDS), the nature and degree of which is also discussed. In order to understand the overall impact of these myriad sets of policies on the overall incentives of the farmers in an open-economy framework, the protection coefficients of rice over a longer period (1981–2005) are then presented. Then an attempt is made to look into the role of India in flaring the rice prices. Finally, the chapter chalks out the way forward with a view to reform the Indian rice sector that can lead to its faster growth, higher efficiency and better environmental sustainability.

The Indian rice market

Rice is the key dietary staple for many Indians and much of the crop grown in the country is used to feed the domestic population. In India, rice occupied 43.7 million hectares, around 23 per cent (highest among all other crops) of the total gross cropped area of 192.8 million hectares in 2005–2006 (Government of India, 2004–2008). At the global level, rice was grown over 157 million hectares in 2007 and India's share (of 44 million hectares) turned out to be about 28 per cent of the total world paddy rice area (FAOStat, 2008). In terms of rice production, India's share (with 97.5 million tons) of 22 per cent in 2008–2009 stands only next to China with 130.5 million tons (30 per cent of global production of 435 million tons in 2008) (FAS/USDA, 2008). Asia is the major producer in the world rice market with a share of 86.5 per cent of the world output of rice in 2008–2009. The Asian market is dominated by China with a share of 35 per cent, followed by India, which produced 26 per cent of the total Asian output in 2008–2009. The productivity of Indian rice (paddy) has been lower in comparison to other nations such as China and Japan. It had a paddy yield of 3.21t/ha as opposed to a yield of 6.35t/ha for China and 6.54t/ha for Japan in 2007 (FAOStat, 2008).

Within India, rice production⁶ fluctuates due to climatic factors. Rice, however, is the most important food crop in India with a share of 42 per cent in the total food grain production in 2007–2008. The yield of rice (not paddy), though low by international standards, increased from 1901kg/ha in 2000–2001 to 2203kg/ha in 2007–2008 (an increase of 16 per cent over the seven-year period). India experienced a record crop of rice in 2007–2008. The key factor contributing to this was a rise in the rice productivity rather than an increase in area harvested. The yield of rice increased by 3.4 per cent in 2007–2008, whereas rice area harvested declined by 0.1 per cent in 2007–2008 (Government of India, 2004–2008). Uttar Pradesh, West Bengal and Andhra Pradesh⁷ are the key rice-producing states in India, although much of the surplus for procurement comes from Punjab, Haryana and Andhra Pradesh.

Table 14.1 *Compound growth rates of area, production and yield of principal crops during 1990–2000 and 2000–2007*

Crop	1990–1991 to 1999–2000			2000–2001 to 2007–2008		
	Area	Production	Yield	Area	Production	Yield
Rice	0.68	2.02	1.34	-0.14	1.87	2.00
Wheat	1.72	3.57	1.83	1.29	1.36	0.08

Note: Base: Triennium ending 1981–1982 = 100. The growth rates for 1990–2000 and for 2000–2008 are compound annual growth rates.

Source: Government of India (2004–2008)

Table 14.1 gives a picture of change in rice area, production and yield vis-à-vis wheat, the next most important crop in the Indian context, since 1990. It may be noted that during the last seven years or so, since 2000–2001, rice yield in India has been increasing at an annual compound average growth rate (CAGR) of 2 per cent, while wheat yield growth has been dismal (0.08 per cent per year).

India has always been one of the key rice-exporting nations. The exports of rice (both basmati and non-basmati) from India have exhibited an increasing trend from 2005–2006 onwards with India exporting 6.4 million tons of rice in 2007–2008 (Government of India, 2009). With a rising trend in growth rates of area, production and yield of rice, there was no supply-side constraint evident in the Indian market that could account for this flaring of the global rice price. On the domestic front, retail rice prices exhibited a rising trend throughout the period from January 2007 to January 2009 (see Figure 14.2). The rise was of a greater extent immediately after the restrictions were imposed on rice exports through the MEP in October 2007.⁸ This rise might have been the result of the hike in the MSP. The MSP for common paddy increased by 20 per cent in 2007–2008 over 2006–2007, and it was raised further by another 14 per cent in 2008–2009. However, the issue price under the Public Distribution System (PDS) remained constant throughout the time period. The reason for granting this hefty increase in the MSP was the hike in the international rice price. Though domestic prices rose, the increase was very nominal in comparison to global prices; the all-India average retail price of rice increased by a meagre 9.5 per cent from January 2008 to May 2008, as opposed to a 150 per cent hike in the global rice prices over the same time span. This shows that there were strong political and economic factors at play in the economy so as to prevent the transmission of high international prices to the domestic market, discussed in later sections of the chapter.

India is a major player in the world market of rice and any policy changes introduced by the Indian government to ensure price stability and food security within the nation are bound to have significant repercussions on the international market.

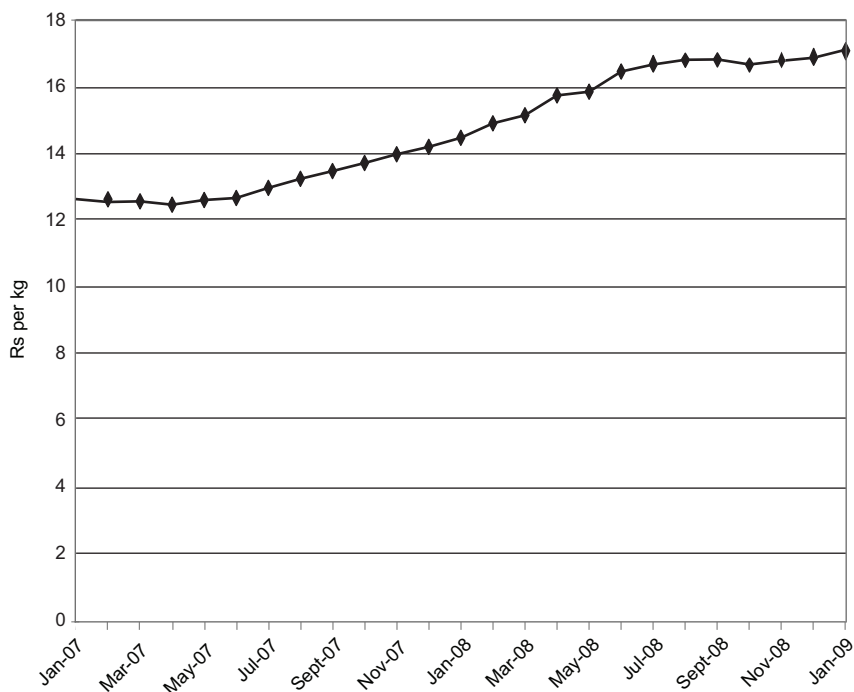


Figure 14.2 All-India average retail prices of rice (Rs/kg)

Note: Data for each month are as reported in the final week of the month.

Source: Ministry of Consumer Affairs, Food and Public Distribution

http://fcainfoweb.nic.in/Prices_Application/weekly_prices/san_report_ave.asp

The global rice market

Rice is a very thinly traded commodity, with only about 7 per cent of world production being traded, as against wheat or maize, where the world trade as a percentage of production was 19 per cent and 12 per cent respectively in 2007 (FAS/USDA, 2008). The major rice exporters include countries such as Thailand, Viet Nam and India. In 2007–2008, India exported 6.4 million tons of rice (Government of India, 2009), perhaps the highest since exports of common rice began in 1994.

Figures 14.3 to 14.5 show the global production of key staples, the share of nations in global rice production and in global rice stocks, along with their percentage shares, for the triennium ending (TE) 2008–2009.

It is well evident from the figures that there was neither any decline in the global rice production, nor in the global rice stocks in the last five years, 2004–2005 to 2008–2009. This trend is also reflected in the case of India, where the percentage share in global rice production was 22.3 for TE 2008–2009. In terms of share in the total global rice stocks, India exhibited a rising trend in the last five years with a percentage share of 16.5 for TE 2008–2009. With no supply-side constraints, the critical question still remains unanswered as to what triggered the volcanic eruption in the global rice price?

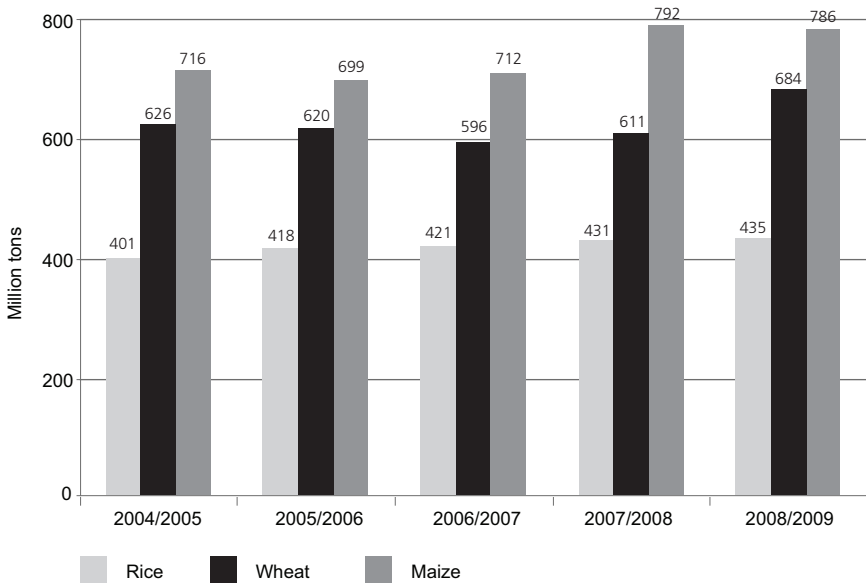


Figure 14.3 *Global production of three key staples*

Note: The figures on the top of each column show total global production (in million tons) of rice, wheat and maize respectively for that year.

Source: USDA (2008)

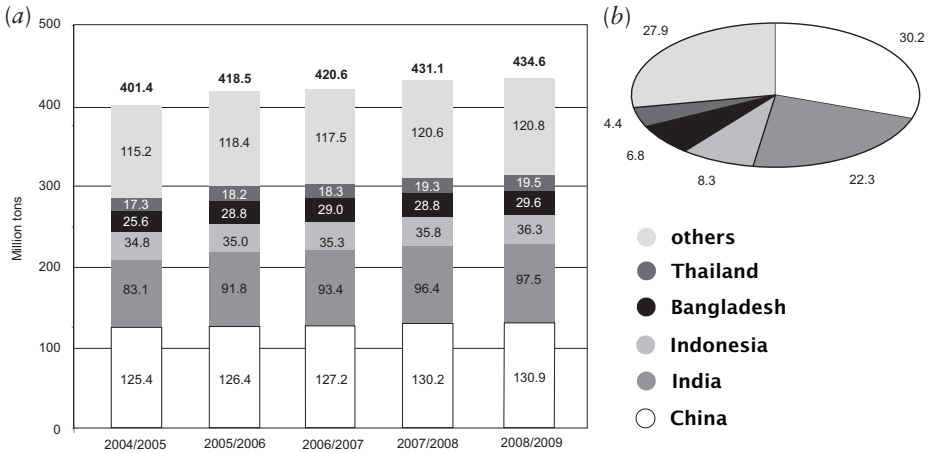


Figure 14.4 (a) *Share in global rice production and*
(b) *percentage share in global rice production (TE 2008–2009)*

Note: The figures on the top of each column show total global production (in million tons) for that year. Data are average percentage share for 2006–2007, 2007–2008 and 2008–2009.

Source: USDA (2008)

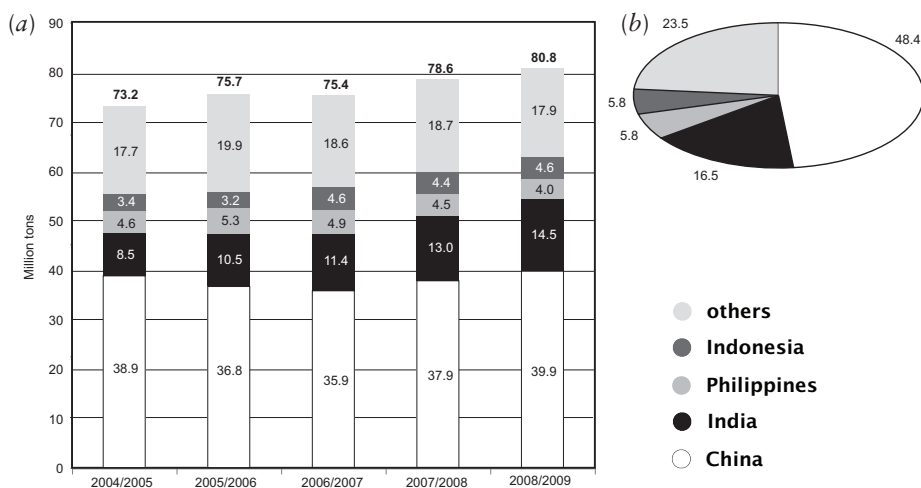


Figure 14.5 (a) Share in global rice stocks and (b) percentage share in global rice stocks (TE 2008–2009)

Note: The figures on the top of each column show total global stocks (in million tons) for that year. Data are average percentage share for 2006–2007, 2007–2008 and 2008–2009.

Source: USDA (2008)

Overview of government policies and intervention in the Indian rice market

Government intervenes in the food grain market through its price and procurement policies. At the farmer front it sets the MSP to ensure remunerative returns to the farmers. This producer price policy plays a crucial role in supporting the growth in rice output by reducing the price uncertainty faced by the farmers and inducing them to adopt new technology in production. At the same time it also subsidizes the inputs to ensure the accessibility of these for the farmers in the production process. The government intervenes on the output front via its procurement, stocking and distribution policies, discussed later. Figure 14.6 displays the trend in MSP for common paddy and wheat from 2000–2001 to 2008–2009. We give here the nominal MSP as well as real prices (deflated by the general wholesale price index). While nominal prices show a large increase in MSP, in real terms the MSP declined during 2000–2001 to 2005–2006, when India had very comfortable grain stocks, and increased thereafter, when the stocks dipped below the minimum buffer norms. In 2007–2008 the real MSP for wheat and rice was almost the same as in 2000–2001.

Another aspect of government intervention is via an array of input subsidies for farmers that have been initiated since the time of Green Revolution. Rice being a crop that needs a lot of irrigation water and fertilizers, it receives a large amount of heavily subsidized inputs ranging from canal irrigation and power for groundwater irrigation to fertilizers. The average total agricultural

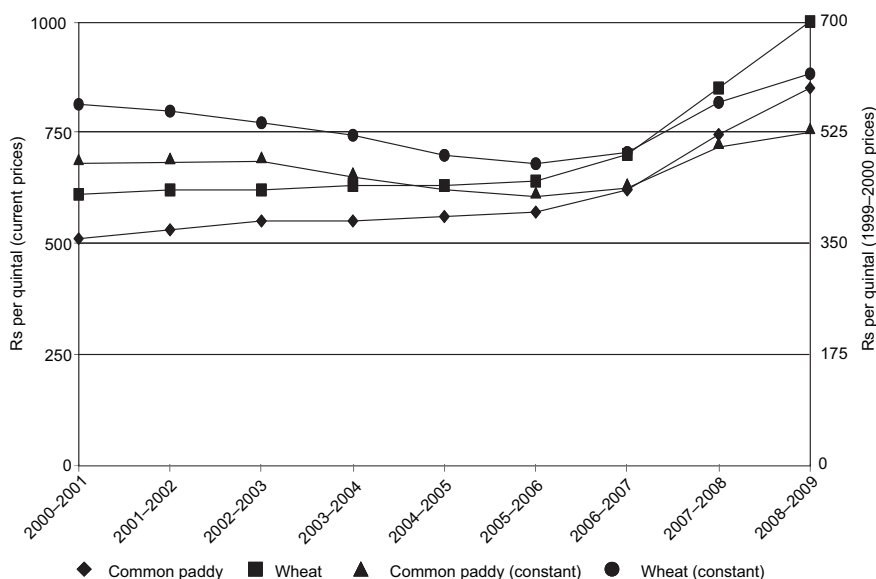


Figure 14.6 Nominal and real minimum support prices for common paddy and wheat (Rs per quintal)

Note: 1 quintal = 100 kg.

Source: Government of India (2004–2008)

subsidies (financial, as given on government account) for TE 2005–2006 was Rs750 billion (around \$15 billion). The estimates of economic subsidy, however, may differ, depending upon the definition adopted. Gulati and Narayanan (2003) estimate that the largest and most distorting of these farm subsidies were for electricity and fertilizers. The crop-specific allocation of these subsidies is a gigantic task. However, some attempts have been made in this regard by Gulati and Pursell (2007), who estimate the incidence of these two subsidies across 11 crops in 2004 and found that rice occupied the highest share (37 per cent) in total subsidies followed by wheat with a share of 35 per cent. The total value of the input subsidies for these 11 crops in the year 2004 was \$7.8 billion (\$1.9 billion for fertilizers and \$5.9 billion for electricity).

Rice production has an intensive use of fertilizers, which is one of the most heavily subsidized inputs. For sustained growth in agriculture, the Indian government has followed a policy of making fertilizers available to farmers at affordable prices. In principle, of all the fertilizers, urea is the only fertilizer that is under statutory price control. To make fertilizers affordable to the farmers, a uniform maximum retail price is fixed by the government. The price of urea has remained constant at Rs4830 per ton since 28 February 2002. The government has not hiked urea prices but the cost of urea production has been rising consistently.

The fertilizer subsidy is not given to the farmers directly. It is routed through the fertilizer industry (manufacturers and designated importers). The

urea subsidy is given under a group retention price scheme, which is basically a cost plus pricing system for urea manufacturers with some norms of technical efficiency. For phosphate and potash fertilizers (DAP and MoP), there is a flat-rate subsidy given to manufacturers and importers. Such a system of fertilizer subsidy, especially for urea, is neither very transparent nor encourages investments or efficiency in the industry. As a result, the production of fertilizer has remained stagnant since 2001. However, its demand has been increasing. This has led to imports increasing from 2.1 million tons in 2000–2001 to 6.8 million tons in 2007–2008. India imported 4.5 million tons of DAP and 3.5 million tons of urea until October 2008, largely contributing to the subsidy bill (Centad, 2009). Besides providing a direct subsidy to the manufacturers, the government has also issued fertilizer bonds worth Rs75 billion (August 2007) to finance the subsidy burden.

In 2006–2007, the actual subsidy on fertilizers was Rs260 billion as against a budgetary allocation of Rs173 billion. In 2007–2008, the actual bill rose to Rs503 billion against an allocation of Rs245 billion. And in 2008–2009, the fertilizer subsidy was expected to touch Rs100 billion (roughly \$20 billion). Since, every time over the last three years, the actual subsidy bill turned out to be higher than what was provisioned in the budget, the government came up with a novel idea of issuing government bonds to fertilizer units for a part of the subsidy (almost half in 2008–2009). These bonds are reimbursable over a period of time. This financial innovation helps the government to spread the fertilizer subsidy payments over a period of time. Urea normally comprises about 60 to 70 per cent of the fertilizer subsidy bill. Heavy subsidization of nitrogen in relation to phosphate and potash has led to an unbalanced use of N, P and K. While the recommended ratio between N, P and K, is 4:2:1, the actual ratio in Punjab was 20:6:1 and in Haryana 30:9:1 in 2005–2006 (IPNI, 2008). Acknowledging this fact, the finance minister in July 2009 promised to move towards a uniform nutrient-based subsidization, which will pave the way for direct subsidy to farmers. Indeed, the government introduced a nutrient-based fertilizer subsidy (NBS) for decontrolled P&K fertilizers, effective 1 April 2010. The subsidy will be based on the nutrients (i.e. N, P, K, and S) contained in the decontrolled P&K fertilizers already covered under the scheme (Government of India, 2010a).

Ensuring remunerative returns for the produce and input subsidization are not the only avenues for government intervention. The government also intervenes heavily in outputs.

Procurement, stocking and distribution policies

Besides intervening through price policy measures and input schemes, the government intervenes at the consumer end via its procurement, stocking and distribution policies. The procurement policy of the government consists of a compulsory levy on the rice millers under the Essential Commodity Act (ECA) of 1955. The Food Corporation of India (FCI) procures grains for the central

Table 14.2 *Percentage of levy on common milled rice in various states, 2008–2009*

	<i>Quantum of levy (%)</i>
Andhra Pradesh	75
Haryana	75
Punjab	75
Uttar Pradesh	60
West Bengal	50

Source: <http://fcamin.nic.in>

pool through a ‘levy’ system on rice millers, whereby the rice mills are obliged to sell a certain proportion of their milled rice (which can go as high as 75 per cent in Punjab) to the state agency at a predetermined price, which is often lower than the market price.⁹ Under the ECA, the state governments can also restrict farmer’s sales to mandis (wholesale market yards set up by government) by imposing movement restrictions.¹⁰ Almost half of the total procurement for the central pool is purchased as milled rice through this levy system. The open market sales are restricted until levy commitments are filled. The percentage of levy is fixed by the state government with the approval of the central government on the basis of requirements of the central pool, domestic consumption and the marketable surplus. The levy percentage varies from state to state (see Table 14.2) depending upon the existing local conditions of surplus production, the storage constraints with FCI and the open market availability of rice at lower price. The rice levy system heavily distorts the market as it restricts the movement of rice across states on private account.

The food thus procured is stored and distributed at subsidized prices to meet the consumption needs of the poor via the PDS. The government maintains stocks of rice and wheat, and under the PDS it supplies a proportion of cereals required by poor consumers at prices lower than the market prices. Stocking of food grains supposedly ensures stability in domestic prices, and distribution of food under PDS supposedly assures availability of food grains to the poorer sections of society at subsidized rates. In addition to this, FCI also resorts to open market sales of food grain buffer stocks at below market prices to dampen the local market prices.

Rice along with wheat is the key food grain that is procured by FCI.¹¹ Rice procurement hovered around 26 million tons each year during 2005–2006 and 2006–2007. In 2006–2007, however, government stocks of wheat fell short of buffer stock norms, and about 6 million tons of wheat was imported. Although rice was in surplus, and India exported 4.7 million tons of rice that year, yet the fear of food shortage weighed heavily on policymakers’ minds and the MSP (in nominal current prices) for common paddy was raised by as much as 37 per cent during the two-year period, 2006–2007 to 2008–2009 (from Rs6200/ton to Rs8500/ton) (*Financial Express*, 2008). To maximize procurement of rice, a restriction on exports of non-basmati rice was also imposed on 9 October

2007. The procurement of rice is high in the states of Punjab, Haryana, Uttar Pradesh and Andhra Pradesh, which together account for roughly 70 per cent of the all-India procurement of rice. The procurement of rice as a percentage of production increased from 25.5 per cent in 2003–2004 to 27 per cent in 2007–2008, and procurement of rice as a proportion of marketed surplus¹² shot up from 31 per cent in 2003–2004 to 41 per cent in 2005–2006. To ensure adequate food grain supplies for the government's procurement operations, a large number of restrictions were also imposed on private traders by the Government of India and state governments. These restrictions included controls on movement, storage, exports, imports and access to trade credit. For example the central government's Cabinet Committee on Prices (CCP) on 31 March 2008 urged all state governments to impose the stock limit norms so that the prices of essential commodities do not rise on account of shortages caused by hoarding (*Thaindian News*, 2008).

One of the prime purposes of procuring rice and wheat for the central pool is to maintain buffer stocks. The central pool is supposed to hold sufficient stocks to meet any emergency arising from possible droughts, floods, crop failures, etc. It also maintains stocks to enable open-market interventions in case of price hike. FCI enhances food grain supply in the lean season as per government instructions to prevent rises in open-market prices. Until 1999 the buffer stock of food grains remained close to the norm requirement. After 1999, however, the stock levels were well beyond the norm owing to good harvests and domestic prices being higher than the export parity prices due to a collapse in the global prices resulting from the East Asian crisis. The decline in effective off-take from TPDS also contributed to the accumulation of grain stocks, which peaked in 2002 (Gulati et al, 2003). These stocks were eased in 2003–2004 because of low procurement following a drought in 2002–2003, combined with relatively high off-take of food grains for the relief operations. The food grain stocks remained higher than the buffer requirement until July 2005, by which time all the existing stocks had been liquidated. The stock of food grains on 1 July 2005 was 24.6 million tons, consisting of 14.5 million tons of wheat and 10.1 million tons of rice against the norm of 26.9 million tons. Starting from 2005, arrangements were made once again to add to the food grains stocks by importing about 6 million tons of wheat. But in 2007, when global rice price crisis erupted, the stocks of rice in July and October 2007 were only a notch above the norm (see Figure 14.7). However, during the same months, wheat stocks were a notch lower than the norm. For wheat and rice together, stocks in July and October 2007 were neither precariously low nor too comfortable, but just hovered around the norm. So the export restrictions did not stem from stocks being very low within the country in October 2007. In subsequent months, the stock position of food grains (rice and wheat) improved significantly. In August 2008 it was 31 million tons comprising of 8.3 million tons of rice and 23 million tons of wheat, which increased to 35 million tons by December 2008, and by July 2009, it was 52.5 million tons, against a norm of 26.9 million tons (Government of India, 2010b). It may be

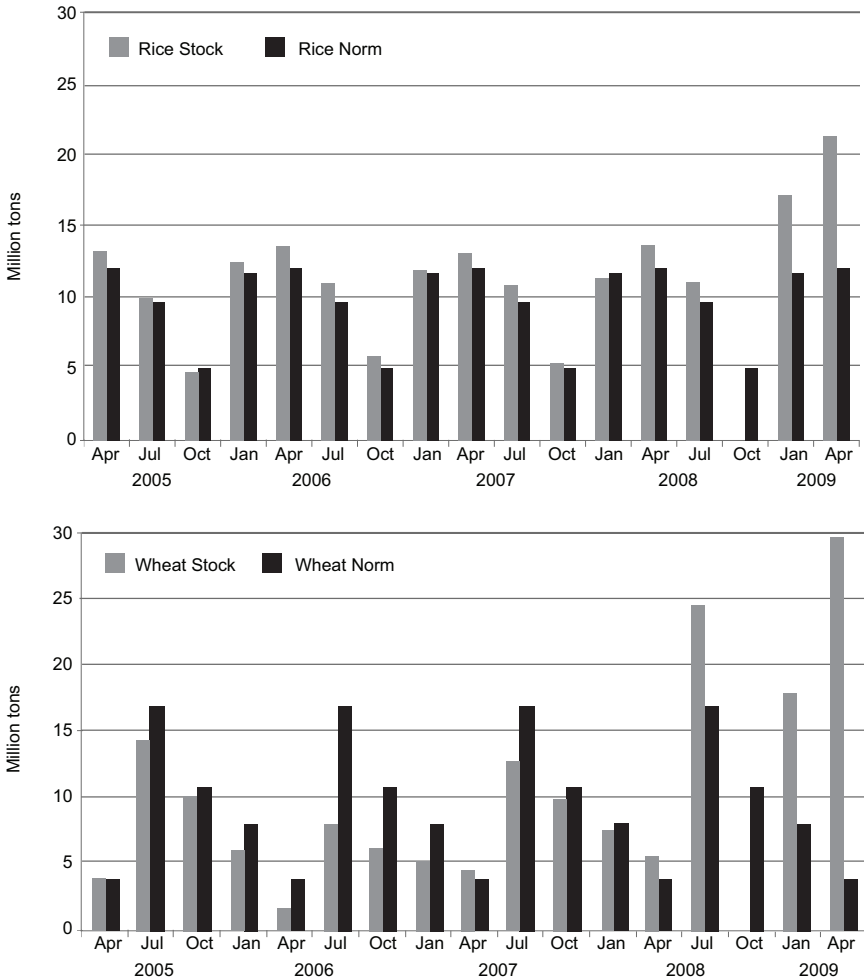


Figure 14.7 Food grain stocks versus norm requirement

Source: Economic Survey (several issues); data for April 2009–2010 is from FCI, http://fciweb.nic.in/stock_management/stock_management.htm

noted that the covered storage capacity with FCI is about 25 million tons. Given all this, it seems India will be back to ‘excessive’ stocks, putting pressure on the storage facilities and leading to large wastages, unless the government finds some way to consume or export some of these stocks.

Besides maintaining buffer stocks, the food grains procured by the FCI are also used to provide food to the poor via the TPDS.¹³ This system is supposed to help the most vulnerable sections of the society to get food grains at reasonable prices (half the economic cost¹⁴). FCI issues wheat and rice to state governments/agencies at uniform Central Issue Prices (CIPs)¹⁵ for distributing food grains to the poor under the PDS. From 1997, when TPDS was introduced, the food grains were allocated at separate prices for people below the

Table 14.3 *Production, procurement, stocks and off-take of rice and wheat*

	<i>Production</i> (1)	<i>Procurement</i> (2)	<i>Stocks</i> (3)	<i>Total off-take</i> (4)	<i>(2) as a % of (1)</i>	<i>(4) as a % of (1)</i>	<i>(3) as a % of (1)</i>	<i>(3) as a % of required norms</i>
2000–								
2001	154.7	37.6	42.2	18.8	24.3	12.2	27.3	173.9
2001–								
2002	166.1	42.8	61.7	32.9	25.8	19.8	37.1	253.8
2002–								
2003	137.6	35.5	63	49.6	25.8	36.0	45.8	259.3
2003–								
2004	160.7	36.6	35.2	49.2	22.8	30.6	21.9	144.7
2004–								
2005	151.8	40.8	29.9	41.5	26.9	27.3	19.7	123.1
2005–								
2006	161.1	41.5	24.5	42.1	25.8	26.1	15.2	91.4
2006–								
2007	169.2	35.5	19.3	36.7	20.9	21.7	11.4	71.7
2007–								
2008	174.8	37.1	23.9	27.3 ^a	21.2	15.6	13.7	88.8

Note: The data on production, procurement, stocks and total off-take are for total rice and wheat, and are measured in million tons. Procurement of rice is from October to September and for wheat is from April to March. Off-take data are from April to March and the stocks are as of 1 July for each year. ^a off-take data for 2007–2008 are from April to December

Source: Government of India (1999–2008)

poverty line and those above the poverty line. This was supposed to improve the outreach of the subsidy programme and help contain the food subsidy bill of the Government of India. From 2001–2002 onwards, the nominal CIPs have remained stable, though in real terms¹⁶ one can observe a decline from 2001–2002 to 2007–2008. Table 14.3 gives the production, procurement, stocks and off-take of rice and wheat from 2000–2001 to 2007–2008. It demonstrates the fact that following the drought year of 2002–2003, there was a decline in the stocks of rice and wheat. From 2004–2005 onwards there has been a fall in the food grains procured for distributing to the poor. The government procures 20 per cent to 27 per cent of the total production of rice and wheat (see Table 14.3).¹⁷

Beyond emergency relief, India also implements social protection measures such as the National Rural Employment Guarantee Scheme, Food for Work Scheme and Public Distribution System that help mitigate the risk of high prices for the poor people. Some states have also announced schemes such as providing rice at Rs1/kg or Rs3/kg to help families below the poverty line.¹⁸ All these safety nets have seen gradual expansion from 2006–2007 to 2008–2009. Besides these consumer-oriented schemes, there is also the National Food Security Mission on the production side, which was launched in 2007 to specifically aim at increasing production of rice by 10 million tons, wheat by 8 million tons and pulses by 2 million tons by 2011–2012.

The analysis so far depicts that the Government of India follows a complex set of policies. On the one hand, it provides incentives through MSP and input subsidies, but on the other hand, it imposes a compulsory levy on rice millers to supply to government a fixed proportion of common rice at predetermined (below market) prices, or at times bans exports. This is like having one foot on the accelerator and the other on the brake. The net result of all this complex web of policies over a long period is that rice farmers have been ‘implicitly taxed’ through trade and marketing policies despite large input subsidies. It is essential to assess the impact of all these policies on the incentives of rice farmers as well as the competitiveness of Indian rice.

Rice trade liberalization and competitiveness of Indian rice

Countries with a high level of government interventions are cautious in liberalizing the rice trade due to concerns for food security. This is more so for large populous countries such as India, with democratic structures and free and vibrant media that put a lot of pressure on policymakers. The government policies (as discussed in the previous two sections) in India have restricted domestic prices below international prices for most years. In addition, exports are also restricted to ensure the food security of the nation. The export of common rice from India was banned until 1994, despite having an inherent comparative advantage in the same. In India different policies were followed for common rice and basmati rice. There was no restriction on the export of basmati rice. However, until 1991, the export of common rice was subject to canalization, minimum export price and export quotas. There were also restrictions on stocking rice beyond a limit unless an export order was in hand (Datta, 1996). Even imports of common rice have been subject to quantitative restrictions occasionally when production dropped significantly.

Until March 1991, India’s trade in non-basmati rice was not significant, with India exporting a mere 25,000 to 30,000 tons between 1987 and 1990 (Chand, 1999). The situation changed dramatically with the devaluation of the Indian rupee in 1991 and exports of basmati rice increased significantly. However, a major boost to rice exports occurred during 1995–1996 when the Government of India decided to open exports of common rice (under a major policy change). The net exports rose to 4.9 million tons from a meagre 0.9 million tons in 1994–1995. However, India restricted the exports of non-basmati rice in October 2007 by fixing the MEP at \$425 per ton, and raising it to \$500 per ton in December 2007 (Commodity online, 2008) to build buffer stocks and control domestic prices that were driven by high export demand. But in March 2008, a complete ban on common rice exports was put in place in an attempt to control food prices and build grain stocks (Reuters, 2008b). This increased world rice prices, as Viet Nam (second leading world exporter of rice after Thailand), Egypt and Cambodia also limited rice exports at that time.

Trade liberalization provides a whole new range of opportunities to any nation and to make the maximum benefit from these challenges, India needs to take measures to enhance its competitiveness. Trade liberalization provides a whole new range of opportunities to any nation. To make the maximum benefit from these challenges, India needs to take measures in enhancing its competitiveness. To assess the price competitiveness of a commodity, the nominal protection coefficient (NPC),¹⁹ measured under both the importable and exportable hypotheses, is a useful measure.²⁰

Rice has been largely competitive on an importable basis since its NPC has been below unity for most years. Indeed, the domestic price of rice (in constant 1980 rupees) was below the import (parity) reference price in almost all years during the period 1965–2004. In fact, even under the exportable hypothesis, India has had export competitiveness in rice: the domestic price has been below the export reference price during most of the period, with 1986–1987 and 1999–2004, years of low prices on global markets, being exceptions. (Including input subsidies in the measures of competitiveness changes the story only marginally).

The removal of export bans on non-basmati rice and liberalizing the exports of basmati rice by eliminating the MEP in 1994 helped India to liberate agriculture from government controls and improve export volumes. Following the East Asian Crisis of 1997, global rice prices dropped owing to weakened demand from Asian importers. In the face of this sharp drop in world rice prices, the domestic price of rice in India was well above the international price and this led to large domestic accumulation of stocks. In spite of its competitiveness, India's exports were stunted by the decline in world rice price. However, exports picked up again after November 2000, when India began to subsidize internal and international freight and other costs of marketing exports to neutralize high subsidization by the US. Following this, the international rice prices gradually climbed back to their long-term levels and India regained its export competitiveness in rice.

The question that arises is that if India is import/export competitive in most of the years and had good production and sufficient rice stocks, then why does it not follow a liberal trade policy? What would happen to its overall welfare if India liberalizes trade in rice? Studies (for example Jha and Srinivasan, 2004; Polaski et al, 2008; Sahay and Chattopadhyay, 2008) have dealt with this question of impact of trade liberalization on the Indian economy and the broad conclusion is that trade liberalization of one sector (rice) per se would not impact the economy to a great extent. The positive impact of the removal of trade restrictions is felt when it is carried out for the entire agricultural sector as a whole. This benefit is amplified if combined with other beneficial measures such as reduction in transportation costs along with the removal of trade barriers. This would require an increase in agricultural investment and better infrastructure for growth. The poverty ratio (measured by the headcount ratio) also declines when trade restrictions on all agricultural commodities are removed.

So far the analysis does not indicate any major supply shortfall or demand pressure in the global rice market that could have led to the tremendous hike in rice prices in 2008. Then why was the export ban imposed in 2008?

The global rice price spike: Why and how India stoked the fire?

The sudden rise in global commodity prices in 2007 led to serious concern among several international organizations. Several reports of international organizations and comments from international experts on the food price crisis generated fear in the global arena that this rise was not a short-term phenomenon, but was likely to stay for many more years.²¹ This fear of impending food crisis was multiplied several times by the overcautious media.²² As a result, each nation undertook policy measures to insulate its domestic economy from the adverse impacts of the food price hike. India, along with other major trading nations, implemented such policies. The key instrument used to restore domestic price stability was the ban on rice exports. But the main question is, was this a rational move?

A look at the global production and stocks of rice (see Figures 14.4a and 14.5a) from 2004–2005 to 2008–2009 shows that on the whole there was neither a major decline in the production of global rice nor a decline in stocks of rice. The scenario remains the same for India also. Indian production of rice also continuously increased during this period (see Table 14.3). Hence, it becomes imperative to investigate the causes for the trade restrictive measures adopted by India. What seems a plausible explanation for this is that these resulted from a ‘fear psychosis’ generated in the international market. In 2006–2007 India had huge wheat imports of 6 million tons, although it was exporting about 4.7 million tons of rice in the same time period. This gave India a reason to worry about the food security scenario in the country. The export bans were undertaken as a knee-jerk reaction to this fear²³ and this in fact triggered a chain reaction, whereby other major exporting nations such as China and Viet Nam (see Figure 14.8) also imposed export bans. As a result, the global rice prices shot through the roof. Figure 14.8 depicts how export restrictions were imposed by different rice-exporting nations, which created a supply shortage in the global rice market leading to the hike in the world rice price.

The fear psychosis reached a new high in March 2008 when all the countries imposed bans on rice exports. These export restrictions by rice trading nations were followed by emergency buying by several importing nations such as the Philippines, further restricting global rice supplies. It can be observed that these wrong policy responses by rice-exporting nations aggravated the existing crisis by reducing producer incentives, increasing price volatility and uncertainty in the international rice market. However, one cannot put the entire blame only on Indian policymakers. The policy measures were initiated only as a preliminary response to stabilize the domestic economy.

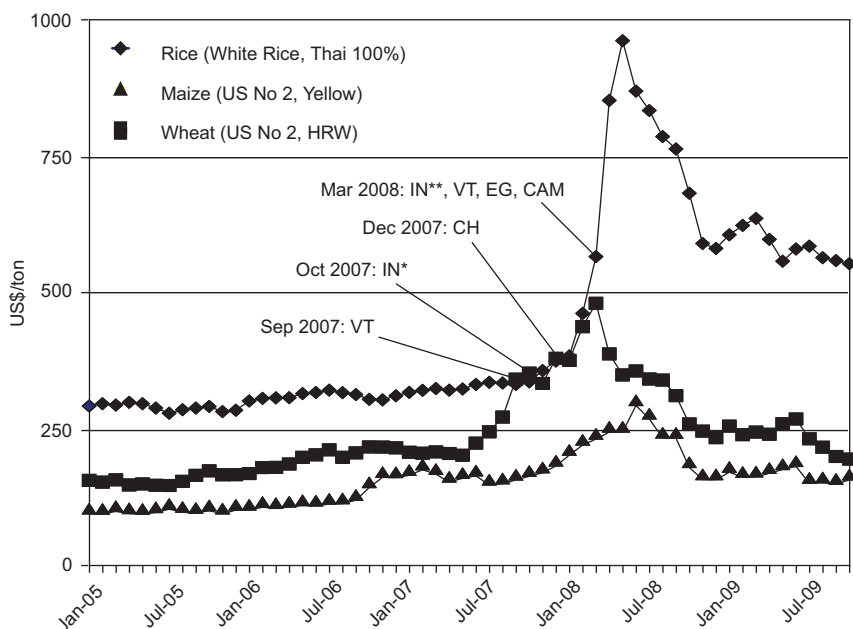


Figure 14.8 *Export bans on rice*

Note: September 2007 VT: Viet Nam placed a partial ban on new sales of rice; October 2007 IN*: India restricts exports by imposing minimum export price on rice; December 2007 CH: China imposed tax on rice exports; March 2008 IN**, VT, EG, CAM: India imposes a complete ban on the exports of non-basmati rice. Viet Nam re-imposed its ban on new sales of rice until June 2008. In late March 2008 Egypt replaced its voluntary ban with an official ban on rice exports. Cambodia also banned rice exports in March 2008.

Source: USDA (2008)

Although there have been comments on how India contributed towards the global rice price hike, India also helped out some nations (Bangladesh) in times of crisis. India entered into a deal with Bangladesh wherein about 400 thousand tons of rice were exported to Bangladesh at \$400/ton while the world price was as high as \$800/ton.²⁴

The situation began to stabilize when some nations removed restrictions on exports; however, much effort is still needed to bring the world rice market to a stable position, and, for that, rice-exporting nations need to immediately open up exports.

The way forward

The conclusion is that there was nothing fundamentally wrong in the rice market and the global rice price hike was not triggered by any fundamental change in the demand–supply equation. The rice prices were perhaps a result of weak diagnosis and a knee-jerk reaction. It primarily resulted from certain policy measures taken by major rice-exporting nations such as India, China and Viet Nam, which eventually led to the spiralling rice prices. To prevent the

conditions from deteriorating further as a result of the fear generated by the global food crisis, there was a need for the markets to open up and liberalize trade. But on the contrary they became more and more protective. The net result was a spike in the global rice price.

A country such as India wanted to protect its own poor consumers in the wake of reports of impending 'food crisis', but that resulted in flaring global rice prices. Being a major player in the global rice market, any policy measures by India to restrict rice exports have serious repercussions in the global market. India needs to look forward towards reformulating its policies so as to strengthen the efficiency of its rice sector, which can lead to its faster growth and greater environmental sustainability. There have been debates on the specific reforms that needs to be initiated ranging from MSP reform, decentralization of the PDS, and introduction of food stamps as policy goals (Jha et al, 2007). The first and foremost task perhaps is to contain the costs of procurement, distribution and storage operations of rice by FCI, which would help reduce the budgetary costs of the government to a great extent. Decentralization would increase the role of private traders and help reduce these costs. The system of levy on rice needs to be abolished. The reform of ECA would be of great help in devising policies to induce investment. Another policy measure could be the de-linking of the procurement price from the MSP. The MSP, which is used as a protection against price risk, ought to be decoupled from using it to augment farmer income. The FCI's role should be to provide emergency buffer stock. The PDS, part of its function, could be gradually eliminated with the expansion of a food coupon system to allow the poor to purchase food from the market at the prevailing market prices.

Attempts should be made with regard to developing options that would prevent a similar crisis in the future by rendering export bans illegal under WTO. An export tax (with trigger points) could be a better option, if at all, rather than an export ban, to restrict rice outflow from the country in case of shortages. The procurement of grains could be through a tendering process from the private sector, for desired quantities and delivery points, using competitive bids. This would enable non-distortion of market prices and would also enable cost minimization. More specifically, steps could be taken to strengthen the global food system in the long run by undertaking a fast impact food production system and scaling up investments in agricultural research and development.

Some measures have already been initiated in this regard by the Indian government. In 2007, India announced a new Agricultural Development Plan to spend around \$6.1 billion over four years, increasing spending on irrigation by 80 per cent in 2008–2009. Also in 2007 a National Food Security Mission was introduced. But there are many more avenues that need to be further explored. Developing more innovative measures would enable long-term sustainability of the rice sector in particular and the global rice economy in general.

Notes

- 1 The data on rice (white rice, Thai 100%) are from FAO (2008). Although by December 2008, the Thai rice price was being quoted at around \$600/ton, there were reports that in January 2009 the Philippines bought about 1 million tons of rice (of lower quality) from Viet Nam at a price lower than \$400 per ton.
- 2 'The rise in prices of food commodities all over the world is not going to ease in the short term ...' declared FAO's Director General Jacques Diouf (Press Trust of India, 2008); 'Although the credit crunch has lowered the price of food ... the stage is set for the next food crisis' said IFPRI Director General Joachim von Braun (2008b); 'The recent surge in world food prices is already creating havoc ... worse is yet to come' declared Jeffrey Sachs (2008).
- 3 Wheat (US No 2, HRW) prices rose by 28 per cent from January 2008 to March 2008 and maize prices rose by 45 per cent from January 2008 to June 2008. If one looks at wheat prices from January to May 2008, they declined by 7 per cent and there was a further decline by 34 per cent from May to December 2008. Maize (US No 2, Yellow) prices rose by 21 per cent from January to May 2008 and then declined by 40 per cent from May to December 2008.
- 4 'The commodity price spikes witnessed in the last couple of years are exceptional when viewed from the perspective of the last decade' (OECD-FAO, 2008); 'The trend in high food prices will likely persist over the next few years, if not longer. The era of cheap food ... may thus be over' (ADB, 2008b); 'The observed increase ... not a temporary phenomenon' (World Bank, 2008).
- 5 'The present crisis reflects long-run factors which will likely not disappear, says Professor Jagdish Bhagwati' (Altman, 2008); 'On average over the coming 10-year period nominal prices for cereals are expected to be 35 per cent higher' (Reuters, 2008a).
- 6 The compound annual growth rate for area harvested was 0.4 per cent for the period 1970–1971 to 2007–2008. The rates of growth for rice production and yield were 2.25 per cent and 1.83 per cent respectively over the same time period.
- 7 West Bengal, Andhra Pradesh and Uttar Pradesh produced roughly 16 per cent, 13 per cent and 12 per cent of all-India rice output respectively, during 2005–2007.
- 8 Domestic retail rice prices rose by 22 per cent from October 2007 to August 2008.
- 9 This is particularly true for those varieties that fetch a good price in export markets. In 2008–2009, for example, the levy price for *sona masuri* variety in Andhra Pradesh was almost 30 per cent below the domestic market price of the same variety. This is despite the fact that exports were banned and domestic prices were somewhat depressed. If the markets are too depressed in a year of surplus production, and the open market price tends to sink below the MSP, then the levy price generally acts as a floor. It is calculated by taking into account the MSP of paddy plus milling costs, and some margin for the rice miller.
- 10 Restrictions were also imposed on the intrastate or interstate movement of paddy via the State Paddy/Rice (restrictions and movement) Order to support the Government of India's price stabilization programme.
- 11 Procurement of food grains is done by the FCI at the MSP under the current system.
- 12 Marketed surplus constitutes about 60 per cent of total rice production (Government of India, 2004–2008).
- 13 The PDS was restructured as the TPDS in June 1997 to focus specifically on the

poor.

- 14 Economic costs consist of the procurement and distribution costs of FCI.
- 15 CIPs are deliberately fixed below the economic costs of procuring food grains to keep food within the reach of the poor. The difference between the issue price and economic cost is borne by the central government through the food subsidy budget.
- 16 The real CIP is the nominal CIP divided by the wholesale price index (all commodities) with 1993–1994 as the base year.
- 17 Procurement as a percentage of marketed surplus (which is almost 60 per cent of production) is much higher.
- 18 Chhattisgarh introduced a Rs3/kg rice scheme on 1 April 2007 (Government, 2009). Tamil Nadu launched the Rs1/kg rice scheme in September 2008 (Mid-day, 2008).
- 19 The nominal protection coefficient is the ratio of the domestic price to the world reference price of the commodity (Hoda and Gulati, 2008).
- 20 Under the importable hypothesis, the domestic price of a commodity is compared with its import parity price and under the exportable hypothesis the comparison is between the domestic price and the export parity price (Hoda and Gulati, 2008).
- 21 Professor Jagdish Bhagwati stated that the 2008 food crisis is different from the one in 1972 and is likely to stay unless addressed differently. Specifically, long-term policy actions will need to be taken to combat the price rise. Professor Jeffrey Sachs also opined that the current high prices of food are likely to rule for a long time and policy intervention would require more yield-raising techniques and open market trading among nations rather than restrictive trade policies of the nations (Altman, 2008). Dr Joachim von Braun commented, ‘At the moment, high and unstable food prices look like that they are here to stay for some time – perhaps years’ (von Braun, 2008a). FAO Director General, Jacques Diouf was quoted in April 2008 as saying, ‘The rise in prices of food commodities all over the world is not going to ease in the short term in view of supply-demand situation’ (*Hindu Business Line*, 2008). Vikram Nehru, Chief Economist for World Bank’s East Asia & Pacific Region also stated in April 2008, ‘We believe that higher food prices are going to stay at least another two years before they begin to decline, but they will remain at elevated levels till well about say 2015’ (Australian Broadcasting Corporation, 2008). While most of these statements were based on their best judgements derived from whatever little hurried research was available on this topic at that time, it created fear in India, which paved the way for export restrictions.
- 22 Just some of the headlines reported were: ‘Food prices: Cheap no more’ (*The Economist*, 2007); ‘Rising food prices may be here to stay’, (Blogging Stocks, 2007); ‘Forget oil, the new global crisis is food’, (*Financial Post*, 2008); ‘Food crisis: Soaring prices are causing hunger around the world’, (*Washington Post*, 2008); ‘India and the global food crisis’, (*Business Week*, 2008); ‘Wrong response aggravates Asia food crisis: ADB Report’, (*Economic Times*, 2008); ‘Long era of cheap food is over’, (BBC News, 2008).
- 23 It is important to note here that electioneering in India could also have been responsible to some extent in driving these policy changes.
- 24 However, with prominent informal trade between the two nations, there are instances of private traders hoarding food grains, selling imported rice at high prices within the nation and hence making it extremely difficult to contain domestic prices.

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Part VI

POLICY RESPONSES IN THE DEVELOPED COUNTRIES

Japan's Rice Policy and its Role in the World Rice Market: Japan Should Act as a Watchdog

Shoichi Ito

Introduction

The Japanese reactions to the global price spikes on world grain markets in 2007–2008 were quite straightforward. The country became seriously concerned about its low food self-sufficiency rate of 40 per cent (in calorie terms), which is the lowest among the developed countries. The mass media attacked the government over ‘insecure’ food supplies and tried to promote domestic production. The Ministry of Agriculture, Forestry and Fisheries (MAFF) responded positively to these complaints, adjusting its budget to give more emphasis to increasing domestic production. Thus, even in a developed country where information on food supplies and the ability to import it are quite sufficient, people are calling for a return to increased domestic supply.

This chapter describes the background of Japan's current rice situation along with the issues that were debated during the recent period of high food prices, and the tentative new budget for the fiscal year 2009–2010 is compared with the previous year's budget. The chapter also describes Japan's quest for improved food security in the future – a compelling topic given that a number of Japanese people were affected by food insecurity in the wake of the global food-price turmoil that took place in 2008.

Key issues in the Japanese rice economy

Declining rice consumption

Per capita rice consumption in Japan has been decreasing since the 1960s (see Figure 15.1). The downward trend has been so large that total consumption of rice has declined despite an increased population, from 12 million tons (milled rice terms) in the early 1960s to slightly over 8 million tons in 2008. The rice situation in Japan has been well documented and indicated by Ito et al (1989); Smil (2004); Ito and Kako (2005); Ito et al (2006); and Ito et al (2007). Given the high domestic prices that discourage exports, declines in rice production appeared to be necessary. Thus, as early as 1971, the Japanese government introduced, for the first time in the country's history, a rice diversion programme designed to stabilize the domestic market price by taking rice land out of production (see below). Further, 1995 saw the introduction of minimum access rice imports under a WTO agreement, requiring Japan to import a certain amount of rice each year. While rice farmers have been forced to cut production, rice imports have reached around 0.767 million tons (brown-rice basis) per year (about 10 per cent of total consumption).

Rice diversion programme

Japan's rice diversion programme, in force since 1971, pays rice producers to keep a certain proportion of their land fallow each year in order to control rice supply and thus stabilize the domestic market price. Under these circumstances, some farmland, much of which used to be paddy fields, has been abandoned and become useless for production. The area of disused land has been increasing across the country, creating an annoyance for the government through media criticism. From 0.22 million hectares in 1990, the area of

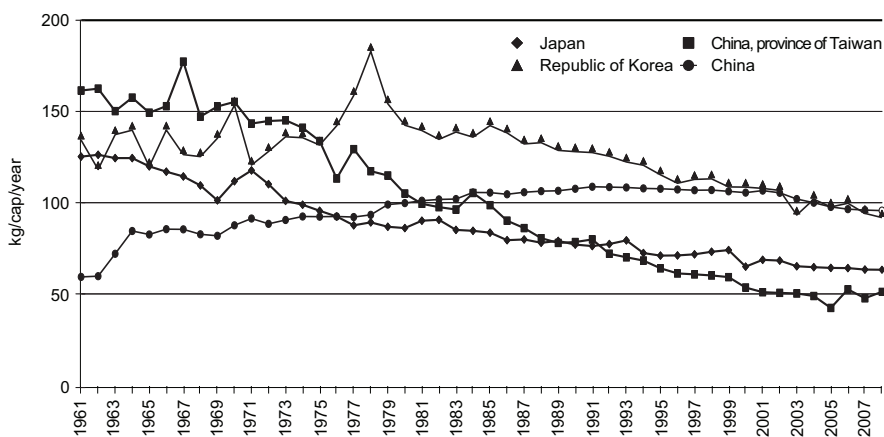


Figure 15.1 Per capita consumption of milled rice for Japan, Chinese province of Taiwan, Republic of Korea and China, 1961–2008

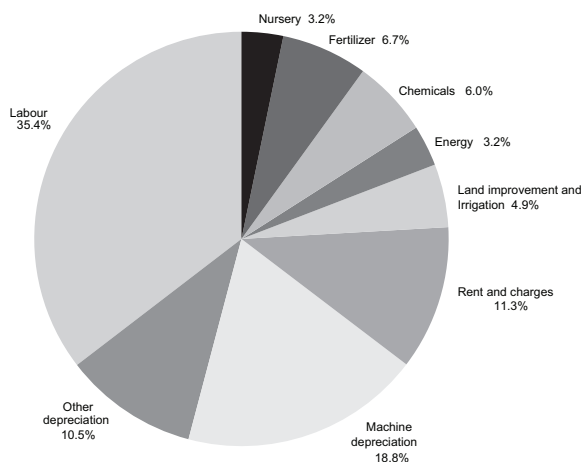


Figure 15.2 *Structure and share of rice production costs in Japan, 2006*

Source: MAFF (2007)

discarded land reached almost 0.4 million hectares in 2005, and this became one of the main policies attacked by the media. The rice diversion programme has caused farmers to gradually give up producing rice on less productive farmlands, often in mountainous areas but also in lowland areas.

Japan's low level of food self-sufficiency is a serious concern from the media's point of view. The term 'food crisis' appeared so frequently in media reports in 2008 that a large portion of the population believed a food crisis was inevitable and many citizens began to feel that domestic food production must be increased. The minister of agriculture, Mr Ishiba, suggested that the food self-sufficiency rate should be increased to around 50 per cent. One of the first proposals for increasing self-sufficiency was to revert discarded farmland back to production.

The cost of food production in Japan is generally quite high. In the case of rice, which remains the staple food despite the decline in its consumption, the costs were more than \$3000 per ton in 2007, although this figure has declined slowly over the last six years. Due to small farm sizes and relatively expensive farm equipment, mechanization is not as advanced as it is in the US and the more economically developed countries of Europe. Accordingly, the largest portion of total costs is for labour (35 per cent) (see Figure 15.2). The cost for farm equipment (almost 19 per cent of total costs) is next, followed by rent and land charges at 11 per cent. Many Japanese farmers generate income from off-farm jobs.

Retail prices of rice in 2008

Wholesale prices of high-quality rice varieties rose sharply in 2008. The price for Koshihikari, for example, increased from ¥15,000 per 60kg of brown rice in December 2007 to ¥21,000 in August 2008 – a 40 per cent jump in eight

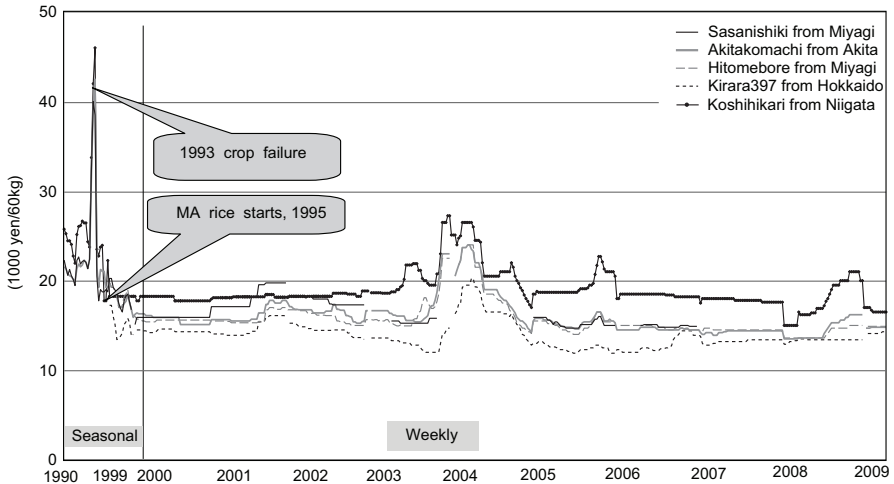


Figure 15.3 Weekly wholesale prices of rice in Japan, 1990–2009

Source: Japanese Financial Times

months (see Figure 15.3). Wholesale prices for lower quality varieties also rose substantially.

However, retail prices actually decreased in 2008 relative to 2007 (see Figure 15.4). On a monthly basis in 2008, the price of Koshihikari rose from ¥512 per kg in January to ¥528 in August – an increase of only 3 per cent (see Figure 15.5). By December, Koshihikari was ¥530 per kg, an almost negligible increase. The retail prices of lower quality blended rice decreased from ¥380 per kg in December 2007 to ¥364 in January 2008, then even further to ¥359 in May before increasing to ¥371 in August. Blended rice finished the year at ¥373 but never recovered its 2007 price level.¹

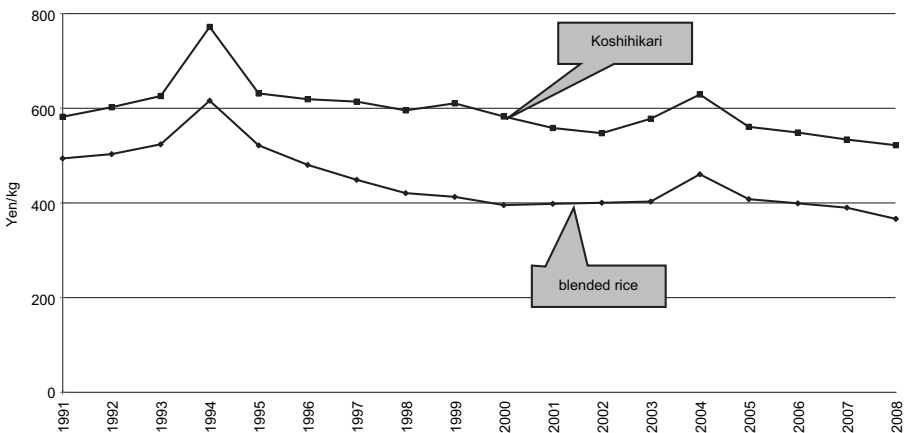


Figure 15.4 Annual retail prices of milled rice in Tokyo, 1991–2008

Source: www.stat.go.jp/data/kouri/3.htm

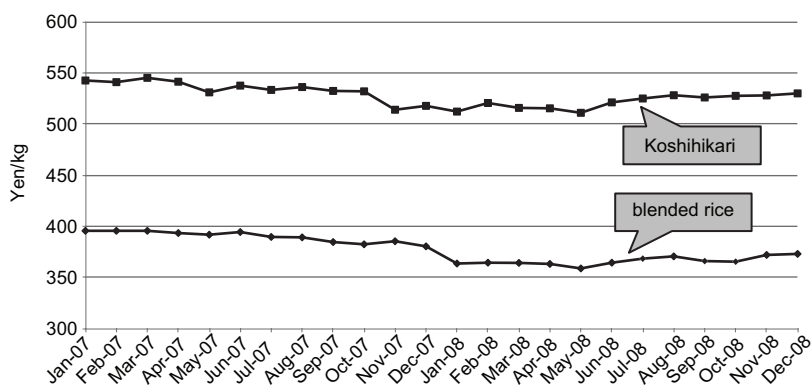


Figure 15.5 Monthly retail prices of milled rice in Tokyo, 2007–2008

Source: www.stat.go.jp/data/kouri/3.htm

The response to increasing wholesale prices in 2008 was a key factor behind the paradoxical fall in retail prices during the same period. Retailers, worried that higher prices would drive away customers, made efforts to cut costs in other sectors in order to keep rice prices down. Heavy competition between retailers meant that the price failed to recover to even the average level of 2007. As a result of retail competition and the fact that Japan's domestic prices were much higher than even the peak reached on world markets, the rice price spike in the global market had minimal influence on Japan's domestic market. Instead, high wheat prices were the major concern for consumers, with high corn prices affecting livestock producers.

Japan's declining agricultural sector

Despite much concern (coming mainly from the media), the food price spikes experienced in 2008 were actually very minor, especially for rice at the retail level in Japan. Nevertheless, a majority of Japanese people remain worried about a future food crisis. Decreases in farmland and the number of producers as well as large increases in the average age of farmers have aggravated the feelings of pessimism (see Table 15.1). Between 1965 and 2005, farmland decreased from 6 million hectares to 4.69 million hectares, the number of farm

Table 15.1 Agricultural situation in Japan, 1965 and 2005

	1965	2005	Change
Farmland (million hectares)	6	4.69	-22%
Farm households (millions)	5.66	2.85	-50%
Farm labourers (millions)	11.51	3.35	-71%
Main operators (millions)	8.94	2.24	-75%
Main operators, aged 65 or over (%)	19.5	57.4	Tripled in 20 years

Note: Data for main operators aged 65 and over refers to 1985, not 1965.

Source: MAFF (2008)

households fell from 5.7 million to 2.8 million, the number of farm labourers dropped from 11.5 million to 3.4 million, and the percentage of farm operators aged 65 years or over increased from 19.5 per cent to 57.4 per cent. These figures paint a picture of agriculture in decline that has shocked many ordinary Japanese people.

A new Japanese budget for food policies

The fiscal year starts in April in Japan, and government officials launch the final stage of negotiations with the Ministry of Finance as early as May for the next fiscal year in order to finalize budgets by December. In 2008, much negotiation took place between ministries in the context of serious concern about the so-called food crisis and the country's low level of self-sufficiency in food production. The MAFF budget for fiscal year 2009–2010, finalized in December 2008, was ¥2.56 trillion (\$25.6 billion). This was 2.3 per cent smaller than the previous year's budget, in line with long-term plans for budgetary cuts.

Despite the budget cut, the ability to promote domestic food production was increased dramatically. Because most of Japan's feed grain is imported, increases in feed production are a way to increase food self-sufficiency. The budget for 'Promotion for raw feed-stuff production' increased by almost 30 per cent from ¥1.82 billion in 2008 to ¥2.35 billion for 2009 (see Figure 15.6). A budget for 'Feed production for the dairy farm' was also increased by around 18 per cent from ¥5.45 billion in 2008 to ¥6.45 billion in 2009.

The 2009–2010 budget also places a strong emphasis on utilization of discarded farmland. A new programme, 'Emergency project for reviving discarded land', was introduced with a 2009 budget as high as ¥23 billion. This effectively provides about \$600 per hectare of discarded farmland. In the case of rice, production costs per hectare were slightly over \$15,000 in 2007. This figure is likely to be much higher for discarded farmland, given that many of these areas have been neglected because of their inefficiency.

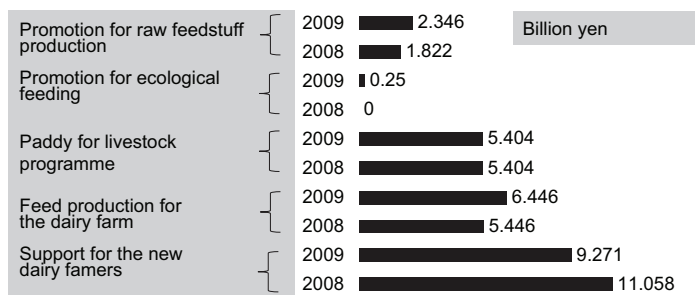


Figure 15.6 Budget for increases in food self-sufficiency rate for livestock feed

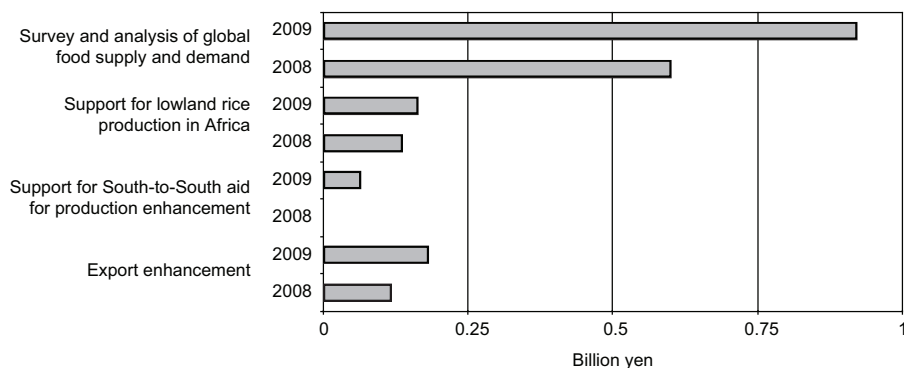


Figure 15.7 Strategic countermeasures against the global food shortage

Source: MAFF (2009)

MAFF has set a plan to increase the self-sufficiency rate from the current 40 per cent to 45 per cent by 2015. However, the whole budget of the emergency project would cover production costs for much less than 1 per cent of the discarded farmland. Efforts for increases in the self-sufficiency rate in Japan will be very costly and difficult to achieve.

Given global trends and Japan's situation, the government, through MAFF, wants to develop a much stronger survey and research system for global food supply and demand to mitigate supply shocks. A budget for the project 'Survey for food supply and demand in the world' was to be increased 50 per cent from ¥0.12 billion in 2008 to ¥0.18 billion in 2009 (see Figure 15.7). Japan's research in this area has not been strong, with MAFF obtaining much of its information from the USDA and other international organizations. The government now wants Japan to have its own independent analysis. The budget for increasing exports of domestic agricultural products was also increased 33 per cent from ¥0.6 billion in 2008 to ¥0.8 billion in 2009.

Foreign aid has also received increased funding, at least in some areas. Budgets for 'Support for lowland rice production in Africa' and 'Support for South-to-South aid for production enhancement' have been increased. Indeed, the Japanese government has committed to fund projects that will help Africa double its rice production by 2018 (see below).

Japan's actions for the global rice market

The Japanese government is in a position to contribute substantially to a more stable global rice market. Aid for African rice production is one example. However, in many ways Japan's current actions are ineffective. This section describes international programmes such as minimum access (MA) rice imports and the East Asia Emergency Rice Reserve (EAERR) programme, as well as the aid programme for African rice production.

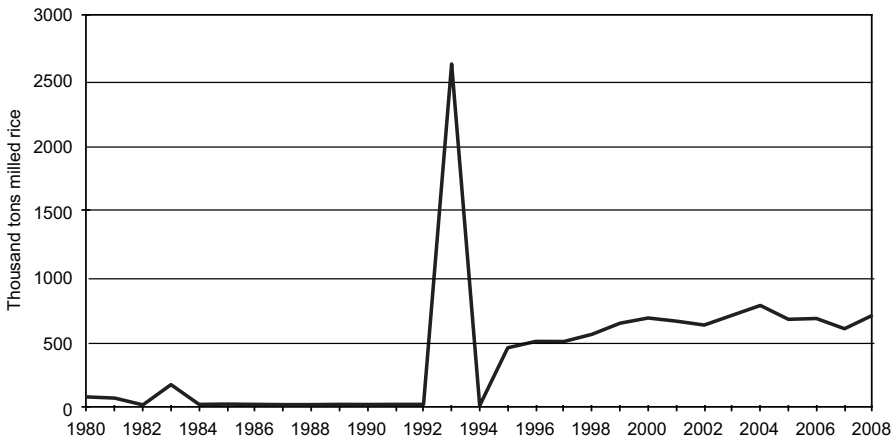


Figure 15.8 Rice imports to Japan, 1980–2008

Source: Ito (2008)

Minimum access rice imports

The Japanese rice market was closed until 1995 when the General Agreement on Tariffs and Trade (GATT) Uruguay Round of Negotiations led to an opening up of the market (see Figure 15.8). Under the MA agreement, Japan was required to import about 0.4 million tons (brown-rice basis) in 1995, increasing to 0.767 million tons in 2000. Since then the same annual volume has been imported. Large imports in 1994 were due to a massive crop failure in 1993.

There were two main effects of the Japanese MA rice imports in 1995. First, Japanese domestic rice prices fell substantially (see Figure 15.3). Second, global japonica rice prices soared relative to those of indica rice (see Figure 15.9). Before 1995, prices of US indica rice (produced mainly in Arkansas) and US japonica rice (produced mainly in California) were similar in the US rice markets. Since Japan began MA imports in 1995, mostly of japonica varieties, the prices of California japonica rice have been consistently more expensive than those of Arkansas indica rice.

The Japanese government has honoured the WTO agreement since 2000, importing 0.767 million tons (on a brown-rice basis) every year (equivalent to 0.68 million tons of milled rice, which consists of 0.58 million tons of ordinary rice and 0.1 million tons of simultaneous-buy-and-sell (SBS) rice). Even in 2008, the full amount was procured toward the end of the fiscal year, although tight supply in 2007 meant that year's procurement fell about 10 per cent short. (In 2007, the SBS rice was imported in full at 0.1 million tons.) The Japanese government finds it difficult to sell the MA rice and spends as much as ¥25 billion (\$250 million) to manage the imports each year. Further, if Japan were to import 'unnecessary' rice at high prices, pushing prices even higher at the expense of needier countries reliant on imports, the Japanese government

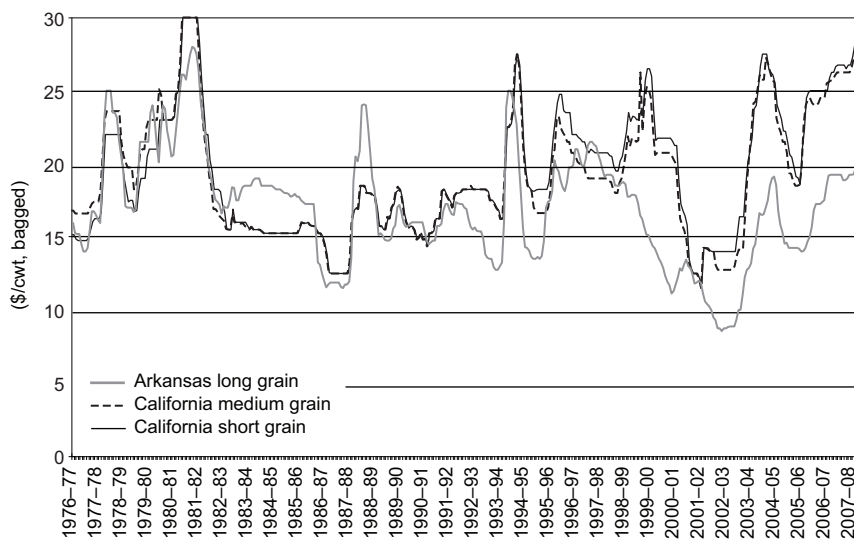


Figure 15.9 US milled rice prices by type, 1979–2007

Notee: 1cwt = 100lbs = 45.36kg.

Source: Ito (2009)

would be criticized heavily. This was the situation during the first half of the 2008 fiscal year, though the substantial decline in international prices during the second half of the year made it much easier to import the MA volumes.

Rice exporters such as Thailand and the US may not agree with the Japanese government's reluctance to fulfil the MA quota when global prices are high. There has been much debate in Japan over whether or not the import quota must be fulfilled each year regardless of prevailing market conditions. It is agreed that under ordinary circumstances the quota must be honoured, but under conditions of tight supply and demand many in Japan feel that the MA agreement should be dealt with differently. Given that rice exporters did very well in 2008, Japanese imports during such a period of high prices would have served only to help exporting countries at the expense of poorer importing countries.

Japan imports primarily japonica rice from California. This helps explain why California rice market prices remained high while the indica rice markets in the southern US plunged along with the Bangkok market prices (see Figure 15.10). (Other factors included Egypt's export ban, continued drought in Australia, and delays by China in setting its export quota.) Japan's strong demand for Californian rice helps to keep Californian rice prices high.

The East Asia Emergency Rice Reserve programme

The EAERR was initiated by the Japanese government in 2004. The idea is that all members of ASEAN plus three (Japan, China and Republic of Korea) jointly organize a rice emergency reserve. Under the plan, each country earmarks an

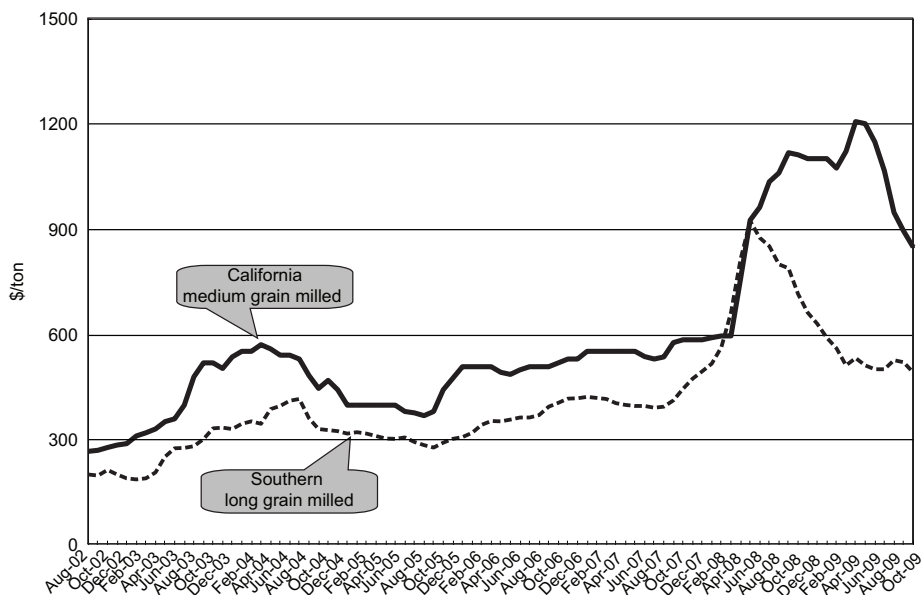


Figure 15.10 Monthly prices of milled rice, USA

Source: Ito (2009)

amount of rice to be used in emergencies such as natural disasters. The Japanese government has provided about \$500,000 each year during the last five years for meetings, management and shipping rice to ASEAN nations from Japan. However, Japan is currently the reserve's only donor.

Under Japan's funding, the rice reserve provided 950 tons to the Philippines in 2006, 380 tons to Cambodia in 2007, and 180 tons to Indonesia in 2008. In the 2009 fiscal year, MAFF proposed that the budget for the EAERR programme be doubled to ¥90 million (almost \$1 million) in the light of the 2008 rice price spike.

Originally introduced as a three-year pilot project, the EAERR has been extended by a year three separate times now under agreement by member countries. Similar programmes have been proposed in the past but failed because no countries were willing to share the costs over an extended period of time. It could be argued that the Japanese government has wasted a lot of money on the EAERR. In 2007, 2008 and 2009, Japan's donation to the reserve has come from its imported MA rice, which was then shipped to the Philippines, Cambodia and Indonesia along with some Japanese rice. A more efficient model would be for the Japanese government to buy the rice from ASEAN countries directly and keep it in reserve near disaster-prone areas. This would allow more rice to be purchased for the same money. Under the current model, the other participating countries may assume that the programme is designed to reduce Japan's surplus rice stocks.

It may also be better for the EAERR programme to set up a reserve of funds instead of rice, so that rice can be purchased when a natural disaster actually happens (a physical rice reserve is costly to maintain). Such a system should be developed within the framework of the global rice market system.

Aid for African rice

The Japanese government has committed to double its ODA budget for Africa from 2008 to 2012 (Ministry of Foreign Affairs, Japan, TICAD IV, Action Plan, 30 May 2008). This programme aims to boost agricultural development, production and marketing as well as infrastructure, trade, investment and tourism. For rice in particular, the target is to double production in Africa by 2018.

The Government of Japan has committed to donate a total of ¥37 billion (approximately \$370 million) to African countries over five years. As much as ¥26 billion (approximately \$260 million) of this is to be spent on agriculture. Besides the donation, the Japanese government will also loan up to \$4 billion to African countries over the same period. Rice technology from Thailand will be involved as a part of the South-to-South project.

Increased rice production in Africa should help stabilize the global rice market. However, if supply increases and demand diminishes, consequent low rice prices may discourage sustainable increases in African rice production in the future.

Conclusions

Japan should act as a watchdog for the global rice market

Rice consumers in many countries suffered from high prices in 2008, although prices eased, beginning in the second half of the year. Since 2007, the prices of commodities such as rice, wheat, corn and soybeans have tended to echo the movement of oil prices due to new linkages between energy and agricultural markets (Ito et al, 2009). In the case of corn, which is now being used for ethanol production, oil prices directly influence corn prices. In addition, corn and the other major grains such as wheat and rice can be substituted with one another for food and feed uses. Because of these links between energy markets and agricultural markets, speculation in oil prices can spill over into food markets.

Speculation was exacerbated by export controls imposed by the major exporting countries. India was the first to restrict rice exports, and its exports declined from over 6 million tons in 2007 to less than 3 million tons in 2008. Subsequently, Viet Nam, the second largest rice exporter after Thailand, banned rice exports by the private sector in early 2008. Despite the ban's intention of protecting domestic consumers from higher prices, Vietnamese domestic prices increased sharply toward the end of May 2008.

These export restrictions kept the world rice market in a more fragile and unreliable state than the markets for corn, wheat and soybeans, for which there

were fewer export restrictions among the largest exporting countries. Thus, one impact of the rice price crisis was that the favourable reputation of the rice export market was tarnished severely. By late 2008, rice exports, which had been very reliable up until late 2007 despite the main exporters being developing countries, were viewed as unreliable. Accordingly, many rice-importing countries appeared to reduce their reliance on world markets and instead focus on policies oriented to increasing domestic production, further impairing the reliability of international trade (Nguyen et al, 2008).

It could be argued that Japan, as a major rice importer, has a responsibility to act strongly against such export restrictions as those imposed by Viet Nam. These restrictions came despite Viet Nam holding enough rice to continue exports as normal, suggesting some exploitation of a volatile international market. If a similar situation occurs again, Japan could act to dissuade such behaviour by threatening to postpone rice imports from the offending countries for a few years. Also, as a developed country, Japan should establish the capacity to export rice for aid to needy countries particularly during periods of restrictions by major exporting countries and high market prices. In short, Japan should act as a watchdog for the global rice market and take any immediate appropriate action required to normalize the market.

Need for increasing demand for rice

While short-term price spikes are important issues to be dealt with, long-term trends are also of critical importance. One important long-term issue is the effects of low prices on farmer incentives, with wheat providing an example. After world wheat production reached a record 589 million tons in 1990, it took seven years to set a new record of 610 million tons in 1997. It took another seven years after that before a new record of 626 million tons was set in 2004. Global production then decreased until 2007 before a new record of 683 million tons was set in 2008, marking a huge jump over 2007's production. The history of wheat over the past two decades suggests that production has been strongly influenced by market prices. Falls in wheat prices between 1990 and 1995 and between 1997 and 2002 discouraged producers globally.

A similar situation occurred in rice after 1999, when global production hit a record high at 409 million tons (milled basis), the first time it had ever topped 400 million tons. However, it took six years until 2005 to set a new record at 418 million tons, a very small increase over the previous record. Indeed, global market prices plunged during this period, removing incentives for producers to increase production. This is closely related to the declining rice consumption seen in many Asian countries (see Figure 15.1).

In many Asian countries where rice is one of the main agricultural products, it is becoming increasingly difficult to keep people on the land. Younger people in particular tend to migrate away from rural to urban areas, and their parents often encourage them to find jobs in the cities. The unprofitable nature of agriculture in many rural areas is a deterrent to staying on the

farm, and the growth in production of unprofitable crops may not keep up with the growth of global population.

In addition, per capita consumption has been declining in many Asian countries. If this situation continues, total global consumption – which is still rising – may decrease in the future. In fact, global wheat consumption stagnated throughout the 1990s. Although the global population continues to grow, consumption of certain crops will not necessarily increase.

These factors – lower prices for farmers, migration to urban areas and declining per capita demand – pose problems for rice, which is the major crop in Asian agriculture. A decline in rice production would be detrimental for Asian agriculture. Indeed, this has been the case in Japan, the Chinese province of Taiwan and Republic of Korea. It is quite reasonable, therefore, to use rice for ethanol and feed in order to stimulate new demand. Higher prices of rice encourage rice producers around the world, and this has been seen in the increased production in 2008.

One of Japan's roles in the Asian rice industry must be to help develop new demand and support other countries in terms of technology and investments. Agricultural development is a key factor in alleviating poverty in Asia, since the majority of the poor people live in the rural areas in the Asian developing countries. With Japanese people now concerned about domestic food supply, the government is opting to increase domestic production. In addition, there is a lot of potential to increase rice production globally, as evidenced by remarkable increases in yields in many countries over the past few decades. Efforts to increase domestic production in Japan, however, should be limited only to the level of individual farmers in the light of consumer preference for domestic products. It would be wasteful to subsidize the recultivation of discarded farmland that is economically inefficient and agriculturally costly. Any money that might go toward such subsidies should be spent on foreign aid and research for developing both new demand and new technologies that can be applied in other countries throughout the world.

Note

- 1 The CPI did not increase substantially during 2008. While the July 2008 CPI was about 2.5 per cent higher than in July 2007, the December 2008 CPI was only about 0.2 per cent higher than in December 2007.

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The ‘Diplomatic Crop’ or How the US Provided Critical Leadership in Ending the Rice Crisis

Tom Slayton

Introduction

Rice is aptly characterized as the ‘diplomatic crop’ in Dan Morgan’s *Merchants of Grain* (1979). International politics have often played a key role in the modern world rice market and in the decade after the first world rice crisis in 1972–1974, G-to-G contracts were increasingly important.¹ Politics were paramount, as well, in the most recent world rice crisis.

While India, Viet Nam and the Philippines played central roles in initiating and exacerbating the world rice crisis of 2008, the US, Thailand and Indonesia provided critical leadership to help quiet the raging market. Thailand, of course, continued to allow unfettered exports, resulting in an extra 3.1 million tons being shipped out during the nine-month period ending June 2008 compared to one year earlier.² Less well known was the Indonesian government efforts in April to urge Japan to give priority consideration to ship rice to the Philippines before filling its needs later in the year.

This chapter, however, focuses on the role played by the US in defusing the crisis. Not only did the US supply an extra 0.4 million tons to the world market during the crisis, but – at the height of the crisis – signalled Japan that it could

delay making WTO-mandated purchases and urged the release of unneeded government-owned stocks to the Philippines and others on favourable terms. Given the contentious history of US–Japan negotiations over rice, Washington’s policy moves were both surprising and devoid of self-interest. Indeed, the policy moves were made expeditiously, despite opposition from part of the US rice industry.

Before the events of 2008 are discussed, however, it is useful to provide background information on when and where rice is produced in the US and the paramount role that US government programmes have played in the development of the rice industry in the modern era. Starting with a preferential trade agreement negotiated with Cuba in the 1930s, the US rice industry’s growth into a major world rice exporter, in large measure, was the result of its political clout in Washington, DC. In the crop year prior to passage of the legislation establishing the PL 480 programme in 1954 (which was subsequently renamed Food for Peace in 1961), US rice exports declined to 453,000 tons due to the combination of high price supports and uncompetitive freight costs.³ From the late 1950s through to the 1970s, US government export programmes were a factor in close to 50 per cent of all exports (Mears, 1975; Schnepf and Just, 1995). The US overtook Thailand as the world’s largest rice exporter in 1967 and exports from the 1980 harvest reached a record 3.1 million tons. As the quantities of food moving under the food aid programmes were drastically reduced and uncompetitive prices once again took a toll in the first half of the 1980s, the rice industry – together with cotton – in 1985 pioneered the subsidies involved in the ‘marketing loan’ programme, which sustained exports at elevated levels.⁴

From a peak of 1.2 million tons in fiscal year 1972 or about two out of every three tons shipped overseas, inflation and declining political support took a toll on the food aid budget overall and the quantity of rice financed for export.⁵ By fiscal year 2008, rice shipments as food aid declined to below 95,000 tons and accounted for only 3 per cent of all exports. Declining world prices served to propel US rice programme costs to a high of \$1.8 billion in fiscal year 1999. Outlays in subsequent years contracted due to the combination of rising world prices and – beginning in 2003 – a less aggressive implementation of the marketing loan programme resulting in direct budgetary outlays for rice falling sharply, reaching a low of \$301 million in fiscal year 2008.

Background

The Setting

The US harvests a single rice crop each year, which is centred into two growing regions: the Gulf (Arkansas, Texas, Louisiana, Mississippi and Missouri) and California (see Table 16.1).⁶ Indica varieties are planted in the Gulf (southern) states, while japonica is grown in California. Arkansas is the largest producing

Table 16.1 *US rough rice production by region (million tons)*

	<i>Total</i>	<i>Gulf</i>	<i>California</i>
2000	8.7	6.7	2.0
2001	9.8	8.0	1.7
2002	9.6	7.6	1.9
2003	9.1	7.3	1.8
2004	10.5	8.2	2.3
2005	10.1	8.3	1.8
2006	8.8	7.0	1.8
2007	9.0	7.0	2.0
2008	9.2	7.3	2.0

Source: USDA, *Rice Situation and Outlook*, various issues and years

state, accounting for just under half of the total harvest. California provides over one-fifth of the output. Rice is planted between March and April in the southern US with harvesting beginning in late July in Texas and coastal Louisiana and progressing north, ending in October in Arkansas and Missouri. In California, planting takes place in April–May, with harvesting between September and November. Because nearly all rice acreage is irrigated, field yields are among the highest in the world.

While US rice farmers produce a crop that is less than 2 per cent of the world output, the US is one of the top five exporters of rice, typically accounting for 10–12 per cent of world exports.

Export markets built via food aid and other government programmes

While rice was first introduced into colonial Virginia in the early 1600s and commercial exports began around 1686 (Holder and Grant, 1979), US rice sales overseas became substantial only during the last 75 years and largely because of the myriad of government programmes, for example food aid, export credits and credit guarantees, and, most recently, the marketing loan. Constrained by acreage allotments⁷ and lower Asian prices, US exports were limited until the years leading up to World War II. Beginning in 1933, the domestic rice industry persuaded the US Congress to expand the import quota for Cuban sugar in return for Havana giving preferential import tariffs for US rice. This, combined with Japan's conquests and the civil war in China disrupting the world rice trade, resulted in a fourfold rise in US exports to Cuba between 1937 and 1939 to over 90,000 tons, making it by far the largest commercial overseas market – accounting for about two-thirds of all US exports.⁸ During World War II, acreage restrictions were lifted, escalating production goals were set, and the US government and its wartime allies became major buyers of US rice (Dethloff, 1988). By the last year of the war, US rice exports approached 325,000 tons – over 80 per cent above that shipped prior to the US entering World War II (see Appendix, Table 16.9).

Table 16.2 *US rice exports (milled basis)*

<i>Period</i>	<i>Exports (thousand metric tons)</i>
1930–1934	92
1935–1939	107
1940–1944	231
1945–1949	428
1950–1954	631
1955–1959	784
1960–1964	1149
1965–1969	1694
1970–1974	1758
1975–1979	2249
1980–1984	2442
1985–1989	2443
1990–1994	2561
1995–1999	2694
2000–2004	3422

Note: August to July crop year basis.

Source: USDA, *Rice Situation and Outlook*, various issues and years

Given the widespread destruction and disorder in Europe and Asia, the post-war environment, too, was conducive to expanded export opportunities for the US rice industry. As Table 16.2 illustrates, overseas shipments in the five-year period following the war (crop years 1945–1949) climbed to an average of 428,000 tons. The ongoing US aid shipments to Japan and commercial sales to Cuba were augmented by additional food aid exports to the Republic of Korea following Pyongyang's invasion of the south in June 1950. Between 1932 and 1954, US rice production had jumped from 850,000 tons to 2.9 million tons. These prosperous and expansive years for US rice farmers and millers came to an abrupt end in 1954 when bumper crops were harvested in Asia and unsold surpluses were forfeited to the US government, which, in turn, successively and substantially reduced the acreage on which it was willing to provide benefits. Between 1954 and 1957, the government reduced acreage allotments by half and plantings plunged to 555,000ha (Dethloff, 1988).

Fortuitously, US rice farmers and millers had friends in high places in Washington, DC. Under the seniority system, southern politicians dominated congressional committees, with the result that the rice industry enjoyed considerable government largesse during the latter half of 20th century.

It is not hard to figure out the reason for the privileged position of the rice business in American agriculture. It is only necessary to examine the roster of powerful congressional committee chairmen – the ‘southern barons’ – who ran Congress in the 1950s and 1960s. The barons were friends of rice. There was Wilbur Mills of Arkansas, chairman of the House Ways and Means Committee; J. William Fulbright of the same state, chairman of the Senate Foreign Relations Committee, W. R. Poage of Texas,

chairman of the House Agriculture Committee; Otto Passman of Louisiana, chairman of the Foreign Operations (foreign aid) Subcommittee of the House Appropriations Committee; Allen Ellender of Louisiana, chairman of the Senate Appropriations [sic] Committee; and Russell Long of the same state, chairman of the Senate Finance Committee. It was said that Wilbur Mills never wrote a tax bill without getting something for rice. Rice was a small crop, but the people who raised it and milled it showed that they were as good at cultivating political support as at cultivating rice. (Morgan, 1979)⁹

Recognizing the critical importance that politics would play in the viability of the industry, the US Rice Millers' Association (RMA) opened an office in Washington, DC in 1958 and moved its headquarters there four years later.

Food aid programmes in the post-World War II period played a key role in building the US rice industry into a world powerhouse. Or, as former RMA President J. Stephen Gabbert observed (personal communication, 2009), 'During the 1960s and 70s, the rice industry was capitalized by PL-480 sales to India, Vietnam, Cambodia, and ROK [Republic of Korea]'. Following 0.3 million tons in fiscal year 1956, food aid shipments the following year more than doubled to 822,000 tons or about 69 per cent of all exports (Mears, 1975). When PL 480 sailings the next year plunged almost 600,000 tons, the rice industry realized that they needed to roll up their sleeves:

The next year the ramifications of the law became clear to rice people. As was usual in government programs, it had been designed with wheat and cotton surpluses in mind, but the rice industry [realized it] could become an excellent vehicle for marketing rice overseas through both government and commercial channels. (Dethloff, 1988)

During fiscal years 1956–1959, 1.5 million tons of rice was shipped as food aid – representing three out of every five tons exported – as part of the geo-political competition with the Soviet Bloc. The Indian subcontinent, Indonesia and Republic of Korea were the main destinations, receiving 45 per cent of all exports (see Table 16.3). But the volumes moving were highly variable and it was another ten years before the volume of rice moving under the PL 480 and other aid programmes would come close to the bumper fiscal year 1957 level:

With the assistance of Senators J. William Fulbright and Allen Ellender and Congressmen E. C. Gathings and T. A. Thompson, the industry mounted a policy offensive that produced the first multi-year commodity agreement ... India agreed [in 1960] to buy 1 million tons over the next four years through PL 480 programmes. (Mears, 1975)

Table 16.3 Top US rice food aid markets (million tons)

<i>Fiscal years</i>	<i>Quantity</i>	<i>Countries</i>
1956–1959	1.5	Bangladesh, Indonesia, India, Republic of Korea
1960–1964	2.6	India, Indonesia, Bangladesh
1965–1969	3.4	South Viet Nam, Indonesia, India, Republic of Korea
1970–1974	5.0	South Viet Nam, Republic of Korea, Indonesia, Cambodia
1975–1979	2.9	Indonesia, Bangladesh, Republic of Korea, Portugal
1980–1984	2.0	Indonesia, Philippines, Peru, Bangladesh
1985–1989	2.2	Bangladesh, Philippines, Republic of Korea, Guinea
1990–1994	1.3	Jamaica, Liberia, Ivory Coast, Russia
1995–1999	1.3	Indonesia, Jamaica, Jordan, Côte d'Ivoire
2000–2004	1.5	Indonesia, Philippines, Uzbekistan

Note: The table lists the top destinations taking at least 100,000 tons during a five-year time frame.

Source: Mears (1975) for 1956–1973; USDA-USAID, *Annual Report Food for Peace and International Food Aid Report*, various issues and years for 1974–2004; USDA (1991) for 1978–1989

This proved fortuitous as Cuba, still the largest overseas commercial market, stopped buying US rice that year for political reasons.

During the first half of the 1960s, 2.56 million tons was provided as food aid – almost one out every two tons exported – with India, Indonesia and Bangladesh the leading destinations. Limited tonnages during this period were provided to South Viet Nam, but the quantities became a torrent as the US military involvement deepened. In the decade before South Viet Nam fell in 1975, over 3.5 million tons of US rice was shipped to that nation. With half destined for Viet Nam, 3.41 million tons of rice were shipped as food aid during the second half of the 1960s or about 42 per cent of the total sailings. Indonesia, once again, was the second largest recipient, but India replaced Bangladesh as number three. Bolstered by the massive food aid volumes, the US overtook Thailand as the world's largest exporter in 1967 and retained that rank in eight of the next nine years.¹⁰

Both concessional and commercial rice exports soared during the 1970s. The latter was fuelled by Asian crop shortfalls in 1972–1973 and the new-found petro-dollar wealth of the OPEC members after the 1973 oil crisis. Almost 5.0 million tons of rice was shipped as food aid during the first half of the decade, accounting for close to 60 per cent of all exports. After South Viet Nam fell, rice's importance as 'the diplomatic crop' was devalued as its national security support lessened. Indonesia then became the largest single recipient for rice PL 480 shipments. Indonesia imported over 1.25 million tons of US rice aid during 1976–1979.

With the retirements of the 'southern barons' in the mid-1970s (and changes in the congressional seniority rules), it was virtually inevitable that the rice industry's out-sized influence in the US government would wane. Initially, however, this decline was buffered by the continued influence in Washington, DC of Connell Rice and Sugar (a New Jersey-based rice exporter that dominated the PL 480 rice market) and the adept RMA leadership of J. Stephen Gabbert.¹¹ With Connell leading the way in Congress and Gabbert

cultivating the friendships of both USDA's political appointees and the rank and file bureaucracy, the rice industry continued to enjoy more than its 'fair share' of the food aid programme.¹² From its peak in the early 1970s, aid shipments, nonetheless, declined 37 per cent to just under 2.9 million tons during fiscal years 1975–1979 – accounting for over 26 per cent of all US rice exports (see Appendix, Table 16.10). As the tonnage moving as food aid and direct export subsidies progressively declined, USDA-issued credits and credit guarantees for commercial export sales assumed increased importance.¹³

During the first half of 1980s, food aid shipments contracted by 31 per cent to 2.0 million tons and the combined food aid and other government-financed exports accounted for less than 16 per cent of all exports. Within the context of declining food aid volumes, US commercial exports collapsed during this period as price supports kept domestic prices above world levels. Despite a spike in food aid shipments to 680,000 tons in fiscal year 1985,¹⁴ commercial exports plunged by almost 0.6 million tons leaving overall exports at a low of 1.9 million tons – over 1.0 million tons below that averaged in fiscal years 1980 and 1981.

Marketing loan revives export competitiveness

With overseas shipments having collapsed by over a third, the US support programme was overhauled with the introduction of the 'marketing loan' programme (see Figure 16.1). Under the new programme, a farmer's loan repayment rate fluctuated with changes in world prices and the government

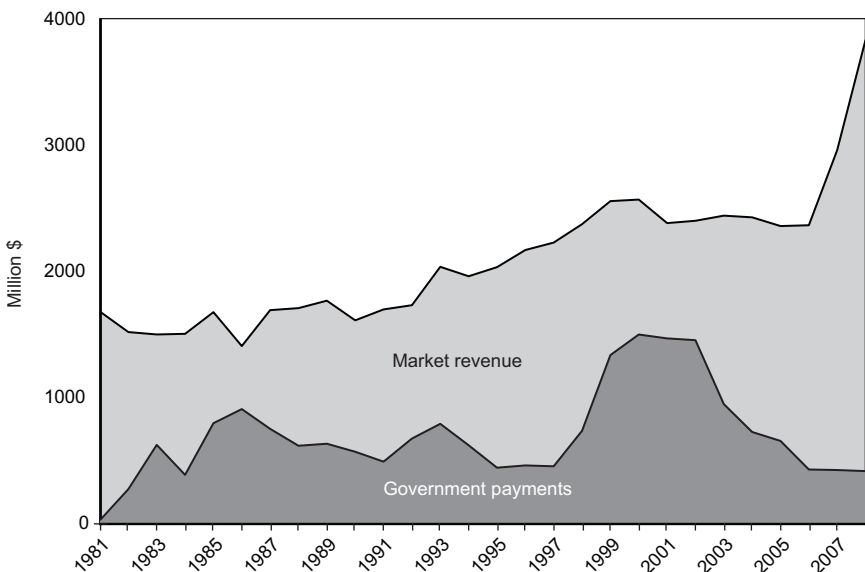


Figure 16.1 US rice outlays, 1981–2008 (million \$)

Source: USDA/Farm Service Agency, personal communications with author

Table 16.4 *US exports, GSM programmes*

<i>Fiscal years</i>	<i>Quantity (thousand tons)</i>
1965–1969	206
1970–1974	428
1975–1979	215
1980–1984	1533
1985–1989	2730
1990–1994	1213
1995–1999	1361

Source: Schnepf and Just (1995) for 1965–1989; USDA, *Rice Situation and Outlook*, various issues and dates, for 1990–1999

absorbed huge losses.¹⁵ With the introduction of the marketing loan programme, ‘the export price differential between the US and Thailand declined drastically, from a high of \$260 in early 1985 to less than \$105 by late April 1986 and below \$53 by August 1986’ (Childs et al, 1994). With the renewed export competitiveness and large GSM-102 guarantees to Iraq,¹⁶ overall rice exports surged as the US regained market share. Exports during the five-year period beginning in fiscal year 1986 averaged over 2.3 million tons.

The new farm policy, though, allowed the government to resume its retrenchment in the quantity of rice moving as food aid. Despite the 1985 spike, rice moving under direct government subsidies (including food aid programmes) fell to 19 per cent of all exports in the 1980s. During this period, ‘[t]otal rice shipments under export credit guarantee programs peaked in fiscal 1989 at 826,000 tons, with Iraq importing 530,000 tons and Mexico 108,000 tons under GSM 102’ (USDA, 1999) (see Table 16.4).

Turbo-charging exports during the first half of the 1990s was the Export Enhancement Program (EEP) which was set up ‘to help US exporters meet competitors’ prices in subsidized markets. Under the EEP, ‘exporters [were] awarded bonus certificates redeemable for [government] -owned commodities, enabling them to sell ... at prices below those of the US market’ (USDA, 1999).¹⁷ At the height of the programme in fiscal years 1992–1993, 671,000 tons of commercial rice exports received EEP subsidies. Almost 1.1 million tons of rice were exported under the EEP to medium grain markets which had been importing rice from the EU – in East Europe, the former Soviet Union, Algeria and the Middle East.

In the 1990s, food aid declined to less than 13 per cent of all rice exports, levelling off at 260,000 tons per annum. Whereas most of the rice shipped during the first 35 years of the PL 480 programme was destined for Asian markets, African and Latin American destinations grew in importance during the 1990s.¹⁸ Rice shipments benefiting from the GSM credit guarantee programmes also declined in the 1990s to average less than 285,000 tons per annum, more than one-third below that moving in the 1980s. By 2000–2004, these programmes accounted for only 8 per cent of the total rice exports as the overall budget for Title I was further reduced. The primary PL 480 rice destina-

Table 16.5 *US and Thai FOB export prices (\$ per ton)*

Year	No 2/4%LG	Thai 100%B	Difference
1990	339	275	64
1991	384	301	83
1992	341	276	64
1993	332	248	83
1994	383	290	94
1995	350	333	17
1996	423	350	73
1997	441	313	128
1998	417	313	104
1999	334	250	84
2000	267	205	62
2001	263	175	88
2002	248	198	50
2003	285	200	85
2004	371	245	126
2005	317	290	27
2006	394	311	83
2007	436	335	101
2008	782	695	87

Source: *The Rice Trader* for 1990–2005; FAO for 2006–2008

tions during this period were Indonesia, the Philippines and Uzbekistan. With the last rice programmed under Title I occurring in fiscal year 2006 (to the Philippines), only limited tonnages are moving as grant aid. In fiscal year 2008, for example, less than 95,000 tons was shipped as food aid (only 3 per cent of the total exports) – destined for 26 different countries (USDA, 2009).

Overall US rice exports rose during the first half of the 1990s, averaging over 2.7 million tons. Notwithstanding a winding-down of the EEP programme, US rice overseas sales during the second half of the 1990s rose by almost 0.4 million tons to 3.1 million tons as USDA more aggressively implemented the marketing loan programme (see Table 16.5). As a result, direct outlays to farmers – which had averaged over \$460 million in fiscal years 1995–1997 – climbed to \$747 million in 1998 and topped a record \$1.8 billion in 1999 as world prices declined sharply (see Appendix, Table 16.11).

Despite a quiet policy decision in 2003 to less aggressively implement the marketing loan programme in an effort to minimize expenditures, declining world prices resulted in direct payments to rice farmers averaging over \$1.25 billion during fiscal years 2000–2004 as exports rose by a further 500,000 tons to average 3.6 million tons. Rising world prices and the continuation of this policy allowing US export prices to be less competitively priced drove rice programme costs even lower in recent years. During fiscal years 2005–2006, direct payments to rice farmers were slashed to average below \$540 million per year. Even further declines occurred in the subsequent years, such that in fiscal year 2008 payments hit a low of \$301 million – the lowest nominal level in 20 years.

Table 16.6 *US Rice supply and distribution (million tons, milled basis)*

	<i>Stocks</i>	<i>Production</i>	<i>Imports</i>	<i>Total supply</i>	<i>Exports</i>	<i>Domestic use</i>
1998–1999	0.9	5.8	0.3	7.0	2.7	3.6
1999–2000	0.7	6.5	0.3	7.5	2.8	3.8
2000–2001	0.9	5.9	0.3	7.2	2.6	3.7
2001–2002	0.9	6.7	0.4	8.0	3.0	3.8
2002–2003	1.2	6.5	0.5	8.2	3.9	3.5
2003–2004	0.8	6.4	0.5	7.7	3.3	3.7
2004–2005	0.8	7.5	0.4	8.6	3.5	3.9
2005–2006	1.2	7.1	0.5	8.9	3.7	3.8
2006–2007	1.4	6.3	0.7	8.3	2.9	4.1
2007–2008	1.3	6.3	0.8	8.4	3.3	4.1
2008–2009	0.9	6.5	0.6	8.1	3.0	4.1

Source: USDA/Foreign Agriculture Service Production, Supply and Distribution Online, www.fas.usda.gov/psdonline/psdHome.aspx

A look at the US rice balance sheet

Over the last ten years, domestic demand has averaged 55 per cent of the combined production, imports and net stock changes (see Table 16.6). Excluding pet foods, per capita consumption was 11kg during 2007–2008 (USA Rice Federation, 2009) – little changed since 2000 (USA Rice Federation, 2008a).

The US has been importing rising quantities of aromatic rice (Thai jasmine and basmati from India and Pakistan), glutinous rice and medium-grain rice (destined for Puerto Rico).

In recent years, the US has been the world's third or fourth largest exporter. Major markets include Mexico and Central America, the Caribbean, Canada and Saudi Arabia for long-grain rice. Turkey, Japan, Republic of Korea and Jordan are important medium grain markets. Exports of rough rice have been playing an increasing role in overall exports, accounting recently for 36 per cent of total rice exports. Mexico and Central America are the largest markets for US rough rice, almost exclusively long grain.

Rocky rice relations with Japan

Rice has been a sore point in US–Japan relations for the last three decades. After World War II, Japan was briefly a market for US rice. Due to increasingly protectionist policies, however, Japan closed its market to imports and began to produce surpluses, which it periodically dumped onto the world market. Japan's subsidized exports of 564,000 tons in 1979 prompted the US RMA to file a Section 301 trade complaint with the US Trade Representative (USTR) in April of the following year arguing that Japanese rice exports were receiving a \$2000/ton subsidy as Japan's domestic prices were ten times the world market price. Following bilateral negotiations, Japan agreed to limit its exports during fiscal years 1980–1983 and to hold periodic bilateral discussions on its export plans (United States House of Representatives, 1986).

In 1986, the RMA filed a Section 301 petition seeking to open Japan's rice market with an import quota of 2.5 per cent of the domestic market, but in October the US government rejected the petition, indicating that it would pursue the goal during the Uruguay Round of trade negotiations under the GATT, which had been launched one month earlier. In September 1988, with Japan showing no willingness in the trade round to open up its market and on the eve of the presidential election, the US rice industry filed a second Section 301 trade complaint calling for the US government to force Japan to open up its rice market to imports. Within six weeks, however, the petition was again rejected, with the USTR arguing that the GATT was the more appropriate forum (Morrison and Villareal, 1991). In December 1993, after the US signalled that it would accept a Section 301 trade complaint if Tokyo was not forthcoming in the GATT, Japan finally agreed to open its market with an annual import quota of 379,000 tons beginning 1 April 1995.¹⁹ This quota was to rise to 758,000 tons by April 2000. On 21 December 1998, however, Japan availed itself of a provision under Annex 5 of the Uruguay Round accord and reduced the quantity of rice it was required to import. Under the revised policy, duty-free imports in 1999 were limited to 644,000 tons (instead of the 682,000 tons which would have been required under the original Uruguay Round agreement) and subsequent import-free purchases levelled off at 682,000 tons (76,000 tons below that originally specified in 1993) until a new agreement is negotiated.

Japan has increasingly chafed under its import obligations resulting in contentious bilateral discussions as it exploited imprecise language used in the original agreement. Where the US sought to reach the Japanese kitchen with its rice, Tokyo kept the rice the government purchased in storage for several years until it was disposed of as starch, animal feed or shipped abroad as grant aid. Import arrivals before 1 April (the beginning of the new Japanese fiscal year) became shipment from the origins, which later became purchases to be concluded during the fiscal year. Increasing quantities of broken rice were purchased instead of whole grain rice and so on.

2008 rice crisis

US harvest rises less than 3 per cent, but farmers reap prices up 31 per cent

While Thai rice prices rose threefold between the beginning of 2008 and the peak of the market during April–May, US long-grain exports prices rose less than 95 per cent, falling short of the highs recorded in Bangkok.²⁰ At the very time that the rise in world prices was accelerating, the US rice crop was being planted in March–May. Expecting that the elevated prices would last, sowings rose 8 per cent to 1.2 million hectares. Over half of the increased acreage occurred in two states: Louisiana and Arkansas. In Arkansas, plantings rebounded from the year-earlier low as farmers switched out of feed grains

Table 16.7 *US farm-gate prices for paddy (\$ per ton)*

	2007	2008	Change
January	229	273	44
February	223	278	55
March	220	300	79
April	225	322	97
May	220	351	130
June	220	364	143
July	223	370	148
August	223	399	176
September	225	373	148
October	245	399	154
November	260	428	168
December	258	410	152
Average	231	355	125

Source: USDA, *Rice Situation and Outlook*, 2009

and, to a lesser extent, cotton. The increase in Louisiana appears to have come at the expense of cotton and feed grains, but there was some acreage inundated by hurricanes in 2006 that was only brought back into production in 2008 (personal communications with rice extension experts Dr Bobby Coats of the University of Arkansas and Dr Johnny Saichuk of Louisiana State University).

While the California crop acreage declined by almost 3 per cent, plantings in the South rose by over 11 per cent. With field yields falling 5 per cent to below 7.7 tons/ha because of damage resulting from two hurricanes and less than ideal growing conditions, US production in 2008 increased by only 2.7 per cent. While world prices fell precipitously during the second half of the year, the decline for US growers was a short-lived single month. According to USDA, the season average price for the 2008 crop was over \$370/ton – 31 per cent above that received for the 2007 harvest (see Table 16.7).

US exports increase by 247,000 tons

Reflecting a steep drawdown in carry-over stocks, US rice exports rose by 0.4 million tons during September 2007 through to June 2008. On a calendar year basis, US exports rebounded to over 3.25 million tons in 2008, almost a quarter of a million tons over the year-earlier low (see Table 16.8). The increase was primarily driven by a 220,000 ton increase in liftings by Venezuela as a result of its poor domestic policy decisions. Further, with Manila paying exorbitant prices in its tenders and desperate to secure rice wherever it could, the Philippines bought commercially almost 80,000 tons of US rice – an unprecedented occurrence as typically higher US FOB values are compounded by significant freight premiums. Including food aid, overall US exports to the Philippines increased by 55,000 tons in 2008. Benefiting from India's virtual absence in the parboiled non-basmati market after Delhi's April 2008 export ban and relatively uncompetitive Thai prices during the second quarter, US shipments to South Africa (a major market through the 1990s) rose by almost

Table 16.8 *US exports to major destinations (thousand tons)*

Country	1990– 1994 average	1995– 1999 average	2000– 2004 average	2005	2006	2007	2008	% change 2007 to 2008
North America	819	1260	1624	2230	2194	2107	1963	-6.83
Canada	133	168	185	236	233	237	232	-2.11
Central America	82	209	398	536	383	510	444	-12.94
Cuba	—	—	58	144	132	60	9	-85.0
Haiti	113	183	247	329	311	277	287	3.6
Mexico	151	285	501	556	585	607	577	-4.8
South America	214	267	122	36	9	14	232	**
Brazil	134	92	78	*	*	*	*	-27.6
EU^a	302	323	304	279	195	96	99	3.1
Middle East	520	478	297	686	521	449	478	6.5
Iran	60	44	2	—	—	—	31	**
Iraq	44	—	16	288	381	223	54	-75.8
Jordan	42	49	16	93	31	69	75	8.7
Saudi Arabia	190	139	119	118	81	127	131	3.2
Turkey	140	196	120	119	13	2	115	**
Africa	452	257	255	243	174	166	181	9.0
Ghana	22	59	90	127	88	86	60	-30.2
South Africa	121	107	49	*	—	1	20	**
Asia	144	322	582	636	513	502	610	21.51
Indonesia	8	66	68	*	1	1	1	70.8
Japan	103	213	311	432	330	303	273	-9.9
Republic of Korea	2	1	33	14	59	66	97	47.0
Philippines	*	7	56	53	67	34	89	**
Chinese province of Taiwan	1	1	51	40	36	65	25	-61.5
TOTAL	2416	2753	3129	3840	3288	3007	3254	8.2

Note: ^a data through to 2004 are for EU-15; 2005–2006 are for EU-25; 2007–2008 are for EU-27. * Less than 500 tons. ** Change is greater than 100 per cent.

Source: US Census Bureau data, as adjusted by author through to 2005

20,000 tons. These increases in long-grain rice sales were moderated by significant declines in purchases elsewhere in Latin America and contracts signed by Iraq.

With Tokyo, Seoul and Taipei curtailing their purchases in the face of soaring medium-grain values, which continued to climb after long-grain prices turned lower at mid-year, US exports to Japan and the Chinese province of Taiwan fell by 30,000 tons and 40,000 tons, respectively. These declines were more than offset by a modest upturn in shipments to Jordan and a nearly 115,000 tons increase in sailings to Turkey – which could not source its normal volumes out of Egypt due to that origin's export restrictions.

Panic briefly flares in US

With the WFP warning of a 'silent tsunami', the panic gripping many Asian markets spread to the US in late April. Talk of the 'world food crisis' and rising

food prices became a staple on the cable news programmes and their 24-hour news loop. Reacting to panic buying, Costco and Sam's Club stores (the two biggest warehouse retail chains) in California began to restrict sales of rice to counter hoarding. It was reported that some Sam's Club stores were limiting customers to four 20-pound bags at a time (*New York Times*, 2008). Press coverage of the restrictions, in turn, heightened the media frenzy and resulted in some additional runs on stores in New York and elsewhere, prompting the US Rice Federation to issue a formal statement that there was no shortage of rice in the domestic market (USA Rice Federation, 2008b).

While the magnitude is by no means certain, it appears that the overseas Filipino community may have played a role in spreading the panic from Asian markets to the US Filipino-Americans, who have long shipped balikbayan boxes (care packages of food and other consumer items) to their relatives back in the Philippines. These packages are filled with items that are often purchased at Costco and are shipped by freight forwarders who pay a standard tax per box to the Philippines Bureau of Customs – regardless of the contents and size of the box. With images of the long food lines in Manila and commercial rice imports subject to government licences, some of the balikbayan box companies urged their customers to ship rice either separately or as part of the contents of the box. Reportedly, some customers used loose rice to fill the empty spaces of their boxes (information in this paragraph from personal communications with Victor Leviste, Agricultural Attaché, Embassy of the Philippines).

US plays midwife to deliver world from rice crisis

Given the disputes between the US and Japan over the last 30 years, it is not surprising that the initial rice enquiries by both Indonesia and the Philippines in the spring of 2008 were rebuffed. In both instances, Tokyo indicated that it would consider the requests only if Manila and Jakarta declared 'emergencies' – which politically was a non-starter. On 21 April, Indonesia was advised by the Japanese Embassy in Jakarta that it was only willing to entertain a request for small tonnages under its Kennedy Round grant aid programme – unless Jakarta made a formal request for food assistance to the WFP and only if the rice could be made under terms that were consistent with 'international agreements such as WTO agreements'.²¹ No promises were made and BULOG was admonished not to delay as the volume available was limited and was given a food aid request form to fill out. In the case of the Philippines, Japan sought to sidestep a potential dispute with the US by offering instead to consider sending locally produced rice to the Philippines.

Friends of Indonesia and the Philippines in the US counselled that this was an extraordinary situation and that the US government could be persuaded to not object to Japan releasing its stocks of imported rice. Acting on this advice, Indonesia's minister of trade made a representation to US Ambassador Cameron Hume in late April 2008 about the potential need to have access to Japan's stocks.

On 9 May, the CGD issued the op-ed paper, 'Japan, China and Thailand can solve the rice crisis – but US leadership is needed' (Timmer and Slayton, 2008). In addition to the US government, the paper was aimed at other policy-makers in Washington (World Bank), as well as in New York (the UN) and Rome (FAO) to either persuade the countries with excess stocks to make the rice available to the world market or to get India and Viet Nam to change their trade policies.

The six-page paper argued that the causes of the 'rice crisis' were different from that of the global 'food crisis' (export restrictions in India and Viet Nam and imprudently aggressive buying by the Philippines) and the proposed solution was straightforward (Japan, China or Thailand needed to release extra supplies into the market). Unlike the analyses and plans offered by others, the diagnosis of the problem and the prescription were cogent and doable. And the media, Congress and public loved it.²²

The Bush White House had earlier convened two inter-agency working committees to grapple with how to deal with the food crisis and within USDA a special task force had been established. Early in 2008, for example, several of the US embassies were instructed to make *démarches* to those governments that had banned food exports. The diagnosis and prescription contained in the CGD paper had been made to a senior USDA official travelling in Southeast Asia in late April and to US Ambassador Hume. The USDA official subsequently urged the Philippines to revise NFA's buying *modus operandi* and brought up the idea of Japan re-exporting its stocks in one of the inter-agency committees. Apparently the proposal was viewed favourably by the State Department, but USDA – having fought hard to open the Japanese rice market – felt that this was a policy reversal that should only be made deliberately and after considering the industry's views. Within the USDA bureaucracy, the issue was extremely sensitive, perhaps because the views of the department's political leadership were unknown. Critical among these views were those of Deputy Undersecretary Ellen Terpstra who was president of the US Rice Federation from 1998 until 2002.

To outsiders, though, it appeared that the US bureaucracy was in a discussion rather than decision-making stage. The authors of the CGD report – a retired rice trade expert operating out of his basement office in Alexandria, Virginia and a college professor in California – were manning an audacious public relations campaign and coordinating the CGD briefing of congressional staffs. The result was a tsunami of public opinion that quickly convinced US policymakers to urge Japan to release its rice stocks.

14 May was pivotal

The Wednesday following the release of the CGD paper was busy:

- 0900 hrs – USA Rice Federation met with USDA;
- 0930 hrs – Senate Foreign Relations Committee hearing on world food crisis;

- 1000 hrs – House Financial Services Committee hearing on the same topic;
- 1330 hrs – Japanese Embassy meets with USDA, USTR and the State Department about the new US policy on releasing the rice and how to respond to press enquiries.

With one of the two US rice industry trade associations (US Rice Producers' Association) having publicly come out in favour of Japan being able to re-export its stocks, the position of the other group – USA Rice Federation – was tenuous.²³ Reportedly, its position was that it was not opposed to the policy shift if Japan were to export both its domestic and imported stocks (possibly reasoning that the subsidies involved in exporting the former would be prohibitive) and that in the future the Japanese government's imported rice should be resold to domestic consumers. The second point was an obvious non-starter, but it was a long-standing federation position and apparently its leadership felt it had no choice but to reiterate it given the views of its rank and file.

With the proposal folded into the testimony of CGD senior fellow Arvind Subramanian in the House hearing, another of those testifying having been briefed over the weekend, and questions prepared by CGD for committee staff members, congressional interest in the US okaying the release of Japanese rice stocks was piqued.

Japan is very skittish about its rice trade policy and the meeting on 14 May did little to alleviate this mood.²⁴ Following inter-agency discussions in the aftermath of the meeting with the USA Rice Federation, Japanese diplomats were summoned to USDA without any word on why. Reportedly, the three diplomats expected that they were going to receive a tongue-lashing from Foreign Agriculture Service Administrator Michael Yost for not having finished buying the Japanese 2007 buying commitment. Instead, the confused diplomats were given press talking points labelled 'Press Points on US reaction to possible release of Japan's rice stocks'.

The paper noted the current 'very unusual' condition of the world rice market:

In light of the food price crisis, some have called upon Japan to release its rice stocks onto the international market. A significant portion of Japan's rice stocks are made up of foreign rice imported under Japan's WTO obligations. Because the rice is imported under the terms of the WTO Uruguay Round Agreement to provide access to Japan's domestic market, the view of the US has been that, rather than go into government stocks, this rice should be consumed in Japan's domestic market. However, the unique conditions in the rice market this year, coupled with the growing humanitarian and political dimensions of recent food price increases in developing countries warrants considering extraordinary measures on this occasion to calm the international rice market. US officials will be conveying these

views to the Government of Japan, and we hope to coordinate our food aid donor efforts in the coming weeks to address the urgent needs around the world.

The paper was deliberately ambiguous about the volume of rice that Japan might re-export. (To do otherwise might cause heartburn for the US rice industry and its supporters on Capitol Hill.) Further, the diplomats were concerned about just how the two countries would coordinate their food aid efforts and the fact that the US had not specified what the agenda would be for the follow-up meeting. (This is because USDA had not formulated its policy yet and ownership of the issue within the department was lacking.) Later that evening, Bloomberg broke the news, quoting an unnamed 'US trade official' as saying that the US would not object if Japan were to release its stocks. While the details had not been worked out, the US had opened the door for Japan to export its stocks. All that remained were for the details to be worked out *and* for the Fukuda government to walk through that open door.

On 15 May, CGD heralded the news about the new US position and rice futures prices in Chicago tumbled for the fourth straight day. The Japanese diplomats, however, described the US position as 'ambiguous' and driven by a need to answer press questions. It was suggested that they have a one-on-one meeting at USDA, as the US side thought it had been very clear. (The Japanese did not follow this advice.) Later, the same diplomat raised the question of uncertainty about how much rice the US would countenance. After rechecking with USDA, one of the CGD experts told him that the 'door was wide open' even for 1.5 million tons. The same individual later informally told the Philippines that the US had no objection if Japan were to give Manila up to 600,000 tons. (Following informal assurances from USDA, the Philippines on 19 May publicly disclosed that Japan might provide it with 200,000 tons of imported rice (Timmer and Slayton, 2008)).

Fearing a trap, Japan's MAFF, however, wanted the US Embassy in Tokyo to spell out in writing what the US view was. (As one USDA official quipped, it seemed that Japan was having a hard time accepting 'yes' for an answer.) Approximately one week later, US Ambassador Cameron R. Hume, while on home leave in Washington, is understood to have once again expressed the view that Indonesia had an urgent need to make major import purchases for late 2008 delivery and how this could further destabilize the world market unless it could source significant tonnages in Japan.

To allay Japanese concerns, the US ambassador to Tokyo, Thomas Scheiffer, issued a written statement on 22 May noting:

The unique conditions in the global rice market this year, coupled with the growing humanitarian and political dimensions of recent food price increases and natural disasters in the region, warrant extraordinary measures to calm the international rice market ... The United States welcomes the news that Japan is

considering extraordinary measures to respond to this uniquely critical situation. (Schieffer, 2008)

The follow-up meeting

On 23 May, a second meeting was held in Washington, DC between the US and Japan. According to meeting participants, there were three main issues discussed:

- 1 whether Japan would release stocks of imported rice to help stabilize the world rice market;
- 2 whether Japan would re-export its imported rice stocks as food aid or through commercial channels for profit; and
- 3 whether Japan intended to fulfil its TRQ obligation for 2007 in addition to its 2008 quota.

During the course of the discussion, the Japanese reportedly said without elaboration that it would not respond favourably to a request by Indonesia for 500,000 tons.²⁵

The US expressed support for Japan's plan to export a portion of its imported rice stocks to alleviate world hunger and to calm world rice prices, but stressed that it should not be only US rice and that domestic Japanese rice should also be exported. (From conversations with US participants, it was not clear if the US was urging Tokyo to export its stocks in proportionally equal shares to its inventory.) Reportedly, Japan replied that it did not have a problem with this concept as it had only received a formal request from the Philippines to purchase 250,000 tons, including 50,000 tons of domestic rice. (According to Filipino official sources, Manila preferred to purchase the rice, rather than receive it as aid, as it believed that the negotiation and execution could be arranged much more expeditiously for delivery in August in time to fill an expected shortfall.²⁶) Reportedly, the Japanese side indicated that it might be willing to export a few hundred thousand tons more, but that no further transactions were being contemplated at that time.²⁷ The US side indicated that the Japanese appeared to resist the idea that their entire 1.5 million tons of imported rice would be re-exported, but one of the Japanese participants denied that this was the case.

On the second point, the US said that it preferred that Japan consider providing the rice through a grant of food aid rather than a sale. If making food aid grants were not possible, the US officials discouraged Japan from making a profit from the sale of imported rice during times of humanitarian need, selling it only at its acquisition cost, not including storage and handling.²⁸

In what were described as 'frank discussions', Japan indicated that it did not plan to buy the 65,000 tons remaining from its 2007 minimum market access (MMA) commitment and that a public statement to that effect might be

made that week.²⁹ The US reportedly stressed that this was unacceptable, pointing out that Tokyo's failure to honour its commitment could undermine purchase commitments by the Chinese province of Taiwan and Republic of Korea. (Washington subsequently directed that its embassy in Japan make a *démarche* to head off a public statement by Japan that it would not buy the outstanding rice or that its sales prices to the Philippines would be made at a substantial mark-up.) The US side also repeated its earlier suggestion that Tokyo might delay its new purchases until after the upcoming harvest in California so as to have a minimal bullish effect on prices.

The USTR subsequently issued a public statement that 'the United States was supportive of Japan's initiative' to export 250,000 tons of rice to the Philippines. Experts at CGD then urged that Japan not only re-export its 1.5 million tons of imported stocks, but that, *on a one-time basis*, it also donate its required 2008 MAFF purchases of 580,000 tons to the WFP and ship it directly to third countries (Slayton and Timmer, 2008). This would have saved Japan on double freight and handling costs, prevented a further build-up in stocks in Japan, which were costing \$144 million per year to store (USDA, 2006), and would have satisfied a long-sought Japanese goal. While the suggestion was endorsed by a *Washington Post* editorial (*Washington Post*, 2008b), it does not appear that the US made this proposal to Japan.

The Epilogue

Ultimately the Philippines did not get the 250,000 tons of rice it requested from Japan and Tokyo failed to deliver on its promise of exporting 'over 300,000 tons' as part of its contribution to alleviating the world food crisis. For reasons that are entirely unclear, Japan's offer prices to the Philippines were high, resulting in protracted negotiations. Once NFA had covered its immediate needs from Viet Nam in early June, Manila no longer needed the rice held by Japan. Reportedly, a number of other countries requested that Japan provide rice as food aid, but Tokyo did not make its excess stocks available to them.

Rather than playing a leadership role in helping to solve the world food crisis and lessen the huge expense created by its rice holdings, the Japanese government refused to use its excess stock as food aid for reasons that are entirely unclear. Quite possibly its inaction was because the idea of releasing its stocks had not been developed internally and/or Japanese bureaucrats resented the external pressure. In any case, once the public spotlight was off it, Japan's rice exports declined from 122,000 tons in 2007 to less than 117,000 tons in 2008. Rather than alleviating world suffering by re-exporting its excess rice stocks, MAFF continued to dispose of its imported rice inventory at highly subsidized prices to its domestic feed industry.³⁰ Clearly the local feed industry's clout trumped any domestic interest in using the unwanted rice stocks to help feed the world's poor.

The US government, however, played a key role in 'pricking the rice bubble' that was gripping the world market in the spring of 2008. The policy

embraced by the Bush Administration was made in the face of opposition from the US Rice Federation and was made quickly – indeed, at what equates to warp speed in Washington, DC.

Two days after the Philippines disclosed that it was discussing with Japan the possibility of receiving 200,000 tons of imported rice, Thai exporters resumed their practice of issuing daily export quotations.³¹ Export price indications began to slide the following week and gapped \$40/ton lower the first week of June with the news that the Thai government was offering to sell its stocks to the Philippines. With the news that the Philippines had covered its needs in Viet Nam and that country had lifted its export ban, world prices collapsed further as the market psychology had completely changed.

Appendix

Table 16.9 US production and exports (thousand tons)

Crop year	Production		Exports		Crop year	Production		Exports	
	Rough	Milled	Quantity	As % production.		Rough	Milled	Quantity	As % production
1930	917	642	136	21	1970	3801	2796	1461	52
1931	911	637	140	22	1971	3890	2838	1804	64
1932	850	595	81	14	1972	3875	2828	1726	61
1933	769	538	45	8	1973	4208	3034	1604	53
1934	797	558	58	10	1974	5098	3667	2194	60
1935	805	564	38	7	1975	5824	4099	1732	42
1936	1017	712	51	7	1976	5243	3781	2097	55
1937	1090	763	151	20	1977	4500	3120	2270	73
1938	1072	750	151	20	1978	6039	4271	2431	57
1939	1103	772	142	18	1979	5983	4298	2716	63
1940	1111	778	179	23	1980	6632	4810	3064	64
1941	1048	733	208	28	1981	8287	5979	2695	45
1942	1319	923	221	24	1982	6967	4960	2222	45
1943	1327	929	224	24	1983	4522	3215	2267	71
1944	1405	983	324	33	1984	6296	4382	1960	45
1945	1391	974	364	37	1985	6120	4332	1885	44
1946	1474	1032	390	38	1986	6049	4307	2719	63
1947	1597	1118	415	37	1987	5876	4109	2289	56
1948	1736	1215	457	38	1988	7254	5186	2786	54
1949	1849	1294	515	40	1989	7007	5087	2537	50
1950	1761	1233	418	34	1990	7081	5098	2331	46
1951	2091	1463	764	52	1991	7228	5096	2128	42
1952	2186	1530	798	52	1992	8149	5704	2515	44
1953	2397	1678	721	43	1993	7081	5053	2544	50
1954	2912	2038	453	22	1994	8971	6384	3286	51
1955	2536	1775	593	33	1995	7887	5628	2694	48
1956	2243	1570	1192	76	1996	7783	5453	2488	46
1957	1947	1363	582	43	1997	8301	5750	2755	48
1958	2030	1421	627	44	1998	8367	5798	2730	47
1959	2433	1703	928	54	1999	9345	6502	2804	43
1960	2477	1756	919	52	2000	8658	5941	2590	44
1961	2459	1763	936	53	2001	9764	6714	2954	44
1962	2996	2133	1119	52	2002	9570	6536	3860	59
1963	3188	2295	1385	60	2003	9068	6419	3310	52
1964	3318	2386	1387	58	2004	10,540	7462	3496	47
1965	3460	2497	1418	57	2005	10,108	7105	3661	52
1966	3856	2805	1719	61	2006	8827	6267	2923	47
1967	4054	2950	1816	62	2007	8999	6344	3349	53
1968	4723	3459	1729	50	2008	9241	6515	2993	46
1969	4168	3003	1786	59					

Note: For crop years 1930–1940, milling rates are assumed to be 70 per cent. Exports are converted from barrels using 162 pounds/barrel for years 1930–1936.

Source: For production, 'The US Rice Industry' by USDA/ERS for 1930–1958; USDA/NASS 'Quick Stats' for 1959–2008. For exports, 'The Rice Situation' by USDA/BAE for 1930–1936, '1936–1960 Rice Situation' by USDA/ERS for intervening years to 1959; 1960–2008 from 'Production, Supply and Demand Database Online' of USDA/FAS

Table 16.10 *US rice exports by programme (thousand tons)^a*

<i>Fiscal year</i>	<i>PL 480^b</i>	<i>Section 416 (b)</i>	<i>Food for Education</i>	<i>Food for Progress</i>	<i>CCC African relief</i>	<i>Total food aid</i>	<i>EEP^c</i>	<i>Total programmes specified^d</i>	<i>Other</i>	<i>Total exports</i>	<i>Gov't. programmes %</i>
1975	747	0	0	0	0	747	0	747	1467	2214	34
1976	509	0	0	0	0	509	0	509	1374	1883	27
1977	676	0	0	0	0	676	0	676	1585	2261	30
1978	502	0	0	0	0	502	0	502	1695	2197	23
1979	442	0	0	0	0	442	0	442	1891	2333	19
1980	500	0	0	0	0	500	0	500	2359	2859	17
1981	320	0	0	0	0	320	0	320	2677	2997	11
1982	332	0	0	0	0	332	0	332	2444	2776	12
1983	429	0	0	0	0	429	0	429	1780	2209	19
1984	366	0	0	0	49	415	0	415	1797	2212	19
1985	500	0	0	0	180	680	0	680	1228	1908	36
1986	411	0	0	0	0	411	23	434	1803	2237	19
1987	370	60	0	0	0	430	28	458	1954	2412	19
1988	338	29	0	0	0	367	120	488	1637	2125	23
1989	355	0	0	0	0	355	20	375	1875	2250	17
1990	276	0	0	0	0	276	0	276	2222	2502	11
1991	210	4	0	0	0	214	76	290	2136	2418	12
1992	229	0	0	16	0	245	358	603	1669	2281	27
1993	199	0	0	137	0	336	278	614	2188	2713	22
1994	222	0	0	10	0	232	46	279	2166	2438	11
1995	196	0	0	14	0	209	113	322	3406	3767	9
1996	179	0	0	12	0	191	0	191	2630	2831	8
1997	115	0	0	14	0	129	0	129	2436	2564	5
1998	178	0	0	11	0	189	0	189	3124	3315	6
1999	542	0	0	45	0	587	0	587	2500	3076	19

2000	209	147	0	37	0	393	0	393	2923	3315	12
2001	144	30	22	30	0	231	0	231	2835	3066	8
2002	241	56	32	27	0	356	0	356	3187	3543	10
2003	263	0	0	47	0	310	0	310	4169	4478	7
2004	129	0	29	55	0	214	0	214	3484	3699	6
2005	126	0	3	21	0	150	0	150	4108	4258	4
2006	53	0	15	28	0	96	0	96	3928	4024	2
2007	97	0	28	11	0	136	0	136	3180	3316	4
2008	78	0	14	16	0	108	0	108	3938	4046	3

Note: ^a Exports (programme and non-programme) are reported on a product-weight basis. Programme shipments are assigned appropriate fiscal years. ^b Titles I, II, and III. ^c Sales, not actual shipments. ^d Adjusted for estimated overlap between CCC export credits and EEP shipments. Fiscal year 2008 data are preliminary and overall data as of February 2009. Also, fiscal year 1996 EEP figure was incorrectly listed as 23,000 tons, but adjusted to zero based on conversations with USDA/FAS.

Source: www.fsa.usda.gov; www.fas.usda.gov.

Table 16.11 *US government outlays on rice (\$ millions)*

<i>Fiscal year</i>	<i>Domestic net direct outlays</i>	<i>Export subsidies</i>	<i>Exports food aid^a</i>	<i>Subtotal</i>	<i>Total</i>
1955	-10	0	4	4	-6
1956	19	0	48	48	67
1957	65	0	199	199	264
1958	18	0	59	59	77
1959	32	5	36	40	72
1960	28	12	98	110	137
1961	11	19	101	101	131
1962	-2	30	83	83	111
1963	20	24	113	113	157
1964	13	39	117	117	169
1965	12	38	95	95	145
1966	10	42	61	61	112
1967	8	22	140	140	170
1968	9	2	134	134	145
1969	43	3	171	171	217
1970	25	14	168	168	206
1971	24	18	168	168	209
1972	-20	25	215	215	220
1973	0	22	244	244	266
1974	15	*	317	317	332
1975	0	0	285	285	285
1976	206	0	242	242	448
1977	145	0	164	164	309
1978	-66	0	149	149	83
1979	50	0	136	136	186
1980	-76	0	194	194	118
1981	24	0	169	169	193
1982	164	0	117	117	280
1983	664	0	130	130	794
1984	333	0	129	129	462
1985	990	0	172	172	1162
1986	947	2	86	86	1033
1987	906	1	84	84	990
1988	128	13	101	101	229
1989	631	226	150	150	781
1990	501	0	105	105	606
1991	661	4	105	109	770
1992	569	23	131	154	723
1993	633	13	87	100	733
1994	801	2	116	118	919
1995	449	5	50	55	503
1996	454	0	80	80	534
1997	479	0	60	60	539
1998	747	0	72	72	820
1999	1801	0	185	185	1986
2000	1371	0	100	100	1470
2001	1423	0	53	53	1476
2002	1085	0	81	81	1166
2003	1279	0	82	82	1361
2004	1130	0	69	69	1199
2005	473	0	58	58	531
2006	605	0	31	31	636
2007	337	0	36	36	373
2008	301	0	55	55	356

Note: * = Less than \$50,000. ^a Includes long-term credit sales.

Source: Mears (1975) for prior to 1961 and reported as USDA (CCC) outlays; Schnepf and Just (1995) for 1961–1989; USDA/FSA and FAS for 1990–2008

Notes

- 1 G-to-G contracts accounted for 2.1 million tons or 41 per cent of all exports by Thailand, Burma and Pakistan in 1982 and this level increased in 1983 (Slayton, 1984).
- 2 Unfortunately, the Thai government helped to disturb the market by its ill-fated April 2008 push to revive a proposed cartel of rice-exporting countries and could have helped to lessen the increase in world prices by releasing government-owned stocks. Unless otherwise noted, all quantities referenced in this chapter are on a milled rice basis and in metric tons.
- 3 Under the original legislation (which has been amended many times), there were two programmes – Title I and Title II. US commodities were exported via Title I under long-term dollar concessional credit sales. These might, for example, be a loan involving an initial grace period of say five years during which no repayments were owed and subsidized interest rates for repayments over an extended period of as much as 35 years. Under Title II, the commodities were provided as a grant.
- 4 Non-recourse loans have long been a key support measure for US farmers. Farmers use their crop as collateral for the loan that can be repaid within nine months. At the end of that period, they must decide either to repay the loan or forfeit the commodity to USDA. If the farmer forfeits his crop, he retains the loan proceeds and the government has 'no other recourse' for repayment. With 'marketing loan', part of the repayment amount can be 'forgiven' if world prices were calculated by USDA to be below the initial loan amount.
- 5 'Measured in *constant* dollars ... food aid levels since the mid-1960s have decreased substantially. From their peak in the mid-1960s, they had declined by half by the mid-1970s; they had declined by half again by the mid-1980s; and by the mid-1990s, they had declined by another third' (USAID, 1998).
- 6 Growers in Texas and Louisiana are capable of producing a smaller second, or 'Ratoon', crop from the roots of the rice plants that remain after combining.
- 7 To produce sufficient supplies of a particular crop, USDA calculated the amount of land that would need to be planted and on which it would provide support. An 'acreage allotment' was an individual farmer's share of the national target and would be based on historical production levels (Childs et al, 1994).
- 8 Through the 1950s, commercial exports were dominated by sales to Cuba. In the marketing year ending 31 July 1959, the US exported over 185,000 tons of rice to Cuba. This came to an end in 1960 when relations between the two countries worsened and Cuba stopped buying US rice (Reid and Gaines, 1974).
- 9 Senator Allen Ellender was chairman of the Agriculture Committee, 1951–1953 and 1955–1971. Wilbur Mills was chairman of the House Ways and Means Committee, 1957–1975. Otto Passman was chairman of the pivotal House Appropriations subcommittee on foreign aid from 1954 until 1976. Other rice industry stalwarts included Senator John McClellan of Arkansas who served as chairman of the Committee on Appropriations, 1972–1977. According to personal communications with J. P. Gaines (the RMA executive vice-president, 1962–1976), House Agriculture committee members Clark Thompson (rice subcommittee chairman) from Texas and E. C. Gathings of Arkansas also played influential roles on behalf of the industry.
- 10 In the decade beginning in 1967, only in 1972 did Thailand export more rice than the US. The two countries alternated in the number one position during 1977–1980. Thailand regained the coveted position in 1981 and has never relinquished it.

- 11 Gabbert served as RMA's chief executive officer from 1976 until 1988.
- 12 In fiscal year 1974, rice accounted for 58 per cent of the Title I budget. As wheat availability improved, rice's share fell back to 38 per cent of the next year's budget.
- 13 The decline in PL 480 rice shipments was, at least in part, due to reduced funding for food aid in general, especially those made under Title I. Beginning in 1956 through fiscal year 1980 and in 1984, USDA operated the GSM-5 programme where it provided direct loans to overseas buyers of agricultural commodities. For budget austerity reasons, the programme was replaced with federal export credit guarantees to US banks. Under the GSM-101 programme, which was in operation during 1979–1981, USDA provided a guarantee against non-commercial risk such as import embargoes, freezing of foreign exchange, revolutions and war. In 1981, coverage for commercial risk (the inability to repay for economic reasons) was added under GSM-102. GSM-102 covered loans that provided up to three years of financing. In 1986, the GSM-103 programme was implemented, generally guaranteeing loans with repayment periods exceeding three years, but not more than ten years.
- 14 Government programmes accounted for almost 36 per cent of all exports in fiscal year 1985.
- 15 Direct net outlays for rice farmers, which had averaged \$435 million annually during five-year period prior to the introduction of the marketing loan, soared to \$623 million per year in the each of the two subsequent five-year periods (fiscal years 1986–1990 and 1991–1995).
- 16 The GSM-102 credits were part of a diplomatic tilt to Iraq in its war with Iran, which lasted from September 1980 until August 1988. Iraq was extended its first GSM-102 credit guarantees in 1983, just before the US re-established diplomatic relations with that country. Thanks in large measure to the credit guarantees, US exports to Iraq doubled from 214,000 tons per annum in calendar years 1980–1983 to 439,000 tons averaged during the balance of the decade. As a result, Iraq was the largest market for US rice in the late 1980s.
- 17 The programme started in May 1985, but the volume of rice moving under EEP was limited during the first six years of the programme – only 191,000 tons in total during fiscal years 1985–1990. By the end of the programme, almost 1.1 million tons of rice was shipped under EEP.
- 18 The export volumes using export credit guarantees also declined during the 1990s, reaching a low in fiscal year 1997 of only 89,000 tons, with the result that less than 6 per cent of all rice exports moved under various government programmes. This compared to 18 per cent in fiscal year 1995 and was 'down from 23 per cent in fiscal 1994 and well below 41 per cent in 1993 and 43 per cent in 1992' (USDA, 1995).
- 19 All quantities agreed to by Japan were on a brown-rice basis.
- 20 Whereas No 2/4%LG prices turned lower in May 2008, California export prices continued to climb, peaking only almost one year later in April 2009.
- 21 Politically this was unacceptable from the Indonesian side, which was publicly saying that it had a rice surplus in order to calm the domestic market. Similarly, the government in the Philippines was at that time issuing public statements that it had everything under control.
- 22 The *Washington Post*, for example, ran two editorials (*Washington Post*, 2008a; *Washington Post*, 2008b) and an op-ed piece (Mallaby, 2008) on the subject within a span of eight days.

- 23 The USA Rice Federation was formed by the 1994 merger of the RMA, USA Rice Council and the US Rice Producers' Group.
- 24 The descriptions of the meetings on 14 and 23 May are based on contemporaneous interviews with the participants and/or their staff.
- 25 According to a Japanese participant in the meeting, no decision had been made as of that date on Indonesia's food aid request.
- 26 This proved to be an erroneous assumption as the Japanese initially set a relatively high price and the negotiations dragged on as declining world values made the price unattractive.
- 27 The US and others were later discouraged by Japanese Prime Minister Fukuda's statement on 3 June at the FAO food security conference in Rome that Japan would 'release in the near future over 300,000 tons of imported rice' to the world market. Notwithstanding this pledge, ultimately the negotiations with the Philippines were inconclusive and Japan's exports in 2008 declined to below 117,000 tons.
- 28 Subsequently, the US side indicated that Japan proposed to sell 200,000 tons of its imported rice to the Philippines at CNF\$840, but that the average imported prices during 2005–2007 for US material ranged from \$431–580, while the Thai-Viet rice came in at about \$100–175 below these levels.
- 29 Japan took the position that it had tried to fulfil the commitment, but that it had refrained from buying in its April tender for fear of propelling world prices higher. (Reportedly, Thai 100%B was offered in its 22 May tender at over \$1300/ton FOB.) It also argued that it had exhausted its budget for imports and, that in any case, the time for buying its 2007 commitment had already lapsed. According to the trade, Japan subsequently purchased the equivalent of 58,000 tons of US rice and Washington decided not to press Tokyo further.
- 30 Prior to 2004, the Japanese government released only limited quantities of imported rice to its domestic feed industry. In the fiscal year ending March 2004, only 13,000 tons of rice was used in compound feed. The following year this climbed to 286,000 tons and then rose only modestly in fiscal year 2005. With its inventory of imported rice ballooning, Japan further increased its disposal efforts in July 2006. Imported rice stocks, nonetheless, reached 1.9 million tons in October 2006. From this peak, holdings declined to 1.5 million tons in October 2007 as feed usage surged to an unprecedented 558,000 tons in fiscal year 2007. Despite the world rice crisis, Japan still disposed of 468,000 tons of imported rice as animal feed in the following Japanese fiscal year. As a result, its imported rice stocks on October 2008 fell to 970,000 tons (USDA-FAS, various years; personal communications with USDA's Tokyo office).
- 31 The leading Thai exporters began to refuse to offer daily price indications beginning in late February. On 21 May 2008, they resumed the practice. Capital Rice, the largest exporter, quoted 100%B at \$980 FOB as of that date, while Asia Golden Rice was showing \$920.

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Part VII

CONCLUSION

Can the Next Rice Crisis be Prevented?

David Dawe

Food prices have always fluctuated, and indeed it is important that they do so, at least to some extent, for a variety of reasons (for example to smooth the availability of supplies over time at a reasonable cost). But there are substantial costs to food price volatility, both economic and political (Timmer, 1989; Dawe, 2001; Myers, 2006), and the rice crisis brought these costs into sharp focus. These costs suggest that the optimal level of price stabilization is non-zero.

Indeed, given the costs of fluctuations in staple food prices, Asian governments view management of price volatility as a key policy challenge in the rice economy. This is clearly true for developing countries, where rice accounts for a large share of farm income and consumer expenditure, but it is even true in Japan, the most developed country in the region, where much of the reason for the very high level of prices is the desire for price stabilization (Timmer, 1993). The recent rice crisis will, if nothing else, strengthen the resolve to manage food prices and reduce reliance on world markets.

Managing food price volatility is likely to become increasingly important in the near future given the new linkages between oil and maize prices. This new linkage is due to several factors that have converged in the past few years. While technologies that can convert grains to fuel have existed for some time, it is only recently that they have become profitable enough that maize can be

Table 17.1 *Volatility of real (inflation-adjusted) commodity prices (%)*

Frequency Measure	Annual		Monthly	
	DLMA 1990–2005	DLMA 2006–2008	DLMA 1990–2005	DLMA 2006– April 2009
Commodity				
Petroleum	21	29	19	27
Rice	14	42	12	26
Wheat	14	33	13	26
Maize	13	34	12	25

Note: DLMA (deviation from lagged moving average) is the average absolute value (over time) of the rolling percentage difference between the annual or monthly price and a two-year lagged moving average.

Source: Raw data from IMF

considered a realistic choice for fuel production. In addition to improvements in technology, biofuel policies (for example mandates, tariffs) have also played a key role by lowering the level of oil prices at which maize becomes competitive as a source of fuel. Finally, developments in supply and demand in world oil markets also play a role: if oil prices are at a relatively high level in the medium term due to continued economic growth in developing countries and increased difficulties in finding new cheap sources of supply, this makes it easier for grains to be competitive as a source of fuel.

Because biofuels represent additional demand for grain, it is widely acknowledged that the linkage between agricultural and energy markets will lead to higher grain prices than would otherwise be the case. This is especially important given that cereal yield growth rates (at least for rice and wheat) have been declining and that rapid economic growth in developing countries is likely to continue, leading to diversified diets and additional feed grain demand. There is thus ample reason to believe that world grain prices will be higher in the next decade than they were in the late 1990s and early years of this century.

Perhaps more important than the additional demand, however, is the fact that oil prices have historically been much more volatile than grain prices (see Table 17.1). If grain prices are now linked to oil prices, then we would expect that grain prices will be more volatile than they have been historically, and indeed, volatility in grain markets has increased in the past two to three years. If world grain prices remain volatile, this will present a major policy challenge to developing countries that want to protect their consumers from price surges that have serious effects on income distribution, investment and nutritional outcomes. The different policy responses used by different governments during the world rice crisis provide some lessons worth considering.

Domestic policy responses during the world rice crisis

As shown in the country chapters, changes in domestic rice prices during the crisis varied widely across countries within Asia. Domestic prices were relatively stable in the three largest countries (China, India and Indonesia) and in the developed countries (Japan and Republic of Korea), but prices surged in

Bangladesh, Thailand, Viet Nam, Cambodia and the Philippines, as well as in several West African countries.

There are many factors that could have led to different outcomes across countries. Certainly stabilization policies had an impact, but outcomes may also have been influenced by initial baseline price levels, the size of crop harvests, and the ability to enforce policies that depend on closing borders.

While acknowledging the potential importance of all these factors, stabilization policies were likely to have been the most important determinant of domestic prices in early 2008. First, world prices soared above domestic prices in all of the countries analysed here (other than Japan, where initial domestic prices were very much higher than world prices). Thus, even if prices were initially high in some countries, there should still have been upward pressure on domestic prices from the world market. Second, crop harvests appear to have been good in all of these countries in early 2008. Third, these countries seem to be able to enforce price differentials when desired: even Indonesia, whose archipelagic nature makes border control difficult, was able to keep domestic prices 20–50 per cent above world prices during 2006 and 2007.

Thus, a further look at policies seems warranted. Clearly, policies are complex and differ from one country to another. But one particularly important policy is the extent to which private sector traders are free to make decisions regarding the quantity of exports or imports. Among the seven largest developing countries examined in this book (including six of the ten largest developing countries in the world), Thailand and Bangladesh are the only two that allow the private sector to play such an equilibrating role. This is not to say that either country has followed a completely free trade policy: in recent years, Thailand has been active in procuring rice from farmers at prices substantially above those that would prevail in a truly free market. Bangladesh, a rice importer, also varies the level of the tariff in response to world market conditions. Nevertheless, given these constraints, traders are free to export or import as much as they please. This cannot be said for the other five large countries discussed here.

What is the consequence of allowing private traders to choose the level of imports or exports? In essence, this allows domestic prices to adjust fully to world prices, after taking account of tariffs, transport costs and quality. If domestic prices are lower than world prices, net exports will increase (and vice versa) until equilibrium is re-established via private sector arbitrage. Thus, the increase in domestic prices in Thailand was approximately the same as the increase in world prices. In Bangladesh, the increase in domestic prices was substantial, but still less than the increase in world prices; the explanation here is that net exports for Bangladesh are bound at zero due to market imperfections. Because Bangladesh is a more or less consistent importer, there are not established mechanisms for assessing the quality of Bangladeshi rice for export; further, it will take time for Bangladeshi private traders to develop a reputation among international traders that will allow substantial quantities of exports

from that country. In addition, Bangladesh also banned exports from early May. Thus, even when the world price rose above the domestic price in the short run, there were no exports. Instead, the domestic price was determined by domestic supply and demand, as opposed to world markets. In this particular case, Bangladesh suffered some domestic production shortfalls due to flooding and typhoon damage in late 2007 that contributed to increases in domestic prices, but an excellent crop in April contributed to a subsequent easing of domestic prices.

But among the five countries where the government determines the quantity of international trade, why did prices increase substantially in two of them (the Philippines and Viet Nam) but not in the other three (China, India and Indonesia)? The most likely explanation here would seem to be that the two countries where domestic prices increased were the same two countries that were directly involved in the trades that sent world prices soaring in March and April.

To understand why this should make a difference, it is first important to realize that neither the Philippines nor Viet Nam were short of supplies during this time. While government rice stocks were a bit on the low side in the Philippines, private sector stocks account for most of total stocks, and these stocks were ample. Domestic production in 2008 was forecast to be substantially above that in 2007, and there were no adverse climatic shocks at the time (there was a 6 per cent increase in domestic production for the first half of 2008 compared to the previous record, reached in the first half of 2007). Finally, there were large import contracts being negotiated (and NFA always sells its imports into the domestic market at below-market prices). Thus, domestic supplies were adequate in quantity terms. As regards Viet Nam, it is the world's second largest exporter with an exportable surplus that is typically about 20 per cent of domestic production, and the export bans it had in place should have ensured ample domestic supplies.

Since supplies were ample in both countries, and since neither one allows the private sector to fully arbitrage prices between domestic and international markets, it seems that the most likely explanation for the surge in domestic prices was speculation and panic on the part of domestic farmers, traders and consumers in those countries. The trades on the international market between the Philippines and Viet Nam in early 2008 were well known to the general public in the Philippines, and in Viet Nam were known at least to those involved in the rice trade. Indeed, even traders who deal primarily in non-rice commodities shifted to rice, speculating on further price increases. While international rice traders in China, India and Indonesia were certainly well aware of the transactions between the Philippines and Viet Nam, the general population in those three countries most likely would be less aware of the trades, and would thus have less reason to panic or speculate. Large government stocks in both China and India probably also served to discourage speculation, and Indonesia benefited from a good harvest and the fact that the timing of its main harvest coincided with the rice price surge on world markets. While there was

speculative activity in Indonesia (T. Slayton, personal communication, 2008), apparently it was not widespread enough to cause a surge in prices.

In conclusion, trade policy played an important role in moderating the impact of soaring world prices on domestic rice prices in several countries, but not all. The fact that trade policy muted the impact on poor consumers in three large developing countries suggests that a closer look at the costs and benefits of trade policy as a complement to safety nets is warranted.

Trade policy as a complement to safety nets

The standard policy advice from most quarters is that the best way to protect poor consumers from sudden increases in prices is by providing safety nets of one sort or another.¹ Although there are many definitions, such safety nets are basically ‘non-contributory transfer programs targeted in some manner to the poor and those vulnerable to poverty and shocks’ (Milazzo and Grosh, 2008). There is a reasonably strong consensus that such approaches are far superior to trade policy instruments such as lowering import tariffs, increasing export taxes or instituting export bans in dealing with surges in world market prices. Despite this consensus, many governments used trade policy extensively during the world food crisis in addition to safety nets (Demeke et al, 2009).

Both trade policy and targeted safety nets have advantages and disadvantages, but much of the discussion surrounding the use of trade policy has failed to consider some of its advantages and has overemphasized its disadvantages. While safety nets are appropriate in many cases, they are not a panacea, and in many cases trade policy might play an effective role in minimizing the impacts of price fluctuations on poor consumers and farmers, especially in poor countries.

There is a large literature on safety nets that cannot be summarized here (Grosh et al, 2008). However, practical experience makes clear that effective safety nets are difficult to implement for a variety of reasons. It is often hard to identify the poor, and even if the poor can be identified, it can be expensive to reach all of them. For example, given its poor targeting and losses due to corruption, Olken (2006) found that a programme of food distribution to the poor in Indonesia represented a net loss to social welfare, even after giving substantially more weight to the poor in society’s utility function.

There may also be community resistance to giving payments to one family that is below some ultimately arbitrary threshold while another family that is barely above that threshold does not get any benefits. Indeed, some communities may seek to distribute the benefits relatively equally across households, reducing the efficiency of targeting. Safety nets may also create long-term adverse effects on incentives, as some families perceive the government to be primarily a source of handouts. Safety nets that are self-targeting to the poor, such as guaranteed employment at a low wage, are the ideal solution, but it is not always possible to implement such schemes. And even when it is possible, setting an appropriate wage level (not too high, not too low) can be a difficult

decision both in technical and in political terms. Further, safety nets may be captured by the non-poor in times of crisis, as shown by Ravallion (2002) in Argentina, Bangladesh and India. Finally, safety nets have complex administrative and managerial requirements, and are very difficult to implement quickly during times of crisis. The ideal solution is to set up the safety net before the crisis hits, but it can be difficult to gather political support for such an approach when there is no immediate need. These arguments are not meant to suggest that there is no role for safety nets in protecting the poor; only that they have important limitations. To put it bluntly, there are no examples of countries where safety nets made the world food crisis irrelevant to poor consumers and producers (and it is unlikely that any conceivable design could have done so).

What about trade policy as a way to protect poor consumers and farmers? Governments around the world, especially in Asia, use trade policies to stabilize domestic rice prices. Some countries lowered import tariffs, while others raised export taxes (or instituted export bans). Others simply maintained government monopolies on trade. Indeed, China, India and Indonesia all experienced domestic rice price increases during the world rice crisis that were much less than those experienced on the world market or in neighbouring countries. As described in the country chapters, all of these countries had trade restrictions that prevented domestic prices from rising substantially during 2008, thus reducing the impact of the price surges on poor consumers within their own borders. Of course, other countries (the Philippines, Viet Nam) also had trade restrictions that were not effective.

There are at least four main objections to using trade restrictions as a complement to safety nets. It is argued that:

- 1 trade restrictions reduce economic efficiency;
- 2 trade restrictions are not targeted to the poor and thus waste scarce resources;
- 3 given the persistence of shocks to world prices, it is not possible to stabilize domestic prices without substantial fiscal costs
- 4 trade-based domestic stabilization policies destabilize the world market, thus making it worse for consumers in other countries relative to the counterfactual of no trade restrictions.

While all of these objections have merit, they are all overstated.

In terms of economic efficiency, it is true that trade restrictions reduce aggregate welfare in a short-run sense: in order to maximize economic welfare it is necessary to let prices fluctuate freely on a month-to-month basis, indeed even day to day. This is true, however, only in a world without market failures. When prices fluctuate for reasons that are not due to changes in technology and preferences, the information content of prices is reduced. Thus, price stabilization can reduce dynamic efficiency losses (Dawe, 2001). Indeed, Timmer (2002) estimates that the growth benefits of price stabiliza-

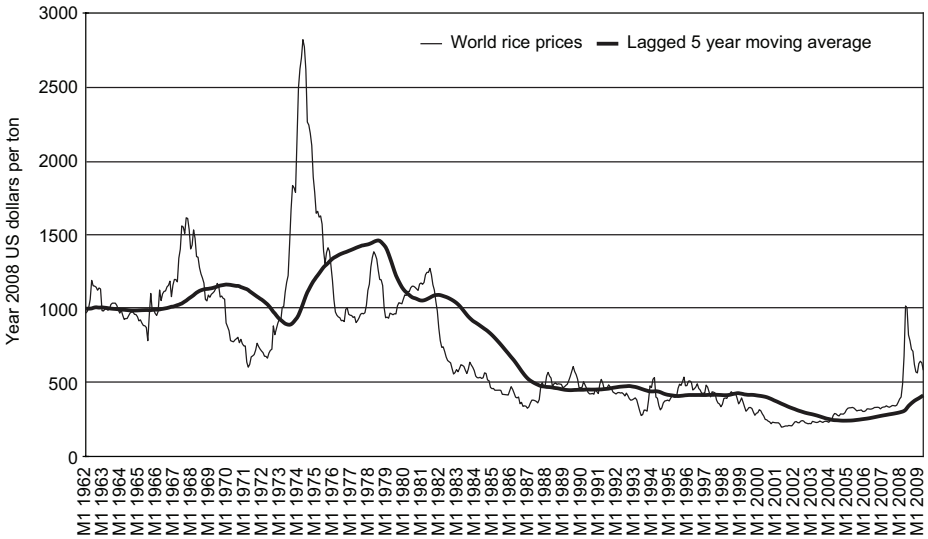


Figure 17.1 *World rice prices adjusted for inflation (monthly, January 1962 to April 2009) and a lagged five-year moving average*

Source: Author's calculations using raw data from IMF (2009)

tion in Indonesia during the 1970s and 1980s outweighed the costs, including deadweight losses.

It is also argued that trade restrictions are not targeted to the poor. This is true, but it misses a key point. A policy to protect the poor should not be evaluated on whether it also delivers benefits to the non-poor, but rather on the costs of reaching the poor. If a there is a low-cost policy that delivers benefits to the poor, and at the same time happens to deliver benefits to the non-poor at zero or low marginal cost, then the benefits to the non-poor should not be considered a disadvantage (unless society derives utility from reducing the income of some of its citizens). Instead, the policy should be evaluated on the basis of its total costs relative to the benefits delivered to the poor. A well-implemented trade policy could have very low costs, and in an economy with reasonably well-functioning markets, could deliver benefits to nearly all of the poor. In such cases where the policy is low cost, it makes sense to minimize the number of poor people who are excluded from its benefits even if many non-poor also reap some benefits.

Another objection to price stabilization policies is that shocks to world prices exhibit long-lasting persistence, so that stabilizing the domestic price at a given level will incur substantial fiscal costs that are most likely to be much greater than any benefits. Again, this is true, but it assumes that the target price remains unchanged from year to year. If the target price is allowed to adjust (but slowly) to changes in world prices, then domestic prices can follow the long-run trend of world prices without being subject to sharp year-to-year variability, as shown in Figure 17.1 (which sets the domestic price equal to a

lagged five-year moving average of the world price). Other simple rules are also possible – the important thing is to be sure that the target price is not constant but adjusts over time. Even if the target price adjusts, it is still inevitable that, given a large enough shock, the scheme will eventually collapse in the sense that it will become bankrupt or will fail to prevent a surge in prices. But such long-run inevitability is not necessarily a relevant guide to policy: in the famous words of Keynes, ‘in the long run we are all dead’. In the short or medium term, however, there can be important benefits to price stabilization if the scheme is well run.

Finally, it is also argued that trade-based domestic stabilization policies shunt price instability from domestic markets to world markets. Again, this is true. But instability must be absorbed somewhere when there are exogenous shifts in supply or demand in the world food economy. There are a few main possible shock absorbers: world market prices, stocks, safety nets or consumer and producer welfare. The policy chosen will determine which of these variables acts as the shock absorber.

Free trade is one possible option. This will force producers and consumers to bear the costs of price instability, but if enough countries participated in a free trade area that was well integrated in terms of information, transportation and communication, the price fluctuations that poor consumers would have to bear might be minimal. But there are political problems with such a solution; many countries simply do not want to implement free trade policies. This makes free trade a difficult choice for country A if country B might institute ad hoc export restrictions. The WTO is an attempt to solve these coordination problems, but it has made very little progress in changing rice trade policies in developing Asia. Further, if there are still substantial price fluctuations under free trade, then poor consumers and farmers will be the shock absorbers. This is clearly not optimal because the consequences can be permanent shocks to human capital even if the price shocks are only temporary.

Implementation or scaling-up of safety nets has a role to play, but as noted earlier they have many shortcomings and are not a panacea. It is possible to absorb the shocks through changes in stock levels, and clearly there is a role for stocks in smoothing price fluctuations. It should be noted, however, that national stocks can be effective at altering domestic prices only in the presence of trade barriers. Under free trade, stock releases will simply leak out to the world market.² In addition, stocks are expensive to hold, especially in tropical countries, so there are limits to the size of stocks that can be maintained in a cost-effective manner. And the incentives to hold government stocks dissipate over time in the absence of crises. This leaves world market prices as a shock absorber.

Ideally, world prices would exhibit little volatility, but, as noted earlier, shocks to supply and demand must be absorbed somehow. If the government in country A uses domestic stabilization policies such as a variable import tariff that decreases when world prices increase, this can help to stabilize domestic prices in A in the face of a world price shock. But the lower tariff in the face of

higher world prices leads to an increase in demand from country A that serves to increase world prices relative to a counterfactual of no change in policy by country A. Thus, country A's stabilization policy increases world market price instability for country B. Of course, if country B uses similar stabilization policies, there is no need for this additional instability to be passed through to domestic producers and consumers in country B. The more countries that implement such policies, however, the more that world price instability will increase, potentially causing problems for countries that do not implement stabilization policies. Excessive price volatility on world markets will also reduce the information content of those prices and make long-term trends in supply and demand more difficult to discern. Further, there are many instances of price stabilization programmes being implemented very poorly in actual practice. They can lead to systematic deviations of domestic prices from world prices, crowding-out of private sector marketing agents, and corruption. These are real costs of domestic price stabilization programmes.

Thus, domestic price stabilization policies have drawbacks as well, just as do the other alternatives. But ultimately, a choice must be made among several imperfect policy options: there are no costless solutions. Given that all policy options have disadvantages, it is unlikely that exclusive use of any one option will be optimal. Domestic price stabilization schemes have some distinct advantages: they can be implemented at low administrative cost (although the low-cost options are not always used), and, by using the power of markets, they can reduce the number of poor people who are excluded from the benefits. And it arguably makes more sense for the world market to act as a shock absorber (i.e. allowing domestic policies to exacerbate world market price volatility) than for domestic producers and consumers to be the shock absorbers. Indeed, until 2008, world rice prices were relatively stable for more than 20 years, even with the existence of domestic price stabilization policies in a large number of Asian countries. To the extent that one is worried about a decreased information content of world prices due to the implementation of domestic price stabilization, one possible solution would be to allow only the poorest countries to implement such stabilization under the auspices of the WTO.

There is also no doubt that domestic price stabilization policies can be improved (Dawe, 2007), and better stabilization policies might have allowed the world rice market to avoid the 2008 price spike. Two major types of improvement would seem to be relatively easy to implement. First, the costs of implementing policies could be reduced by allowing a greater role for the private sector in international trade, subject only to a variable import tariff/export tax system. This would mean less reliance on government procurement, storage and distribution, and it would mean that import decisions were less likely to be made for non-transparent political reasons that can contribute to uncertainty among private traders.

Second, panic and hoarding would be less likely if government policies were more predictable and less discretionary. This objective could be accom-

plished by using a variable tariff/export tax schedule that stipulates in advance the tariff/tax as a function of the world price, as opposed to a system where the tariff/tax can be changed in an ad hoc manner at any time for any reason. For example, the government could state that the tariff on rice imports would be equal to 45 per cent if world prices are \$300 per ton, 25 per cent if world prices are \$400 per ton, 10 per cent if world prices are \$500 per ton, and so on (the magnitudes used are purely illustrative). The tariff rate (but not the tariff schedule) would be adjusted at the end of every month based on prevailing world prices. Such a system would provide the private sector with much more predictability while simultaneously lowering costs. The administrative costs of implementing such a system would be close to zero, while still protecting domestic consumers and producers from fluctuations in world market prices and domestic production shocks. Such a variable tariff would entail instability in tariff revenues that might be difficult to manage, especially if these tariffs were a substantial portion of government revenue. In many cases, however, the changes in tariff revenue will be relatively small compared to the overall government budget. And the costs of instability in government budgets must be compared with the costs of instability in the food intake of the poor.

Indonesia has used an export tax on palm oil to stabilize domestic cooking oil prices, but has not attempted a similar scheme for rice imports. Indeed, while such a system is WTO compatible for export taxes, a similar system for import tariffs is not (Foster and Valdes, 2005). By contrast, ad hoc changes in tariff rates are permitted under the WTO provided they remain under the bound rate. It would seem that some changes in the WTO might be desirable to treat export taxes and import tariffs in a similar manner: the current system discourages predictability and adds to uncertainty in times of crisis.

Another alternative would be for importing and exporting nations to engage in long-term forward contracts at pre-agreed prices. Such contracts would serve to make the world market thinner and exacerbate world price volatility; in that sense, they are similar to domestic price stabilization. They would also need to take account of the fact that some of the international trade is carried out by private firms, for example in Thailand. Nevertheless, long-term forward contracts would encourage exporters to increase production and provide more reliable supplies to importing countries, provided that legal uncertainty surrounding contract enforcement could be kept to a minimum.

In conclusion, price volatility seems likely to continue in the medium term as long as there are linkages between grain and energy markets. Price volatility has real costs to the poor, and governments will continue to look for ways to reduce these costs. The optimal solution will vary from country to country, and will most likely involve some combination of targeted safety nets, stocks and trade policy. While trade policy is viewed by many as controversial, it seems wise to evaluate such programmes on the basis of their costs and benefits in specific contexts rather than excluding them as an option on a priori grounds.

Notes

- 1 The discussion will primarily focus on protecting consumers from sudden price surges, as opposed to protecting farmers from sudden price declines. This is because sudden large increases in prices are more common than sudden large decreases (Deaton and Laroque, 1992). However, the arguments presented are equally applicable to both increases and decreases in prices.
- 2 Regional or global stocks might address this problem in theory, but the practical experience with such schemes has not been heartening. For example, the ASEAN rice reserve has formally existed since 1979 but has never been used in actual practice.

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Index

- Abbott, P. C. 36
access to rice supplies 4, 40, 62, 96, 110, 113, 132
ADB (Asian Development Bank) 22, 274
AFET (Agricultural Futures Trading of Thailand) 205, 209
Africa 9, 69, 72, 163–164, 173, 305
aid to 305, 309
Emergency Rice Initiative for 160
rice production/consumption in 163
world food crisis in 163–164
see also East Africa; Southern Africa; sub-Saharan Africa; West Africa
African Rice Initiative (ARI) 169
Africa Rice Center 160
AFSR (ASEAN Food Security Reserve) 81
agricultural colleges 135
agricultural commodity markets 7, 66–67, 71–72
agricultural credit *see* loans
agricultural employment 102–104, 105, 106, 109
agricultural machinery subsidies 258, 259
agricultural machinery trade 92
agricultural productivity 65, 135–137
and technology 4, 5, 98, 108, 136, 247, 248–249, 250, 274, 279
agricultural research 4, 34, 133, 136–137, 140
aid 182, 305, 309, 311, 314, 315
see also food aid
aman crops 92, 93, 94, 95, 107
Andhra Pradesh (India) 275, 282, 283
Angola 166, 173
animal feed 47–49, 95, 303, 304, 323, 331
ARI (African Rice Initiative) 169
Arkansas (US) 306, 307, 314, 315, 316, 323–324
ASEAN (Association of Southeast Asian Nations) countries 81, 85, 234–235, 307
Asia 5, 62, 69, 72, 127, 161, 171, 173, 325, 345
GDP in 73–74, 75
least-developed countries 74, 79
medium-term outlook for 73–79
net trade positions in 74–79
productivity in 135, 146, 167, 275, 310–311
Asian Development Bank (ADB) 22, 274
Asian economic crisis (1998) 114, 130, 283
Asian rice policy 8–10, 62, 80–83
aus crops 92, 93, 94, 108
Australia 67, 75, 204, 307
BAAC (Bank for Agriculture and Agricultural Cooperatives) 192, 193, 196, 197, 207, 208–209
Badan Urusan Logistik *see* BULOG
balikbayan boxes 326
Balisacan, A. M. 130–131, 137
Baltic Dry Goods Index 155
Bangladesh 8, 19–20, 136, 350
diet/nutrition in 96
export bans in 105, 348
floods/cyclones in 99, 100, 106
food aid to 95, 318
food production/availability in 92–97
food security/insecurity in 97–99, 102–104
100 Days Employment Scheme in 106
and India 98, 99, 289
inflation/incomes in 101–104
market deregulation in 92
marketing margin in 101, 102
micro-credit in 106–107
PFDS/safety net programmes in 104, 105–106, 108
population growth in 92
private traders in 347–348
rice-growing seasons in 92–95
rice imports/exports of 95–96, 347–348
rice market volatility in 91–108
rice policies in 92, 95, 96, 104–108
rice prices in 97–104, 108, 347
rice production/yields in 92–95, 106–107, 278
rice stocks in 98–99, 104, 105, 108
banks 106–107, 139, 192, 209
international 22, 45, 65, 150, 274, 327

- Barker, R. 3
- barn-house pledging 192, 193, 207
- basis trading 205
- basmati rice 99, 276, 287, 322
- Benin
- exchange rates in 151–152, 153, 154–155
 - millet/rice import prices in 156–158
 - productivity in 145–146, 147, 166, 169
 - rice consumption in 145, 146, 149, 173
 - rice imports to 146, 148
 - rice policies in 160, 161
 - self-sufficiency ratio/surpluses in 146, 149
- Bennett, M. K. 3
- Benz, H. D. 178
- bilateral/multilateral agreements 83–84
- biofuels 6, 17, 35, 36, 65, 74, 262, 274
- and maize prices 64, 309, 345–346
 - and oil/petroleum prices 71–72, 73, 345–346
 - see also* ethanol
- black market 194
- blended rice 302, 303
- Block, S. 131
- border price interventions 152, 154, 158, 159
- borders, national 23, 99–100, 115, 151, 181, 239, 347
- boro crops 92–94, 95, 100, 108
- brand recognition 249, 250
- Brazil 23, 64, 75, 325
- Briand, A. 7
- Britain 171
- brown rice 301–302, 306
- BRR1 dhan 28/29 varieties 94
- BULOG strategy (Indonesia) 113, 114, 116, 118–121, 326
- Burkina Faso
- exchange rates in 151–152, 153, 154–155
 - export ban in 181
 - food riots in 150, 180
 - millet/rice import prices in 156–158
 - poverty in 150
 - productivity in 145–146, 147, 166
 - rice consumption in 145, 146, 149, 172
 - rice imports to 146, 148, 176
 - rice policies in 160, 161
 - self-sufficiency ratio/surpluses in 146, 149
- Burundi 166, 173
- California (US) 306, 307, 308, 314, 315, 324, 326, 331
- Cambodia 9, 22, 23, 79, 99, 136, 233–250, 308
- export ban in 241, 286
 - food aid to 317, 318
 - irrigation in 235, 237, 249
 - Khmer Rouge period 236
 - marketing systems in 239–242
 - population growth in 234, 235
 - and post-harvest facilities 239, 248, 250
 - price trends/poverty in 234, 243–246, 347
 - production costs/comparative advantage in 242–243
 - production systems/trends in 235–239
 - rice economy of 234–235
 - rice exports of 181, 208, 233, 235, 238–241, 246–250
 - rice-growing regions in 236
 - and Thailand/Viet Nam 233, 234, 235, 239, 240–241, 242, 243, 244, 248, 249–250
 - varieties grown in 235, 237–238, 240, 244
 - yield growth in 236–237, 247
- Cameroon 150, 166, 170, 173, 176, 180
- Canada 322, 325
- Can Tho (Viet Nam) 223, 226
- Cape Verde 170, 173
- Caribbean 72, 322
- CARP (Comprehensive Agrarian Reform Program, Philippines) 139
- cash transfers 114, 140
- CBOT (Chicago Board of Trade) 71
- CCTs (conditional cash transfers) 140
- Central Africa 164, 165, 166, 168, 182
- rice consumption in 170, 174, 177
 - rice imports to 176, 183, 184
 - see also* CFA Zone
- Central African Republic 166, 173
- Central America 322, 325
- cereal *see* grain
- CFA (Communauté Financière d'Afrique) Zone 151–152, 153, 158
- currency of 178, 180
- CGD (Center for Global Development) 24, 327, 328, 329, 331
- Chad 166
- Char areas (Bangladesh) 106
- Chicago Board of Trade (CBOT) 71
- children 131
- China 8, 36, 75, 255–272, 275
- agricultural productivity in 136, 137, 167
 - and CRTC 195
 - export duties in 262–263, 271
 - fertilizer duties in 262, 264–265
 - food security of 255, 265, 271
 - grain export restrictions in 257–264, 266
 - grain production policies in 257–261, 271–272
 - grain production profitability in 269–270, 271
 - meat prices in 255–256
 - oil demand of 65
 - rice consumption in 300
 - rice exports of 9, 23, 67, 74, 76, 263, 307
 - rice/grain stocks of 17, 41, 65, 70, 257, 265–266, 271
 - rice prices in 204, 255, 266, 267, 346, 348
 - rice production in 257, 260–261, 270–271, 278
 - soybean prices in 267, 268, 269
 - surpluses in 261

- VAT in 258, 262, 263
and WTO 256, 260, 262, 272
- CIMMYT (International Maize and Wheat Improvement Center) 5
- CIPs (Central Issue Prices, India) 284–285
- civil war 150
- climate change 140
- climatic constraints 99, 137, 275, 348
- coarse grain 5–6, 76
- coarse rice 98, 100, 101, 234, 236, 315, 322
- colonialism/post-colonialism 170–172
- commodity funds 66
- commodity markets 7, 62, 64
boom/crash 45, 66, 80
characteristics of 39–40
and financial markets 43–56
price formation in *see* food prices
price indexes 39
speculation on *see* market speculation
supply/demand in *see* supply/demand models
and supply of storage model *see* supply of storage model
uncertainty and 18, 19, 20, 22, 23, 24
volatility 71–73, 346
- commodity reserves 80–81
- commodity-system analysis 143
- communications 121
- Comoros 166, 170, 173, 177
- competitiveness 160, 178, 179, 209, 287, 319–321
- Comprehensive Agrarian Reform Program *see* CARP
- conditional cash transfers (CCTs) 140
- Congo 166, 173
- Congo, D. R. 166
- Connell Rice and Sugar 318–319
- corn *see* maize
- corporations 135
- corruption 138–139, 202–204, 207–208, 349
- Côte d'Ivoire 150
rice consumption in 169, 170
rice imports to 175, 176, 178, 318
rice production in 164–165, 166, 169
- Cotonou (Benin) 154
- CPI (consumer price index) 110, 151
- credit guarantee programmes 315, 319, 320
- cropping intensity 220
- cropping systems 108, 221–222
- CRTC (Council on Rice Trade Cooperation) 195
- Cuba 314, 315, 316, 318, 325
- CV (coefficient of variation) 32, 34, 51, 54–55, 56, 69, 111, 124–126, 199
- cyclones 24, 99, 100, 106
- Dakar (Senegal) 154
- DAP (diammonium phosphate) 226, 230, 281
- data issues 39–40, 56, 134, 234
see also market information
- decentralization 139
- deforestation 35
- Denning, G. 160
- Dethloff, H. 317
- developing countries 72, 73, 74, 137, 345, 347
- Diagne, A. 169
- diesel 102, 107, 242, 248
- diet 6, 96, 126–129, 274
and income 127, 174
- Doe, Samuel 150
- domestic rice markets 8, 9, 15–16, 70, 97–104, 346–349
buffering of 152, 155, 159, 161
and world rice prices 150–160, 161
- drought 5, 41, 96, 140, 155, 165, 283
- EAERR (East Asia Emergency Rice Reserve) 81, 305, 307–309
- East Asia 72
- Eastern Africa
rice consumption in 169–170, 174, 177
rice imports to 176, 183, 184
rice production in 164, 166, 167, 168, 177, 182
- economic growth 39, 42
- economies of scale 144
- education 131, 133, 135
- EEP (Export Enhancement Program, US) 320, 321
- eggs/dairy consumption 97, 129, 255
- Egypt 23, 67, 99, 286, 307, 325
- elasticity of demand 178, 196
see also short-/long-run elasticities
- Ellender, Allen 317
- El Niño 130
- emergency reserves 80–81, 85, 104, 115, 305, 307–309
- Emergency Rice Initiative for Africa 160
employment 245, 285, 301, 349
see also agricultural employment
- environmental degradation/costs 35, 137
- environmental sustainability 275
- ES (exportable surplus) 245–246
- ethanol 6, 36, 47, 263, 309, 311
- Ethiopia 166
- euro 43, 51, 52, 151, 178
- Europe 72, 170–171, 173
- European Union (EU) 64, 75, 80, 249, 320, 325
- exchange rates 43–44, 45–47, 71, 121, 151–155
RER appreciation 151–152
- exportable surplus (ES) 245–246
- export bans 23, 31, 41, 42, 67, 105, 121, 160, 181, 191, 204, 274, 309–310
- export duties 181, 182, 262–264, 265, 271, 347, 352–354
- export licences 194, 257, 262, 263

- famine 35, 97
- FAO (Food and Agriculture Organization, US) 8, 17, 24, 36, 64, 71, 72, 73, 113, 160, 274
 Committee of Commodity Problems 82
- Farmer Assistance Fund (FAF) 193, 208–209, 212
- farmer associations 117
- farmers 122, 126, 132
 communications with 121
 credit schemes for *see* loans
 incentives for 91, 104, 108, 120, 275, 279
 knowledge of 35
 off-farm employment of 301
 payments/subsidies for 259
 responsiveness of 34
 rich 198
 vulnerability of 133, 135
- farm-gate prices 100, 101, 116, 126, 134, 198–201, 324
- FCI (Food Corporation of India) 281–282, 283–284, 290
- fertilizers 5, 6, 34, 35, 94, 105, 167–169, 181
 bonds 281
 costs 185, 230, 242, 243, 271, 301
 duties 262, 264–265
 market 226–227
 subsidies 107, 133, 219, 258, 259, 260, 271, 275, 279, 280–281
- FIELDs programme (Philippines) 133
- financial regulation 66
- fish consumption 97, 127, 129
- floods 96, 99, 100, 106, 140, 283, 348
- flour products 263
- FOB (free on board) prices 24, 98, 209
- food aid 314, 315, 316, 317–319, 320, 326, 330
- food commodities *see* commodity markets
- food crises 3–10, 155
 1972–3 5–6
 2007–8 *see* world food crisis (2007–8)
 and market forces 3–4
 and rice prices 7–8
 state intervention in 4
- food price dilemma 4
- food prices
 and conflict 150–151
 cross-commodity linkages in 47–52
 and exchange rates 45–47
 high, causes of 30–37
 and inflation 102, 103, 255–257
 long-term trends in 63–64
 and market characteristics 39–40
 medium-term projections of 75
 and oil prices 47, 48, 51, 52, 114, 121, 309
 policy actions for 72
 and poverty 150
 sharp decline in 31, 61, 62
 short-/long-run elasticities in 31–34, 40–43
 simple model of 31–32
 spikes in 4, 7, 40, 61, 62, 328
 stabilization, optimal 345
 supply/demand models of *see* supply/demand models
- food production shocks 67, 104
- food riots/unrest 150, 164, 180, 191
- food security 3, 7, 16, 81, 82, 109–110
 and distribution systems 105–106
 household 123
 and inflation 102–104
 international system for (IRFSS) 83–85
 and rice trade 8
 self-sufficiency *see* self-sufficiency
see also under specific countries
- food stocks 104–105
- France 171
- Frankel, J. 66, 71
- free market 25, 347, 352
- fruit production 127, 129, 221, 222
- fuel prices 114, 115, 274
see also diesel
- fuel subsidies 257, 260
- Fuglie, K. O. 65
- Fulbright, J. William 316, 317
- futures markets 7, 18, 24, 30, 37, 45, 65–66, 329
- G8 countries 271
- Gabbert, J. Stephen 317, 318–319
- Gabon 166, 170, 173
- Gajigo, O. 160
- Gambia 166, 169, 171, 179
- Gardner, B. L. 4
- GATT (General Agreement on Tariffs and Trade) 260, 306, 323, 328
- GDP (gross domestic product) 71, 73–74, 75, 127–128
- GFI (government financial institutions) 139
- Ghana 166, 169, 173, 175, 176, 178, 325
- Gilbert, C. L. 71
- global financial crisis 44–45, 61, 66, 71, 73, 130–131
- globalization 35
- glutinous rice 322
- GMOs (genetically modified organisms) 35
- GOANA (Big Agricultural Offensive for Food and Abundance, Senegal) 160
- governance 138, 139, 248–249, 250
- government financial institutions (GFIs) 139
- GPP (government purchase price) 110–111, 113, 119, 122
- grain consumption 127, 129, 172
- grain export subsidies 262–263
- grain prices 6, 25, 30, 36, 255
 and biofuel production 64, 346
 government intervention in 104, 256–257, 265–266, 271
 long-run relationships in 52–56
 spikes in 7, 9, 40
see also maize prices; wheat market

- grain production 4, 5–6, 169
 support/subsidies for 258–260
see also maize; wheat
- grain stocks 99, 100, 274
- Granger causality test 7, 30, 43, 44, 46–47, 55, 71
- Green Revolution 5, 135, 279
- Grosh, M. 349
- groundnuts 170–171
- groundwater 92
- growing seasons 8, 20–22
- GSM-102 credit guarantee programme 320
- G-to-G (government to government)
 contracts 19, 20, 24, 206, 313
- Guinea 150, 160, 176, 181, 318
 rice consumption in 169, 170
 rice production in 164–165, 166, 169, 179
- Guinea-Bissau 166
 rice consumption in 169
- Gulati, A. 280
- GVA (gross value added) 137
- Haryana (India) 275, 281, 282, 283
- HCMC (Ho Chi Minh City, Viet Nam) 21
- Herd, R. W. 3
- high-yielding varieties 167–169
- hoarding 23, 41, 42, 67, 122, 204, 224, 283, 326, 353
- Hom Mali* rice 199, 201–202
- human resources 140, 231
- 100 Days Employment Scheme (Bangladesh) 106
- hunger/malnutrition 4, 131–132, 150
- hybrid varieties 94
- ICBs (international commodity bodies) 82
- IEA (International Energy Agency) 84
- IGGs (intergovernmental groups of commodities) 82
- IMF (International Monetary Fund) 39
- import licences 113
- incomes 35, 163, 174, 192, 209, 271
 and diet/nutrition 95–96, 127–128
 and food expenditure 109–110, 128, 129, 245
 and inflation 102–104, 214
- India 5, 8, 36, 40, 79, 136, 273–290, 350
 and Bangladesh 98, 99, 289
 and CRTC 195
 Essential Commodity Act (ECA, 1955) 281, 290
 export ban by 18–20, 99–100, 191, 209, 210, 256, 274, 282–283, 286, 289, 309, 327
 FCI activities 281–282, 283–284, 290
 fertilizer subsidies in 280–281
 food aid to 317, 318
 food security in 286
 future rice sector reform in 275, 289–290
 and global rice market 275, 276, 277–279, 286, 288–290, 313
 MSP in 274–275, 276, 279, 280, 286
 oil demand of 65
 population 274, 286
 poverty/grain prices in 284–285, 287, 290
 procurement policy in 281–283, 290
 protection coefficients in 275, 287
 rice exports of 9, 24, 41, 67, 74, 76, 95, 181, 276, 277, 286, 322
 rice/grain stocks in 279, 283–284, 285
 rice millers' levy in 275, 281–282, 286
 rice policies in 274–275, 279–288
 rice prices in 98, 204, 276, 284–285, 286, 346, 348
 rice production in 167, 275–276, 285
 rice trade liberalization in 286–288
 subsidies in 275, 279–281
 TPDS in 275, 283, 284, 290
 wheat production in 274, 276, 280
- indica rice 257, 258, 266, 267, 307, 314
- Indonesia 5, 75, 109–122, 136
 BULOG strategy in 113, 114, 116, 118–121, 326
 fertilizer market in 116–117
 food aid to 317, 318, 321
 food production in 113
 food security/insecurity in 109–110, 114, 115, 122
 fuel price increases in 114, 115
 price stabilization in 8–9, 110–115, 118, 120, 122, 347, 351, 354
 RASKIN programme in 114, 115, 119
 rice imports/exports 9, 74, 77, 113, 114, 115, 317, 325, 329
 rice policy in 109–115
 rice prices in 110–122, 346, 348, 349
 rice procurement/distribution in 114, 115, 118–121
 rice production in 116–118, 278
 rice self-sufficiency of 8
 rice stocks in 110, 113, 114, 115, 119, 279
 small-scale farmers in 109
 and world rice crisis 110, 111, 113, 114–115, 121–122, 313, 326
- inflation 39, 101–104, 111, 206–207
- information dissemination/exchange 121, 195, 205
see also market information
- infrastructure 5, 133, 179–180, 220, 248, 249, 250, 271
- input intensity 94
- insect pests 95, 137
- institutional framework 62, 80–83, 248–249, 250
- interest rates 73
- intergovernmental groups of commodities (IGGs) 82
- international commodity bodies (ICBs) 82
- international contracts 83–84
- international donors 4, 5
- International Maize and Wheat Improvement Center (CIMMYT) 5

- International Settlements Bank 45
 investment funds 45
 Iraq 320, 325
 IRFSS (international rice food security system) 83–85
 IR varieties 244
 IR I variety 11
 IR III variety 113
 IR66 variety 237, 238, 240
 Irrawaddy Delta (Myanmar) 24
 irrigation 5, 35, 92, 94, 99, 105, 118, 133, 146, 165–167, 235, 315
 fuel for 107
 investment 138, 141, 182, 185, 249
 subsidies 275, 279
 IRRI (International Rice Research Institute) 5, 143
 Isvilanond, S. 197
 Ito, S. 300
 Ivanic, M. 245
- Japan 8, 75, 275, 299–311
 agricultural sector in 303–304
 discarded land in 300–301, 304
 and EAERR 305, 307–309
 food policies budget in 299, 304–305
 food security/insecurity of 299, 301, 303, 304
 foreign aid from 305, 309, 311
 and global rice market 305–310
 government ministry (MAFF) in 299, 304, 305, 329, 331
 and MA rice imports 305, 306–307
 media in 299, 300, 301–302, 303
 and Philippines *see under* Philippines
 rice consumption in 300–301
 rice imports to 300, 306–307, 322–323, 325
 rice prices in 301–303, 322–323, 345, 346, 347
 rice stocks/surplus of 42–43, 49, 308, 323, 326–330
 supporting/development role of 310, 311
 and US 9–10, 19, 24, 306, 307, 313–314, 316, 322–323, 326, 327, 328–331
 japonica rice 257–258, 266, 267, 306, 307
 jasmine (*Hom Mali*) rice 199, 201–202, 322
 Java (Indonesia) 118, 120, 121, 131
 Jha, S. 139
 Jordan 318, 322, 325
- Kako, T. 300
 Kalimantan (Indonesia) 118, 120
 Kenya 166, 173, 176, 179
 Kigali (Rwanda) 164
 Korea, Republic of *see* ROK
 Koshihikari variety 301, 302, 303
- labour costs 230, 243, 301
 labour productivity 135, 136, 139
 Lançon, F. 178
- land reform 139
 land use/productivity 65, 73, 92, 116, 136, 167, 168
 disused/abandoned land 300–301, 304
 Laos 79, 136, 208
 Latin America 72, 320
 LGUs (local government units) 133, 139, 140
 Liberia 150–151, 166, 170, 318
 livestock feed *see* animal feed
 loans 105–107, 133, 139, 197–198, 319–321
 see also credit guarantee programmes; marketing loan programme; paddy pledging programme
 local government 117, 133, 140, 227
 units (LGUs) 133, 139, 140
 locally grown rice 178, 179
 Lokollo, E. M. 111
 Louisiana (US) 314, 315, 317, 323–324
- Madagascar 165, 176, 180, 181
 rice production/consumption in 169–170, 173, 177
 maize 95, 257, 261
 consumption 174
 profitability of 269–270
 maize prices 6, 7, 17, 30, 36, 45, 61, 255
 and biofuel production 64, 309, 345–346
 and exchange rates 45, 46
 and government intervention 265
 and other grain prices 47–49, 51, 52–56, 205, 273, 274, 278–279, 289
- Malawi 166, 173, 184
 Malaysia 23, 75, 136, 206
 rice consumption in 128
 Mali 160, 161, 180, 181
 rice consumption in 169, 172
 Rice Initiative scheme in 160, 181, 182
 rice production in 164–165, 166, 169, 178, 179, 184
- MA/MMA (minimum access/minimum market access) 305, 306–307, 308, 330–331
 market deregulation 92
 market forces 3–4, 255
 market information 82, 231
 marketing loan programme (US) 314, 315, 319–321
 marketing margin 101, 102
 market risk 66
 market speculation 7, 8, 9–10, 24, 29–56, 65–66, 99, 121, 309, 348–349
 ‘outside’ speculators 38, 45, 348
 and supply of storage model *see* supply of storage model
 Martin, W. 245
 Mauritania 166, 173
 Mauritius 170, 177
 MDGs (Millennium Development Goals) 91, 130, 131
 Mears, L. A. 317

- meat consumption 97, 127, 129, 178, 255–256
- media 23, 83, 121, 205, 274, 325, 327
see also under Japan
- Mehta, A. 139
- MEPs (minimum export prices) 18, 19, 99, 100, 276, 286
- Mexico 320, 322, 325
- micro-credit 106–107
- Middle East 72, 320, 325
- Milazzo, A. 349
- milled rice 39, 76–79, 96, 111, 172, 175, 176, 177, 244, 303, 308
regular/well (RMR/WMR) 124–126, 127
- Millennium Development Goals *see* MDGs
- millet 153, 154, 156–158, 174
- minimum access *see* MA/MMA
- minimum export prices *see* MEPs
- minimum stock requirement (MSR) 120
- minimum support price *see* MSP
- Missouri (US) 314, 315
- Mitchell, Don 36
- MMA (minimum market access) *see* MA/MMA
- monetary policies 66, 71
- Monga areas (Bangladesh) 106
- monitoring 115, 135, 219, 231
- monsoons 5, 92, 94
- Morgan, Dan 313, 316–317
- MOU (memorandum of understanding) 22
- Mozambique 165, 166, 173, 180
- MRD (Mekong River Delta) 20, 21, 221, 223, 224, 225, 226, 227–228
An Giang Province (Viet Nam) 227, 229–230
- MSP (minimum support price) 274–275, 276, 279, 280
- MSR (minimum stock requirement) 120
- Munier, B. 7
- MVs (modern varieties) 94, 95
- Myanmar 22, 24, 79, 95, 99, 167, 208
- Narayanan, S. 280
- Nargis, Cyclone 24
- national policies 8, 17, 18–25, 80–83, 104–108
- natural disasters 24, 99, 115
see also drought; weather events
- NBS (nutrient-based fertilizer subsidy) 281
- NERICA varieties 169, 170
- NFA (National Food Authority, Philippines) 21, 24–25, 41, 133, 138–139, 331, 348
- NGOs (non-governmental organizations) 106–107
- Niamey (Niger) 154
- Niger
exchange rates in 151–152, 153, 154–155
millet/rice import prices in 156–158
productivity in 145–146, 147, 166
rice consumption in 145, 146, 149, 169, 172
rice imports to 146, 148, 181
rice policies in 160, 161
self-sufficiency ratio/surpluses in 146, 149
- Nigeria 23, 144
National Food Security Program 181, 182
rice consumption in 169, 173
rice imports to 175, 176, 178, 179–180
rice production in 164–165, 166, 169, 179
rice stocks of 180–181
- NPC (nominal protection coefficient) 287
- NRAs (nominal rates of assistance) 158, 159
- Nusa Tenggara (Indonesia) 118, 120
- nutrient-based fertilizer subsidy (NBS) 281
- nutrition 96, 131–132
- Oceania 69
- ODA *see* aid
- OECD (Organisation for Economic Co-operation and Development) 73, 274
- oil palm *see* palm oil
- oil prices 6, 7, 17, 25, 35, 36, 43–44
and biofuels 71–72, 345–346
and food prices 47, 48, 51, 52, 114, 121, 309
see also petroleum prices
- Olken, B. 349
- ON (Office du Niger, Mali) 181
- OPEC (Organization of Petroleum Exporting Countries) 6, 195
- open interest 71
- open market sales 105, 106, 182
- options markets *see* futures markets
- OREC (Organization of Rice Exporting Countries) 22
- ORS (Office Riz-Segou, Mali) 181
- Oryza glaberrima* 170
- Oryza sativa* 170
- Ouagadoudou (Burkina Faso) 154
- paddy pledging programme (Thailand) 191–194, 196–205, 207–208, 214–215
borrowing options in 192
budget 197
changes in 193–194, 199
costs of 196–197
and export competitiveness 211–212
and FAF (Farmer Assistance Fund) 193, 208–209, 212
government losses in 197
organizational structure 193
performance 194
political economy/rent-seeking in 196, 202–204
and poor farmers 196, 197–198
Public Warehouse Organization in *see* PWO
and rice market structure 196, 201–202
and rice mills 194, 202, 203–204
and rice prices 196, 198–201
warehouse deposit slip scheme 192, 193–194, 207

- Pak Irri-25% rice 63
- Pakistan 40, 95, 136, 322
and CRTC 195
rice production in 40, 167
- palay rice 126, 134
- palm oil 48, 114, 171, 192, 354
- panic buying 41, 56, 67, 122, 224, 325–326
- parboiled rice 95, 98, 210
- Pare-Pare (Indonesia) 115
- Pearson, S. R. 143
- pests/diseases 95, 137
- petroleum prices 35, 45, 65
and biofuels 71–72, 73
- PFDS (Public Food Grain Distribution System) 105–106, 108
- Philippines 5, 19, 22, 24, 75, 123–141, 308, 313
employment in 137
FIELDS programme in 133
food aid to 318, 321
food consumption in 127–128, 129
food security in 123, 124, 135, 140
GDP/incomes in 127–129, 130, 137
governance in 133, 139
government response in 132–135
importance of rice in 126–132
and Japan 24, 42–43, 313, 314, 326, 329, 330, 331, 332
land reform in 139
local government/LGUs in 133, 139, 140
NFA activities *see* NFA
and panic buying in US 326
policy recommendations for 140–141
population growth in 127, 137, 140
poverty/malnutrition in 123, 130–132
reasons for rice crisis in 135–139
rice consumption in 126–130, 169
rice imports to 21, 24–25, 42–43, 74, 78, 129, 134–135, 137, 325
rice prices in 21, 123, 124–126, 347, 348
rice production/productivity in 123–124, 135–137
rice sector constraints in 137–139
rice stocks in 21, 41
rural finance in 139
speculative buying by 99, 191, 204
and Thailand 206
and Viet Nam 20–22
wheat/maize prices in 124
- Phnom Penh (Cambodia) 240, 244, 248
- photoperiod insensitive varieties 235, 237–238
- PL 480/Food for Peace programme (US) 314, 317, 318, 320–321
- Poapongsakorn, N. 197
- population 6, 17, 73, 74, 92, 127, 137, 140, 182, 184
and rice prices 33, 35, 36, 56, 274
- pork consumption 255–256
- post-harvest facilities 133, 239, 248, 250
see also rice mills/millers
- potash fertilizers 107, 281
- poultry industry 95
- poverty 4, 106, 129, 131–132, 150
reduction 130–131
and rice distribution/allocation 114, 115, 118–121
and rice prices 16, 102, 150, 245, 284–285
safety net policies for *see* safety net programmes
- price expectations 39–40, 41, 44–45
- private sector 5, 96, 99–100, 104, 106, 132
imports/exports by 81, 96, 99–100, 104, 107, 113, 347
investment 92, 138, 139
and rice extension programmes 141
stocks held by 120, 348
- profitability 99, 101, 108, 120, 310–311
- protectionism 322–323
- Public Food Grain Distribution System *see* PFDS
- public stockholding 35, 104–105, 260
- pulses 97, 105, 129, 285
- Punjab (India) 275, 281, 282, 283
- purchasing power 102
- Pursell, G. 280
- PWO (Public Warehouse Organization, Thailand) 192, 193, 196, 206, 207, 209
sues exporters 203, 204
- rained rice production 116, 156, 165, 249
- RASKIN programme (Indonesia) 114, 115, 119
- rationing systems 104
- Ravallion, M. 350
- Reardon, T. 172
- Red River Delta *see* RRD
- regular milled rice (RMR) 124–126, 127
- rent-seeking 196, 202–204
- RER (real exchange rate) appreciation 151–152
- 'reserves' system 84–85
- retail rice prices 99, 100–101, 126, 224–225, 301–303
- rice auctions 203, 206, 209, 212
- rice consumers/consumption 9, 34, 109–110, 122, 126–130, 310
and calorie supply 169, 174
forecasts 182–183
historical 170–171
reductions in 135
see also under specific countries
- rice exports/imports 5, 8–9, 23, 62, 239–241, 306–307, 309–310
constraints on 234, 248–249
credit guarantee programmes 315, 319
determinants of 178–180
and domestic crops 156–158
duties on *see* export duties
and exchange rates 151–155, 180
forecasts 182–184

- informal/smuggled 115, 135, 181, 208, 234, 239, 240, 243
 and smooth supply 41, 62, 80, 83–85
 and timing 135
see also under specific countries
- rice extension programmes 139, 140
 Rice Initiative scheme (Mali) 160, 181
 rice intensification programmes 5, 181
 rice market 5, 9, 62
 characteristics of 39, 55–56
 crisis in *see* world rice market crisis
 and national policies 80–83
 panic in *see* panic buying
 and rice stocks *see* rice stocks/reserves
 state role in 25, 108
 vulnerability/thinness of 7, 25, 30, 40, 276
- rice marketing systems 133, 138, 144, 219, 234, 239–242
 margins/costs 241–242
 rice market volatility 7, 9, 41, 42, 45, 56, 61–73, 81–82, 91–108, 144, 346, 352
 and commercial/non-commercial traders 70–71
 and exchange rates 71
 factors in 64–73
 and food security 109–110
 and policy actions 72, 80, 81–82
 and rice production 68–69
 and rice stocks 68, 69–70, 73
- Rice Millers' Association *see* RMA
 rice mills/millers 110, 194, 202, 203–204, 207–208, 248
 levies on 275, 281–282, 286
- rice prices 5, 8–9, 243–246, 350
 and conflict 150–151
 domestic *see* domestic rice markets
 and elasticity of demand 178
 and exchange rates 47
 and financial markets 43–56
 and hoarding *see* hoarding
 long term decline of 15, 34, 54, 55
 in market crisis (2007–8) 3, 7–8, 15–16, 21, 23, 273
 marketing margin 101, 102
 and other grain prices 49–51, 52–56, 156–158
 and paddy pledging programme (Thailand) 198–201
 and population 33, 35, 36, 56
 responsiveness to 178
 and rice stocks 29–30
 seasonality of 199–201, 243–244
 sharp decline in 67
 short-/long-run elasticities in 30, 31–34, 40–43, 52–56
 speculation on *see* market speculation
 stabilization policies 110–115, 118, 152, 155, 159, 347, 349–354
 statements on/forecasts of 23
 and supply of storage model *see* supply of storage model
- wholesale/retail 99, 100–101, 111, 126
- rice procurement 35, 104, 105, 107, 108, 110, 118–121
- rice production 6, 105–107
 coefficients of variation of 69
 constraints in 98, 99
 costs 105
 intensified 129, 133, 181
 local 178, 179
 and rice prices 8, 9, 17, 68–69, 91
- rice quality 179, 203, 211–212, 240, 244, 245
- rice retailers/retail prices 99, 100–101, 110
- rice stocks 3, 8, 23, 29–30, 39, 40–43, 65, 66, 113
 for emergencies *see* emergency reserves
 global system of 80–81, 84–85, 279
 and market volatility 17, 68, 69–70, 73, 80, 98, 180–181, 352
 minimum requirement (MSR) 120
 virtual 80
see also paddy pledging programme;
 supply of storage model
- rice traders 8, 9, 39, 55, 99, 110, 133, 206
 commercial/non-commercial 70–71
 constraints on 248–249, 283
 governments as 194, 201–202
 monitoring 115
 smuggling by 115, 135, 208
- rice yields 166–169, 223, 275
 gaps 137–138
 growth 35, 36, 92–95, 98
 and population 33
see also under specific countries
- RMA (Rice Millers' Association, US) 317, 318–319, 322–323
- RMR (regular milled rice) 124–126, 127
- ROK (Republic of Korea) 75, 307–308, 311, 322, 325, 331, 346
 food aid to 316, 317, 318
 rice consumption in 128, 178, 300
- RRD (Red River Delta, Viet Nam) 221, 223, 229
- rural economy 135, 137, 144
- rural infrastructure 5, 133, 138, 179–180, 185
- Russia 75, 318, 320
- Rwanda 164, 166, 173, 180
- safety net programmes 104, 105–106, 108, 349–354
 defined 349
 impacts of 349–350
 objections to 350–352
- Sahelian countries 145, 171
see also Benin; Burkina Faso; Niger; Senegal
- Samuelson, P. A. 68
- Saudi Arabia 322, 325
- Sawit, M. H. 111
- SBS (simultaneous-buy-and-sell) rice 306

- Scheiffer, Thomas 329–330
- Schmidhuber, J. 71
- seed certification 133
- seed distribution 117, 133, 181
- 'seed-fertilizer' generation 6
- seed subsidies 258, 259
- seed technologies 5, 35
- self-sufficiency 8, 133, 146, 149, 233, 255, 304
- Senegal 180
 - economic reforms in 159
 - exchange rates in 151–152, 153, 154–155
 - GOANA scheme in 160
 - groundnut production in 171
 - millet/rice import prices in 156–158
 - poverty in 150
 - privatization of imports in 159
 - productivity in 144, 145–146, 147, 166
 - rice consumption in 145, 146, 149, 169, 170, 173
 - rice imports to 146, 148, 158–160, 175, 176, 178, 181
 - rice policies in 158–159, 160, 161
 - self-sufficiency ratio/surpluses in 146, 149
- Seychelles 170, 177
- short-/long-run price elasticities 30, 31–34, 40–43, 52–56
- shrimp production 221
- Sierra Leone 151
 - rice consumption in 170
 - rice production in 164–165, 166, 169
- simultaneous-buy-and-sell (SBS) rice 306
- SinoGrain 265
- Slayton, T. 99, 327
- small-scale farmers 109, 144, 240, 245
 - see also* subsistence farmers
- Smil, Vaclav 300
- smuggling rice 115, 135, 181, 208, 234
- soap manufacture 171
- social protection programmes 105, 139, 285
- soil
 - nutrients 137, 138
 - salinity 95
- Somali variety 240, 244, 245
- South Africa 166, 175–176, 325
- South Asia 72
- Southeast Asia 5, 171
- Southern Africa
 - rice consumption in 170, 174, 177
 - rice imports to 175–176, 183
 - rice production in 164, 165, 166, 167, 168, 177, 182
- South-to-South aid 305, 309
- soybeans 17, 114, 259, 262, 263, 264, 267, 268, 309
 - profitability of 269–270
- stockpiling *see* hoarding
- stock to utilization ratios 69–70
- stress-tolerant varieties 140
- sub-Saharan Africa 9, 160, 164–185
 - colonialism/post-colonialism in 170–172
 - fertilizer consumption in 169
 - global food crisis in 180–182
 - grain consumption in 172
 - groundnut production in 170–171
 - land area harvested in 167, 168, 182
 - policy responses in 180–182
 - rice consumption in 169–174, 182–183
 - rice imports to 163, 175–185
 - rice imports to, forecasting 182–184
 - rice production in 164–169, 182, 184
 - sub-regions of 164–165, 166
 - urbanization in 172–174
 - varieties grown in 169, 170
 - water resources of 165–167
 - yields in 166–169
 - see also* CFA Zone
- subsidies 4, 105, 107, 115, 116, 139, 258–260, 269, 275
 - buffering of domestic markets 152, 155, 159, 161
 - crop-specific allocation of 280
 - fertilizer 107, 133, 257
 - machinery/fuel 257, 258
 - in paddy pledging programme 192–193, 197, 202, 208
 - and poverty 284–285, 287
- subsistence farmers 95, 106, 109, 137, 245
- substitution 64, 157
- Sudan 166, 173
- sugar production 64
- Sulawesi (Indonesia) 115, 118, 120, 121
- Sumatra (Indonesia) 118, 121
- supermarkets/retail chains 224, 326
- supply chain 39, 55, 240, 249, 250
- supply/demand models 29, 31–37, 56, 66–67
 - and high food prices 36–37, 63–64, 274
 - short-/long-run elasticities in 31–34, 40–43, 52–56
 - trends/factors in 34–36, 39
- supply of storage model 8, 29–30, 37–40, 55–56
 - relevance of 39–40
- Swaziland 166
- Taiwan (China) 300, 311, 324, 331
- Tanzania 166, 173, 180
- Targeted Public Distribution System *see* TPDS
- tariffs 105, 115
- taxes 4, 159, 160, 179, 181, 192, 225
 - export *see* export duties
 - VAT 160, 258, 262, 263
- Texas (US) 314, 315, 316
- TFP (total factor productivity) 65, 135–136
- Thai rice 47, 111
- Thai 5% broken 98, 111, 113
- Thai 15% broken 112
- Thai 25 % broken 126
- Thai 100%B variety 15, 24, 63, 226, 266, 267

- Thai A1 Super rice 63
 Thailand 5, 8, 40, 75, 136, 191–215,
 234–235, 309
 AFET activities 205, 209
 export cartel policy 22, 194–196
 MOC (Ministry of Commerce) 194–195,
 205, 206, 207, 208
 National Rice Committee 193, 205–206,
 208, 212
 paddy pledging programme *see* paddy
 pledging programme
 and Philippines 206
 rice consumption in 128, 169
 rice export cooperation strategy 195
 rice exports of 19, 22, 24, 41, 74, 78, 95,
 99, 180, 191, 204, 209–210, 213–214
 rice policies (pre-2007) 192–204
 rice policies (2007–2008) 204–215, 313,
 347
 rice prices in 98, 198–201, 347
 rice production/yields in 9, 167, 183, 235,
 278
 rice stocks of 24, 191, 194, 197, 199, 203,
 205, 206–210, 212–214
 Samak government 204–207, 208, 209,
 214
 Somchai government 208–209
 Surayud government 194, 204–205,
 209–210
 Thaksin government 194, 195
 and US 320, 321, 323
 and Viet Nam 191, 195, 204, 209, 211
 Timmer, C. P. 4, 327, 350–351
 Titapiwatanakun, B. 203
 Togo 166
 TPDS (Targeted Public Distribution System,
 India) 275, 283, 284, 290
 trade barter deals 83
 trade-distorting policies 260
 trade liberalization 286–288
 trade restrictions 99, 105
 see also export bans
 transparency 25, 66, 82, 212, 281
 transportation costs 19, 155, 203, 248–249,
 314
 Turkey 322, 325

 Uganda 166, 173, 180
 United States (US) 5, 6, 8, 40, 66, 75, 301
 Agriculture Department *see* USDA
 biofuels in 36, 64
 credit guarantee programmes 315, 319,
 320
 financial crisis in 44–45, 225
 food aid programmes 314, 315, 316,
 317–319, 320, 334–335, 336
 and Japan *see under* Japan
 marketing loan programme 314, 315,
 319–321
 panic buying in 326
 and Philippines 21–22
 PL 480/Food for Peace programme 314,
 317, 318, 320–321, 333–334
 politics of rice in 316–319
 rice balance sheet of 322
 in rice crisis 323–332
 rice exports of 95, 314, 315–323,
 324–325, 333–335
 rice industry background in 314–323
 rice market in 24, 41, 63, 71
 rice production/growing regions in
 314–315, 323–324, 333
 rice trade associations in 326, 327, 328,
 332
 RMA 317, 318–319, 322–323
 and subsidies/loans 287, 314
 and Thailand 320, 321, 323
 and world food crisis 325–326, 327
 urbanization 163, 172–174, 182–183, 184,
 310
 urban markets 144, 146, 152, 255
 urea fertilizers 107, 116, 117, 151, 226–227,
 280–281
 Uruguay Round (WTO/GATT) 260, 306,
 323, 328
 US 2/4% rice 63
 USDA (United States Agriculture
 Department) 23, 30, 233, 305, 319,
 321, 324
 and rice crisis 327, 328, 329
 US dollar 39, 66
 depreciation 17, 35, 44, 45, 71, 151
 and euro 43, 51, 52
 and oil prices 43, 51
 US Rice Federation 326, 327, 328, 332
 USTR (United States Trade Representative)
 322–323
 Uttar Pradesh (India) 275, 282, 283
 Uzbekistan 318, 321

 VAT (value-added tax) 160, 258, 262, 263
 vegetable oils 35, 40, 102, 105, 262, 269
 vegetables 97, 127, 129, 221, 222
 VFA (Viet Nam Food Association) 219–220,
 223, 231
 Viet 5% rice 63, 113
 Viet Nam 25% broken 19
 Viet Nam 9, 22, 24, 40, 43, 75, 136,
 219–231, 234–235, 313
 crop rotation in 221–222
 and CRTS 195
 export ban by 191, 204, 221, 225, 286,
 309, 310, 327, 332
 fertilizer prices in 226–227
 food aid to 317, 318
 food security of 220–221, 229, 230–231
 government ministries (MARD/MOIT)
 219, 220, 223, 224, 231
 Mekong River Delta *see* MRD
 Northern/Southern Food Corporation
 219, 231
 and Philippines 20–22

- planted area in 220, 221–222, 227–228, 229
- production costs/profits in 229–230
- rice exports of 19, 20, 23, 24, 41, 67, 74, 79, 95, 99, 223–226, 229
- rice prices in 223–226, 347, 348
- rice production in 167, 183, 221–223, 235
- rice sector in 219–220
- and Thailand 191, 195, 204, 209, 211
- VFA activities 219–220, 223, 224, 231
- yields in 221, 223, 228, 229, 230
- virtual stocks 80

- wages *see* incomes
- WARDA (West African Rice Development Authority) 143, 160, 169
- water resource 118, 137–138, 156, 275
 - see also* irrigation
- weather events 5, 18, 35, 73, 100, 107, 348
 - see also* climatic constraints; cyclones; floods
- welfare effects 146, 149
- West Africa 9, 143–161, 182
 - exchange rate effects in 151–155
 - export bans in 160
 - food riots in 150, 164
 - government investment in 144
 - groundnut production in 171
 - millet/rice import prices in 156–158
 - poverty in 150, 161
 - rice consumption in 144, 145, 146, 149, 160, 161, 169, 174, 177
 - rice imports to 144–145, 146, 148, 153–155, 158–160, 161, 175, 176, 183, 184, 185
 - rice prices in 144, 145, 146, 150, 347
 - rice production in 144, 145, 147, 160, 161, 164, 166, 167, 168, 177
 - rice trends in 144–150
 - trade policy responses in 158–160
 - and world rice markets 144, 150–160
 - yields in 143, 145–146, 158
 - see also* CFA Zone; *and see specific countries*
- West Bengal (India) 275, 282
- Weymar, F. H. 38
- WFP (World Food Programme) 7, 325, 331
- wheat 5–6, 7, 17, 95, 97, 172, 261
 - intensification programmes 5
 - profitability of 269–270
 - stocks 283–284
- wheat market 4, 6, 7, 8, 16, 17, 18, 19, 30, 36, 41, 45, 61, 114, 255, 267
 - and exchange rates 45, 46
 - government intervention in 255, 257–258, 265, 267
 - imports/exports 96, 105, 257
 - and other grain prices 47–49, 51, 52–55, 205, 289
 - and rice prices 49–51, 204, 273, 274
 - wholesale rice prices 111, 112, 126, 302
 - and retail prices 99, 100–101
- Wickizer, V. D. 3
- Wodon, Quentin 150
- women 131
- World Bank 65, 150, 274, 327
- World Development Report* (World Bank, 2008) 65
- World Food Conference (Rome, 1974) 6
- world food crisis (1972–3) 5–6, 159, 313
- world food crisis (2007–8) 6–10, 41, 220, 263, 271, 273–274, 299, 305, 328
 - and Asian rice policy 8–10
 - impact in Africa 163–164
 - lessons from 345–354
 - and market speculation 7, 40
 - and national policies *see* national policies and rice prices 7–8
- world rice economy 3, 40–41, 55–56, 62, 67–73, 74, 163, 196, 277–279
 - and domestic rice markets 150–160, 161, 227, 263, 274
 - exchange rates *see* exchange rates
 - India's influence on 276, 286, 287, 288–290
 - and international politics 313, 317–319
 - and national policies 80–83, 110–111, 121–122
- world rice market crisis (2007–8) 3, 15–25, 56, 110, 273
 - bubble pops in 24–25, 331–332
 - external factors in 17
 - and India's export ban 18–20
 - Philippine policies in 20–22
 - policy decisions and 17, 18–24, 25
 - rice prices in 15–16
 - speculation and *see* market speculation
 - Thai policies in 22
 - timeline of events 19
 - uncertainty and 18, 19, 20, 22, 23, 24–25
 - US and 323–332
 - Viet Nam's policies in 20
 - and wheat prices 17, 19
- Wright, B. D. 7
- WTO (World Trade Organization) 82, 256, 258, 260, 272, 290, 326, 352, 354
 - rice stocks 42–43, 314, 328

- Zambia 166, 173
- Zimbabwe 166, 173