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The Case of Hens and Eggs in Eastern
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Information Asymmetry and Economic Concentration: The Case of Hens and Eggs in Eastern Indonesia

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Abstract

Eggs have been important elements of cooking and nutrition in Indonesia for centuries, mostly supplied from ducks and backyard chickens. Consumption of layer eggs has increased 12-fold over the past 30 years, and prices are lowered in central areas of the country. In the outer islands, however, layer egg prices are high and eggs are of lower quality. This report aims to discuss why concentration of chicken feed and egg production is maintained in the central areas of the country, while malnutrition, poverty and unemployment are high and increasing in areas without commercial feed and egg production. The difference is great between those who know and those who do not in the Indonesian poultry industry. Potential gains from information acquisition are not reflected in efficient markets for information, knowledge and skills. Information markets are not established because there are neither suppliers of nor any substantial demand for the competence that could be used by new commercial egg producers at peripheral sites of production. Lowering entry barriers into poultry feed and layer egg production is mainly a question of competence, and policy recommendations include improved dissemination of information and knowledge through schooling systems and local government extension services.

Key Words: entry barriers, information asymmetry, egg production, feed prices, Indonesia

JEL: O17; Q12; Q13; Q18

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1. Introduction

From various parts of the developing world we see that farmers show weak supply responses to allegedly favourable market incentives. Deregulation policies tend to increase levels of inequality in society and poverty of smallholders in poor areas (Reardon and Barrett 2000, Obare et al. 2003). In Latin America, rural poverty is found to affect more people in many countries and to be considerably deeper than urban poverty (de Janvry and Sadoulet 2000). Similar findings are also reported from Africa (Sahn and Stifel 2003) and Asia (Warr 2000).

In Indonesia, eggs have been an important element of cooking and nutrition for centuries, supplied from ducks (*bebek*) and backyard chickens (*ayam kampung*). There is not a long tradition of commercial poultry and egg production in the country, however. Increasing population, especially in urban areas, has brought *bebek* and *ayam kampung* eggs in short supply and prices are high, normally between 1,000 and 2,000 rupiah per egg (0,11 - 0,22 USD). Layer eggs are generally cheaper, but prices vary and are very high in parts of the country without local production. Consumption of eggs has increased from a calculated average of five per capita per year in 1968 (FAO 1972) to more than 60 in 2002 (FAOSTAT 2003), and most of the increase comes from layer hens. Being an important source of protein and a crucial component in Indonesian cuisine, egg production could still be substantially increased and prices lowered in many parts of the country. With a sustained economic crisis and widespread unemployment in rural areas, and even dramatically amplified problems of under- and malnutrition (Dhanani and Islam 2002, Jakarta Post 21.2. 2003), increased egg production could serve multiple purposes.

In eastern Indonesia, in the provinces of Nusa Tenggara Barat (NTB) and Nusa Tenggara Timur (NTT), more than six million people are practically without commercial egg producers. Consumers are offered expensive *ayam kampung* eggs from their neighbourhoods or low-quality hen eggs traded from Bali and East-Java, often more than one week in transport. NTT is among the poorest provinces in Indonesia, and NTB has recently experienced decreasing tourist inflows and increasing social unrest and youth violence related to problems of rural unemployment (Kristiansen 2003a).

In the early 1980s, the Indonesian government aimed at supporting small-scale layer egg production by regulating the size of poultry businesses. The regulation had a dual purpose: one was the spread of profitable business and employment opportunities; the other was to curb the spread of diseases, typically a risk in large-scale and poorly managed poultry units. This policy was abandoned as a part of the general deregulation policy in the late 1980s and early 1990s, leading to increased plant size and concentration of egg production at a small number of locations in Java. Supply of information and skills through agricultural extension services and vocational training and capital through credit schemes have also recently been reduced, enhancing barriers of entry to the poultry business. Informal institutions and ethnic trading networks also contribute to upholding unreasonably high transaction costs for non-related potential business starters.

Previous empirical findings from Africa indicate that entry barriers can be high and blocking in the off-farm labour markets as well as in more advanced farm activities. This is due to requirements of investments, information and skills, and various acquisition and license fees (Woldenhanna and Oskam 2001, Barrett et al. 2001, Abdulai and Rees 2001). The same tendencies are found in Latin America (Corral and Reardon 2001), and the process of

'institutionalizing barriers to entry' is reported also from geographical contexts in Asia (Goletti and Chabot 2000).

This report aims to investigate what constitute the main barriers of entry into small-scale layer egg production in poor areas, with an empirical focus on eastern parts of Indonesia. More specifically, reasons are sought why prices of eggs divert by as much as 200% within this country, while the quality of eggs in the eastern markets decrease with increasing prices. The research is based on qualitative interviews and market studies in the two provinces, as well as in the major supplying areas of Bali and East Java. Empirical research has been conducted intermittently over a period of two years, facilitated through the well-established institutional collaboration between Agder University College, Norway, and universities in Java and Lombok (NTB). The report is organised in seven parts. After this introduction follows a brief presentation of the macro study context, which is Indonesia through the phases of economic growth and the recent widespread crisis in society. A general description of poultry business in Indonesia follows. The theoretical discussion of entry barriers follows in section four, emphasising general problems of market failures and information asymmetry in rural areas of poor countries. The empirical findings from the research on egg supply in eastern Indonesia are presented in section five, before entering into a more context-specific discussion of information asymmetry and the consequent geographical concentration of production in part six. The report is closed by a concluding section, which also includes some policy recommendations and ideas for further research.

2. Indonesia through growth and crisis

Indonesia saw a steady and remarkably high rate of economic growth after Suharto took power and the era of the 'New Order' begun in 1965. Growth in income per capita averaged 4.5% per annum between 1965 and 1990. From 1990 to the outbreak of the financial crisis in 1997 the economy grew by an average of 6.5% per year. The agricultural sector grew along with the rest of the economy, in spite of a reduction of agriculture's share in GDP from 51% in 1965 to 15% in 1996. The country became self-sufficient in rice in the mid-1980s, and farm exports of commodities like spices, cocoa, coffee and palm oil expanded rapidly. Agriculture also played a leading role in providing employment to the increasing and poorly educated labour power. Its share of the total employment remains high, around 45% (BPS 2003a). In spite of growth in agriculture, Tambunan (1998) argues that the sector has been curbed and its potentials not fully utilised due to financial under-investment and a subsequent lack of technological progress and human resource development. Despite a rapid urbanisation during the last decades, 65% of Indonesian households still live in what is classified as rural areas, while 46% of them get their sole income from agriculture (Booth 2002).

Following reduced oil prices in the early 1980s and increasing foreign trade deficits, economic reforms from the mid-1980s included a shift from a tightly-protected to a market-based agricultural development. The selected adjustment package in the 1980s was successful in restoring financial equilibrium, and income distribution in the country was improved according to official statistics (Thorbecke 1991). Exchange rate adjustments had significant impacts on exports, especially from the manufacturing sector, while food imports actually rose through the deregulation period. It was generally agreed that policy adjustments were consistent from a macroeconomic management point of view (Usui 1996). Subsidies to the agricultural sector were gradually reduced, actually almost halved until the early 1990s (Tambunan 1998). Import duties and taxes on export were also cut down on most agricultural

commodities. Through the 1990s, Indonesia went through most of the steps and procedures normally prescribed in a structural reform package: prices being determined by markets, privatisation, reduced government spending, and institutional reforms. The government generally maintained macroeconomic stability, got prices right, provided public goods and left growth to the private sector (Rock 1999). Market capitalisation on the Jakarta Stock Exchange grew from USD 1.8 billion in 1989 to USD 91 billion in 1996, while annual turnover at the exchange climbed from USD 400 million to USD 12.5 billion. A substantial share of the increase was due to an escalating interest from foreign investors in property development, construction works and various manufacturing industries, while certain agricultural sectors were also favoured. The value of net foreign direct investment increased from 1 billion USD in 1990 to 6.2 billion in 1996 (Bank Indonesia 1999). The face value of outstanding foreign loans grew very quickly through the 1990s to around 140 billion USD at the outbreak of the Asian financial crisis (Pangestu 2002, Wie 2002).

The Asian crisis hit the country hard, starting from August 1997. In a few months, the national currency, the rupiah, lost 85% of its value against the foreign currencies of borrowed capital. The annual inflation rate was close to 80% at the peak of the crisis. Food prices rose by 133% from 1997 to 1999 (Booth 2000: 148), while wages were falling (Manning 2000). Estimates indicate that around 8 million additional people fell below the poverty line from 1997 to 1999 (Warr 2000) and inequality in society was dramatically increasing, both regionally and socially (Wie 2002). ILO calculated that 5.4 million workers were displaced as an impact of the crisis only in 1998 and that the number of unemployed reached 18 million or around 20% of the workforce (ILO 1998). The National Planning Agency estimated an unemployment rate at 30% in 1999 (BAPPENAS 1999). Official statistics also reveal that more than 18 million people worked without salary in the year 2000, an increase of 3 million from 1997. Agricultural employment increased by 13.3% from 1997 to 1998 (Hugo 2000: 124) and the sector swelled by 6 million workers, without a measurable increase in agricultural output. Towards the end of 2001, the Minister of Manpower formally unveiled an unemployment figure of 40 million (Jakarta Post 22.12.2001). ILO calculates that the national economic growth should be above 5% annually for the economy to be able to absorb only the net population growth, close to three million people. A present GDP growth rate at 3% adds another million or so young people annually to the rows of unemployed. A former labour minister recently declared that the unemployment rate would increase by 6.2% to 42.5 million in 2004 from 40 million early in 2003, which would result in serious impacts on the unstable situation in the social, economic and political spheres (Jakarta Post 14.8.2003). The government has made serious efforts to whisk the unemployed off to the countryside as quickly as possible in order to curtail the rising political tensions in urban areas (Silvey and Elmhirst 2003).

The economic crisis and the subsequent termination of the New Order era and its political system provided arguments for continued reforms towards market liberalisation and the rule of law in economic affairs. Indonesia's new antimonopoly law (Law No. 5/1999), along with other acts and regulations, aims to ameliorate conditions for industry and trade and create an improved business environment. Corporate activities that result in monopolistic practices, including market control and holding of a dominant market position, are now formally prohibited. Blocking the entry of new agents in a business line should thereby become more difficult. However, law enforcement mechanisms are still very weak and there is no reason to expect any substantial changes in these conditions in the near future. After the economic crisis and the implementation of decentralisation strategies since 2001, agricultural extension services and other efforts of human capital development in rural areas have been drastically

reduced. The agricultural sector is stagnant but absorbs steadily more workers. Without subsidies on inputs to agricultural production, there is a clear tendency towards a more labour- and less capital-intensive agricultural sector. The price of modern farming has become high, and many farmers return to traditional seeds, organic fertiliser and no use of pesticides.

Diversification of rural economic activities has received increasing attention after the economic downturn and re-migration of millions of people to their rural home-areas from temporary employment in urban areas or abroad. Finding alternative employment and stabilising household income of the rural poor in Indonesia are crucial issues in policy discussions today (Kusago 2002, Tambunan 2000). There is still a schism, however, in economic development thinking in Indonesia, between priority given to macroeconomic equilibrium and financial stability on the one hand and more proactive policies to boost production in the real sector on the other. At present, the government tends to prioritise policies to stabilise macroeconomic conditions and to harvest the expected effects of free markets, along with advice from the World Bank and IMF (Sadli 2003).

3. Poultry business in Indonesia

Domestication of poultry probably started in Asia, and tropical areas have fostered most modern breeds of chicken in use worldwide today. Poultry as a commercial business, however, was not known in tropical Asia before the twentieth century (Daghir 1995). Indonesia, like most of Southeast Asia, had the bulk of its national supply of eggs from native scavenger flocks in small-scale and subsistence-type farms. According to Daghir (1995: 7), countries in this region have ‘a tremendous potential for increasing poultry production through the development of small and medium-sized commercial operators’, depending on modern practices, human skills and the availability of nutrient-rich feed. Huge varieties of raw materials may be used for feed production, and a better utilization of local feed ingredients could create additional employment and cash income for thousands of producers and inexpensive animal protein for millions of consumers in Indonesia (Bushman 1974, Aarts 1990, Daghir 1995).

A distinction is normally made in Indonesian poultry production between two sub-sectors, the one based on native chickens, *ayam kampung*, and the other based on improved hybrids imported from overseas (Setioko 1991). *Ayam kampung* is an indigenous breed of chicken domesticated from *Galus galus* or *Galus varius*, species that are commonly found in the Southeast Asia region and extensively raised by rural population all over Indonesia. Eggs and meat yields from this sector are mostly for home consumption, while also converted into cash through local markets in times of need. Accidental selections and crossbreeding have led to degradation of genetic quality over time, and egg production capacity of these breeds is presently very low, normally between 30 and 40 per bird per year (Setioko 1991, FAO 1972). This can be compared to approximately 250 eggs in the first year of production for layer hens. The mostly used improved hybrids of layers in the country are Isa Brown, Lohman Brown and Hysex Brown. Hybrid layer chicks in Indonesia are normally produced by one large-scale hatchery, the Javanese PT. Multibreeder, a company owned by the same group as the dominant poultry feed manufacturer, PT. Japfa Comfeed. Chicken feed sellers have for a long time also been active in the eggs trade, buying layer eggs from multiple producers at discounted prices and in payment for feed supply (FAO 1972).

In the Indonesian government's first Five Year Plan (1969-74), high priority was given to rising poultry production and thereby to reduce the protein gap in the increasing population. A target was set for an increase in egg production at 350% over a short time-span. In 1968, estimated consumption per capita per year was only five eggs (FAO 1972), while egg production reached approximately 62 per capita in 2002 (estimated from FAOSTAT 2003). Much of the growth of the Indonesian poultry industry occurred through vertically integrated production units controlled by the limited number of large-scale feed manufacturers.

In the 1970s, the poultry business, comprising both broilers and layers, saw a strong concentration on a few firms and at a small number of locations in Java. An argument for the geographical and corporate concentration was the easier access to veterinary services and technical support at a selection of localities (Ritter 1984). In 1981, however, the government passed a decree (*Keppres 50/1981*) that regulated the size of commercial laying farms to a maximum of 5,000 birds, while chicken breeding farms passed unaffected. The idea behind this reform was to bring more small-scale producers into the business and to spread the benefits of poultry profits and proteins. The policy was modified again already in 1984 by the so-called 'nucleus farming system', where larger enterprises were expected to promote the development of smaller producers through input and output linkages. Deregulation of the business occurred from the late 1980s, following the general policy of economic liberalization. Suwartini et al. (1997) have calculated that there was a relatively high price, in terms of loss of economic efficiency, which society as a whole had to pay in order to achieve the goal of a more equitable income distribution from the policies of *Keppres 50/1981*. It remains to be analysed, however, to what extent the poultry business has contributed at all to equity in the country.

Indonesia can grow or produce all ingredients that are necessary to make good quality poultry feed (FAO 1975). Most ingredients for present feed production is imported, however, most dominantly corn from the US, China and Argentina. Indonesian total imports of soybeans and corn, which are main feed ingredients, quadrupled from 1991 to 1996. Poultry meat increased its share of total meat production in Indonesia from 13% to 37.2% in the period 1969 - 1993 (Rutherford 1999). Huge investments were made in the poultry industry in the 1990s, facilitated by liberalised capital markets and the inflow of foreign capital. Many foreign companies and lending institutions saw potentials especially in broiler production in a country of 220 million people, mostly Muslims precluded from the consumption of certain other kinds of meat. The Indonesian chicken industry grew rapidly, doubling in size between 1992 and 1997. Foreign loans worth one billion USD were invested in an increasingly integrated chicken industry in the 1990s, stretching from hatcheries to fancy outlets of Kentucky Fried Chicken (Hill 1999). The industry was suddenly and severely hit by the financial crisis from 1997. External debts in the sector and increasing feed prices due to the falling value of the national currency and the high percentage of import brought many producers out of the market. According to the Ministry of Agriculture, 80% of the country's 17,600 poultry farmers at that time were forced out of business only in 1998 (Jakarta Post, 4.3.1999).

The Indonesian poultry industry remains highly concentrated, which is not astonishing in a global business where five major international poultry breeding companies supply more than 80% of the world's commercial chickens. With businesses ranging from poultry farming, feed production, poultry shops, egg distribution and butcher shops, the 'big five' in the Indonesian context are PT. Japfa Comfeed, PT. Charoen Pokphan Indonesia, PT. Leong Hap, PT. Wonokoyo Rojokoyo and PT. Sierad Produce. The two first mentioned are the dominating feed producers and distributors, with a combined market share of approximately 70%. Both

are parts of typical business conglomerates, owned by ethnic Chinese and with close connections to the Suharto family. There are presently tendencies to more competition in the feed market, however, and weaker vertical ties can be observed between ‘poultry shops’ and egg producers in the dominating production areas. A main issue in the further discussion in this paper is the impacts of the proven oligopoly tendencies in the poultry industry on entry barriers and business opportunities for small-scale and decentralised layer egg producers.

4. Entry barriers in rural business

Deregulation and liberalization as parts of structural adjustment programmes have changed conditions for farmers in the developing world over the last decade. As mentioned, there are general tendencies to increased levels of inequality and rural poverty in Asia as well as in Africa and Latin America, and livelihood diversification is widely discussed as a means of survival and improved rural living standards (Ellis 1998, 2000). From field research in Indonesia comprising more than 1,000 small farmer households outside Java, Sunderlin et al. (2001) concluded that most farmers perceived themselves as worse off after the 1997/98 crisis, that there is a great need for alternative employment and income generation in rural households, and that environmental degradation increased with the aim of household livelihood security. Indonesian newspapers constantly bring news on land slides and water shortage as consequences of environmental degradation. People are simply forced to utilise their surrounding natural resources in a non-traditional and unsustainable way. Among the policy lessons to be learnt is that sound income diversification is important for the household economy, as well as for ecological sustainability.

Transaction costs and entry barriers can be high, however, also in the rural off-farm labour market and more advanced farm activities in poor countries. This is partly due to requirements of capital investments and partly because of needs for business information and technical skills. From Latin America, Corral and Reardon (2001) found that high entry barriers in profitable non-traditional businesses lead to geographic and socio-economic concentration of such activities in rural Nicaragua. Areas with denser infrastructure and households with higher incomes and levels of education gain advantages in profitable business entries, and inequalities tend to be escalating. Several studies from Africa have similarly documented how entry barriers tend to curtail employment and the utilisation of business opportunities and to increase regional and social inequalities. In Mali, Abdulai and Rees (2001) found that lack of household resources and education could hinder poor farmers from diversifying into livestock production. Differential access to the high-return cash cropping and non-cropping activities appear to be driving the differences in marginal utilities across households at this location. Similarly from Côte d'Ivoire, Barrett et al. (2001) found that households with poor endowments were less able to respond to attractive emerging on-farm and non-farm opportunities due to entry barriers. The results from a recent study of smallholder production in Kenya add credence to arguments that subsistence-oriented production patterns on small farms are rational responses to high farm-to-market transaction costs (Obare et al. 2003). In the expected continued absence of major investments in rural roads, the policy challenge is to identify and catalyse ‘bridging institutions’ or ‘shortcuts’ of various kinds. Staal et al. (1997) found that farmers’ organisations contribute significantly to reducing transaction costs associated with access to assets, markets and information in Kenya and Ethiopia. Policy recommendations generally include institutional innovations to reduce a range of transaction costs and increase assets of social capital. Reardon and Barrett (2000) believe that village-level co-operatives are resurgent, after a long period of disfavour due to corruption and

inefficiency. They might be means of overcoming liquidity constraints, information asymmetries and minimum efficient scales of production or marketing. Co-operative selling institutions are potential catalysts for lower transaction costs, thus stimulating entry into markets. Institutional innovations are probably by themselves, however, insufficient to catalyse market entry; they should be accompanied by dissemination of knowledge to the household level (Holloway et al. 2000). In Indonesia, the state-organised co-operative schemes for rural development are highly discredited due to corruption and misuse of power, and any resurgence would have to be based on initiatives from the household level.

One conclusion from Weijland's (1999) studies of rural clusters in Indonesia is that the self-initiated co-operation of small-scale enterprises is successful in many ways. In particular, they achieved transaction cost reductions and social capital development by attracting customers and traders. These are examples of positive agglomeration effects from geographical clustering and business co-operation. Also from Indonesia, Pomp and Burger (1995) showed how limited information leads farmers to copy adoption decisions of neighbouring producers, and most farmers tend to avoid adoptions that have not proved successful in their vicinity. Limited information on business alternatives simply impedes a shift into potential rural trades with higher profitability and growth prospects. Again, dissemination of knowledge to the household level seems to be of importance for new business initiatives in rural areas, and to achieve innovation instead of involution (Kristiansen 2003b).

Agricultural extension and small-scale business support services are examples of policy instruments that used to act as an interface between the national macro-economy and decision-making at household and individual levels. Reduced government intervention and the phasing out of these so-called meso-level policies, as can be seen also in Indonesia, brings in new needs to understand actual behaviour of rural households and potential entrepreneurs. The central neo-classical assumption underpinning deregulation in agriculture is that most farmers would rapidly respond to price incentives after suspending protectionist policies and eliminating subsidies of inputs, credits and services (Zezza and Llambi 2002). In a world of frictionless markets and perfect institutions there are no transaction costs, and factors of production can move to maintain equilibrium, irrespective of entry barriers. The involved actors have complete information about market opportunities, costs and benefits. In reality, however, also neo-classical economists know that economic agents only act to move the system back to equilibrium when the deviation from equilibrium exceeds a critical threshold, whereby the benefits of this adjustment exceed the costs. Concurrently, increasing attention in economics is offered to the fact that incomplete and costly knowledge cause 'x-inefficiency' in society (Leibenstein 1966, Stiglitz 1989, Arnott et al. 1994). Lack of information, or lack of efforts to gather information, as well as lack of motivation and incentives, create a substantial time lag before individuals and firms accomplish potential improvements, and levels of x-inefficiency are allowed to increase. X-inefficiency is related to the fact that the market for entrepreneurs is generally one of the least efficient markets in any economy (Casson 1995). Imperfect information prevents the awareness among potential entrepreneurs of possible market transactions generating net benefits, and the result is inefficiency in both 'allocative' and 'adaptive' or 'creative' functions of markets (Arndt 1988, North 1993). 'Markets are instruments for economic efficiency (in their allocative function) and for economic growth (in their creative function)' (Arndt 1988: 222). X-inefficiency, or lack of creative efficiency, in a society is the result of missing 'gap-fillers', entrepreneurs who find new business opportunities that are based on innovations in technology, organisation or market arrangements (Leibenstein 1968). The 'gap-filling opportunity set' is reduced to those

possibilities that might be associated with expected yields of positive net profits, forming the ‘opportunity context’ of the society’s potential gap-fillers or entrepreneurs.

The lack of gap-filling opportunities is often explained by transaction costs. According to Arndt (1988), market failure occurs where transaction costs are so high that markets are no longer worthwhile. In dualistic economies, especially, the transaction costs between the modern and the traditional sectors are high. There might be ‘organizational disconnection’ between the two sectors, and ‘the connecting pipelines are clogged up’ (Arndt 1988: 225). Certain characteristics of rural economic activity in poor and remote areas, such as inadequate infrastructure and lack of access to capital and information, certainly make costs of action high and uncertain. The deviation from equilibrium may not be known by potential entrepreneurs, entry barriers may be too high, or the risk of adjustments may be considered unreasonable. According to Fafchamps (1992), the major determinants of the scale of transaction costs include the quality of the physical and facilitating marketing infrastructure, as well as market information.

In the market for information and knowledge, potential customers are typically ignorant of potential gains from obtaining services above their level of awareness. Private production or supply of information may be inhibited because potential purchasers find it difficult to evaluate information prior to its acquisition. A transition to a new technology, quality, or market area offering benefits greater than costs may not be arranged, and inefficient or sub-optimal economic organisations become the dominant long-run equilibrium outcome (Weiler 2000). In addition, there is the ‘spillover’ explanation of information market failure. Fear of spillover effects may, according to Bartik (1990), act as a hindrance for information purchase by individual businesses. Entrepreneurs may be sceptical of purchasing and making use of new information and competence, because of the risk of information leakage and the adoption of the production technique by others (Kristiansen 2002). Spillover effects could result in substantial social gains, but might appear primarily as potential business losses to the original entrepreneur due to sharpened competition.

North (1993), in his analysis of economic growth, emphasised the need to improve our understanding of institutions that produce ‘path dependence’. Through the formal rules of institutions, created and conducted by ‘principals’, their ‘agents’ and state bureaucracy in that society, hindrances are made for innovation and economic progress. Path dependence implies that the established organisations of business and government, in line with the established institutional and power structures, make their decisions ‘perpetuating the current direction of the economy, whether growth or stagnation’ (North 1993: 75). In Indonesia, the interests of the elite have a strong dominance over ordinary people’s wishes. The ‘principals’ use their ‘agents’ at different levels of state bureaucracy to enforce their rules, to limit opposing interests, and to hinder differing economic actions by non-elite groups. Spread of information may be hindered, or entry barriers kept persistently high by credit and interest rate policies, and the ‘principals’ are allowed to remain dominant in the profitable businesses. This is a form of path dependence that was firstly elaborated by David (1985) and Arthur (1988). They explained the way in which increasing returns of new ideas and technologies tend to lock the players into a particular and not necessarily optimal path. Rising returns in a free market typically generate sub-optimal equilibrium solutions due to the control of information and competence. A ‘climb the ladder and pull it up’-philosophy may be the individual rationale behind that economic process of path dependence. The propensity of dominating actors to economise on limited knowledge is emphasised by Eggertson (1997) as a reason for weak institutional designs and poor economic development policies. People and institutions with

valuable knowledge logically want to avoid leakages and curtail the sharing of benefits and their loss of lead. Path dependence is not only associated with government institutions, principals and agents in the formal sector, or state bureaucracy. Also informal institutions and private businesses may play a strong role in upholding destructive path dependence, as shown in the liberalisation of the Peruvian economy. According to Tavera (2001: 724), a new generation of reforms is needed after privatisation, in Peru as well as in other countries exposed to comprehensive deregulation and loss of state authorities: ‘This would include, for instance, a more active regulatory agency.’ Obviously there is a need to define new roles of government institutions that hinder the negative impacts of monopoly power and closed circuits.

Previously, agricultural credit, input and output markets in Indonesia were linked under a system controlled by the central government. When market liberalisation occurs, it is likely to lower the costs of output exchange while raising transaction costs in the financial and information markets (Winter-Nelson and Temu 2002). We have seen from other places that price and trade liberalisation has induced dramatic adjustments in relative prices, a decline in the relative price of agricultural output over inputs (Dries and Swinnen 2002). In the Indonesian poultry business more specifically, we have seen the egg / feed price relation change from 8 : 1 in the early 1970s (FAO 1972) to 2 : 1 recently. One kilo of egg output in Java now can buy only two kilos of feed input. The changing price relation is partly due to increasing competition and efficiency in egg production in the central areas, while oligopoly tendencies are maintained in the feed production sector. Increasing prices on feed may also be explained by currency exchange movements following the economic crisis and an increasing dependency on imported raw materials. We shall continue analysing variations in this ratio within Indonesia and at the same time aim for identifying potential means to reduce transaction costs in information markets and lower entry barriers in rural businesses, in eastern Indonesia as well as in poor countries in general.

5. Egg production and trade in eastern Indonesia

- Study area, data collection and methodology

The empirical study area in eastern Indonesia has a total population of 6.2 million and comprises three major islands, which are Lombok, Sumbawa and Flores. Lombok is close to Bali and the most densely populated with around 2.7 million people. The fertile Lombok island and the drier Sumbawa island to the east comprise the NTB province with a total population of 3.9 million. The rugged and mountainous island of Flores, further to the east, is a part of the NTT province and has a population of approximately 2.3 million.

The research is based on qualitative methodology, in-depth interviews and participant observation during several fieldwork periods over a time-span of two years. The qualitative interview and close dialogue are at the centre of the methodology. The researcher has entered the ‘life-worlds of the researched’ (Long 1992: 6) and tried to observe and comprehend the eggs business through the lenses of farmers and traders in the study area. Series of interviews have been carried out with egg producers, consumers, traders and owners of ‘poultry shops’, and not least with potential hen egg producers, for instance present *ayam kampung* and *bebek* keepers. Larger-scale production units in East Java and Bali have also been visited, and most agricultural markets from West Lombok to East Flores have been called on. The objective has been to explain the non-existence of commercial hen egg producers in most of the area and

the subsequent higher prices and lower quality of eggs in the markets. A map of the area is shown in Figure 1.



Figure 1: Map of eastern Indonesia

- Variable egg prices

Prices of eggs vary over the year and price peaks normally occur before and during big ceremonial events, such as the Muslim *Idul Fitri (Lebaran)*. All prices referred to in this article are from January / February 2003, after *Lebaran* and before the Chinese New Year. Price fluctuations are normally relatively small at the site of production, but variations are bigger in the ‘outer markets’, like in the eastern parts of our study area. After the October 2002 Bali bombing, we saw a drop in egg prices as an impact of excess capacity due to occupancy rates below 10% in Bali’s abundant hotels. Over geographical areas, prices differ greatly. A fresh egg costs less than 350 rupiah in East Java, while the price reaches 1,000 in markets in Flores where quality has deteriorated after more than a week in transport and storage in hot climate (see table 1).

In the retail markets, eggs are normally sold one by one. For conversion to kilo prices, the average number of layer eggs per kilo is 17, for *ayam kampung* eggs 25, and for *bebek* eggs 13.

Table 1: Average retail egg prices (in rupiah) at various locations (in increasing geographical distance from main layer egg suppliers)

	Layer eggs	<i>Ayam kampung</i> eggs	<i>Bebek</i> eggs
West Lombok and Mataram	450	750	900
Central Lombok	525	800	900
East Lombok	525	750	900
Sumbawa Besar	500	1000	750
Bima	550	1000	1250
West Flores	1000	1500	1500
Central Flores	750	1500	1500
East Flores	750	2000	2000

For comparison, the layer egg retail price in East Java is typically less than 350 rupiah and the price of a *bebek* egg is around 750.

- Clusters of layer egg producers and traders in East Java

There is a concentration of Indonesian layer egg production around the East Javanese town of Blitar. Most of eggs for the consumption in eastern Indonesia come from this area. Only in the three villages of Kanigoro, Rejotangan and Srengat, approximately 150 layer egg producers are established. The size of the farms varies between 5,000 and 100,000 birds. Central elements in the production and trading system are the ‘poultry shops’ located in these villages. They supply day-old chicken (DOC), feed and vaccines and keep close relations with egg collectors, *pengepul*, who buy eggs for distribution around the country. They also provide working capital if needed by the producers. Farmers have for long complained that the large cartels and their outreach are killing their small-scale poultry businesses (Jakarta Post 12.3.2002).

The geographical location of the clustered egg producers can best be explained by short distance to upstream suppliers of breed, feed and technical support and to the large and concentrated markets in Java. 120 million people are within reach of a day’s travel by truck or train. Transaction costs and entry barriers in the cluster area were steadily lowered by increasing scale and skills in the late 1980s and 1990s. The Javanese traditions of copying success and following proven leaders also offer some explanation for the clustering business and increasing concentration. Also, social trading networks related to input producers (mostly ethnic Chinese) have facilitated growth. Entry barriers were lowered due to credit, skills and marketing offered by poultry shops included in this network. Dominant excess labour power and lack of agricultural land offer additional explanations.

Impacts of concentration and the large amount of suppliers in the area include tough competition. Medium-scaled, clustered producers could develop efficiency over time and are now offering eggs at low prices in the area. A flexible national trading network could expand on this basis. ‘Outer markets’ devoid of local producers could be served at higher prices and profitably used as outlets for excess production, especially in periods of low central demand. Consequently, the outer markets face high price fluctuations and subsequent high entry barriers for non-related peripheral producers. In addition to uncertainty because of price

fluctuations, potential producers outside the concentrated area are burdened by the lack of input supply and skills, only adding to concentration tendencies.

Similar production clusters as in East Java also developed in Bali, especially in the village of Penebel and in the area of Karangasem. The local demand of more than 12 million tourist-breakfasts per year, on top of the normal consumption of the island's 3.5 million people, created the commercial basis of demand for these establishments. Also from this area, eastern Indonesia and especially Lombok are employed as profitable market outlets for excess production.

- Layer egg distribution

All transport of eggs from Java and Bali to the eastern markets goes on trucks and ferries. No cooling systems are used, and transport may take as much as a week, especially in the windy rainy seasons with frequent cancellations of ship transport.

In Lombok, eggs are mostly sold to consumers in permanent bazaars in the urban areas and in occasional (mostly weekly) markets in rural areas. In the towns, small numbers are also sold in permanent shops or supermarkets. The largest egg markets in the study area are the four main bazaars of the capital of NTB, in the urban areas of Ampenan, Mataram and Cakranegara. Wholesalers located in the urban area also trade with retailers in the weekly markets around the island. We have estimated that an average of 1.3 million eggs are traded from Java or Bali into the island of Lombok in a typical week, which equals 27 eggs per capita per year, less than half the national average egg consumption. Figures may double in weeks of big ceremonies. The average figure is reasonable, taking into account that a substantial number of eggs are consumed without passing the market, and that locally made *ayam kampung* and *bebek* eggs are also sold in the markets. The majority of wholesalers are ethnic Chinese, but Balinese and Javanese also keep market shares. No wholesalers are *Sasak* (people originally from Lombok). The wholesalers typically buy eggs at 325 rupiah or less per piece from traders in Bali or Java and sell to retailers at 375-400 rupiah per egg.

To Sumbawa, eggs are brought either by trucks over Lombok from Bali or Java to the western parts, or by ferries directly from Surabaya (Java) to the eastern markets around the harbour of Bima. Ethnic Chinese *pengepul* are in charge of the sales, joining in with Chinese wholesalers in the capital towns of Sumbawa Besar and Bima. All over the island, regular markets represent sales outlets for the imported eggs along with locally produced vegetables and staple food.

Flores is the most difficult location to reach, several days by ferries from Surabaya, Java. Main permanent markets are found in the towns of Labuhan Bajo, Ruteng, Bajawa, Ende, Maumere and Larantuka. Regular and periodic markets are found in most rural areas, and all are supplied by eggs traded by ethnic Chinese wholesalers through their main distributor in East Java. There is, however, one example of an up-coming large-scale layer egg producer in the area, still keeping minor market shares. This business is also owned by an ethnic Chinese living in Surabaya.

Less than ten *pengepul* in East Java dominate the supply of eggs to the eastern market, and most of them trade on Lombok. The Sumbawa market is dominated by one distributor and trader, UD. Shinta, who recently also established a production plant in Lombok. This firm is financially and socially closely linked to the PT. Japfa Comfeed feed supplier. Similarly, only

one distributor dominates the Flores market, a Chinese company located in Surabaya. Systems of financial and social networking contribute to explaining the sustainability of an inefficient distribution system and the persistent high entry barriers to potential upcoming local producers. Firstly, as mentioned, dominating feed and breed producers are financially related by shareholdings to poultry shops in the production areas. The poultry shops are the distributors of various inputs like feed and medicines, and if needed, also of credits to the producers. Next, egg collectors, *pengepul*, are financially related to poultry shops through flows of working capital and credits, and producers are likewise related to *pengepul*, mostly through access to start-up capital and working credit. More difficult to document, but what everyone knows, are the financial links between leading enterprises and government officers through the various forms of bribing. Collusion between people in private business and *pejabat*, government officers with some influence, is quite common in the informal institutional system in the Indonesian political and administrative context. In addition to financial links, social networks are also strong, characterised by trust and loyalty, easy capital and information flows, and possible stern sanctions for breaking unwritten rules (Kristiansen and Ryen 2002). Large-scale egg collectors (Chinese) are also tied by social bonds to feed producers and poultry shop owners. Distributors or wholesalers in the outer markets are similarly socially related to the *pengepul* in the production areas, either ethnic Javanese or Chinese, or Balinese as in the case of egg trade between Bali and Lombok. Still, possibilities to change trading partner are present but rarely occur. Retailers in the eastern markets belong to local ethnic groups, but all distributors are ‘aliens’.

- Local egg producers

Apart from one larger-scale and newly established layer farm in Mataram, Lombok, and another under establishment in Ende, Flores, there are only a hand-full commercial layer egg producers (keeping more than 100 hens and a maximum of 1,000) in the study area. One of them is presented beneath to illustrate some general problems of entry barriers in the business. Also, results from interviews with a number of potential egg producers in the area are presented in this section to shed light on the reality of egg production and trade from the perspectives of small-scale farmers.

A case of small-scale layer egg production in Flores

In Maumere, Mr. H., a graduate from the provincial university in Kupang, started layer egg production in 2001 with a small investment. Cages and other equipment are locally made. He keeps 300 hens and maintains a production of 150-200 eggs per day, depending on the climatic season and feed composition. Eggs are sold at 650-700 rupiah (11,500 rupiah per kilo) directly to retailers in the main market in town. The small business also includes some *ayam kampung* and some commercial chicken for meat production.

Mr. Heri mixes the feed by himself, mostly corn and rice husk, added by concentrate from the main national feed supplier (PT. Japfa Comfeed) and fish powder. A main problem is irregular supply and fluctuating input prices, especially on rice husk. If prices are reasonable, however, adequate layer feed can be composed at around 1,800 rupiah per kilo (main ingredients are corn and rice husk at 1,250/kilo; concentrate costs 3,000/kilo). The egg/feed price ratio in this case is 6.4 : 1.

Average income from egg sales per day is 118,000 rupiah in this enterprise. Feed is the main cost element, around 60,000 rupiah per day. Labour, electricity, vaccines and other minor

running costs add to a maximum of 20,000 per day. Slaughtered hen meat adds to the income and more than outweighs the costs of purchasing young chicken (DOCs). A rough calculation, then, gives a net income of 40,000 rupiah per day or approximately 15 million per year. For comparison, the yearly minimum salary in the province is around 4 million rupiah. In spite of highly acceptable profitability, the owner is sceptical to business expansion because of uncertainty related to price fluctuations, both on the input and output sides. He fears that the dominant traders will increase input prices or cut egg prices for a while if he grows to a level where he could challenge their lead and business interests.

Generally perceived obstacles to start-up

In addition to the few small-scale, commercial layer egg producers, there are a number of small-scale farmers in the area that for long have diversified their sources of income by producing eggs from *ayam kampung* and *bebek* and who sell regularly to distributors or directly to nearby markets. In structured in-depth interviews with 30 *ayam kampung* and *bebek* egg producers in the three islands we raised the question about possible entry into more profitable layer egg production. They were all reluctant to enter that business, and five dominant reasons were presented in the interviews. The reasons are outlined beneath in the order mentioned by most of the respondents. The subjectively identified entry barriers are subsequently discussed in the following.

- 1) High price on manufactured feed
- 2) Uncertainty about other input prices, like DOCs and medicines
- 3) Lack of competence in technical matters
- 4) Uncertainty about egg prices and distribution systems
- 5) High risk and a lack of instruments to hedge against it

Input prices: Feed in Java and Bali is bought in 100 kilo bags from 2,300 to 2,600 rupiah per kilo from the large-scale producers through the poultry shops. In Lombok, feed is sold around 2,600-2,700 per kilo. There is no regular shipment and no established poultry feed distributors in Sumbawa and Flores. Feed usually comprises 60-70% of the total cost of layer egg production in Europe or the US, while the ratio is normally above 90% in Indonesia. For price comparison, poultry feed prices in Britain averaged 143 GB£ per tonnes in 2002, equivalent to 2,000 rupiah per kilo (http://www.defra.gov.uk/esg/Work_hm/Notices/eggnotce.pdf), and approximately 180 USD per tonnes (1,600 rupiah per kilo) in the US (<http://www.agric.gov.ab.>). On average, poultry feed prices in Indonesia are approximately 40% above world market prices. Prices are maintained high due to import taxes on manufactured feed and a limited number of suppliers in the domestic market. Most breeds for hen egg production in Java and Bali come from one hatchery, PT. Multibreeder, located in Java and owned by the dominating feed producer. Most medicine for vaccination is supplied from PT. Medion in Bandung. Due to lack of alternative suppliers, prices tend to be high and potential egg producers feel uncertain about stability of supply and price fluctuations. Also prices on locally produced input, like rice husk as discussed above, tend to fluctuate strongly with season. There is a lack of professional business systems to process, store and market alternative feed inputs.

Competence in technical matters: Keeping layers and producing eggs is not a technically sophisticated process. However, productive breeds are much more vulnerable to sickness compared with traditional *bebek* and *ayam kampung*, and contagious diseases eradicating whole flocks are not uncommon. Potential producers most strongly feel their lack of

competence in medication, housing and feeding. As regards alternative feeding formula, technology is actually available at national research institutions that could produce poultry feed at a price 60-70% below the present commercial market prices (Jakarta Post, 5.8.2002). These calculations are based on average prices of nationally available raw materials. Non-conventional and locally available feedstuff could comprise rice bran, cassava meal, sorghum and its bi-products, fish bi-products, snails and shells and several other commodities (Setioko 1991). According to researchers, the alternative technology is difficult to commercialise due to a lack of interest in the market, which could be caused by ignorance of potential producers or fear of penalties from the established oligopolists. Co-operatives or groups of small-scale egg producers at a locality could potentially carry out and sustain alternative feed production using this technology. On their own, however, the small-scale producers feel uncertain about feed production and composition, while knowing that productivity and egg quality are highly dependent on feed ingredients. It is a thought-provoking fact that neither university nor agricultural high schools in the area offer relevant courses in layer egg production as parts of study programmes in agriculture or animal husbandry.

Egg prices and market outlet: Ordinary small-scale farmers or rural inhabitants do not have access to information on price fluctuations in egg markets elsewhere in the region, and they feel uncertain and inferior in comparison to and in possible competition with the well-connected large-scale operators in the markets. Many of the potential producers interviewed told stories about price manipulations by wholesale egg traders that previously had ruined farmers that tried to enter the market. None of the respondents could report on any co-operative initiatives among potential business starters for establishing and maintaining stable market access, nor for any other purpose related to business entry.

High risk: Access to capital is not the major problem, because capital entry barriers are relatively low and the traditional systems of savings and credits (*arisan*) could be used for obtaining the necessary starting capital. An initial investment in ten chickens and a simple cage at less than 100,000 rupiah would be enough to get started. The problem, however, is the perceived risks related to three factors: sickness and possible death of the flock; increasing prices on input; and reduced egg market prices. All farmers interviewed were reluctant to invest their money due to these elements of uncertainty.

6. Discussion: asymmetry and concentration

Rural Indonesia is in desperate search for employment opportunities. Commercialisation and liberalisation normally mean withdrawal of labour from the agricultural sector (Pingali and Rosegrant 1995). Labour surplus should ideally be absorbed in manufacturing industries or other labour intensive sectors where competitive advantages are found. According to Mellor (1995: 1), rapidly increasing productivity in agriculture is a precondition for the further acceleration of 'structural change in the employment distribution of the labour force', which is regarded to be necessary for the further economic growth process. However, the economic crisis and the continuous growing population challenge these assumptions in the present Indonesian context. There is an abundance of millions of labourers in the rural areas, not least in the poorer eastern parts of the country. Various reflections of rural poverty are steadily reported. Protein intake has decreased after the crisis (BPS 2003b), and according to the Ministry of Health, more than 25% of Indonesia's 18 million children aged below five are presently suffering from malnutrition (Jakarta Post 21.2.2003 and 12.11.2002).

There is a general tendency that commercialisation and liberalisation of rural economies increase spatial inequalities. Farm households in remote areas are likely to be worse off, while farmers closer to infrastructure, markets and input supply are in a better position to gain from market reforms (Havnevik et al. 2003: 23). In Indonesia, layer egg production is concentrated close to large-scale feed producers in East Java. We have indicated an information asymmetry by the fact that practically no local people in eastern Indonesia are engaged in wholesale trade or commercial production of layer eggs. Prices of eggs in the area are far above a normal equilibrium level, and the quality of imported eggs is poor due to the long time in transport and the hot climate. Our main question in this paper has been why redundant labour power and farmers in need of income diversification do not take the opportunity and fill the gap. The flexibility of scale in layer egg production is high, allowing for the production for home consumption or local market sale, as well as of larger quantities requesting transport and marketing facilities.

Our main conclusion is that information asymmetry and related information market failures exist. A reduction of information asymmetry generally depends on the development of social capital, networks and knowledge of inferior actors (Ferrary 2003). The difference is great between those who know and those who do not in the Indonesian poultry industry, and that distinction has a huge impact on business opportunities. Potential gains from information acquisition are not reflected in efficient markets for information, knowledge and skills. Information markets are not established because there are neither suppliers of nor any substantial demand for the competence that could be used by new entrants in the sector at peripheral sites of production. All the five subjectively identified entry barriers outlined in the empirical study above are attached to problems of information flows, individual competence and human and social capital development. High input prices could be reduced using alternative feed composition and production methods, thereby also undermining the dominance of the oligopoly. Alternatives are also potentially available for breed and medicines. Competence in hen raising and efficient egg production could facilitate the entry of new agents in the industry, and access to market information could make new businesses sustainable. Also, capital would be available if uncertainty was reduced. A variety of layer egg production forms could be possible in the studied area if more information was available and skills were at a higher level.

Two possible explanations on limited information flows emerge from our studies: one is related to the limited demand; the other concerns the lack of supply. Information market failure on the demand side occurs when potential layer egg producers in an area do not seize information that is actually obtainable at a price that would allow for net gains from new projects initiated on the basis of that information. This situation may be caused by the ignorance of potential farmers; they are not aware of the potential gains from building knowledge. The limited demand for information may also be the consequence of a lack of capital or risk-willingness to implement new ideas. Entrepreneurs are not necessarily ignorant but possibly realistic. Obtainable information may simply not be applicable in their legal, social and business context. Finally, the limited demand could also be caused by the potential innovator's fear of spill-over effects and by his or her reluctance to take the risk of sharing costly new information with competitors. On the supply side, information market failure may be caused by path dependence and the 'climb the ladder and pull it up'-philosophy. Why should existing poultry experts share their business information and networks with potential competitors? And why should 'principals' allow opposing interests and non-elite groups to grow stronger? To be more concrete, why should not those who know in the Indonesian

poultry industry try to limit dissemination of business information and competence through, for instance, universities and agricultural high schools?

Various solutions to the problem can be seen. The most obvious is enhanced awareness and increased knowledge and skills by intervention in information markets. Local competence can be developed and supplied by improved local government extension services, motivated by the ongoing regional autonomy reform and the need for local income generation as a basis for taxation. Schools, especially high-schools with specialisation in animal husbandry, but also university institutions and lower level education, could combine competence building with information supply and awareness creation. Examples of facilitated entry into micro- and small-scale egg production are offered from resource-poor rural areas in South Africa (MacGregor and Abrams 1996) and Guatemala (Johnson et al. 1996). In both cases, non-government institutions were involved in raising people's awareness and competence.

Lowering entry barriers into poultry feed production is also mainly a question of competence. Technology is available, as mentioned, for small-scale use of varieties of locally available raw materials. Increased local feed production would strengthen competitive pressure on the large incumbent firms. With access to available information on feeding, farmers could even easily enter into 'designer egg' production, composing special tastes and contents of nutrition. Knowing that people in Flores pay 2,000 rupiah for a small *ayam kampung* egg due to the quality of its taste and its medical effects, possibilities should be there for higher value-added in that business. Easier and more stable market access for local egg producers could also be obtained by increased access to information, thus also lowering perceived risks. According to Grewal et al. (2003), increasing transparency of price information, for instance by the use of the Internet, could enable a closure of the traditional information asymmetry. From Bangladesh, Bayes (2001) reported that cellular phones supplied by the Grameen Bank contributed substantially to enhance market information flows to small-scale rural producers.

Reaching a threshold level of production, which could be seen as gains from information spill-over, would facilitate local input production as well as market outlets. Gaining a critical mass is important to overcome disadvantages of smallness and isolation, and institutional development is a crucial means. Building on some positive experiences with co-operatives could be one way ahead. Obstacles are already being reduced through political reforms, democratisation and the multi party system since the election in 1999. Previous practices of corruption and monopoly power all the way down to the village and neighbourhood levels can possibly be changed, and co-operatives could regain popularity and achieve success in reducing entry barriers for participating partners in business.

A remaining question, however, is whether deconcentration of egg production should be a political objective. Leading institutions and poultry businesses repeatedly argue that a geographical concentration of egg and broiler production is the best way of organising, because of the better availability of veterinary services and technical support in the central areas. However, closeness and concentration also represent a danger for contamination, as clearly demonstrated in the recent spread of the Marek's disease killing 3 million young chickens in the centre of broiler breeding in Ciamis and Tasikmalaya, West Java (Jakarta Post 6.6.2002). The increasing problems of unemployment and malnutrition in rural areas of peripheral provinces are also serious arguments for political action for deconcentration. The empirical part of this report has shown that prices and quality of eggs are likewise.

7. Conclusion and policy implications

This research is based on qualitative methodology, and findings are indicative and not final. It thus has certain limitations. While covering egg markets and distribution systematically in the two provinces of the study area in eastern Indonesia, the sampling of respondents on production issues can be characterised as accidental rather than random. Measurement of perceived entry barriers could be improved by including more respondents, using a more representative sampling technique, and applying for instance multiple item Likert scale variables. There is also a need for further research on alternative input markets, and certainly further context-specific research findings are required before policy instruments can be fine-tuned. Some major findings emerged, however.

Making a distinction between exogenous and endogenous entry barriers (Mathis and Koscianski 1996), where the former is represented by economies of scale and high initial investment, entry barriers in the layer egg business in Indonesia are definitely endogenous. They are the results of institutional weaknesses and oligopoly tendencies. Entry barriers sustain path dependence, and intervention in information markets seems justified. Government policies should be developed aimed at providing farmers with information in agricultural and off-farm diversification, including layer egg production.

Arndt (1988) found a need for government action in Indonesia to correct market failures and induce private investment and inter-sectoral competition, thus opening ‘clogged-up pipelines’ between modern and traditional and between urban and rural sectors. Mubyarto (1996: 22) had another perspective, observing the unhealthy dominance of the conglomerate sector over the ‘peoples economy’ and geographical concentration of profits. ‘After the free market forces begin to work, the stronger groups of firms quickly become even stronger, and the weak are evicted’. Competition on an equal footing is another case, according to Mubyarto, and market failure corrections and government regulation should aim towards levelling the playing field and lowering barriers to entry. Finding a solution to the related problems of information asymmetry and economic concentration in the Indonesian poultry business is actually not a question of chickens and eggs; skills and knowledge should come first through intervention in information markets. Deconcentration and spread of reasonably priced and high-quality eggs could subsequently follow, together with employment and diversification of rural income.

The majority of policy recommendations on poor countries’ agricultural development still advocate the transition to a purely ‘free market’ situation. In contrast, Ponte (2001) has argued that solving market failures in input distribution and credit provision require new and fine-tuned forms of public intervention. In our case, selective government intervention in the imperfect information markets should aim to develop the knowledge and skills necessary to make geographically scattered small-scale producers effective and competitive in free markets. However, government regulation of markets in Indonesia has generally lost credibility due to the prevailing extensive corruption at all levels of administration. Kristiansen et al. (2003) have pointed at the increasing significance of free information flows through the Internet in Indonesia and the potentials for setting up more public access points, also in rural areas. Private entrepreneurs have proved successful in establishing profitable information access centres or Internet cafés, and the role of government could be mainly in infrastructure development and awareness creation through an already well-established system of primary and secondary education in rural areas. Policy-makers still need to have the competence, capacity and autonomy from elite interests to plan and implement selective

interventions. Policies should be developed to reduce corruption and rent-seeking by politicians and government employees. That requires full transparency in transactions and decisions, combined with a thorough process of monitoring and evaluation. That, however, requires enhanced awareness and increased knowledge among ordinary rural citizens. Which should come first?

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