

Indonesia's Food Law of 2012

Prospective Impact on Domestic Markets and Food Security

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Contents

Executive Summary	iv
1. Introduction	1
2. Food Law of October 2012	5
Objectives	5
Nominated Policy Instruments	5
Economic Commentary on the Law	6
3. Food Market Developments	11
4. Potential Economic Impact of the Food Law	15
5. Policy Options for Implementing the Food Law	21
6. Conclusion	25
References	27
Appendix. The GTAP Global Model and Database	1

Illustrations

Figures

Figure 1. Real International Food and Fossil Fuel Price Indexes, 1960 to 2012	2
Figure 2. Sectoral Shares of GDP and Real GDP per capita, Indonesia and Other Countries, 1961 to 2011	12
Figure 3. Shares of China and other Developing Asia in the Global Economy, 2007 and 2030 (%)	13
Figure 4. Nominal Rate of Assistance to Agriculture in Indonesia, China and India, 1990 to 2010 (%)	26

Tables

Table 1. Indonesia's Self sufficiency in Farm Products, 2007 and 2020	15
Table 2. Indonesian Food and Agricultural Import Shares and Tariff Rates Required to Achieve Self-sufficiency for Products Marked *, 2020 (percent)	16

Table 3. Contributions of High-income and Developing Countries, and of Importing and Exporting Countries, to the Proportion of the International Price Change That is Due to Policy-induced Trade Barrier Changes, 2006-2008	18
Table 4. Comparison of Domestic Price Rise with Rise in International Grain Prices Net of Contribution of Changed Trade Restrictions, Rice, Wheat and Maize, 2006-2008	18
Table 5. Poverty Effects of Countries Insulating Themselves from the 2006-2008 Spike in International Food Prices	19

Executive Summary

The Government of Indonesia has sought over the long term to achieve 100 percent self-sufficiency in rice, and over the short term to ensure that the domestic price and available quantity of rice do not deviate greatly from their trend values. Its new Food Law of October 2012 allows it to broaden the coverage to other key foods and to expand the ways and means by which the government might influence domestic food markets. The Law's ultimate objectives are to promote more equitable, stable, and sustainable outcomes that lead to less poverty and more food security, food sovereignty and food safety in Indonesia.

The timing of the new Law presumably has been influenced by the increase and occasional spikes in international prices of primary products. That terms of trade change has brought a boom to Indonesia's fossil fuel and perennial crop industries and strengthened the nation's currency, but at the expense of other industries producing tradables, including producers of food (the so-called 'Dutch Disease'). A much-expanded use of biofuel subsidies and mandates in the US, EU and elsewhere has added to both the mean and variance of international food prices.

Understandably, consumers in Indonesia are upset by the higher prices for food, and both they and domestic producers of marketable surpluses of food are concerned by the increased volatility of those prices. Projections for the next decade or so suggest higher and more-variable food prices are likely to continue to be the norm in international food markets, relative to the late 20th century, so the new Food Law needs to be evaluated with that possibility in mind.

What are the prospective impacts of the new Food Law on Indonesia's food markets and on the economic welfare of the main stakeholders? What alternative or additional policy options, if adopted during the Law's implementation process, could reduce the cost of the Law and at the same time contribute to its objectives?

The specific aims of the Food Law are to:

- Increase food production and self-sufficiency, especially of food staples;
- Improve the welfare of farmers, fishers and food processors and their competitiveness in both domestic and foreign markets;
- Improve consumer access to food at affordable prices, especially for the most-malnourished; and
- Provide a diversity of food that fulfils consumers' safety, quality and nutritional requirements, and increase consumer knowledge and awareness of those benefits.

The nominated policy instruments for achieving the Law's objectives are many and various. To boost food production and self-sufficiency over the long term, the main measures specified include restricting food imports and exports, investing more public funds in rural infrastructure and R&D, and better management, development, and allocation by government of farm land and water resources. To deal with short-term fluctuations in domestic prices of food staples and their availability, the main measures specified include varying restrictions on food imports and exports, and procuring staple foods and managing their distribution from a government-controlled reserve. To provide a greater diversity of food that fulfills consumers' safety, quality and nutritional requirements, the main measures specified include broadening consumer knowledge and awareness of the benefits of consuming foods that are safe and nutritious, and investing in R&D to expand the diversity of foods than can be grown domestically.

The aspirational vision behind the law is laudable. However, ensuring that every citizen always has access to a healthy and nutritious diet of their choosing could be prohibitively expensive for any government. How much Indonesia's society is willing to pay to achieve that vision is unclear, but attention can focus on the most efficient ways of working towards that goal.

Investing more public funds in agricultural R&D could make a large contribution, and not only because there is generally a high social rate of return from further spending in this area in developing countries. An especially high payoff in Indonesia is likely because, as a percentage of agricultural GDP, its level of investment is less than half that of China and India and barely one-seventh that of Malaysia and Brazil. Any higher farm productivity that more R&D generates would be shared between farmers (higher profits) and consumers (lower food prices). The Food Law allows for more public funds for R&D, and they need not be spent only on government research providers. It even allows for some of the funds to be spent on genetic engineering, although such research will continue to be highly regulated. Care is needed in allocating such funds to ensure the highest payoff though. Using them to expand the diversity of foods that can be profitably grown domestically (one of the measures nominated in the Food Law), for example, may yield low returns because only a small subset of food production in Indonesia will ever be internationally competitive.

A positive contribution to income growth and equality can be expected also from investing more public funds in rural infrastructure such as roads and telecommunications. The lower is the private cost to domestic farmers of supplying urban food markets, the less likely those markets will be supplied from abroad. Better roads and telecoms also make it less costly for members of farm households to take part-time off-farm jobs, and more profitable for non-farm businesses to locate in provincial towns and cities and improve the efficiency of the country's food value chains. Improved property rights and better institutions to foster well-functioning markets for the lease and sale of land and water rights also could add substantially to farmer incentives to expand food production.

Much more questionable are the nominated uses in the Food Law for trade policy measures. They are nominated to help achieve at least five of the law's objectives: food self-sufficiency; higher incomes for producers; lower food costs for consumers; more diversity, higher quality and greater nutrition in the foods available to consumer; and less volatility in the prices and available quantities of staple foods.

Certainly a restriction on imports raises the producer price and encourages more production of a domestic substitute for that importable good, which boosts the welfare of net sellers of that product. However, that will benefit most the largest producers, and they are the ones least likely to be food-insecure. An import restriction does nothing for those households that produce only enough of that product for their own needs; and it lowers the welfare of net buyers of that good whose purchase price is raised by the import barrier. Their reduced consumption contributes to the goal of national self-sufficiency, but at the cost of reducing their own food consumption and hence food security. Moreover, it is the poorest and most food-insecure net buyers who are hurt most, since they spend the highest proportion of their income on food. Import restrictions also work against the goal of providing a greater diversity of foods for consumers, as there is vastly more diversity in international food markets than in any nation's domestic food market, including one as diversified as Indonesia's. Hence keeping food trade barriers down offers the greatest prospect for consumers to diversify their diet, and at the lowest cost. It also offers the greatest prospect for food and feed processors to satisfy domestic demands.

Export restrictions have the opposite distributional effects: they lower domestic food prices and so hurt net sellers of food while helping net buyers – and benefit most the wealthiest consumers, who are

the ones least likely to be food-insecure. Like import restrictions, they reduce the openness of the economy, which in turn lowers economic growth and hence food security.

Indonesia tends to vary its trade restrictions in response to fluctuations in domestic production and/or international prices of foods. Varying the barriers to trade at the country's border in principle can reduce fluctuations in domestic food markets at least. In practice, though, the timing of such variations is crucial, and it is quite possible for ministers and their bureaucrats to add to rather than reduce such instability by acting too late. If quantitative restrictions rather than taxes are used to restrict trade, that provides scope for corruption, especially if those quotas are not openly auctioned. Having to apply for quotas adds to the cost of doing business, and the uncertainty associated with the administration of import quotas also adds to foreign traders' costs of supplying the Indonesian market in a timely fashion.

Holding a public reserve of staple foods may serve a social purpose if it calms the domestic market and, when prices rise, reduces the incentive for (a) households and others to hoard and (b) ministers to alter food trade barriers. Private storers have more incentive than salaried bureaucrats to raise and lower stocks in a price-stabilizing way as markets fluctuate, but they will be crowded out of the market by a public stockpile. Should the aggregate stockholding by the private sector be deemed insufficient from society's perspective, it might be cheaper to subsidize those storers' activities rather than set up a public storage operation. Even just the possibility of the government becoming more involved in food storage, as provided in the Food Law, dampens incentives for firms – both domestic and foreign – to invest in storage facilities. With less such investments, there is less scope for agents to contribute to price stability.

Indonesia's food self sufficiency is projected to rise slightly for most products by 2020, and exports of palm oil would continue to rise dramatically assuming China's economy continues to grow reasonably rapidly. Even though the consequent GDP boost means real per capita consumption of agricultural and processed food products by Indonesian households would nearly double by 2030, the government may still feel it necessary to secure a higher trend level of food self-sufficiency and to be less exposed to international price fluctuations. It could ensure 100 percent self sufficiency in a wider range of foods simply by banning their importation; and it could reduce instability in its domestic food markets by using trade measures to insulate against international price volatility. Those two policy choices are not without downsides, however.

For example, if the government decided to ban imports of rice, coarse grains, sugar, red meats and dairy products, the tariff equivalents of those import bans are very high. The bans would divert mobile resources away from palm oil and other farm products in which Indonesia has a comparative advantage, and Indonesia's share of global exports would shrink instead of rising over time. Such protectionism would necessarily reduce real spending power of Indonesians, and hence also the quantity and quality of their food consumption compared with what it would be if the economy remains open. The estimated tariff equivalents required to achieve full self-sufficiency in those products are highest for coarse grains, live cattle, and sugar. That suggests it would be wise to aim for less than 100 percent self-sufficiency in those products. Moreover, their importance in domestic value chains means a ban on their importation would disrupt many industries in addition to adversely affecting final consumers of those products. For example, sugar is used in many processed foods, and coarse grains are a huge part of the poultry industry's input costs. As for live cattle, many decades of efforts suggest Indonesia has a stronger comparative advantage in finishing imported animals than in trying to also breed those animals, so a ban on live imports would lead to higher domestic beef prices and hence a less nutritious diet for consumers.

Needless to say, the estimated tariff equivalents to achieve self-sufficiency would be less, the more the government simultaneously boosted investments in agricultural research and rural infrastructure so as to raise the profitability of producing food domestically. The supply response from such investments would reduce food prices in local markets, thereby ensuring that net buyers as well as net sellers of food would benefit from such investments.

The Food Law also provides for the government to vary its border trade restrictions as international prices fluctuate, so as to insulate its domestic food markets from price spikes up or down. Indeed Indonesia has been doing precisely that in the past. When some governments alter the restrictiveness of their food trade measures to insulate their domestic markets somewhat from international price fluctuations, the volatility faced by other countries is amplified. That reaction therefore prompts more countries to follow suit. The irony is, however, that when both food-exporting and food-importing countries so respond, each country group undermines the other's attempts to stabilize its domestic markets. That is to say, what seems like a solution to each importing country's concern *if it were acting alone* turns out to be less effective, the more exporting countries respond in a similar way. It is like everyone in a crowded stadium standing up to see better: if people are of equal height, no-one is better off. A recent study suggests such insulation behavior by developing country governments made almost no difference to the number of people in poverty in Indonesia: the estimated number of people saved from falling into poverty by insulating behavior is almost the same as the number pushed below the \$1.25 poverty line. This reflects the fact that there are roughly as many poor net sellers of staple foods in Indonesia, who were harmed by not transmitting the international price rises to them, as there are poor households that are net buyers of staples.

Given the high cost of pursuing food security via targeted import bans to achieve full self-sufficiency in a wider range of foods, and of varying trade restrictions to insulate domestic food markets, what other policy options are worth pursuing? Two measures that are nominated in the Food Law are public investments in agricultural R&D and rural infrastructure and improving the allocation and policing of land and water property rights. Both would yield high social rates of return; both would have the advantages of also boosting food self sufficiency through making domestic food production more profitable; and both would benefit net buyers as well as net sellers of food – in contrast to import restrictions, which benefit net sellers but at the expense of net buyers of food, of producers in other sectors who compete with food producers for land and other mobile resources, and of those industries using importable farm products as key inputs.

As for the regulatory elements of the new Food Law, they need to be evaluated in the light of the current revolution in global value chains that is impacting on international trade. This dramatically changing feature of global commerce offers enormous business opportunities for those countries that have not only open borders but also flexible domestic markets not hampered by high costs of regulatory compliance. In this light it is of concern that there are many articles in the Food Law that suggest the government may become a more-active player in the food value chain. For example, the Law provides for the government to procure, manage, store as reserves, and distribute an unspecified list of staple foods. Such sweeping provisions reduce the incentives for private firms to invest in these activities, the cost of which will steadily rise as the global value chain revolution proceeds.

What alternative instruments might governments use, instead of varying their trade restrictions to avert losses for significant groups in their societies, when international food prices spike? Food security for consumers, most notably food affordability for the poor, may be dealt with most efficiently using generic social safety net measures that offset the adverse impacts of a wide range of different shocks on poor people without imposing the costly by-product distortions that necessarily

accompany the use of nth-best trade policy instruments for social protection. That might take the form of targeted income supplements to only the most vulnerable households, and only while a price spike lasts. Indonesia has been able to deliver moderately-sized benefits at the right time, for the right duration, throughout Indonesia, and with a very lean administrative apparatus.

Indonesia has been a leader also in trialling conditional cash transfers aimed at providing direct cash benefits conditional on household participation in locally-provided health and education services. They have had an immediate impact in reducing household vulnerability while encouraging investment in long-term household productivity. More specifically, Indonesia's conditional cash transfers have directly increased income for very poor households and at the same time promoted healthy behaviors: expenditure on health services saw especially large increases, and assisted households also increased their share of food expenditure on protein-rich foods. These programs demonstrate that Indonesia is already well placed to reduce both chronic long-term food insecurity associated with intergenerational poverty cycles and short-term food insecurity associated with food price spikes. As experience with these mechanisms grows, they promise to provide perhaps the most cost-effective ways of dealing with food security concerns in Indonesia. If supplemented with an expansion of public investments in agricultural R&D and rural infrastructure, they would also add to Indonesia's overall economic growth.

1. Introduction

The Government of Indonesia has always been sensitive to market developments that threaten national food security. In particular, it has sought over the long term to achieve 100 percent self-sufficiency in rice, and over the short term to ensure that domestic prices and available quantities of rice and other key food staples do not deviate greatly from their trend values.

Three recent global developments have made it challenging to achieve those policy objectives. One is the impact of rapid industrialization in China and other emerging economies on the trend level of real prices of food and other primary products in international markets: they have been rising during the past decade, in contrast to their downward trend over most of the 20th century. For natural resource-abundant Indonesia, the increase in primary product prices has brought a boom to its fossil fuel and perennial crop industries within its mining and agricultural sectors. Such a terms-of-trade-driven boom raises national income, but it also strengthens the nation's currency and so puts a strain on other industries producing tradables, including producers of rice and other key foods (the so-called 'Dutch Disease').

The second recent global development is a marked increase in the volatility of international food prices since 2007, during which time there have been three price spikes. The first, in 2008, was partly because global stocks of grain were exceptionally low at that time (Wright 2011). The insulating nature of the food trade policies of many countries—both exporters and importers—also contributed non-trivially to those price spikes (Martin and Anderson 2012).

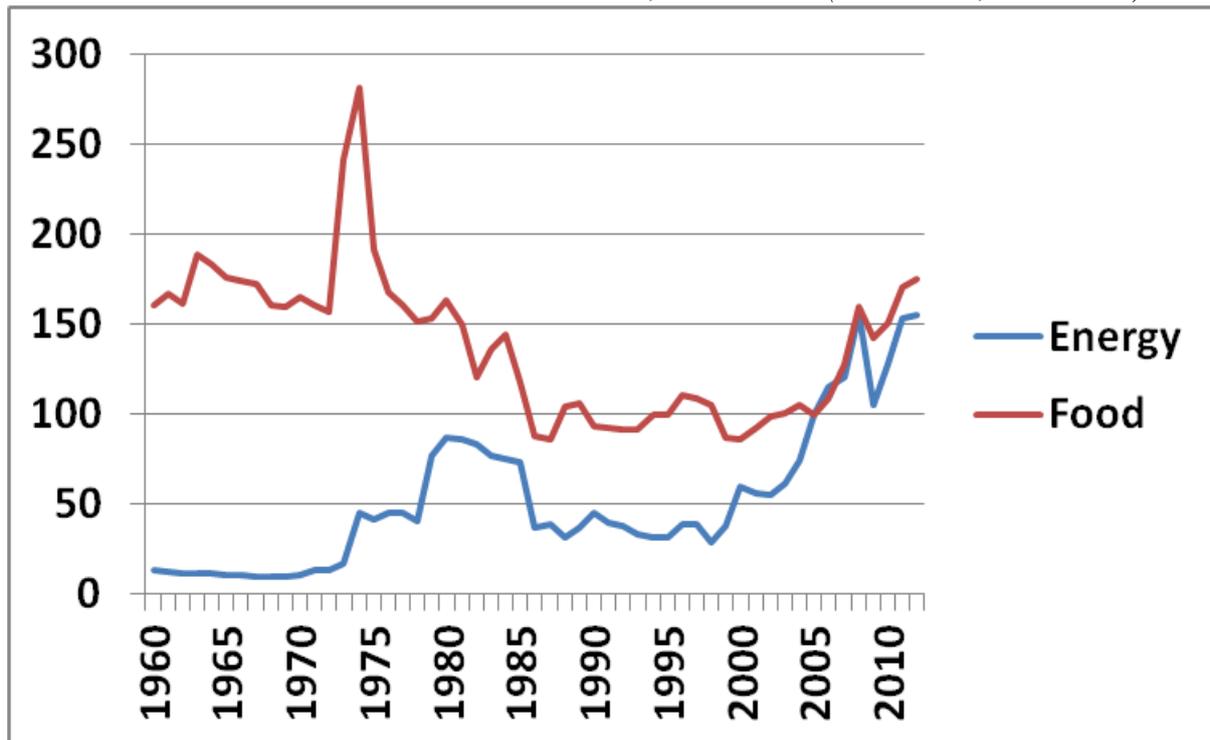
The third recent development has compounded the first two. It is the much-expanded use of biofuel subsidies and mandates in the US, EU and elsewhere. Ostensibly those biofuel policies are aimed at enhancing energy security in those countries. However, they have raised both the mean and variance of international food prices and caused food and fossil fuel prices to move together since about 2005.¹ If recent political events in the Middle East and North Africa continue to keep fossil fuel prices high and volatile, biofuel subsidies and mandates will ensure they have a spillover effect on the height and instability of international food prices.

The consequences of these three developments for international prices are clearly reflected in Figure 1: the recent reversal in the downward trend in international food prices,² their increased volatility, and their co-movement with fossil fuel prices since 2005.

¹ Timilsina et al. (2010) project that by 2020, international prices will be higher in the presence vs the absence of current biofuel subsidies and mandates as follows: for sugar (10%), corn (4%), oilseeds (3%), and wheat and coarse grains (2.2%).

² The reversal in the trend in real prices of primary products relative to manufactures as industrialization in China and other Asian countries booms is not unlike what occurred with the original industrial revolution in the first half of the 19th century (Williamson 2012).

Figure 1
Real International Food and Fossil Fuel Price Indexes, 1960 to 2012 (annual data, 2005 = 100)



SOURCE: World Bank (2013a).

Consumers in Indonesia are upset by the higher prices for food, and both they and domestic producers of marketable surpluses of food are concerned by the increased volatility of those prices.

It is in this setting that Indonesia rushed through a new Food Law in October 2012, seeking to strengthen its food sovereignty. The most prominent objective is a continuation of the long-run one of boosting national food (especially rice) self-sufficiency, but there are also numerous subsidiary objectives that include reducing fluctuations in domestic food (especially rice) prices around their trend level.

The purposes of this report are to assess the prospective impacts of this new Food Law on Indonesia's food markets and on the economic welfare of the main stakeholders; to provide an indication of its overall economic cost nationally, depending on how it is implemented; and to consider alternative or additional policy options which, if adopted during the implementation process, could reduce the cost of the Law and at the same time provide for more equitable, stable, and sustainable outcomes that lead to less poverty and more food security, food sovereignty and food safety in Indonesia.

The report is structured as follows. Section 2 outlines key elements of the Food Law, summarizing both its stated objectives and the policy instruments nominated for addressing them before offering a commentary on them. Section 3 reviews pertinent recent market developments abroad and in Indonesia that may have shaped views on the efficacy of the new Food Law, and draws on new modeling work to suggest prospective market developments over the next decade or so. Section 4 offers an assessment of the potential economic impacts of key policy instruments nominated in the Law, and summarizes some new modeling results that estimate (a) the national market and welfare

impacts of using import restrictions to achieve self sufficiency in selected products, and (b) the price and poverty impacts of insulating domestic markets from international food price volatility. The most adverse of those economic impacts could be avoided or reduced by the use of alternative or complementary policy instruments, as discussed in Section 5. The final section concludes by drawing out the main implications of the analysis for Indonesian policy makers to consider.

2. Food Law of October 2012

The new Food Law has a mixture of objectives, related to concerns about both long-run market developments and short-term fluctuations in domestic markets for food staples. It also specifies the various policy instruments that could be used to achieve those objectives. In this section these are summarized in turn, before providing an economic assessment of them.

OBJECTIVES

The overall aim of the new law is to boost the nation's food security in the sense defined at the World Food Summit of 1996. That is, its vision is to ensure that all citizens always have a sufficient quantity and quality of food that is safe, diverse, nutritious and affordable so as to enable them to live healthy, active and productive lives. More specifically, the aims of the Food Law are to

- Increase food production and self-sufficiency, especially of food staples;
- Improve the welfare of farmers, fishers and food processors and their competitiveness in both domestic and foreign markets;
- Improve consumer access to food at affordable prices, especially for the most-malnourished; and
- Provide a diversity of food that fulfills consumers' safety, quality and nutritional requirements, and increase consumer knowledge and awareness of those benefits.

NOMINATED POLICY INSTRUMENTS

The nominated policy instruments for achieving the Law's objectives are many and various. To boost food production and self-sufficiency over the long term, the main measures specified include

- Restricting food imports and exports;
- Investing more public funds in rural infrastructure and R&D; and
- Better management, development, and allocation by government of farm land and water resources.

To deal with short-term fluctuations in domestic prices of food staples and their availability, the main measures specified include

- Varying restrictions on food imports and exports;
- Procuring staple foods and managing their distribution from a government-controlled reserve.

To provide a greater diversity of food that fulfills consumers' safety, quality and nutritional requirements, the main measures specified include

- Broadening consumer knowledge and awareness of the benefits of consuming foods that are safe and nutritious; and

- Investing in R&D to expand the diversity of foods than can be grown domestically.

ECONOMIC COMMENTARY ON THE LAW

At the outset it should be recognized that several of the specific objectives of this new law work against each other. The most obvious conflict is between improving consumer access to food at affordable prices and restricting imports of food, since the latter raises food prices. Hence compromises will be required. However, no indication is provided of society's willingness to pay for the achievement of these various and conflicting objectives. Nor is there even a ranking of priorities among them. What can be done here, though, is to point out the potential contributions of the various measures nominated to achieve the law's objectives, and to identify where there are limitations and conflicts.

Vision

The aspirational vision behind the law is laudable. However, ensuring that every citizen always has access to a healthy and nutritious diet of their choosing could be prohibitively expensive for any government. The challenge, therefore, is to decide how much society is willing to pay to achieve that vision and then to find the most efficient ways of working towards that overall goal so as to get as close to it as possible within that cost constraint.

The overall goal is more likely to be achieved the higher and more equitably distributed is national income, and in particular the lower the incidence of poverty. Any initiative that promotes pro-poor economic growth in the country is therefore likely to contribute toward achieving the Food Law's goal. Conversely, initiatives that inhibit economic growth will undermine that effort.

Agricultural R&D Investments

Investing more public funds in agricultural R&D is almost certain to make a positive contribution. This is because there is generally a high social rate of return from further spending in this area in developing countries (Rao, Hurley and Pardey 2012). Moreover, it is likely to have an especially high payoff in Indonesia where, as a percentage of agricultural GDP, the level of investment is less than half that of China and India, and barely one-seventh that of Malaysia and Brazil (ASTI 2012). Also, any higher farm productivity that more R&D generates may be shared between farmers and consumers. The lowered costs of production will be partly passed on via lower consumer prices if there is an imperfect link between domestic and international prices (for example, because of transport costs or imperfect substitution by consumers as between local and imported foods).

The R&D need not be undertaken only by government research providers. Universities, for example, may be able to do it cheaper, so they could be subsidized by the government if there would otherwise be less investment in this area than is socially optimal. The Food Law allows for that possibility. It even allows for genetic engineering, but such research will remain highly regulated.

Of course the rate of return from an expansion in such public R&D investment will vary between research projects, so care is needed in allocating them to ensure the highest payoff. For example, diverting them with the aim of expanding the diversity of foods that can be profitably grown domestically (one of the measures nominated in the Food Law), may well yield low returns when only a subset of foods are suited for production in Indonesia and all the rest could be imported relatively cheaply.

Rural Infrastructure Investments

A positive contribution to income growth and equality also can be expected from investing more public funds in rural infrastructure such as roads and telecommunications (Fan 2008; Mogues et al. 2012). This is increasingly the case as urbanization proceeds and income growth in cities outstrips that in rural areas. The lower is the private cost to domestic farmers of learning about and supplying growing urban food markets, the less likely those markets will be supplied from abroad. Better roads and telecoms also make it less costly for members of farm households to earn extra income from part-time off-farm jobs, and more profitable for non-farm businesses to locate in provincial towns and cities that are accessible to farm families. If those non-farm activities improve the efficiency of the country's food value chains, that further contributes to national food security and sovereignty.

Improved Property Rights and Markets for Land and Water

Likewise, improvements by the government in issuing and policing property rights to farm land and water resources, and in developing the institutions and policies to foster well-functioning markets for the lease and sale of land and water rights, could add substantially to farmer incentives to expand food production.

Trade Restrictions to Alter the Trend Level of Prices

Much more questionable are the nominated uses in the Food Law for trade policy measures, not least because they have opposite effects for producers and consumers. They are nominated to help achieve at least five of the law's objectives: food self-sufficiency; higher incomes for producers; lower food costs for consumers; more diversity, higher quality and greater nutrition in the foods available to consumer; and less volatility in the prices and available quantities of staple foods.

A restriction on imports raises the producer price of a domestic substitute for that importable good, which boosts the welfare of net sellers of that product. It does nothing for those households that produce only enough of that product for their own needs; and it lowers the welfare of net buyers of that good whose purchase price is raised by the import barrier. Their reduced consumption contributes to the goal of national self-sufficiency, but at the cost of reducing their own food consumption and hence food security. And it is the poorest and most food-insecure net buyers who are hurt most, since they spend the highest proportion of their income on food. Certainly net sellers will be encouraged by the higher price to expand their domestic production, but that will benefit most the largest producers – and they are the ones least likely to be food-insecure.

Import restrictions can also work against the goal of providing a greater diversity of foods for consumers: there is vastly more diversity in international food markets than in any nation's domestic food market, including one as diversified as Indonesia's. Hence keeping food trade barriers down offers the greatest prospect for consumers to diversify their diet, and at the lowest cost.³ It also offers the greatest prospect for food and feed processors to satisfy domestic demands. The poultry sector, for example, depends heavily on feed mixes that have imported ingredients, the cost-effectiveness of which is greatest when feed processors have unrestricted access to those ingredients.

³ In Indonesia in recent years there have been restrictions on rice imports but not on wheat imports. The absence of wheat import restrictions has helped to diversify diets in the country—which has also made it easier to keep rice self-sufficiency high.

Export restrictions have the opposite distributional effects: they lower domestic food prices and so hurt net sellers of food while helping net buyers – and benefit most the wealthiest consumers, who are the ones least likely to be food-insecure.

Both import and export restrictions reduce the openness of the economy. However, the most efficient and most growth-enhancing outcomes for an economy come from unfettered market activity, and especially free trade across national borders. Such openness is even more likely to boost economic growth and hence food security if foreign firms are able to set up businesses alongside local firms, including in processing, importing, distribution, storage, wholesaling and retailing along the food value chain.

Modern information and communication technologies, particularly mobile phones and the internet, are rapidly lowering the cost to both buyers and sellers of obtaining price and other market information from any region in the country, or indeed abroad. More than that, on-line sales, including business-to-business as well as business-to-final consumer, are among the fastest-growing sales media in the world. These modern technologies are thus making it increasingly difficult for excessive profit-making by any seller or buyer to persist, even in small remote regions. An effective way of further promoting market transparency and reducing excess profit-making is thus to ensure that those technologies are made as widely available as possible and at the lowest cost to both businesses and households. International experience suggests that requires strong competition or at least contestability in the domestic markets for those digital goods and especially associated telecom services.

If trade barriers were to be so high as to generate food self-sufficiency, one consequence may be *greater* instability of the domestic food market. This is because variable seasonal conditions cause production fluctuations that are likely to be larger than those in the rest of the world as a whole (where good seasons in some regions are more or less balanced out by poor seasons in other regions of the world). For this reason many countries, including Indonesia, tend to vary their trade restrictions in response to fluctuations in domestic production and/or international prices of foods.

Variations in Trade Restrictions to Reduce Domestic Market Instability

Varying the barriers to trade at the country's border can reduce fluctuations in domestic food markets in principle at least. In practice, the timing of such variations is crucial, and it is quite possible for ministers and their bureaucrats to add to rather than reduce such instability by acting too late (as has happened with maize in several African countries, for example—see Minot 2011). If quantitative restrictions rather than taxes are used to restrict trade, that also opens up scope for corruption, especially if those quotas are not openly auctioned. Having to apply for quotas adds to the cost of doing business, and delays can mean processors, restaurants, and final consumers face unpredictable shortages from time to time – as happened in 2013 for such products as shallots and beef, for example. The uncertainty associated with the administration of import quotas also adds to foreign traders' costs of supplying the Indonesian market in a timely fashion.

Moreover, such insulating interventions encourage other countries to follow suit. This then exacerbates the spike in the international price, making it tougher for non-intervening countries and reducing the effectiveness in each insulating country of its own actions.

Staple Food Reserves

Holding a public reserve of staple foods may serve a social purpose if it calms the domestic market and, when prices rise, reduces the incentive for (a) households and others to hoard and (b) ministers to alter food trade barriers. Private storers have more incentive than salaried bureaucrats to raise and lower stocks as markets fluctuate, so it may be more efficient to not crowd them out of the market by setting up a public stockpile. Should the aggregate stockholding by the private sector be deemed insufficient from society's perspective, it might be cheaper to subsidize those storers' activities rather than set up a public storage operation. (Such operations tend to crowd out private storage in part because they can be subject to political imperatives that over-ride their commercial decisions – see Gulati, Rashid, and Cummings 2008). Even just the possibility of the government becoming more involved in storage of various products, as provided in the Food Law, dampens incentives for firms – both domestic and foreign – to invest in storage facilities. With less such investments, there is less scope for agents to contribute to price stability.

3. Food Market Developments

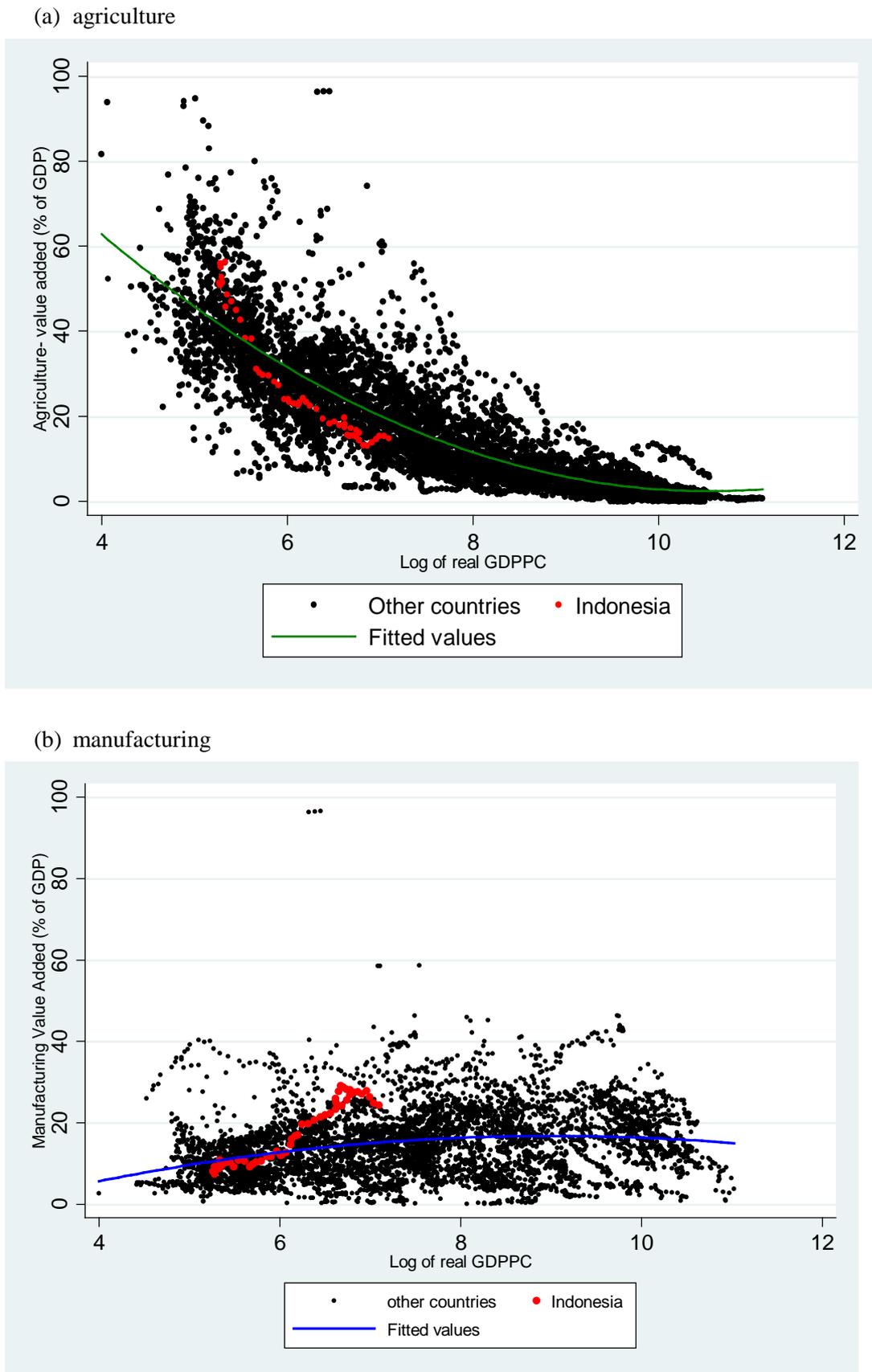
As mentioned at the outset, the rapid economic growth and industrialization of China and other emerging countries has altered the structure of natural resource-rich economies such as Indonesia's, and may have been a trigger for implementing the new Food Law. With the rise in primary product prices, exports of fossil fuels and palm oil have boomed. Even though that and the associated real exchange rate appreciation have reduced the competitiveness of other farming activities, the agricultural sector's share of Indonesia's GDP has reversed its fall in recent years – but thanks mostly to perennial cash crops and especially palm oil, and despite the squeeze it has put on producers of staple foods. Those same 'Dutch Disease' forces (see Corden 1984) have contributed also to the reversal of the rise of the manufacturing sector's share of GDP in Indonesia (Figure 2, next page).

These changes raise the question: what is likely to be the impact on Indonesia's food sector of further growth and structural changes in the world economy over the next decade or two? If China and other natural resource-poor emerging economies continue to grow at rates well above the rest of the world's, primary product prices may remain high. That is what the latest OECD/FAO (2013) outlook statement is projecting through to 2022 at least.

This question has been addressed in a new study by Anderson and Strutt (2013), results from which are summarized here. The study employs the GTAP model of the global economy and the latest GTAP database which is calibrated to 2007 levels of production, consumption, trade and protection for 134 countries (see Appendix for details). That 2007 baseline for the world economy is projected to provide a new core baseline for 2020 and 2030 by assuming, initially, that the 2007 trade-related policies of each country do not change. Over that 23-year period it is assumed that national real GDP, population, unskilled and skilled labor, capital, agricultural land, and extractable mineral resources grow at exogenously set rates. Given those exogenous growth rates, the model is able to derive implied rates of total factor productivity and GDP per capita growth. The international price consequences for the core simulation are that real primary product prices by 2030 are only slightly above those in 2007.

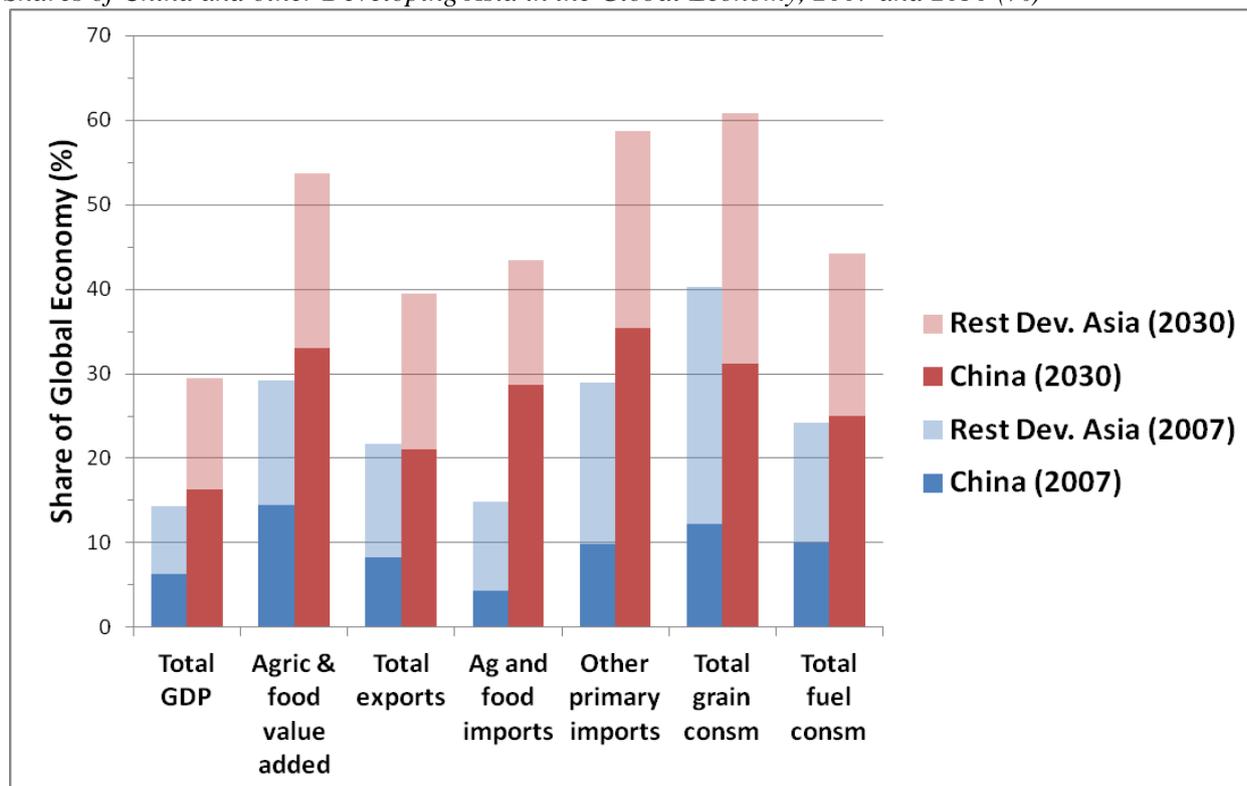
The faster-growing developing economies (especially those of Asia) will account for considerably larger shares of the projected global economy over the next two decades. The developing country aggregate share of world GDP (measured in 2007 US\$, not PPP dollars in which developing country shares are much larger) is projected to rise from 27 percent in 2007 to 36 percent in 2020 and 45 percent in 2030, and for Indonesia from 0.8 percent to 1.2 percent and 1.4 percent in those same years. By 2030 China is projected to return to its supremacy as the world's top producing country not only of primary products but also of manufactures. It is projected to become much more dominant in many other respects too, including imports of primary products (Figure 3).

Figure 2
Sectoral Shares of GDP and Real GDP per capita, Indonesia and Other Countries, 1961 to 2011



SOURCE: Author's compilation from data available at World Bank (2013b).

Figure 3
Shares of China and other Developing Asia in the Global Economy, 2007 and 2030 (%)



SOURCE: Anderson and Strutt (2013)

The growth of China's trade is entirely at the expense of high-income countries, as the global shares for the other developing-country regions also grow. In particular, Indonesia's share of global exports rises from 0.9 percent in 2007 to a projected 1.5 percent by 2030. The consequences of continuing Asian industrialization are also evident in the sectoral shares of national trade. In Indonesia, the share of farm products in its exports rises, from 12 percent to 20 percent. This implies an increase in Indonesia's comparative advantage in farm products at the expense of mineral and energy products declines. This reflects the fact that not only China but also India becomes a bigger importer of farm products by 2030. These changes mean that agricultural and food self-sufficiency in Indonesia rises, from 104 percent to 119 percent, while that of other ASEAN and of other developing Asian countries falls slightly on average.⁴

Self sufficiency is a poor indicator of food security, however (Warr 2011). A more meaningful indicator is real per capita consumption of agricultural and processed food products by households. Between 2007 and 2030, real per capita agricultural and food consumption is projected to increase by 80 percent for developing countries as a group and by 93 percent for Indonesia, and to more than double for China and South Asia.

Turning to global consumption shares, the rise in grain consumption is especially great in China because of their expanding demand for livestock products, most of which continue to be produced domestically in this core scenario. So even though China's share of the world's direct grain

⁴ It is possible that these populous countries will seek to prevent such a growth in food import dependence in practice, by erecting protectionist barriers at least for food staples, but that is not modelled here.

consumption by households grows little, its share of grain consumed indirectly grows from 9 percent to 25 percent of the global total (the differences between China's total and household consumption in Table 8). That promises to provide on-going growth in the market for grain (and oilseed) exports to China. China's share of global consumption of fossil fuels is projected to rise by a similar proportion over this period (from 10 percent to 25 percent) and likewise for imports of other non-agricultural primary products (from 10 percent to 35 percent – see Figure 3).

The phenomenal growth in China's shares of global imports of primary products and exports of manufactures dominates the bilateral trade picture. The share of Indonesia's exports going to China nearly trebles between 2007 and 2030, rising from 9 percent to 25 percent, while the share of its imports that come from China doubles (rising from 13 percent to 26). The same tendency is evident in the projected trade direction of many other natural resource-rich countries, some of which are well ahead of Indonesia in their intensity of trade with China.

The above results depend on the underlying macroeconomic assumptions made, including those of relatively rapid growth in China and India. If these economies experienced a significant slowdown, this would have a substantial impact on other countries including Indonesia. To test the sensitivity of the results the 2030 baseline was projected with 25 percent slower growth in GDP, capital and skilled labor for China and India. On its own that leads to a slight fall instead of a slight rise in primary product prices in international markets by 2030. However, if such a growth slowdown led to a 1 percent global slowdown in primary total factor productivity growth, as seems probable, international prices of primary products would rise considerably. Hence either way these results—and the OECD/FAO latest projections—suggest it is reasonable for Indonesia to assume that the trend level of international food prices is unlikely over the next decade or so to fall below the level in 2007.

Might Myanmar's gradual opening up alter that view though? In the interwar period, Burma (as it was then known) was the world's largest rice exporter, supplying about one-third of global exports (Wickizer and Bennett 1941); and its share was almost as high in the 1950s and early 1960s (Barker and Herdt 1985). To examine the prospect of Myanmar re-emerging as a major rice exporter, Anderson and Strutt (2013) ran a simulation to allow an expansion in rice production and exports between 2007 and 2020 to the extent that the rice self-sufficiency of ASEAN countries other than Indonesia rose to 132 percent in 2020, instead of 125 percent as in the core 2020 projection for that year. Despite that major increase in rice exports in Southeast Asia, the estimated impact on Indonesia is minor: its rice self-sufficiency falls by only one percentage point with the drop in the international rice price of two-thirds of a percentage point. Hence real food consumption in Indonesia by 2020 is only marginally higher.

4. Potential Economic Impact of the Food Law

If the scenarios summarized above turn out to be vindicated and international food prices remain at or above 2007 levels over the next decade or two, Indonesia's food self sufficiency is projected to rise slightly for most products by 2020, and exports of palm oil would continue to rise dramatically (compare columns 1 and 2 of Table 1). Food security, in the sense of real per capita consumption of agricultural and processed food products by Indonesian households, would rise far more, as it is projected to nearly double by 2030. True, if international prices were instead to trend downwards over coming years then Indonesia's food self-sufficiency might drop in the absence of policy interventions. But in that case real per capita food consumption levels would be *even higher*, because food would be cheaper.

Table 1
Indonesia's Self sufficiency in Farm Products, 2007 and 2020 (ratio of production to consumption)

Product	2007 Baseline	2020 Core Projection	Indonesia Food Law (to achieve self-sufficiency in some foods by 2020)
Rice	0.96	0.97	1.00
Coarse grains	0.97	0.98	1.01
Fruit & Veg	0.98	1.06	1.03
Oilseeds	0.94	0.93	1.00
Veg oils	1.95	2.53	2.16
Cattle & sheep	0.94	0.94	1.00
Sugar	0.64	0.66	1.00
Beef & mutton	0.92	0.92	1.00
Poultry meats	0.97	1.00	0.99
Dairy products	0.71	0.72	1.00
Highly processed food	1.06	1.05	1.03

SOURCE: Anderson and Strutt (2013).

However, what if the government felt it necessary to have a higher trend level of self sufficiency and to be less exposed to international price fluctuations? It could ensure 100 percent self sufficiency in a wider range of foods by 2020 simply by banning their importation; and it could reduce instability in its domestic food markets by using trade measures to insulate against international price volatility. In this section we consider those two policy choices in turn.

IMPORT TARIFFS FOR BOOSTING FOOD SELF-SUFFICIENCY

What would be the tariff equivalent in 2020 of import bans on key food products?. Anderson and Strutt (2013) examined that question with their model assuming the targeted products are rice, coarse grains, sugar, red meats and dairy products. The tariff equivalents required to achieve self-sufficiency in those targeted products via import bans are reported in Table 2. These would divert mobile resources away from palm oil and other farm products in which Indonesia has a comparative advantage. The real exchange rate appreciation that such a rise in protectionism triggers means that, instead of Indonesia's share of global exports rising from 1.6 percent to 2.4 percent of global trade between 2007 and 2020, it shrinks to 1.2 percent. This eliminates much of the projected growth in the share of Indonesia's exports to China.

By foregoing some of the gains from trade, such protectionism would necessarily reduce real GDP. The reduction estimated by that comparative static model is 0.5 percent per year, but that is certainly an underestimate of the true cost of such a policy because it ignores the dampening effect that reduced trade openness has on the rate of growth of GDP. Even ignoring such a policy's dynamic effect, the estimated lowering of national income means real domestic food consumption in Indonesia would rise less. According to the model results, that reduction would be 1.4 percentage points between 2007 and 2020. That is, this critical food security indicator would be reduced by such a policy development.

Table 2

*Indonesian Food and Agricultural Import Shares and Tariff Rates Required to Achieve Self-sufficiency for Products Marked *, 2020 (percent)*

Product	2020 Projected Share of Agricultural and Food Imports	2020 Tariffs Needed to Achieve Self-sufficiency in Starred Products under New Food Law
*Rice, processed	4	190
Wheat	16	3
*Coarse grains	1	599
Fruit & veg	3	4
*Oilseeds	3	186
*Vegetable oils	4	114
*Sugar	11	401
Cotton	16	0
Other crops	5	4
*Cattle & sheep	3	487
*Beef & mutton	2	121
Other meats	2	2
*Dairy products	10	125
Other processed foods	20	10
TOTAL	100	

SOURCE: Anderson and Strutt (2013)

The estimated tariff equivalents in Table 2 provide some guidance as to what products to target with trade measures. The highest tariff equivalents are for coarse grains, live cattle, and sugar. That suggests it would be wise to aim for less than 100 percent self-sufficiency in those products, as they would be the most costly to restrict. Moreover, they are important in domestic value chains, and so a

ban on their importation would disrupt many industries in addition to adversely affecting final consumers of those products. For example, sugar is used in many processed foods. Also, coarse grains are a huge part of the poultry industry's input costs, so raising those costs would reduce that industry's capacity to remain 100 percent self-sufficient in poultry products. As for live cattle, many decades of efforts suggest Indonesia has a stronger comparative advantage in finishing imported animals than in trying to also breed those animals. A ban on live imports would therefore lead to higher domestic beef prices and hence a less nutritious diet for consumers.

Needless to say, the estimated tariff equivalents to achieve self-sufficiency would be less, the more the government simultaneously boosted investments in agricultural research and rural infrastructure so as to raise the profitability of producing food domestically. The supply response from such investments would reduce food prices in local markets, thereby ensuring that net buyers as well as net sellers of food would benefit: both groups would have higher real incomes and thus greater capacity to consume more and better-quality food.

TRADE MEASURES TO REDUCE FOOD MARKET VOLATILITY

The Food Law also provides for the government to vary its border trade restrictions as international prices fluctuate, so as to insulate its domestic food markets from price spikes up or down. Indeed Indonesia has been doing precisely that in the past. This tendency means the estimated nominal rate of assistance (NRA) for each product—the percentage by which the domestic price exceeds the border price—also fluctuates from year to year around its long-run trend, and in the opposite direction to the international price.

When some governments alter the restrictiveness of their food trade measures to insulate their domestic markets somewhat from international price fluctuations, the volatility faced by other countries is amplified. That reaction therefore prompts more countries to follow suit. The irony is, however, that when both food-exporting and food-importing countries so respond, each country group undermines the other's attempts to stabilize its domestic markets. That is to say, what seems like a solution to each importing country's concern *if it were acting alone* turns out to be less effective, the more exporting countries respond in a similar way—presumably for the same political economy reasons. It is like everyone in a crowded stadium standing up to see better: if people are of equal height, no-one is better off.

Anderson and Nelgen (2012) provide a back-of-the-envelope estimate of the proportional contribution of government trade policy reactions to an international price spike such as in 2006-08. Their estimates for the key grains are 0.40 for rice, 0.19 for wheat, and 0.10 for maize. It is possible to apportion those policy contributions between country groups. Table 3 reports the contributions of high-income versus developing countries, and also of grain-exporting versus grain-importing countries. During 2006-2008, developing countries were responsible for the majority of the policy contribution to all three grains' price spikes, and for almost all in the case of rice. Indonesia alone contributed almost one-third (5 of the 18 percentage points) attributable to the actions of developing country rice importers.

Table 3

Contributions of High-income and Developing Countries, and of Importing and Exporting Countries, to the Proportion of the International Price Change That is Due to Policy-induced Trade Barrier Changes, 2006-2008

	Total Proportional Contribution	High-income Countries	Developing Countries	Indonesia	Importing Countries	Exporting Countries
Rice	0.40	0.02	0.38	0.05	0.18	0.22
Wheat	0.19	0.09	0.10	0.00	0.07	0.12
Maize	0.10	0.05	0.05	0.00	0.03	0.07

Note: Contributions are expressed such that the two numbers in each subsequent pair of columns add to the total proportion shown in column 1 of each row.

SOURCE: Anderson and Nelgen (2012).

In the light of these estimates it is possible to get a sense of how effective were changes in trade restrictions in limiting the rise in domestic prices. The proportional rise in the international price *net of* the contribution of changed trade restrictions, when multiplied by the international price rise, is reported in the second column of Table 4, where it is compared with the proportional rises in the domestic price in the 82 sample countries. On average for all countries in the sample, domestic prices rose *more* than the adjusted international price change for wheat, and only slightly less for maize and just one-sixth less for rice. These results suggest that the combined responses by governments of all countries have been sufficiently offsetting as to do little to insulate domestic markets from this recent international food price spike. Indonesia insulated more than the average developing country, such that its rice price rose one one-third as much as it would have if no country insulated, but its maize price rose three-quarters as much as it would have if no country insulated.

In the absence of a multilateral agreement to desist from altering trade restrictions when international prices spike up (or down), it is understandable that those governments whose future is at risk when prices spike will want to avert losses to politically significant groups. If, however, the dozen or so major rice countries—both exporters and importers—could agree to desist from such insulating behavior, there would be far less volatility in the international rice market and so far less need for such insulation.

Table 4

Comparison of Domestic Price Rise with Rise in International Grain Prices Net of Contribution of Changed Trade Restrictions, Rice, Wheat and Maize, 2006-2008 (percent, unweighted averages)

	International Price Rise		Domestic Price Rise		
	Including Contribution of Changed Trade Restrictions	Net of Contribution of Changed Trade Restrictions	All Countries	Developing Countries (& Indonesia in brackets)	High-income Countries
Rice	113	68	56	48 (21)	74
Wheat	70	56	77	65 (na)	81
Maize	83	75	73	62 (57)	82

SOURCE: Anderson and Nelgen (2012).

Did the short-term policy responses to the food price spike in 2008 lead to less people being pushed below the poverty line? A new study by Anderson, Ivanic and Martin (2014) makes use of household income and expenditure survey data and the methodology and data in Anderson and Nelgen (2012) to get at least an initial answer. For a sample of 30 developing countries including the biggest four (and

76 percent), it first identifies what proportion of each nation's households are net buyers of grains and oilseeds. It then uses the above estimates of how much international prices rose during 2006-08, how much domestic prices rose for those products, and how much international prices would have risen had no countries insulated. The results suggest insulation behavior by developing country governments would have prevented an extra 82 million people temporarily falling below the \$1.25 a day poverty line *had those government responses had no impact on international food prices*. But, because those actions (and those of high-income-country governments) exacerbated the international price spike, the number of people saved from falling into poverty by that insulating behavior is estimated to be slightly less than the number pushed below the \$1.25 poverty line, such that globally an extra 8 million were added to the global total of poor people by those insulating policies (Table 5). If the study were to have taken into account supply, demand and wage responses, this number would have been even higher, had rural wages risen sufficiently in the event of fuller price transmission. In the case of Indonesia, the study estimates the number of people saved from falling into poverty by its insulating behavior is very slightly lower than the number pushed below the \$1.25 poverty line if the impact on international food prices is ignored, and virtually zero once that price effect is taken into account. This reflects the fact that there are roughly as many poor net sellers of staple foods in Indonesia who were harmed by not transmitting the international price rises to them as there were poor households that are net buyers of staples.

Table 5
Poverty Effects of Countries Insulating Themselves from the 2006-2008 Spike in International Food Prices

Country	Decline in Millions of Poor	
	Ignoring int'l price effects	Including int'l price effects
Indonesia	-1.6	-0.1
China	5.7	-3.6
India	59.0	-4.4
Pakistan	9.9	5.9
Nigeria	4.4	1.2
Other SS Africa	0.9	-0.7
Rest of world	3.3	-5.8
World	81.6	-7.5

SOURCE: Anderson, Martin and Ivanic (2014).

5. Policy Options for Implementing the Food Law

Given the high cost of pursuing food security via targeted import bans to achieve full self-sufficiency in a wider range of foods, and variable trade restrictions to insulate domestic food markets, what other policy options are worth pursuing? It has already been mentioned that there could be high social rates of return from expanding public investments in agricultural R&D and rural infrastructure and improving the allocation and policing of land and water property rights, measures that are nominated in the Food Law. Such measures have the advantages of also boosting food self sufficiency through making domestic food production more profitable, and of benefitting both net buyers and net sellers of food – in contrast to import restrictions which benefit net sellers but at the expense of net buyers of food, of producers in other sectors who compete with food producers for land and other mobile resources, and of those industries using importable farm products as key inputs.

Focusing on growth-enhancing measures such as R&D and infrastructure also would facilitate Indonesia's adjustment to some other global developments not mentioned above. These are forces that often fall under the general heading of globalization, because they are driven by declines in the transactions costs of doing business across space (both within and between countries). They are also associated with rapidly rising incomes in and urbanization of emerging economies, which are driving major changes in diets. The supermarket revolution is contributing to those transformations, but there is as well a 'quite revolution' taking place within many Asian countries that is rapidly altering also the supply chain for staple foods destined to less-sophisticated markets—again driven by declines in transactions costs and changes in demand patterns in towns and cities (Reardon et al. 2012). These market forces are in turn transforming farm production systems and food trade in Asia. In particular, farming is becoming more of a part-time activity for many households, so that their economic well-being depends increasingly on earnings from post-farmgate processing and service activities rather than on farm production itself (Reardon 2013). Those earnings are enhanced, the more internationally competitive is the overall economy, whereas they would be diminished if instead the economy chose to be more xenophobic.

Indeed this is part of a broader revolution in global value chains that is impacting on manufacturing and services trade too. As Baldwin and Lopez-Gonzales (2013) make clear, this dramatically changing feature of global commerce offers enormous business opportunities for those countries that have not only open borders but also flexible domestic markets not hampered by high costs of regulatory compliance. The regulatory elements of the new Food Law need to be evaluated in this light, because there are many articles in the Law that suggest the government may become a more-active player in the food value chain. For example, in addition to allowing for variable trade restrictions and bans at the country's border, the Law provides for the government to procure, manage, store as reserves, and distribute an unspecified list of staple foods. Such sweeping provisions

reduce the incentives for private firms to invest in these activities, the cost of which will steadily rise as the global value chain revolution proceeds.

Many governments have comprehensively reviewed their various regulatory regimes over recent years. Most have sought to increase competition in their economies, recognizing that increased competition can improve a country's economic performance, open more business opportunities to its citizens thanks to the global value chain revolution, and thereby reduce the cost of goods and services throughout the economy. Plurilateral organizations such as the OECD and APEC have pooled their knowledge and understanding to suggest guidelines for national governments seeking to reform their regulatory practices (OECD 2005a,b). The recent economic recession has prompted them to emphasize this even more, leading to the release of a very comprehensive competition policy toolkit (OECD 2011) and a revised set of recommendations on regulatory policy and governance (OECD 2012a). Those best-practice recommendations are summarized in Exhibit 5-1. While it appears that few of those were taken on board during the drafting of the new Food Law, there is nonetheless the opportunity during the implementation phase to adopt more of those best practices. In particular, using benefit/cost analysis to evaluate the worth of proposed key regulatory changes before deciding whether they should be adopted might help to avoid the most-costly of interventions.

In abnormal times involving a food price spike, it is not unreasonable that governments may wish to provide social protection to some vulnerable households. What alternative instruments might governments use instead of varying their trade restrictions to avert losses for significant groups in their societies? Food security for consumers, most notably food affordability for the poor, may be dealt with most efficiently using generic social safety net measures that offset the adverse impacts of a wide range of different shocks on poor people—net sellers as well as net buyers of food—without imposing the costly by-product distortions that necessarily accompany the use of n^{th} -best trade policy instruments for social protection. That might take the form of targeted income supplements to only the most vulnerable households, and only while the price spike lasts.

This standard answer has far greater power now than just a few years ago, thanks to the digital information and communication technology (ICT) revolution. In the past it has often been claimed that such payments are unaffordable in poor countries because of the fiscal outlay involved and the high cost of administering such handouts. However, recall that in half the cases considered above, governments *reduce* their trade tax rates, so even that intervention may require a drain on the budget of many finance ministries. In any case, the option of using value-added taxes in place of trade taxes to raise government revenue has become common practice in even low-income countries over the past decade or two. Moreover, the ICT revolution has made it possible for conditional cash transfers to be provided electronically as direct assistance to even remote and small households, and even to the most vulnerable members of those households (typically women and their young children – see, e.g., Fiszbein and Schady (2009), Adato and Hoddinott (2010) and Skoufias, Tiwari and Zaman (2010)). They can even boost economic growth (Alderman, and Yemtsov 2013; Gertler, Martinez and Rubio-Codina 2012).

Indonesia has been a leader in trialling both conditional and temporary unconditional cash transfers. Conditional transfers have been aimed at providing direct cash benefits conditional on household participation in locally-provided health and education services. They have had an immediate impact in reducing household vulnerability while encouraging investment in long-term household productivity. They thereby have the potential to break the intergenerational cycle of poverty. More specifically, Indonesia's conditional cash transfers have directly increased income for very poor households and at the same time promoted healthy behaviors: expenditure on health services saw especially large

increases, and assisted households also increased their share of food expenditure on protein-rich foods (World Bank 2012a). Those programs have been supplemented by temporary unconditional cash transfers to supplement consumption by poor households facing unprecedented price increases. Moderately-sized benefits have been delivered at the right time, for the right duration, throughout Indonesia, and with a very lean administrative apparatus (World Bank 2012b). Together these programs demonstrate that Indonesia is already well placed to reduce both chronic long-term food insecurity associated with intergenerational poverty cycles and short-term food insecurity associated with food price spikes. As experience with these mechanisms grows, they promise to provide perhaps the most cost-effective ways of dealing with food security concerns in Indonesia. They therefore may make redundant some of the more inefficient policy instruments nominated in the Food Law, most notably variable border trade-restricting measures.

Exhibit 5-1

Best-practice Regulatory Policy and Governance

The OECD and APEC have pooled their knowledge and understanding to suggest guidelines for national governments seeking to reform their regulatory practices (OECD 2005a,b). The recent economic recession has prompted them to emphasize this even more, leading to the release of a comprehensive competition policy toolkit (OECD 2011) and a revised set of recommendations on regulatory policy and governance (OECD 2012a).⁵ Those best-practice recommendations include the following (italics added for emphasis):

- Commit at the highest political level to an explicit *whole-of-government policy* for regulatory quality. The policy should have *clear objectives and frameworks* for implementation to ensure that, if regulation is used, the economic, social and environmental benefits justify the costs, the distributional effects are considered, and the net benefits are maximized.
- Adhere to principles of *open government, including transparency* and participation in the regulatory process to ensure that regulation serves the public interest and is informed by the legitimate needs of those interested in and affected by regulation. This includes providing meaningful opportunities (including online) for the public to contribute to the process of preparing draft regulatory proposals and to the quality of the supporting analysis. Governments should ensure that *regulations are comprehensible and clear* and that parties can easily understand their rights and obligations.
- Establish mechanisms and institutions to actively provide oversight of regulatory policy procedures and goals and thereby *foster regulatory quality*.
- Integrate Regulatory Impact Assessment (RIA) into the early stages of the policy process for the formulation of new regulatory proposals. Clearly *identify policy goals, and evaluate if regulation is necessary* and how it can be most effective and efficient in achieving those goals. Consider means other than regulation and identify the tradeoffs of the different approaches analyzed to identify the best approach.
- Conduct systematic program reviews of the stock of significant regulation against clearly defined policy goals, including *consideration of costs and benefits*, to ensure that regulations remain up to date, cost justified, cost effective and consistent, and deliver the intended policy objectives
- Regularly *publish reports on the performance of regulatory policy* and reform programs and the public authorities applying the regulations. Such reports should also include information on how regulatory tools such as Regulatory Impact Assessment (RIA), public consultation practices and reviews of existing regulations are functioning in practice.
- Develop a consistent policy covering the role and functions of regulatory agencies in order to provide greater confidence that *regulatory decisions are made on an objective, impartial and consistent basis*, without conflict of interest, bias or improper influence.
- Ensure the effectiveness of systems for the review of the legality and procedural fairness of regulations and of decisions made by bodies empowered to issue regulatory sanctions. Ensure that citizens and businesses have access to these systems of review at reasonable cost and receive decisions in a timely manner.
- Apply risk assessment, risk management, and risk communication strategies to the design and implementation of regulations to ensure that regulation is targeted and effective. Regulators should assess how regulations will be given effect and should *design responsive implementation and enforcement strategies*.
- Where appropriate *promote regulatory coherence* through co-ordination mechanisms between the supranational, the national and sub-national levels of government. Identify cross-cutting regulatory issues at all levels of government, to promote coherence between regulatory approaches and avoid duplication or conflict of regulations.
- Foster the development of regulatory management capacity and performance at sub-national levels of government.
- In developing regulatory measures, *give consideration to all relevant international standards and frameworks* for co-operation in the same field and, where appropriate, their likely effects on parties outside the jurisdiction.

⁵ These have drawn in part on regulatory reform in Australia, which has further revised its guidelines and procedures and shifted responsibility for oversight to its Department of Finance (Office of Best Practice Regulation 2010).

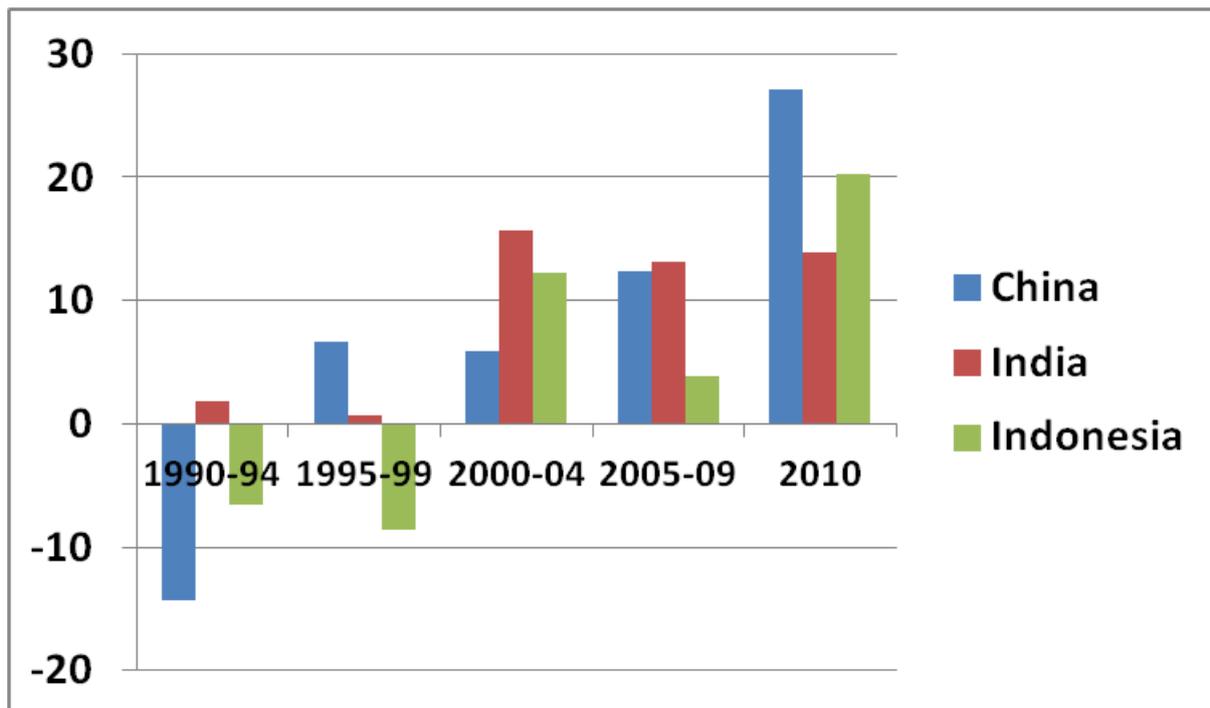
6. Conclusion

The world economy is altering very rapidly, and Asia is fast becoming a major centre of gravity for world production, consumption and trade, including for food. The opportunities to become more engaged in that process are enormous, including through joining the world's global value chains. Indonesia is well placed geographically, and in terms of its resource endowments, to be an integral contributor to and beneficiary of these unique historic developments. It can do so more, the sounder its macroeconomic policies, the more open and flexible its economy, the more clearly it defines and enforces property rights, and the more coherent and transparent are its regulatory processes and governance. By these standards, however, the new Food Law appears to be moving Indonesia's food system away from rather than towards these emerging opportunities, and could make it less rather than more likely that its various industries contributing along the food value chain add to national economic growth, poverty alleviation and food security.

Overall government assistance to Indonesia's agricultural sector has switched from being negative up to the end of the 20th century to being increasingly positive in the first decade of this century (apart from the dip when international food prices spiked in 2008)—and by 2010 its nominal rate of assistance was greater than India's and close to China's (Figure 4). If implementation of the new Food Law were to include restricting food imports more in the years ahead, and if international prices were to not rise much above current levels (as the projections reported above suggest), then the results in Table 2 suggest assistance to the sector would rise enormously by 2020. Self-sufficiency in those targeted products would be higher, but food security (in terms of the quantity and quality of food consumption by Indonesian households) would be much less, as would growth-enhancing trade with China and other Asian countries.

The challenge of switching from trade to domestic policy instruments for addressing domestic concerns such as rural-urban income inequality and food price fluctuations is evidently non-trivial. Yet some reform has been possible during the past three decades. As well, Indonesia's initial success in pioneering new, lower-cost social protection mechanisms involving conditional and unconditional cash transfers bodes well for the government to move one or more steps away from the use of beggar-thy-neighbor trade measures to promote more equitable, stable, and sustainable outcomes that lead to less poverty and more food security, food sovereignty and food safety in Indonesia. If supplemented with an expansion of public investments in agricultural R&D and rural infrastructure and improvements in the allocation and policing of land and water property rights, they would also add to Indonesia's overall economic growth.

Figure 4
Nominal Rate of Assistance to Agriculture in Indonesia, China and India, 1990 to 2010 (%)



SOURCE; Derived from estimates in Anderson and Nelgen (2013)

References

- Alatas, V., A. Banerjee, R. Hanna, B.A. Olken and J. Tobias. 2012. Targeting the Poor: Evidence from a Field Experiment in Indonesia. *American Economic Review* 102(4): 1206-40.
- Alderman, H. and R. Yemtsov. 2013. How Can Safety Nets Contribute to Economic Growth? World Bank Policy Research Working Paper 6437. Washington D.C.
- Anderson, K., M. Ivanic and W. Martin. 2014. Food Price Spikes, Price Insulation and Poverty. In *The Economics of Food Price Volatility*, edited by J.-P. Chavas, D. Hummels and B. Wright, Chicago and London: University of Chicago Press for NBER (forthcoming).
- Anderson, K. and S. Nelgen. 2012. Agricultural Trade Distortions During the Global Financial Crisis. *Oxford Review of Economic Policy* 28(2): 235-60, Summer.
- Anderson, K. and S. Nelgen. 2013. *Updated National and Global Estimates of Distortions to Agricultural Incentives, 1955 to 2011*. World Bank, Washington D.C., to be accessible from June at www.worldbank.org/agdistortions.
- Anderson, K. and A. Strutt. 2013. Emerging Asia's Growth and Policy Developments: Implications for Indonesia's Economy and Trade to 2030. Paper for 16th Annual Conference on Global Economic Analysis, Shanghai, June 12-14.
- Armington, P. 1969. A Theory of Demand for Products Distinguished by Place of Production. *IMF Staff Papers*, 16: 159-78.
- Agricultural Science and Technology Indicators. 2012. *ASTI Database*. Washington, D.C.: International Food Policy Research Institute. <http://www.asti.cgiar.org/data>
- Baldwin, R.E. and J. Lopez-Gonzales. 2013. Supply-Chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses. CEPR Discussion Paper 9421. London.
- Barker, R. and R.W. Herdt (with B. Rose). 1985. *The Rice Economy of Asia*. Washington D.C.: Resources for the Future.
- Byerlee, D., T.S. Jayne, and R.J. Myers. 2006. Managing Food Price Risks and Instability in a Liberalizing Market Environment: Overview and Policy Options. *Food Policy* 31(4): 275–87.
- Fan, S. 2008. Public Expenditures, Growth, and Poverty in Developing Countries: Lessons from Developing Countries. Baltimore MD: Johns Hopkins University Press.
- Fiszbein, A. and N. Schady (with F.H.G. Ferreira, M. Grosh, N. Kelleher, P. Olinto and E. Skoufias). 2009. *Conditional Cash Transfers: Reducing Present and Future Poverty*. Policy Research Report. Washington D.C.: World Bank.

- Gertler, P., S. Martinez and M. Rubio-Codina. 2012. Investing Cash Transfers to Raise Long-Term Living Standards. *American Economic Journal: Applied Economics* 4(1): 164-92.
- Gulati, A., S. Rashid, and R. Cummings Jr. (eds.). 2008. *From Parastatals to Private Trade: Lessons from Asian Agriculture*. Baltimore: Johns Hopkins University Press for the International Food Policy Research Institute.
- Martin, W. and K. Anderson. 2012. Export Restrictions and Price Insulation During Commodity Price Booms. *American Journal of Agricultural Economics* 94(2): 422-27, January.
- Minot, N. 2011. Transmission of World Food Price Changes to Markets in Sub-Saharan Africa. IFPRI Discussion Paper 1059, Washington D.C.
www.ifpri.org/sites/default/files/publications/ifpridp01059.pdf
- Mogues, T., B. Yu, S. Fan and L. McBride. 2012. The Impacts of Public Investment in and for Agriculture: Synthesis of the Existing Evidence. Discussion Paper 01217, International Food Policy Research Institute, Washington D.C.
- Narayanan, B.G., A. Aguiar and R.A. McDougall (eds.). 2012. *Global Trade, Assistance, and Production: The GTAP 8 Data Base*. West Lafayette: Center for Global Trade Analysis, Purdue University. www.gtap.agecon.purdue.edu/databases/v8/v8_doco.asp
- OECD. 2005a. APEC-OECD Integrated Checklist on Regulatory Reform: A Policy Instrument for Regulatory Reform, Competition Policy and Market Openness. Paris: OECD.
www.oecd.org/document/27/0,3746,en_2649_34141_2753254_1_1_1_1,00.html
- OECD. 2005b. OECD Guidelines for Regulatory Quality and Performance. Paris: OECD.
www.oecd.org/document/27/0,3746,en_2649_34141_2753254_1_1_1_1,00.html
- OECD. 2011. *Competition Assessment Toolkit: Volume 1, Principles; Volume 2, Guidelines*. Paris: OECD. www.oecd.org/document/48/0,3746,en_2649_37463_42454576_1_1_1_37463,00.html
- OECD. 2012a. Recommendation of the Council of the OECD on Regulatory Policy and Governance. Paris: OECD, March.
www.oecd.org/document/27/0,3746,en_2649_34141_2753254_1_1_1_1,00.html
- OECD. 2012b. OECD Review of Agricultural Policies: Indonesia. Paris.
- OECD/FAO. 2013. *Agricultural Outlook, 2013-2022*, Paris: OECD.
- Office of Best Practice Regulation. 2010. *Best Practice Regulation Handbook*. Canberra: Office of Best Practice Regulation, Australian Department of Finance.
www.finance.gov.au/obpr/proposal/gov-requirements.html
- Rao, X., T.M. Hurley and P.G. Pardey. 2012. Recalibrating the Reported Rates of Return to Food and Agricultural R&D. Staff Paper P12-8, Department of Applied Economics, University of Minnesota, St. Paul. September.
- Reardon, T., K.Z. Chen, B. Minten and L. Adriano. 2012. *The Quiet Revolution in Staple Food Value Chains in Asia: Enter the Dragon, the Elephant, and the Tiger*. Manila: Asian Development Bank and Washington DC: IFPRI.

- Reardon, T. 2013. Asia Agrifood System's Five Linked Transformations: Implications for Agricultural Research and Development Strategies. Presented at the CGIAR–ISPC Foresight Study Workshop on Urbanization and Farm Size: Implications for Agricultural Research, Tufts University, Boston. January.
- Skoufias, E., S. Tiwari and H. Zaman. 2010. Can We Rely on Cash Transfers to Protect Dietary Diversity During Food Crises? Estimates from Indonesia. Policy Research Working Paper 5548, World Bank, Washington D.C.
- Timilsina, G.R., J.C. Beghin, D. van der Mensbrugge and S. Mevel. 2010. The Impacts of Biofuel Targets on Land-use Change and Food Supply: A Global CGE Assessment. Policy Research Working Paper 5513. World Bank, Washington D.C. December.
- Warr, P.G. 2011. Food Security vs. Food Self-Sufficiency: The Indonesian Case. *The Indonesian Quarterly* 39(1): 56–71.
- Wickizer, V.D., and M.K. Bennett. 1941. *The Rice Economy of Monsoon Asia*,. Stanford CA: Stanford University Press.
- Williamson, J.G. 2012. Commodity Prices over Two Centuries: Trends, Volatility, and Impact. *Annual Review of Resource Economics* 4(6): 1-22. DOI: 10.1146/annurev-resource-110811-114502.
- World Bank. 2012a. **PKH Conditional Cash Transfer** Social Assistance Program and Public Expenditure Review. In *Protecting Poor and Vulnerable Households in Indonesia*, Volume 2. Washington DC: World Bank.
- World Bank. 2012b. **BLT Temporary Unconditional Cash Transfer** Social Assistance Program and Public Expenditure Review. In *Protecting Poor and Vulnerable Households in Indonesia*, Volume 2. Washington DC: World Bank.
- World Bank. 2013a. *Pink Sheets*, <http://econ.worldbank.org>, accessed 14 March.
- World Bank. 2013b. *World Development Indicators*, <http://econ.worldbank.org> (accessed March 14, 2013).
- WTO. 2013. *Trade Policy Review: Indonesia*. Report by the Secretariat, Geneva: World Trade Organization.
- Wright, B.D. 2011. The Economics of Grain Price Volatility. *Applied Economic Perspectives and Policy* 33(1): 32–58.
- Yu, W., T.W. Hertel, P.V. Preckel and J.S. Eales. 2004. Projecting World Food Demand Using Alternative Demand Systems. *Economic Modelling* 21(1): 99-129.

Appendix. The GTAP Global Model and Database

An economy-wide model of the world's national markets is needed to project trends in primary product and other trade. The GTAP model (Hertel 1997) of the global economy is employed here, together with its Version 8.1 of the GTAP database, which is calibrated to levels of production, consumption, trade and protection in 2007 (Narayanan, Aguiar and McDougall 2012), that is, just prior to the disruptions of spikes in food and fuel prices and the global financial crisis and recession.

GTAP is a very widely used CGE model for economy-wide global market and trade policy analysis. It assumes perfect competition and constant returns to scale in production. Farm land and other natural resources, labor (skilled and unskilled), and produced physical capital substitute for one another, while intermediate inputs substitute for value-added in fixed proportions. Land is mobile among alternative agricultural uses over this projection period. Natural resources, including coal, oil, gas and other minerals, are specific to the sector in which they are mined. In the long-run model closure adopted here, labor and produced capital are assumed to be immobile internationally but mobile across all uses within each country.

There is a national representative household whose expenditure is governed by a Cobb-Douglas aggregate utility function. Private household demand is represented by a Constant Difference of Elasticities (CDE) functional form, which is calibrated to replicate a vector of own-price and income elasticities of demand. In projecting to 2030, we follow Yu et al. (2004) in modifying these elasticities, based on our own econometrically estimated relationships between per capita income and income elasticities of demand for agricultural and food products as reflected in the full GTAP database. These estimates are then used to modify the elasticities for each region by 2030, given projections of per capita income for each region. The standard Armington (1969) specification is used to handle bilateral international trade flows by differentiating products by their country of origin. The Armington elasticities are the same across countries but are sector-specific. Since we are dealing here with long-term changes, we follow the typical modelling practise of doubling the short-to-medium term estimated Armington elasticities.

The world economy is divided into 129 countries/country groups and 57 sectors in the GTAP database but, for the sake of both computational speed and digestion of model outputs, we compress the number of regions and sectors (35 countries/country groups, 34 sector/product groups). We further aggregate for reporting many results; and we distinguish countries that are natural resource rich

(NRR) from others, based on their trade specialization patterns as of 2005-09.⁶ Indonesia is among the NRR group.

⁶ Our so-defined natural resource-rich countries account in 2007 for one-fifth of global GDP, one-fourth of global trade, one-third of the world's agricultural trade, two-thirds of its trade in other primary products, and just one-sixth of non-primary product exports.