- 1 The undernourishment estimates referred to in this discussion are calculated using the standard FAO methodology, modified when necessary to take account of incomplete data on production and trade. See FAO. 2008. The State of Food Insecurity in the World 2008. High food prices and food security threats and opportunities. Rome, p. 7.
- M. Demeke, G. Pangrazio and M. Maetz. 2009. Country responses to the food security crisis: nature and preliminary implications of the policies pursued. FAO Initiative on Soaring Food Prices (available at ftp://ftp.fao.org/docrep/fao/011/ ak177e/ak177e00.pdf).
- J. Piesse and C. Thirtle. 2009. Three bubbles and a panic: An explanatory review of recent food commodity price events. Food Policy, 34(2): 119-129; C.L. Gilbert. 2010. How to understand high food prices. Journal of Agricultural Economics, 61: 398-425: D. Headey and S. Fan. 2010. Reflections on the global food crisis: how did it happen? How has it hurt? And how can we prevent the next one? IFPRI Research Monograph 165, Washington, DC. International Food Policy Research Institute; D. Headey. 2011. Rethinking the global food crisis: the role of trade shocks. Food Policy, 36(2): 136-146; B. Wright and C. Cafiero. 2011. Grain reserves and food security in the Middle East and North Africa. Food Security, 3(Suppl. 1): S61-S76. FAO. 2009. Insecurity in the World 2009. Economic crises impacts and lessons learned. Rome.
- 4 Organisation for Economic Co-operation and Development (OECD) and FAO. OECD-FAO Agricultural Outlook 2011– 2020 (available at http://www.agrioutlook.org).
- 5 FAO. 2011. The State of the World's Land and Water Resources for Food and Agriculture. FAO Conference Document C2011/32. Thirty-seventh Session. Rome, 25 June–2 July.
- 6 World energy markets are much larger than world food commodity markets. Thus, food commodity prices will not have much effect on world energy markets.
- 7 R. López and G. Galinato. 2007. Should governments stop subsidies to private goods? Evidence from rural Latin America. *Journal* of *Public Economics*, 91(5): 1071–1094.
- 8 FAO. 2009. The State of Food Insecurity in the World 2009. Economic crises – impacts and lessons learned. Rome.
- 9 For a more detailed assessment of the evidence, see D. Dawe, S. Block, A. Gulati,

- J. Huang and S. Ito. 2010. Domestic rice price, trade and marketing policies. *In* S. Pandey, D. Byerlee, D. Dawe, A. Dobermann, S. Mohanty, S. Rozelle and B. Hardy, eds. *Rice in the global economy: strategic research and policy issues for food security,* pp. 379–407. Los Baños, Philippines, International Rice Research Institute.
- 10 M.A. Aksoy and A. Isid-Dikmelik. 2008. Are low food prices pro-poor? Net food buyers and sellers in low-income countries. Policy Research Working Paper 4642. Washington, DC, World Bank.
- 11 M. Ivanic and W. Martin. 2008. Implications of higher global food prices for poverty in low-income countries. Agricultural Economics, 39: 405–416.
- 12 A. Zezza, B. Davis, C. Azzarri, K. Covarrubias, L. Tasciotti and G. Anríquez. 2008. The impact of rising food prices on the poor. ESA Working Paper 08-07. Rome, FAO (available at ftp://ftp.fao.org/docrep/ fao/011/aj284e/aj284e00.pdf).
- 13 M. Robles and M. Torero. 2010. Understanding the impact of high food prices in Latin America. *Economia*, 10(2): 117–164. The difference in findings on impact of higher prices in Peru between Robles and Torero (2010) and Ivanic and Martin (2008) (see note 11) is most likely due to the fact that Robles and Torero used actual price changes, while Ivanic and Martin used a uniform price change across commodities.
- 14 Dawe et al. (2010) (see note 9).
- 15 The analysis in this report focuses on staple foods, as does most of the literature on this area. This focus has been driven by the large share of staple foods in the budget of the poor, and by the large price fluctuations for these commodities on world markets. Overall food-price inflation has fewer spikes and smaller increases than staple food prices, but the basket used to calculate food-price inflation is not representative of the budgets of the poor and thus is less relevant from a food-security perspective.
- 16 S. Block, L. Kiess, P. Webb, S. Kosen, R. Moench-Pfanner, M.W. Bloem and C.P. Timmer. 2004. Macro shocks and micro outcomes: child nutrition during Indonesia's crisis. *Economics and Human Biology*, 2(1): 21–44.
- 17 H. Torlesse, L. Kiess and M.W. Bloem. 2003. Association of household rice expenditure with child nutritional status indicates a role for macroeconomic food policy in combating malnutrition. *Journal* of Nutrition, 133(5): 1320–1325.

- 18 A. de Brauw. 2011. Migration and child development during the food price crisis in El Salvador. Food Policy, 36(1): 28–40.
- 19 A. D'Souza and D. Jolliffe. 2010. Rising food prices and coping strategies: household-level evidence from Afghanistan. World Bank Policy Research Working Paper 5466. Washington, DC, The World Bank.
- 20 FAO. 2008. The State of Food Insecurity in the World 2008. High food prices and food security threats and opportunities.
 Rome; N. Kumar and A. Quisumbing.
 2011. Gendered impacts of the 2007–08 food price crisis: evidence using panel data from rural Ethiopia. IFPRI Discussion Paper 01093. Washington, DC, International Food Policy Research Institute.
- 21 S. Bhalotra, and M. Umaña-Aponte. 2009. Distress work amongst women? Micro data evidence from 66 developing countries on women's work participation as an insurance device. Bristol, UK, Department of Economics, University of Bristol.
- 22 J. Aranda, 2000. Respuestas campesinas a la crisis del café: las mujeres cafetaleras se organizan. In J. Aranda, C. Botey and R. Robles, eds. Tiempo de crisis, tiempo de mujeres. Oaxaca, Mexico, Universidad Autónoma Benito Juárez de Oaxaca.
- 23 M. Floro. 1995. Women's well-being, poverty and work intensity. *Feminist Economics*, 1(3): 1–25.
- 24 S. Baird and N.S. Friedman. 2007. Aggregate income shocks and infant mortality in the developing world. Policy Research Working Paper 4346. Washington, DC, The World Bank.
- 25 A. Chapoto and T.S. Jayne. 2010. Maize price instability in Eastern and Southern Africa: the impact of trade barriers and market interventions. Paper presented at the COMESA policy seminar on "Variation in staple food prices: causes, consequences and policy options", Maputo, Mozambique, 25–26 January 2010 (available at http://programmes.comesa.int/attachments/186_AAMP Maize price instability (7 Jan).pdf).
- 26 K. Basu. 1986. The market for land: an analysis of interim transactions. *Journal* of *Development Economics*, 20(1): 163–177.
- 27 For more information on the macroeconomic and political impacts, see: C.P. Timmer and D. Dawe. 2007.

- Managing food price instability in Asia: a macro food security perspective. Asian Economic Journal, 21(1): 1–18; A. Prakash. 2011. Why volatility matters. In A. Prakash. ed. Safeguarding food security in volatile global markets. Rome, FAO (available at http://www.fao.org/economic/est/volatility/vgm/en/); and R. Arezki and M. Bruckner. 2011. Food prices and political instability. International Monetary Fund Working Paper 11/62. Washington, DC, International Monetary Fund.
- 28 S. Gillespie, A. Niehof and G. Rugalema. 2010. AIDS in Africa: dynamics and diversity of impacts and response. *In A. Niehof*, G. Rugalema and S. Gillespie, eds. *AIDS and rural livelihoods*. London, Earthscan.
- 29 H. Kazianga and C. Udry. 2006. Consumption smoothing? Livestock, insurance and drought in rural Burkina Faso. *Journal of Development Economics*, 79: 413–446.
- 30 M. Grimm. 2011. Does household income matter for children's schooling? Evidence for rural sub-Saharan Africa. Economics of Education Review, 30: 740–754; D. Cogneau and R. Jedwab. 2008. Household income and investments in child health and education in Ivory Coast. Paris School of Economics (mimeo).
- 31 J.E. Baez, and I.V. Santos. 2007. Children's vulnerability to weather shocks: A natural disaster as a natural experiment. New York, USA, Social Science Research Network (available at http://siteresources.worldbank.org/INTMIGDEV/Resources/2838212-1237254959508/Children_Vulnerability_to_Shocks_Hurricane_Mitch_in_Nicaragua_as_a_Natural_Experiment.pdf).
- 32 J. Hoddinott. 2006. Shocks and their consequences across and within households in rural Zimbabwe. *Journal of Development Studies*, 42(2): 301–321.
- 33 World Bank. 2006. Repositioning nutrition as central to development: a strategy for large-scale action. Washington, DC;
 J. Hoddinott, 2009. Early childhood nutrition increases adult wages.
 EuroChoices, 8 (Special Issue): 34–37;
 J.A. Maluccio, J. Hoddinott, J.R. Behrman,
 R. Martorell, A.R. Quisumbing and
 A.D. Stein. 2009. The impact of improving nutrition during early childhood on education among Guatemalan adults.
 Economic Journal, 119(537): 734–763.
- 34 S. Maccini and Dean Yang. 2009. Under the weather: Health, schooling, and economic consequences of early-life

- rainfall. *American Economic Review,* 99(3): 1006–1026.
- 35 M.R. Carter, P.D. Little, T. Mogues, and W. Negatu. 2007. Poverty traps and natural disasters in Ethiopia and Honduras. World Development, 35(5): 835–856.
- 36 International Fund for Agricultural Development (IFAD). 2010. Rural Poverty Report. Rome.
- 37 M.R. Rosenzweig and K.I. Wolpin. 1993. Credit market constraints, consumption smoothing, and the accumulation of durable production assets in low-income countries: investments in bullocks in India. Journal of Political Economy, 101(2): 223–244.
- 38 T. Kurosaki and M. Fafchamps. 2002. Insurance market efficiency and crop choices in Pakistan. *Journal of Development Economics*, 67(2): 419–453.
- 39 S. Dercon and L. Christiaensen. 2011. Consumption risk, technology adoption and poverty traps: evidence from Ethiopia. *Journal of Development Economics* (in press).
- 40 OECD-FAO (2011) (see note 4).
- 41 Robles and Torero (2010) (see note 13).
- 42 N. Minot. 2011. *Transmission of world food price changes to markets in sub-Saharan Africa*. IFPRI Discussion Paper 01059. Washington, DC, International Food Policy Research Institute.
- 43 Demeke, Pangrazio and Maetz (2009) (see note 2).
- 44 See D. Dawe, ed. 2010. The rice crisis: markets, policies and food security. London, Earthscan and Rome, FAO, especially C. Fang, How China stabilized grain prices during the global price crisis; A. Gulati and M. Dutta, Rice policies in India in the context of the global rice price spike; and A. Saifullah, Indonesia's rice policy and price stabilization programme: managing domestic prices during the 2008 crisis.
- 45 A. Shepherd. 2005. Review of the role of the private sector in meeting food emergencies in Zambia. Rome, FAO (available at http://www.fao.org/fileadmin/templates/ags/docs/marketing/esa/zambia.pdf).
- 46 See Chapoto and Jayne (2010) (note 25).
- 47 Cumulative inflation was about 20 percent in both the United States of

- America and West African countries using the CFA franc during this period, so adjustment for inflation would not substantially affect the results.
- 48 Some Thai policies (e.g. domestic support prices) may indirectly affect the level of exports. Nevertheless, Thai domestic prices have tracked world prices nearly perfectly since 1986.
- 49 G. Rapsomanikis and A. Sarris. 2008. Market integration and uncertainty: the impact of domestic and international commodity price variability on rural household income and welfare in Ghana and Peru. *Journal of Development Studies*, 44(9): 1354–1381.
- 50 P. Dorosh. 2009. Price stabilization, international trade and cereal stocks: world price shocks and policy response in South Asia. Food Security, 1: 137–149.
- 51 The sample includes all African countries for which data were available for either rice or wheat and one traditional staple. All available data from 2005 to 2010 were used in the analysis.
- 52 F.T. Portmann, S. Siebert and P. Döll. 2010. MIRCA2000 – Global monthly irrigated and rainfed crop areas around the year 2000: a new high-resolution data set for agricultural and hydrological modeling. Global Biogeochemical Cycles, 24, GB1011, 24 pp. doi:10.1029/2008GB003435.
- 53 A. Quisumbing, R. Meinzen-Dick, L. Bassett, M. Usnick, L. Pandolfelli, C. Morden and H.Alderman. 2008. Helping women respond to the global food price crisis. IFPRI Policy Brief 7. Washington, DC, International Food Policy Research Institute.
- D. Dawe. 2010. Cereal price transmission in several large Asian countries during the global food crisis. Asian Journal of Agriculture and Development, 6(1): 1–12; M. Hossain and U. Deb. 2010. Volatility in rice prices and policy responses in Bangladesh. In D. Dawe, ed. The rice crisis: markets, policies and food security. London, Earthscan and Rome, FAO.
- 55 I. Maltsoglou and Y. Khwaja. 2010. Bioenergy and food security: the BEFS analysis for Tanzania. Environment and Natural Resources Management Working Paper 35. Rome, FAO.
- 56 H. Höffler and B.W. Owuor Ochieng. 2009. *High commodity prices – who gets* the money? A case study on the impact

- of high food and factor prices on Kenyan farmers. Berlin, Heinrich-Boell-Foundation (available at http://www. boell.de/downloads/worldwide/ HighFoodPrices-WhoGetsTheMoney_ Kenya.pdf).
- 57 B. Hill. 2008. Shaking the invisible hand. *Rice Today*, 7(4): 26–31.
- P.F. Moya, D. Dawe, D. Pabale,
 M. Tiongco, N.V. Chien, S. Devarajan,
 A. Djatiharti, N.X. Lai, L. Niyomvit, H.X.
 Ping, G. Redondo and P. Wardana. 2004.
 The economics of intensively irrigated rice in Asia. In A. Dobermann, C. Witt and
 D. Dawe, eds. Increasing the productivity of intensive rice systems through site-specific nutrient management, pp. 29–58.
 Enfield, NH, USA, Science Publishers, and Los Baños, Philippines, International Rice Research Institute.
- S. Descargues. 2011. Impact of food price volatility on incomes and investment of smallholder farmers in Bangladesh. Rome, FAO
- 60 Höffler and Owuor Ochieng (2009) (see note 56).
- 61 D.Headey, S. Malaiyandi, and S. Fan. 2010. Navigating the perfect storm: reflections on the food, energy and financial crises. *Agricultural Economics*, 41(s1): 217–228.

- 62 K.S. Imai, R. Gaiha and G. Thapa. 2011. Supply response to changes in agricultural commodity prices in Asian countries. *Journal of Asian Economics*, 22: 61–75.
- 63 J. Subervie. 2008. The variable response of agricultural supply to world price instability in developing countries. *Journal* of Agricultural Economics, 59(1): 72–92.
- 64 See Shepherd (2005) (note 45) and Chapoto and Jayne (2010) (note 25).
- 65 Often trade controls increase domestic prices above world prices in such cases, these policies add to world supplies.
- 66 See Shepherd (2005) (note 45).
- 67 P. Villers and M. Gummert. 2009. Seal of approval: Hermetic storage of rice is becoming increasingly popular across Asia. Rice Today, 8(1): 36–37.
- 68 J.M. Harris, K. Erickson, J. Johnson, M. Morehart, R. Strickland, T. Covey, C. McGath, M. Ahearn, T. Parker, S. Vogel, R. Williams and R. Dubman. 2009. Agricultural income and finance outlook. Washington, DC. United States Department of Agriculture (available at http://usda.mannlib.cornell.edu/usda/ers/ AlS//2000s/2009/AlS-12-22-2009.pdf).
- 69 A.B. Banful. 2011. Old problems in the new solutions? Politically motivated allocation of program benefits and the

- "new" fertilizer subsidies. World Development, 39(7): 1166–1176.
- 70 B. Tortora and A. Rzepa. 2011. Recent trends in food security: a perspective from sub-Saharan Africans. Gallup Social and Economic Analysis.
- 71 E. Ligon and E. Sadoulet. 2007.

 Estimating the effects of aggregate
 agricultural growth on the distribution of
 expenditures. Background paper for the
 World Development Report 2008
 (available at http://siteresources.
 worldbank.org/INTWDR2008/
 Resources/2795087-1191427986785/
 LigonE&SadouletE_
 EstimatingEffectsOfAggAgGr.pdf).
- 72 S. Daidone and G. Anríquez. 2011. An extended cross-country database for agricultural investment and capital. ESA Working Paper 11-16. Rome, FAO (available at http://www.fao.org/ docrep/014/am640e/am640e00.pdf).
- 73 FAO. 2009b. *Investment*. Issues Brief. High Level Expert Forum on How to Feed the World in 2050 (available at http:// www.fao.org/fileadmin/templates/wsfs/ docs/Issues_papers/HLEF2050_Investment. pdf).
- 74 S. Fan, 2008. Public expenditures, growth, and poverty: lessons from developing countries. Baltimore, MD, Johns Hopkins University Press.

NOTES for Annex table

- World Food Summit goal: halve, between 1990–92 and 2015, the number of undernourished people.
- 2. Millennium Development Goal 1, target 1C: halve, between 1990 and 2015, the proportion of people who suffer from hunger. Indicator 1.9 Proportion of population below minimum level of dietary energy consumption (undernourishment). The results are obtained following a harmonized methodology and are based on the latest globally available data averaged over three years. Some countries may have more recent data which, if used, could lead to different estimates of the prevalence of undernourishment and consequently of the progress achieved.
- Latest report period refers to 2006–08 estimates and baseline refers to 1990–92. For countries that did not exist in the baseline period, the 1990–92 proportion of undernourished is based on 1993–95 and the number of undernourished is based on their 1990–92 population and his proportion.
- 4. The colour indicator shows the progress that is projected to be achieved by year 2015, if current trend continues:
 - Target already met or expected to be met by 2015

 Progress insufficient to reach the target if prevailing trends persist
 - No progress, or deterioration
 - Country has a proportion of undernourishment below 5 percent

Countries revise their official statistics regularly for the past as well as the latest reported period. The same holds for population data of the United Nations. Whenever this happens, FAO revises its estimates of undernourishment accordingly. Therefore, users are advised to refer to changes in estimates over time only within the same *The State of Food Insecurity in the World* publication and refrain from comparing data published in editions for different years.

Country composition of the special groupings: least-developed countries, landlocked developing countries and small island developing states:

 Includes: Afghanistan, Angola, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, United Republic of Tanzania, Timor-Leste, Togo, Uganda, Vanuatu, Yemen and Zambia.

- Includes: Afghanistan, Armenia, Azerbaijan, Bolivia (Plurinational State of), Botswana, Burkina Faso, Burundi, Central African Republic, Chad, Ethiopia, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Lesotho, Macedonia (The former Yugoslav Republic), Malawi, Mali, Republic of Moldova, Mongolia, Nepal, Niger, Paraguay, Rwanda, Swaziland, Tajikistan, Turkmenistan, Uganda, Uzbekistan, Zambia and Zimbabwe.
- Includes: Antigua and Barbuda, Bahamas, Barbados, Belize, Cape Verde, Comoros, Cuba, Dominica, Dominican Republic, Fiji Islands, French Polynesia, Grenada, Guinea Bissau, Guyana, Haiti, Jamaica, Kiribati, Maldives, Mauritius, Netherlands Antilles, New Caledonia, Papua New Guinea, Saint Kitts and Nevis, Saint Lucia, Saint Vincent/Grenadines, Samoa, Sao Tome and Principe, Seychelles, Solomon Islands, Suriname, Timor-Leste, Trinidad and Tobago and Vanuatu.

Developing countries for which there were insufficient data are not included in the table.

- In addition to the countries listed in the table, includes: Democratic Rep. of the Congo, Somalia, Cape Verde, Comoros, Djibouti, Guinea Bissau, Sao Tome and Principe, and Seychelles.
- 9. In addition to the countries listed in the table includes: Afghanistan and the Maldives.
- In addition to the countries listed in the table, includes: Myanmar, Brunei Darussalam and Timor-Leste.
- In addition to the countries listed in the table, includes: Iraq and Occupied Palestinian Territories.
- In addition to the countries listed in the table, includes: Antigua and Barbuda, Bahamas, Barbados, Dominica, Grenada, Netherlands Antilles, Saint Kitts and Nevis, Saint Lucia and Saint Vincent/Grenadines.
- 13. In addition to the countries listed in the table includes Belize.
- Includes: Fiji Islands, French Polynesia, Kiribati, New Caledonia, Papua New Guinea, Samoa, Solomon Islands and Vanuatu.

KEY

- Proportion less than 5 percent of undernourished
- na Data not available
- ns Not statistically significant

SOURCES

Total population: UN Population Prospects, 2008 revision. Undernourishment: FAO estimates.

Cover photos: All photos are from the FAO Mediabase. Copies of FAO publications can be requested from: SALES AND MARKETING GROUP E-mail: publications-sales@fao.org Fax: (+39) 06 57053360
Web site: http://www.fao.org/catalog/inter-e.htm

The State of **Food Insecurity in the World**

How does international price volatility affect domestic economies and food security?

The State of Food Insecurity in the World 2011 highlights the differential impacts that the world food crisis of 2006-08 had on different countries, with the poorest being most affected. While some large countries were able to deal with the worst of the crisis, people in many small import-dependent countries experienced large price increases that, even when only temporary, can have permanent effects on their future earnings capacity and ability to escape poverty.

This year's report focuses on the costs of food price volatility, as well as the dangers and opportunities presented by high food prices. Climate change and an increased frequency of weather shocks, increased linkages between energy and agricultural markets due to growing demand for biofuels, and increased financialization of food and agricultural commodities all suggest that price volatility is here to stay. The report describes the effects of price volatility on food security and presents policy options to reduce volatility in a cost-effective manner and to manage it when it cannot be avoided. It will be important to provide improved market information, create gender-sensitive safety nets that are designed in advance and can be implemented quickly in times of crisis, and invest in agriculture for the long-term to make it more productive and resilient to shocks.

ISBN 978-92-5-106927-1



I2330E/1/07.11