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Managing Price Volatility: Approaches at the global, national, and household levels

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Abstract

Political dynamics, not economic analysis, drive the domestic policy response to sharply rising food prices. The political objective during a food price crisis is almost always to keep it from happening. In the short run, this means “stabilizing” domestic food prices despite whatever is happening in world markets. Stabilizing domestic food prices in the face of sharply escalating world prices is not a foolish goal—most countries try to do it. The real issue is whether this can be done *effectively* and *efficiently*. The answer is always “no” unless the country has planned well ahead for such a contingency and already has an operational food price stabilization program in place.

As a matter of “good practice,” all countries are discouraged by international donors from conducting such programs. Instead, countries are urged to implement “social” safety nets in times of food price spikes. The economic rationale is clear: let market prices signal the scarcity of food resources so that supply and demand can adjust, and then compensate the poor for deterioration in their standard of living when food prices rise. The problem is that safety nets that reach the poor quickly and effectively take considerable time to design and implement, and are quite costly in fiscal terms if the poor are a substantial share of the total population. Historically, unless the country is already running a cash transfer program to the poor, the emergence of a food price crisis is too sudden for an effective government response. *Gearing up emergency food relief safety nets is not an effective response to a sudden spike in food prices.*

More active measures to *prevent* food price spikes are needed, both domestically and internationally. One starting point would be for countries with large populations to gradually build their grain reserves to the point where they do not feel vulnerable to spikes in world prices and to possible grain embargoes from their regular suppliers. It would be desirable to have such stockholding strategies coordinated internationally, but this is unlikely in other than rhetorical terms. Still, the mere existence of these stocks, even if domestically controlled, would have a calming influence on world grain markets (especially on the very thin world rice market). With calmer markets, recourse to more open trade policies becomes politically feasible (and it is almost always economically desirable). Eventually, the reality of the high costs of grain storage will stimulate a more balanced approach to food security, with both reserves and trade playing significant roles.

Managing Food Price Volatility: Approaches at the global, national and household levels

Introduction

There are strongly contended views on how best to address current food price volatility and its socio-economic consequences. For example, in Bangladesh in what is now the fifth year of extreme price volatility for basic foods the Prime Minister is responding to rice prices that were at least 30–40 percent higher than a year ago by proposing a massive increase in food subsidies through open market operations and the extension of ration and fair price to around a quarter of the population. In contrast the World Bank President in an open letter to the French G8/G20 Presidency identifies a range of ways of doing better to enable poor people to cope with price volatility whilst conspicuously de-emphasising international or national level interventions through trade measures, open market operations and stock management: ‘the answer to food price volatility is not to prosecute or block markets, but to use them better.’ (Zoellick 2011) [Quoted from Clay et al. 2011, p. 4]

Both of these approaches cannot be right. Either the Government of Bangladesh is pandering to popular demands and ignoring good economics, or the World Bank is pandering to economic ideology and ignoring good politics. Is there any way for good economics to be politically sensible, or good politics to be economically rational? These questions, difficult as they seem to be, are at the core of this paper.

Most economic analysis of the impact of volatile food prices has focused on the welfare of micro-based decision agents—poor consumers, smallholder farmers, sometimes on investment decisions by firms, especially in the marketing system (Newbery and Stiglitz 1981). The insights from such analyses are fairly predictable: price spikes hurt consumers, price drops hurt producers, and volatility in general confuses investors. The policy recommendations are equally straightforward: help producers cope with price risks through financial insurance instruments, help poor consumers via targeted safety nets, and help investors by making price formation more transparent (World Bank 2005). Price formation itself, however, must not be altered, because prices send signals about the scarcity of resources, and the willingness of consumers to pay for the productive use of those resources, that are essential to the efficient functioning of a market economy.¹

There are two problems with this approach. First, much of the damage from highly unstable food prices occurs at the macro level, especially on the rate of economic growth and how well the poor participate in that growth (Timmer 2000). Second, behavioral economics has shown clearly that decision agents strongly prefer stable environments, and are willing to punish governments that fail to provide them (Timmer 2010c). Stable food prices are not a natural market outcome—the provision of stability is a public good, not a private one. Food security, as proxied by the

¹ As noted in the opening quotation, this is the approach recommended by Robert Zoellick, President of the World Bank, to the G-20 meetings convened by the French government to recommend measures for managing food price volatility (Zoellick 2011).

stability of staple food prices, is primarily a macro political economy problem, not a micro decision agent problem.

The micro problems are real, and household-level interventions that take the instability of food prices as given are needed to cope with them. But the macro political economy problems are larger and more long-lasting, and will require national and international interventions that seek to alter food prices themselves. The failure of the international community to agree on such interventions is understandable given the sharply different interests of key players (Sharma 2011), and greater attention needs to be devoted to “second-best” approaches at the national level. If stable food prices are recognized as the responsibility of governments, they will seek to provide them. The key questions are whether they can do this effectively in the short run while still building a market-friendly food economy in the long run.²

A framework for discussion

There is no question that food prices have been highly unstable, both recently and in the long run (see Figures 1 and 2).

We start by asking a basic question: what does price volatility have to do with food security? This is actually a very controversial question.³ Still, there is surprisingly wide agreement in the development community that, in general:

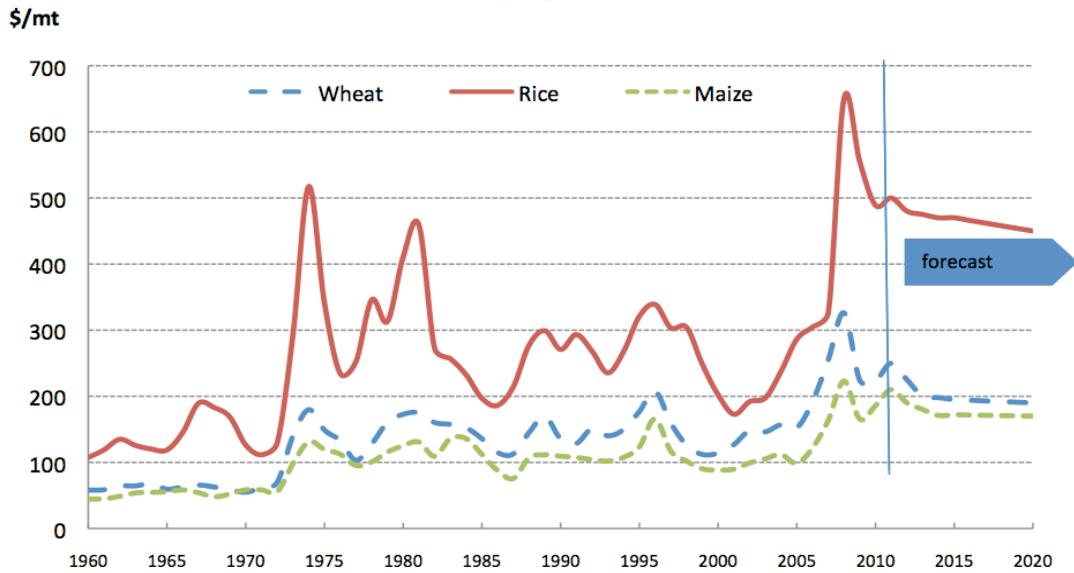
- 1) Price spikes hurt poor consumers, who buy most of their food;
- 2) Price collapses hurt farmers with crop surpluses to sell; and
- 3) Price risks reduce the quantity and quality of investments, including by smallholder farmers for agricultural modernization.

Thus highly unstable food prices have negative consequences at the micro level for household-level decision makers. One likely conclusion from these agreed points is that measures to alleviate the impact of food price instability will also need to be micro based. But my own work suggests that food price instability also has a deeper and more insidious impact: it slows down economic growth and the structural transformation that is the pathway out of rural poverty (Timmer 1980, 2009). Thus food price instability really hurts the poor in both the short run and the long run. An immediate conclusion from this perspective is that efforts to stabilize food prices, if successful, will have much larger economic benefits than suggested by the micro perspective, and the implementation measures are likely to be considerably different (Timmer 1989, 1991).

² The Indonesian experience with stabilizing rice prices in the short run while building a dynamic private marketing sector in the long run is discussed in Timmer (1996, 1997). Its broader relevance is presented below.

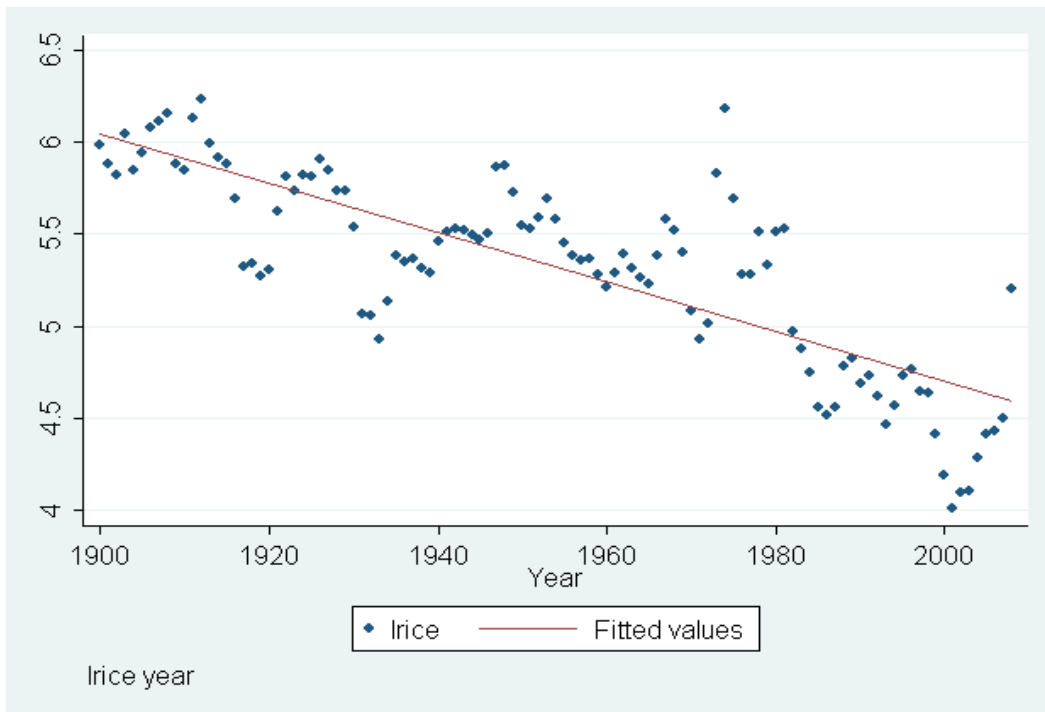
³ For example, see Barrett and Bellemare (2011). Their provocative title is “The G-20’s error: Food price volatility is not the problem.” Naylor and Falcon (2010) provide a quantitative assessment of changes in food price volatility.

Figure 1. Annual grain prices (constant US\$2000) historically high, and forecast to stay high in medium term



Source: Christiaensen 2011. Note: These are almost certainly nominal prices, not constant US\$2000.

Figure 2. Long-run trend in real rice prices, 1900-2008



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

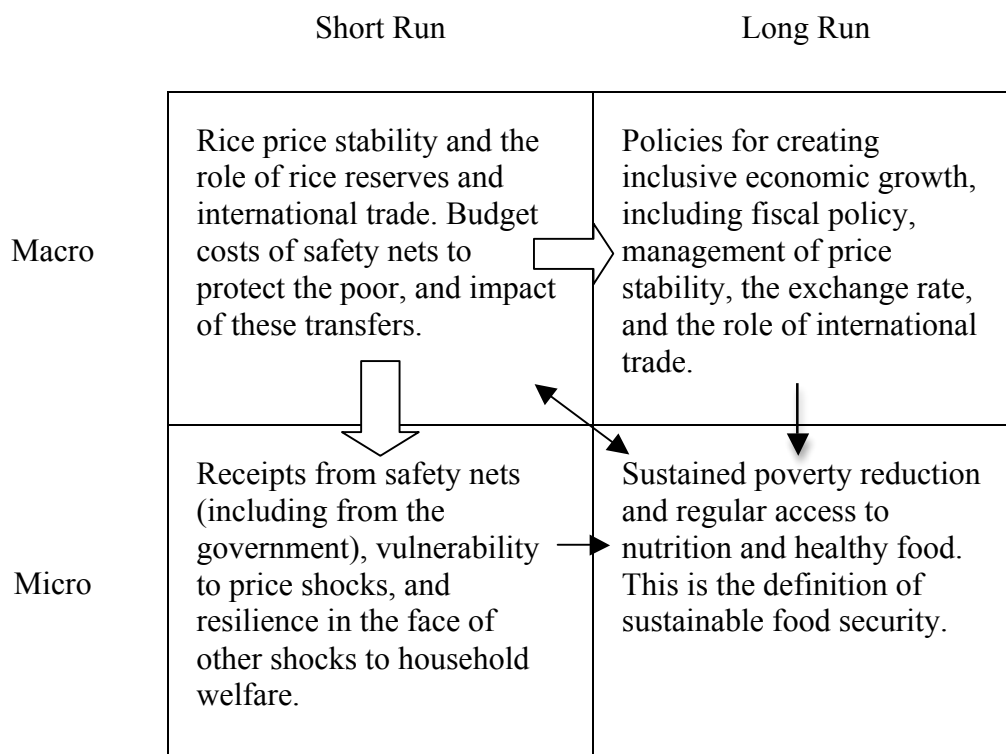
Consider a very simple model of food security that focuses on the short run versus the long run, and on the macro level (of policymakers) versus the micro level (of household decision makers) (see Figure 3).⁴ When the global economy is reasonably stable, and when food prices are well behaved, policymakers can concentrate their political and financial capital on the process of long-run, inclusive growth. Keeping the poor from falling into irreversible poverty traps is easier and less costly in a world of stable food prices, and the poor are able to use their own resources and entrepreneurial abilities to connect (via the small horizontal arrow) to long-run, sustainable food security for themselves.

If the food economy is highly unstable, constantly in crisis, policymakers spend all of their time and budget resources in the “upper left” box, trying to stabilize food prices and provide safety nets for the poor. During food crises, vulnerable households often deplete their human and financial capital just to stay alive. This is the world of poverty traps and enduring food insecurity. We are also trapped in short-run crisis management, both macro and humanitarian. Donors such as USAID can be trapped in crisis mode as well as governments, and end up spending their human and financial resources on emergency relief rather than longer-run development strategies and investments.

With success in achieving the objectives in the upper right and lower left boxes, market forces gradually—over decades—bring the poor above a threshold of vulnerability and into sustained food security (connecting macro to micro and short run to long run). The goal is to get to the “lower right” box where households have sustainable access to food in the long run. That is, they are food secure.

⁴ This framework was originally worked out for a presentation to a food security conference sponsored by the Asian Development Bank in Manila in July 2010, and is presented in more detail in Timmer (2010d).

Figure 3. Basic framework for understanding food security issues in Asia



How do we break out of these traps? Franck Galtier (2009) and his colleagues at CIRAD in France have designed a simple framework to think about managing food price instability. It builds on two critical distinctions: first, between preventing food price instability and coping with the consequences of unstable food prices; and second, between the role of the private sector in each domain and the public sector. Thus there is a 2x2 matrix with four cells -- A, B, C and D (see Figure 4).⁵

⁵ The HLPE (2011) manuscript expands the Galtier matrix from 2x2 to 3x3 by differentiating the B and D mechanisms into *ex ante* management measures and *ex post* coping measures, and by adding a third level of actor—civil society.

Figure 4. Approaches to managing food price volatility

	Prevent	Cope
Private	<p>“A”</p> <p>Storage & transportation</p>	<p>“B”</p> <p>Insurance</p> <p>Hedging & futures markets</p>
Public	<p>“C”</p> <p>Buffer stocks</p> <p>Import/export controls</p>	<p>“D”</p> <p>Safety nets</p>

With the rise of market fundamentalism since the mid-1980s, most donor efforts have concentrated on A and B measures, and on D measures when food crises still erupted. In view of the relative lack of success with the ABD approach, the issue is whether approaches to “C” might work. Are there public interventions that could stabilize food prices?

The answer depends on a variety of general and specific issues, especially on the level of action: local, national, regional and/or international. Although most analytical attention focuses mainly on the distinction between national and international actions, examples exist where farmer organizations at the local level and regional bodies such as the Association of Southeast Asian Nations (ASEAN+3), for instance, have engaged in price stabilization initiatives.

General issues facing price stabilization efforts

Within these four levels of action—local, national, regional and international, five main issues are relevant.

1) Where is price instability a problem?

At the local level, highly unstable farm gate prices are a significant burden to small farmers seeking to invest in modern agricultural techniques and to raise their productivity. Consuming households (and many smallholder farm households are net consumers) are obviously the locus of burdens from high food prices and especially from price spikes.

At the national level, the concern is for price stability in major urban markets and is often the focus of action by macro policymakers.

At the international level, the concern is for the level and stability of food prices from the major exporters, and the possibility that export barriers might prevent access to food by importing countries in times of rising prices.

2) Which commodities need more stable prices?

Three categories of agricultural commodities might be considered for stabilization activities: food staples, cash crops and perennial tree crops. Prices of cash crops are a real concern to farmers but have relatively little impact on consumers—perhaps onions in India and red chili peppers in Indonesia are exceptions. Perennial tree crops present special financing problems because of the long time horizon for the investment to start to pay off, and there is a very sharp distinction between short-run marginal costs and long-run average costs. But price variability has little impact on consumers—perhaps palm oil in Indonesia and coffee in the United States are minor exceptions.

Accordingly, recent emphasis has been on price stabilization techniques for the major staple food grains, especially rice, wheat and maize. Although these commodities have much in common because they often form a large share of energy input among the poor, the world rice market behaves very differently from the world markets for wheat and maize (Timmer 2010b). There are other food grain markets with their own unusual trading regimes: cassava, millet and white maize, for example, often behave more like “non-tradable” commodities than the tradable commodities with large, liquid international markets. Any efforts to stabilize food grain prices will need to recognize the special characteristics of individual commodities.

3) What instruments are available to stabilize food prices?

In general, there are three main categories of stabilization instruments: border (trade) controls, buffer (reserve) stocks, and regulation of financial markets involving agricultural commodities.

Border controls are a national issue because nations are defined by their borders. Economists do not like political borders very much because they impede the free flow of goods and services (and hence reduce the “gains to trade”), but the nation state is the main modern actor in many areas of economic, political and diplomatic initiatives. Borders, and border controls over trade, are a reality. The World Trade Organization (WTO) seeks to impose disciplines on what border controls are legitimate, and agriculture has been included in those disciplines since the Uruguay Round. However, the food crisis in 2007/08 revealed a serious asymmetry in how the WTO approaches border controls for food grains. Virtually all of the trade disciplines, and all of the current negotiations under the Doha Round, refer to import barriers rather than export controls. There is now wide agreement that export controls on food grains have been a significant source of price instability (Martin and Anderson 2011; Sharma 2011). The asymmetry of trade discussions should be rectified, but it is difficult to imagine grain exporting countries agreeing to significant restrictions on their ability to control exports as a means of stabilizing their domestic food prices. Food security is simply too important as a political mandate for national leaders to forgo this policy instrument. Only significantly more stable world grain markets are likely to change this reality—an obvious challenge in the face of export barriers.

Large reserves of grain, at whatever level, have the obvious advantage that they can be drawn on when harvests are damaged or there are surges in demand. Large reserves tend to hold price

levels down as well, although there is a clear endogenous relationship, explained by the theory of supply of storage, between expectations of price changes and levels of stocks held by the private sector. The issue is whether the public sector should be holding reserve stocks of grain above and beyond the willingness of the private sector to hold stocks (and the subsequent willingness of the private sector to hold these stocks in the presence of public stocks).⁶

Holding public reserve stocks faces three key issues: their costs (and who should pay), monitoring the level and quality of stocks (and who should manage them), and enforcement of agreements to buy and release stocks according to some transparent rules. Each of these issues has been difficult to resolve even in the case of national stocks. There is virtually no experience at the international level of procuring, managing and releasing reserve stocks on behalf of an agreed protocol to stabilize grain prices. The experience of using Japanese “WTO” rice stocks in 2008 as an external supply source to prick the rapidly rising spike in world rice prices was clearly a unique episode (and even then the stocks were never actually released) (Slayton and Timmer 2008). Very serious doubts exist that any internationally viable scheme of holding reserve stocks of grain for stabilization purposes could be agreed and implemented (but see the specific discussion below).

Regulation of financial markets for agricultural commodities is being vigorously discussed, especially within the context of the French chairmanship of the G-20 this year. Attention is focused on two possibilities: re-imposition of position limits on speculative positions for important food commodities traded on futures markets (such as existed before the financial deregulations in the 1990s), and a “Tobin-tax” on each financial transaction to slow the emergence of speculative bubbles. The difficulties with either approach are clear—many of the financial transactions in commodity markets do not actually take place on organized exchanges where regulators can see what is happening, no single market could initiate such regulations unless others around the world did as well, and there is no experience with taxing financial transactions of this sort. Still, it is recognized that the “financialization of food commodities” is a relatively recent and rapidly growing phenomenon and urgently needs more research and understanding.

4) How can stabilization interventions be governed?

The issue is important at three different levels (four, if the regional level is somehow distinct from the international level because of greater commonality of interests).

At the local level, especially for farm or community organizations, governance would seem to depend on active participation and “voice.” The great advantage of local initiatives, of course, is precisely their ability to be responsive to local conditions and aspirations. General guidelines on how to manage them are probably not very useful.

At the national level, democratic processes are widely thought to be the basis of good governance generally, and should provide appropriate feedback to national leaders on how well they are doing in managing the country’s food security. Still, it is important for outside analysts,

⁶ Gilbert and Morgan (2010) are emphatic that increased *public* stockholding are a bad idea (“This policy direction is dangerous,” p. 3031), because it displaces *private* stocks. However, clear release mechanisms for public stocks alleviate much of this concern. The HLPE (2011) report simply dismisses the notion that private stocks will be adequate for food security purposes.

donors and the private sector to realize that food security is inherently a political issue subject to political decision making. It is certainly desirable that good technical analysis, especially economic analysis, be brought to bear on these decisions, but history has shown how difficult it is to make such analyses relevant and implemented.

At the international (and regional) level, negotiations informed by transparent technical rules would seem to be the best way forward. But there is deep skepticism that such negotiations can be successful. Even within ASEAN, for example, the interests of Vietnam and Thailand diverge sharply from those of the Philippines and Indonesia.

5) How do we evaluate success or failure in stabilizing food prices?

At the local level, the basic issue is whether sustained gains are seen in agricultural productivity on small holder farms. Of course, many other ingredients are needed for “getting agriculture moving,” but a major rationale for stabilizing commodity prices at the farm gate is to enhance the profitability of these other investments. The feedback from success at this level is also critical: nothing would improve the outlook for food security more effectively than rapid increases in farm productivity, especially for staple food crops grown by small holders.

At the national level, success in stabilizing food prices is likely to be seen primarily in greater political support for the government that gets credit, and ultimately in a more stable investment climate that should stimulate economic growth. Although the political payoff is likely to be primarily in the short run, the contribution to economic growth will be apparent to economic historians, and to the country’s consumers as they gradually escape from poverty.

At the international level, if a price stabilization accord can be agreed to and implemented, success will almost certainly have to be measured using technically sophisticated but transparent methodologies that are part of the initial framework. Cost-benefit analysis is a powerful tool when stakeholders agree on the methodology and the result.

Policy responses during food crises: An Asian perspective with implications for Africa

Reducing food price volatility is likely to be a highly specific process—depending on commodity, country, and global market conditions. The following discussion focuses mostly on Asia and on rice, for three reasons. First, most Asian countries have taken seriously the “mandate from heaven” by which rulers are expected to provide their citizens with a generally stable political environment. Because of the importance of rice in the diets of most Asians, stable rice prices were seen as part of political stability. Nearly all Asian countries have tried to stabilize their rice price.

Second, rice is overwhelmingly the food of the poor (Asia Society 2010; Timmer et al. 2010). More than one billion of the world’s population live on less than \$1 a day, and rice is the daily staple food for nearly two-thirds of them. Any broad-based reduction in poverty will need to find a way to make rice accessible in a reliable fashion to this population.

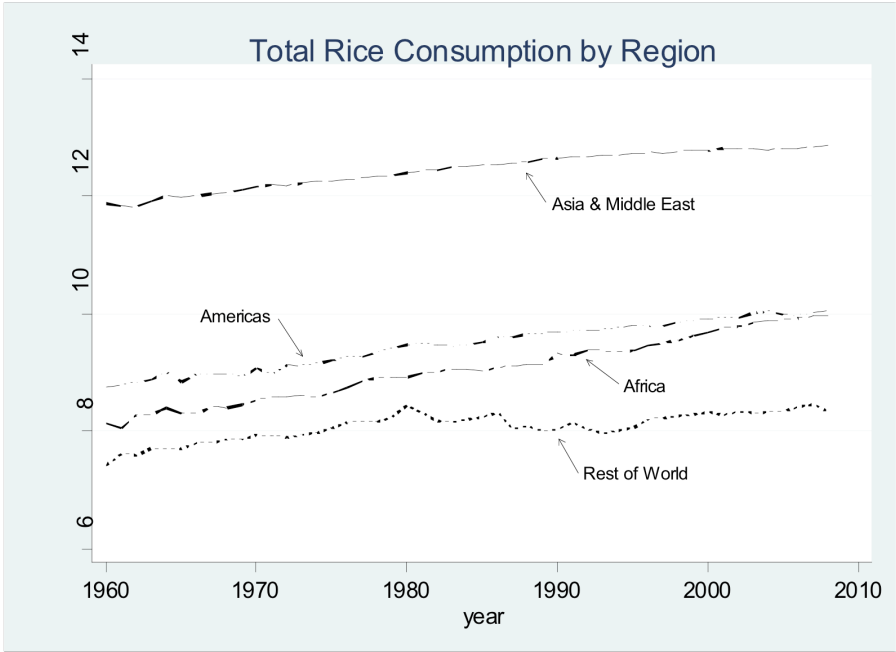
Third, rice is a globally traded commodity with a number of African countries increasingly dependent on Asian supplies to feed their rapidly growing demand. Total rice consumption in Africa has been growing at a steady 3.8 percent per year, whereas all other regions show a declining growth rate for rice consumption (see Figure 5). Africa’s steady growth will make it a large factor in global rice demand as early as 2030.

But the world rice market is distinctly different from other staple food markets (the small world market for white maize shares many of the characteristics of the rice market).

The world rice market is a thin, segmented, and imperfect market in which price discovery is difficult. With many different grades of rice and price differentials between origins which do not reflect only transportation and quality differentials, there is no single “world rice price.” Also, unlike the other grains, there is no futures market which allows global market participants to hedge their trading risks (Slayton 2011).

Because of these characteristics, the world rice market is highly unstable, with very little transparency in price formation. Most significant rice import and export “deals” are struck behind closed doors, often on government account, with very little accountability to other participants in the system, especially farmers and consumers. It is understandable that countries dependent on this market make serious efforts to protect themselves from its instability. History demonstrates that rice prices within many Asian countries can be kept reasonably stable with respect to world prices (Timmer and Dawe 2007). Africa may well want to learn how Asia did this, and why (Timmer 1993).

Figure 5. Rice consumption trends by region



Source: Timmer et al. 2010.

Rice has not been “financialized” to a significant extent, but there are still speculative hoarding episodes driven by widespread expectations of scarcity and surplus. As countries try to protect themselves from these speculative episodes, there are often spillovers from their actions, and these spillovers increase price instability in world markets. A little-researched topic is how to minimize the impact of these spillovers, or cope with them on a country-by-country basis, rather than to follow the standard policy advice, which is to avoid the actions altogether, and thus avoid the spillovers in the first place. The standard policy advice turns out to be politically impossible in times of turbulent markets. Are there better alternatives?

Lessons from history⁷

Three controversial lessons from historical experience with food crises inform the discussion here. They stem from the world rice crisis in 1972/73 (which pre-dated the more general food crisis in 1974/75), the experience with spiking food prices in 2007/08, and the most recent episode of soaring maize and wheat prices in 2010/11.

The first lesson is obvious in retrospect, but no less important. Political dynamics, not economic analysis, drive the domestic policy response to sharply rising food prices. If economists do not understand this political dynamic, their economic analysis tends to be irrelevant. Finding ways for sound economic analysis to be part of the political dialogue during food price crises is a real challenge to the profession. A good starting point would be to encourage countries seeking to stabilize their domestic food economies, not discourage them.

Second, the political objective during a food price crisis is almost always to keep it from happening. In the short run, this means “stabilizing” domestic food prices despite whatever is happening in world markets. Stabilizing domestic food prices in the face of sharply escalating world prices is not a foolish goal—most countries try to do it. The real issue is whether this can be done effectively and efficiently. The answer is always “no” unless the country has planned well ahead for such a contingency and already has an operational food price stabilization program in place. As a matter of “good practice,” all countries are discouraged by international donors from conducting such programs (World Bank 2005).

Instead, the third lesson from past food crises is that countries are urged to implement “social” safety nets in times of food price spikes. The economic rationale is clear: let market prices signal the scarcity of food resources, and then compensate the poor for deterioration in their standard of living when food prices rise. The problem is that safety nets that reach the poor quickly and effectively take considerable time to design and implement, and are quite costly in fiscal terms if the poor are a substantial share of the total population. Historically, unless the country is already running a cash transfer program to the poor (as, for example, Indonesia has done since the compensation program for increasing fuel prices in 2008), the emergence of a food price crisis is too sudden for an effective government response. Gearing up emergency food relief safety nets is not an effective response to a sudden spike in food prices. More active measures to prevent food price spikes are needed, both domestically and internationally.

⁷ These lessons are drawn from Timmer (2010a).

Can (groups of) countries cooperate to manage food price volatility?

It has been understood for a long time that cooperation to keep national borders open to international trade can have very large pay-offs from the efficiency gains that come from better allocation of resources. The argument for keeping national borders open to the world rice market is even more powerful. In addition to the “gains from trade” in the strictly economic domain, more open borders to rice trade also help stabilize the world price of rice and reduce the tendency for hoarding behavior to set off price panics.⁸

So, why don't countries cooperate to keep their borders open to rice trade, and thus prevent much of the price instability that plagues the world rice market? The answer lies in the “prisoner's dilemma,” where one of the most basic insights from game theory shows the logical outcome of two independent parties (countries) presented with two choices—cooperate or act independently, where the payoff to cooperation is high, but highly costly if the other party fails to cooperate. Without communication between the parties, or credible forms of commitment, the parties chose to operate independently, lowering welfare for all. The outcome for rice policy is clear: individual countries make decisions about domestic prices, and the trade policies needed to defend those prices (e.g. a rice export ban by India or subsidized imports by the Philippines), based strictly on their own domestic political constituency. They are protecting their national sovereignty. The potential for all countries to cooperate, keep rice trade open, and thus reduce rice price volatility, is missed.

There are two ways to resolve the prisoner's dilemma. The best is to agree on a formal mechanism for cooperation, with binding commitments of the sort that have allowed the General Agreement on Tariffs and Trade (GATT) and WTO to gradually reduce trade barriers and greatly expand international trade. The world rice economy has not benefited from these protocols because most of the major players in the world rice market have been exempt from binding commitments (Martin and Anderson 2011; Sharma 2011). Still, the current level of concern about instability in the world rice market may offer a window of opportunity for the major global players in the world rice market—ASEAN+3, Bangladesh, India and Pakistan, and the United States—to convene meaningful discussions on how to put rice trade on a more open basis through cooperation.

The alternative to cooperation to solve the prisoner's dilemma is not particularly appealing—it involves the gradual learning by both parties through “repeated games.” In the context of the world rice market, such learning would be stimulated by repeated rice price crises, a painful and inefficient way to reach an agreement that could come from active discussions instead.

An important case study: Indonesia

Indonesia's experience with rice price stabilization and pro-poor growth reveals a number of broad lessons for other countries seeking a rapid emergence from poverty (Timmer 2004). As the

⁸ See Timmer (2010b) for the evidence behind this argument.

largest and most diverse economy in Southeast Asia, Indonesia has had to cope with a wide variety of challenges—climatic, political, economic, and religious—in order to transition from the failed economic policies of the Sukarno era in the 1950s and early 1960s, to the rapid pro-poor growth stimulated by the Suharto regime’s revival of a market economy, and to the democratic governments that had to assemble new political institutions in a rush after Suharto was forced from office in 1998 in the wake of the Asian Financial Crisis. A number of governments in Asia and Africa have sought to learn from these experiences.

During these tumultuous decades, Indonesia has almost always been a significant player in the world rice market, and has learned that its engagement is a two-way street. Imports were used routinely to stabilize domestic prices, but great care was needed in procuring these imports not to push up prices in the world market. Significant fluctuations in Indonesia’s own rice production also caused large variations in its import demands. Indeed, under the impact of favorable weather, new technology, cheap fertilizer and price supports for farmers, Indonesia actually exported small quantities of rice in the mid-1980s. It is impossible to understand the world rice market without understanding Indonesia’s rice economy.

The country is also starting to play a much more visible role in world affairs. As a member of the G-20, Indonesia has been asked to support the French initiative in 2011 to manage food price volatility. As the Chair of ASEAN in 2011, Indonesia is using its leadership to move forward the longstanding discussions on how ASEAN might coordinate its rice trade and reserves policies to make the world rice market more transparent and stable. What should Indonesia do with these unique opportunities?

It should be obvious that Indonesia can only promote initiatives that will be in its own self-interest, in either the short run or long run, or both. The whole point of national borders is to promote the welfare of citizens within the borders. The political economy of determining who benefits (and who might lose) from policy initiatives is complicated, but the bottom line will be perceived national self-interest.⁹ No one expects Indonesia to act otherwise.

That said, it is clear that Indonesia has an enormous stake in regional stability and economic growth. As Chair of ASEAN in 2011, Indonesia has the opportunity, almost the obligation, to provide leadership on these key issues. As the largest player in this “neighborhood,” Indonesia’s actions will also play an important role in maintaining a positive external environment in which investors and diplomats both can act with confidence. A positive “neighborhood effect” is demonstrably a powerful determinant of performance of individual countries within the neighborhood.

The problem is that the current “neighborhood effect” for the region’s rice markets is actually quite negative. Consequently, there is a real opportunity for Indonesia to highlight the issues at ASEAN forums, provide a sounding board for ideas from partners, and perhaps to take leadership in translating good ideas into concrete proposals and plans for implementation.

⁹ For a somewhat whimsical explication of the political economy of food security, based on an *Economist* article on January 29, 2011, see Annex 1.

Two initiatives seem worth consideration. First, Indonesia could take the lead in emphasizing that the long-run goal of national rice policies should be to engage in an integrated Asian rice market, with more open trade policies the major vehicle for such integration. As rice consumption begins to fall in most of the countries of ASEAN, such integration should be easier because high-cost production will not be needed to satisfy strictly local demand (Timmer et al. 2010). Indeed, a concrete step Indonesia could take to move forward rice market integration in the region would be to stop insisting that the goal of domestic rice policy is rice self-sufficiency, but instead is food security.¹⁰

There is clearly a tension between a rice price policy designed to achieve self-sufficiency and one designed to enhance food security. It is well understood that high rice prices increase the level of poverty—the current parameter for Indonesia is that a 10 percent increase in rice prices causes a 1.3 percentage point increase in poverty (although the arguments for updating this parameter with more recent data are valid). At the same time, maintaining domestic rice prices at a level that is somewhat higher than the trend of world prices also makes it much easier to maintain stability of domestic prices, via varying levels of imports that complement domestic production. Avoiding price spikes for rice is highly beneficial to the poor, perhaps even compensating for somewhat higher prices on average (especially if rapid economic growth is raising rural wages and creating lots of employment opportunities for unskilled labor) (Timmer and Dawe 2007).

The trick is to use a transparent mechanism—visible to both domestic and international traders—for arranging the rice imports. The optimal mechanism is probably an openly published schedule of variable import duties, but other mechanisms are no doubt available that would not destabilize world prices. One promising sign is that several ASEAN countries, including Vietnam on the export side and the Philippines on the import side, are actively considering transparent trade levies as a way to stabilize their domestic prices. Such transparency would be very helpful in rebuilding confidence in the reliability of the world rice market as a source of supplies (and demand). Indonesia could reinforce this very desirable policy direction by moving to a variable levy system for rice imports as the mechanism to stabilize domestic rice prices.¹¹

The second concrete initiative the Indonesian government could make as Chair of ASEAN is to promote larger rice reserves in member countries. This could be part of the initiative to create an ASEAN + 3 rice reserve for emergency purposes, but this rice reserve is unlikely to be of a scope, or with management rules, that would permit its use for preventing rice price crises. Instead, larger rice reserves at the country level, promoted by active discussion at an ASEAN Roundtable, would still enhance confidence in the world rice market, as individual countries would feel less vulnerable to sudden trade shocks, and thus could continue to use the world rice market as the source of efficient imports (and exports) to complement their domestic supplies.

¹⁰ As part of this emphasis on long-run efficiency and lower costs of rice production, Indonesia could encourage very small-scale rice farmers, most of whom are net consumers, to diversify into higher value agricultural products or to exit agriculture altogether as part of a successful structural transformation. See Timmer (2009), for comparative and historical perspective.

¹¹ See Martin and Anderson (2011) for a model that examines the impact on world price variability if all countries isolate themselves from the world market price.

Larger domestic rice reserves are not an economically efficient instrument for stabilizing domestic (or international) rice prices. Trade, and open borders, is the efficient vehicle for that purpose. But larger domestic rice reserves would serve two important functions: (1) they would enhance confidence among national policy makers that they could use the world market to lower their average costs of rice consumption (on the import side), and (2) the resulting reduction in price instability in the world rice market could reinforce political support for the trade-opening actions. Greater stability in the world rice market opens many important avenues for political actions domestically. Although not economically efficient, greater domestic rice reserves may be politically efficient.

The final question is what role Indonesia should be playing as a member of the G-20. Somewhat controversially, France, as the Chair of G-20 in 2011, has tabled a proposal to manage price volatility in world food markets. How should Indonesia respond? In the first instance, Indonesia should insist that the world donor community needs to invest vastly more in basic agricultural research and development. The shameful decline in donor funding to support agricultural development, which started in the mid-1980s and lasted until the mid-2000s, needs to be corrected. Sharply higher funding levels need to be sustained for the next two decades.¹²

Second, the “financialization of food commodities” is a trend that is very worrisome. Huge volumes of financial liquidity looking for the next best speculative return have turned to commodities, including basic food commodities, as a venue for diversifying financial portfolios, and increasing returns to investors. The world has never lived with the reality of pricing of food commodities as a direct function of financial speculation, rather than the reality of movements in basic fundamentals of supply and demand. The two are not disconnected, of course, but the volatility of financial investments, especially by hedge funds, large banks on behalf of rich clients, and even amateur speculators able to play as day traders, vastly overwhelms the reality of real movements in the supply of and demand for basic food commodities on a short-run basis.

The impact of financialization of food commodity markets is a highly controversial topic and it is important not to overstep the evidence. Still, a number of recent reviews of food price volatility have suggested that financial speculation has probably played a role, at least in the “bubble” phase of food price commodity spikes in 2008 and again in 2011. One suggestion is to use a “precautionary principle” as an innovative step forward.

In the absence of any conclusive evidence that the significant increase in speculative activities on the performances of futures markets carries benefits (by reducing the cost of hedging in particular), and the demonstrated existence of risks regarding the occurrence of price bubbles and the exclusion of commercial actors because of the higher costs of participating in the deregulated commodity exchanges, a precautionary approach dictates tighter regulation of speculation on agricultural commodity exchanges (HLPE 2011, p. vi).

¹² A fascinating article by Lobell et al. (2011) reports that roughly 10 percent of productivity gains from agricultural research since 1980 has been lost to climate change, which is already having a measurable impact on the yields of wheat and maize. The need to “run even faster” is clear. For a very helpful review of the institutional architecture needed to bring about this increase in funding for agricultural research, see Global Author Team (2010).

President Sarkozy of France has urged the EU to start this process of greater regulation, so it is clearly on the G-8 and G-20 policy agenda.

It is not clear that the financialization of food commodities can be stopped, even with a precautionary approach. Greater regulation of financial markets for commodities is highly problematical, as financial “innovations” often stay several steps ahead of regulators, and many of the most questionable investments in commodities do not even occur on open markets, where informed regulators might see what is happening. A transactions tax has been proposed as a way to slow the emergence of commodity price bubbles, but getting all commodity trading floors to go along with such a tax is also problematic. In the end, individual countries and the international community may simply have to learn to live with this influx of financial “hot money” into the system, and concentrate instead on stabilizing the real market.

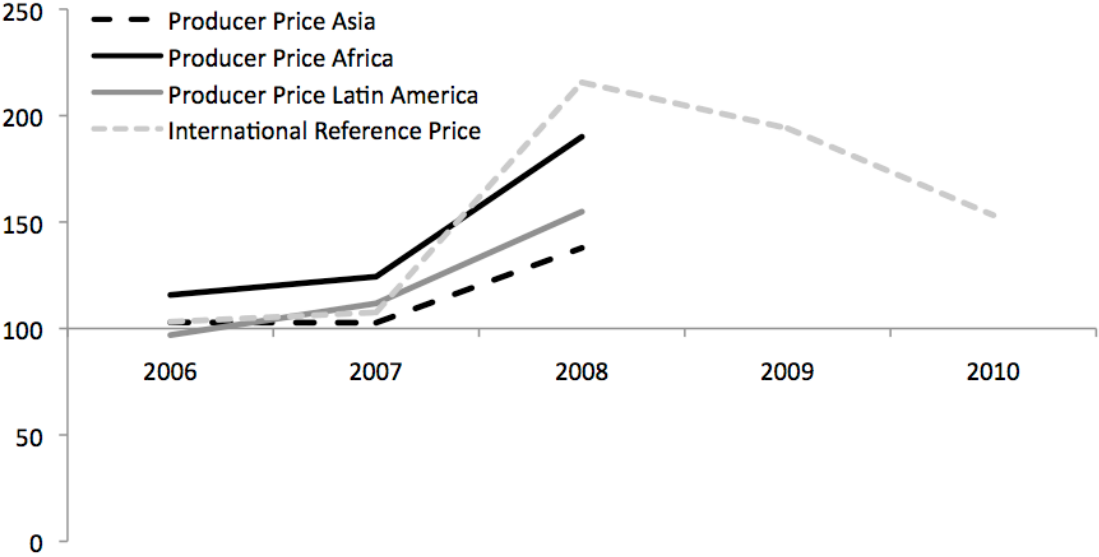
Finally, because of the great uncertainty surrounding the world food system right now, there would be great merit in having Indonesia host a roundtable discussion on the way forward in the ASEAN + 3 forum (or, ideally, to have an ASEAN + 6 forum, to include Bangladesh, India and Pakistan, with the United States as a “side” participant). Perhaps with ADB assistance, such a roundtable could provide a neutral forum to discuss key impediments to making the world rice market more open, transparent, and reliable. Identifying the impediments is the first step to removing them. That is the long-run agenda for both ASEAN and the G-20.

Are there lessons for Africa from the Asian experience?

Asia has been relatively successful in isolating itself from movements in world food prices. Africa has not. Figures 6-8 show that the differences are quite dramatic. In Figure 6, Martin and Anderson (2011) demonstrate that the spike in rice prices in 2008 was followed closely by producer prices for rice in Africa, but Asian countries managed to isolate themselves from the spike to a considerable extent (Dawe 2009).

Figure 6: Indexes of real international and producer prices of rice, developing countries' unweighted average, 2006-2010 (2005=100)

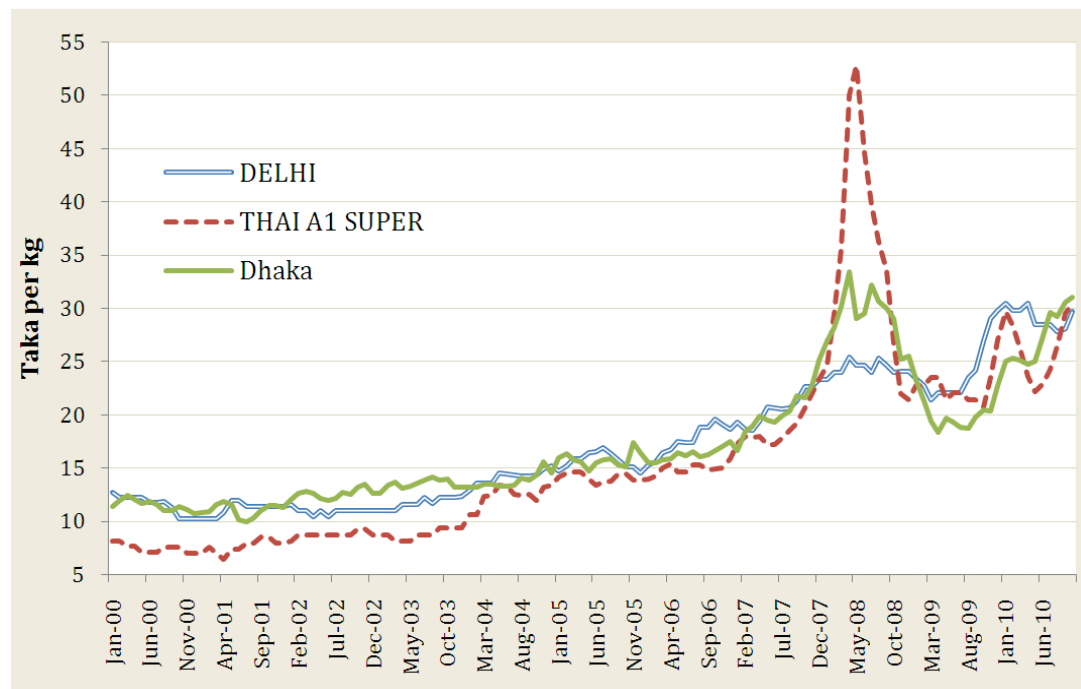
Rice



Source: FAOSTAT producer prices (www.fao.org) and international reference prices from the World Bank's Prospects Group (econ.worldbank.org) (Martin and Anderson 2011).

Figure 7, from Clay et al. (2011) shows that India was able to isolate itself from the rice price spike (indeed, India's actions to isolate itself—a ban on rice exports—explain much of the sharp spike in world rice markets). Rice prices in Bangladesh, which normally follow Indian rice prices quite closely, rose sharply when access to Indian rice supplies was cut off. Even so, rice prices in Dhaka did not rise nearly as sharply as in Bangkok, where the world price is set.

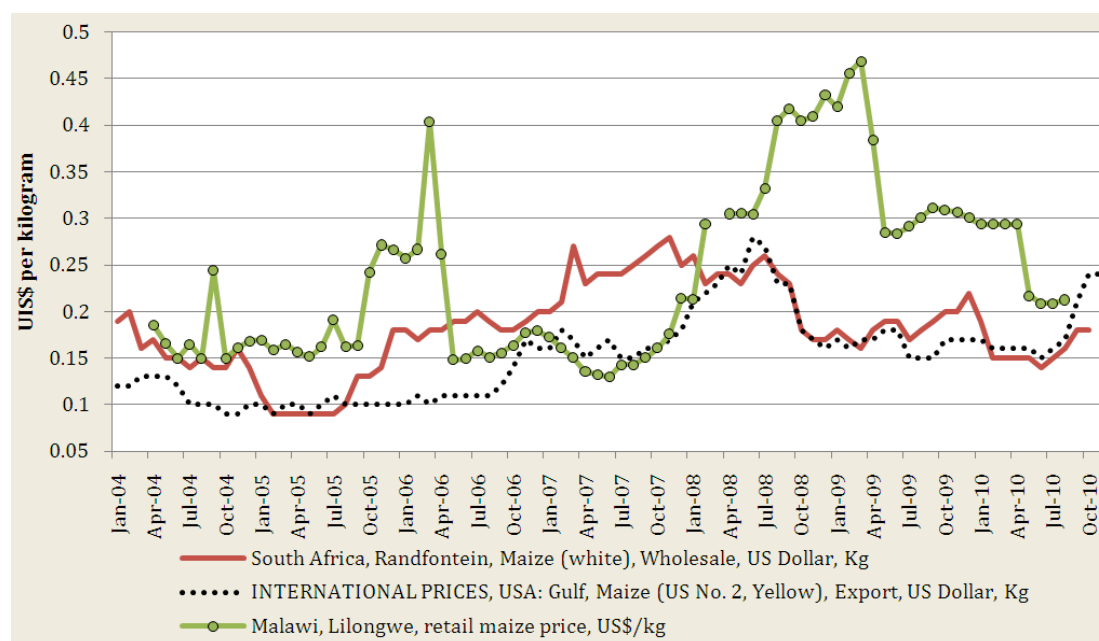
Figure 7. Dhaka, Delhi and Bangkok Rice Prices from Jan 2000 to Oct 2010, converted to Taka



Source: Clay et al. 2011.

Figure 8, also from Clay et al. (2011) shows how different the situation is in at least one closely watched African country, Malawi. White maize prices in Malawi are considerably more unstable than either relevant international market price—for white maize from South Africa or yellow maize from the United States. Explaining these sharply differing patterns of price instability for staple grains in Africa and Asia should be a high research priority. One important focus could be the aggregate welfare impact from Asian policies designed to stabilize domestic rice prices as they spill over to the world market and actually cause much of the instability facing African countries.

Figure 8. Monthly Malawi and international export prices in US dollars since 2004



Source: Clay et al. 2011.

Stabilizing rice prices: The agenda

Serious new confidence-building measures are needed to renew trust in the world rice market. Very severe damage to this trust was inflicted during the 2007-08 food crisis, mostly because of the Indian ban on exports, the on-again, off-again ban on Vietnamese rice exports, and open talk in Thailand of withholding stocks from the market and creating an “OREC,” or Organization of Rice Exporting Countries, to boost prices in the world market. Still, there is plenty of blame to go around in explaining the growing political distrust of the world market for rice. Important importing countries, such as Indonesia and the Philippines, speak publically of their desire to end “dependence” on supplies from the world market. Such rhetoric does not make them a market that exporting countries can trust (although this rhetoric also has little impact on rice traders, who tend to judge market impact from actions rather than political statements).

This retreat into autarky comes at a very high price to economic efficiency and the welfare of poor consumers. It makes the world market even more unstable and less reliable. Is there anything we can do to re-build confidence and trust in international trade in general and in the world rice market in particular? Any confidence-building measures will need to involve both exporting and importing countries, acting in their own self-interest. One possibility is a country-by-country investment in greater rice reserves to cope with shocks to rice supplies, while gradually increasing the use of trade to lower costs of rice consumption. A higher level of stocks does not alter the requisite flow of rice from producers to consumers, but it does create a buffer against interruptions to that flow. Thus:

Specifically, we need larger rice reserves at four different levels of the global rice economy—those held by the private sector, in small importing countries by the public sector, in large rice producing and consuming countries held publicly, and internationally.

Most of the rice stocks in the global economy are held by the private sector—farmers, traders, processors, retailers, and consumers—to even out seasonal production patterns and to keep trade pipelines flowing smoothly. Few private stocks are held to even out inter-annual price fluctuations, but the pipeline stocks carried across crop-years are probably equal to a month or two of consumption, a considerable quantity. With greater price instability expected in the future, and greater uncertainty about the reliability of supplies in world markets, optimal (profit-maximizing) levels of privately held rice stocks will increase. Although we know little about the actual levels of these stocks, or the behavioral parameters that affect them, even the most basic models of supply of storage suggest there will be a significant increase in privately held rice stocks going forward. Of course, if publicly held stocks succeed in stabilizing world rice prices, privately held stocks will then gradually be drawn down.

A completely overlooked potential for the private sector to provide greater stability of rice prices through stock management comes from the “supermarket revolution” in Asia. Before the turn of the Millennium, supermarkets in the region were niche players catering mostly to the urban middle and upper classes. Now they provide—via modern supply chains—perhaps a third to as much as half of the rice consumed in East and Southeast Asia, with the share growing rapidly (although even the rough numbers are not really known).

The potential of modern supermarkets to stabilize rice prices comes from the large market share of individual companies under central management control. If consumers desire stable food prices, astute supermarket managers can supply it. This potential of supermarkets to stabilize prices contrasts with traditional small, competitive, retail rice markets, where prices change regularly on the basis of daily supply and demand. Historically, “food price stability” has been a public good because no private entity found it profitable to provide it. The rise of supermarkets may mean that stable food prices could become primarily a private good. This would truly be a revolution in the food industry.

Next, for similar reasons, small countries that rely heavily on imports for their rice supplies, such as Malaysia, Singapore, or Brunei, will find it desirable to increase the level of stocks held publically, or (as in Singapore) held privately but with levels determined by public regulations.¹³ Even a modest increase in rice stocks in these countries will increase confidence that the world market remains their best long-run source of supply (which, of course, it is).

Large countries face a somewhat different situation. Because of the sheer size of their domestic rice economies, actions to increase production, reduce consumption, or alter the size of stocks held by public agencies will also have a noticeable impact on the international rice economy. These countries certainly include China and India, probably Indonesia, and possibly the

¹³ To obtain a license to import rice into Singapore, the trading company must agree to hold three months of normal consumption in storage. In view of the increased instability and uncertainty in the world rice market, expanding these stocks to 3.5 or even 4 months of supplies probably makes sense. Of course, higher storage costs will be incurred and these will have to be paid by consumers.

Philippines and Bangladesh.¹⁴ Larger rice reserves in these countries are probably desirable for reasons of domestic food security, but they will also alter the perception of global observers about the adequacy of worldwide stocks. That is, larger rice reserves in these countries will have a positive spillover impact on the global rice economy by stabilizing price expectations, and thereby actual rice prices. An important question for the international community, especially the major donors, is whether any actions can be taken to encourage the gradual build-up of rice reserves in these large countries.

A role for the international community?

Finally, the hardest question is whether there is any role for international ownership and control of rice stocks as a means to stabilize rice prices on global markets. Ever since the publication of the classic Newbery and Stiglitz volume, *The Theory of Commodity Price Stabilization*, in 1981, the answer has been a clear “no.” Both history and theory demonstrate that it is impossible to stabilize the price of a commodity in world markets for long periods of time—from cocoa to coffee to copper to tin to wheat to whatever—using internationally managed buffer stocks. Budget constraints and the asymmetry of storage—it can never be negative—mean that stochastic variations in supply or demand will eventually overwhelm the ability of a buffer stock to stabilize prices (Williams and Wright 1991). No international commodity agreement (ICA) with binding provisions has been negotiated since the Newbery and Stiglitz volume.

Still, it is important to address a more modest question. Would the availability of a limited amount of rice under international control help stabilize expectations about the behavior of world rice prices? If expectations can be stabilized, panicked behavior on the part of multitudinous participants in the world rice economy could be sharply reduced, with self-reinforcing price bubbles and collapses made less frequent and less extreme. The availability of international stocks would not need to keep rice prices within some legally specified band, but could be useful if world rice supplies suddenly tighten and prices threaten to spike. Is this more limited objective possible?

There are four levels at which this question should be addressed. First would be within Asia: the ASEAN + 3 (which includes China, Japan and South Korea), or possibly a new ASEAN + 6 (to include also India, Bangladesh and Pakistan) would include nearly all of the world’s major rice importers and exporters (except the United States), not to mention about 90 percent of world production and consumption. An expanded ASEAN rice buffer stock has been under “active” consideration for years, with little discernible progress. How do we stimulate such progress, beyond the steps underway to improve information flows and policy coordination? Would an agreement to focus on a specific quality of rice, say 25% broken long-grain rice, help build confidence that the reserve could help meet demand from the poorest consumers when prices spike?

Second, by an accident of international trade negotiations and strong protection of domestic rice producers, Japan holds over 1.5 million metric tons of high quality “foreign” rice that it imports

¹⁴ Thailand and Vietnam, as the world’s leading rice exporters, carry substantial stocks both seasonally and as part of their normal pipeline for regular deliveries to their customers. They are unlikely to need larger stocks for food security reasons.

under its WTO agreement but which it refuses to sell to domestic consumers. The potential availability of this rice in May of 2008 was sufficient to prick the rapidly exploding rice price bubble at that time, once the stocks were put “in play” by U.S. policymakers in private negotiations with Japanese officials. Would it be possible to manage these Japanese stocks with a more active concern for movements in international rice prices?

Third, could Australia, under AusAID auspices, use its mostly redundant rice industry to build up stocks of rough rice from surplus countries in Asia (shipping it to Australia in otherwise empty cargo carriers that go up to Asia filled with coal, iron ore or bauxite) and then offer these stocks, after milling, back to the world market when rice supplies get tight? The Australian rice industry has an excellent record of managing rice stocks and shipments and has little vested interest in exploiting price movements on the international rice market. Could Australia provide an important international public good by helping to stabilize world rice prices?

Finally, the question inevitably comes up: can the international community itself commit to publically managed international rice stocks that would be an effective stabilizer of world rice prices? At the height of the world food crisis, the International Food Policy Research Institute (IFPRI) put forward a proposal to create “virtual reserves” of grain to dampen financial speculation on world grain markets (Robles et al. 2009). Whatever the merits of such “financial” reserves for wheat, corn and soybeans, they clearly will not work for rice. Without deep futures markets, and with less-than-transparent price discovery in the world market, virtual reserves for rice will not influence real participants in real transactions.

The historical record on managing an international commodity agreement, with fixed price bands and the ownership of physical stocks, is not encouraging, and it was never even tried for rice because of the difficulties of stock deterioration, quality variations, and poor information on the prices of actual rice trades. None of those problems has gone away. Probably the best that could be done from an international perspective is for the major donors interested in rice—the World Bank, the Asian Development Bank, USAID, AusAID, and perhaps the Bill and Melinda Gates Foundation, to agree on modest incentive payments to large rice consuming countries to store more rice, at the margin, than they would store under normal conditions. Knowledge of the size, location, and condition of such stocks (a necessary condition for receiving incentive payments to hold them) would be an important stabilizing element for participants in world rice trade, even if the trigger mechanisms for stock release, domestically or internationally, were not enforceable by the international community.

The proposals here are incremental. They seek to change the long-run incentives for stockholding behavior, and to use increased stocks to build confidence in the international market for rice, which is clearly the most efficient source of supply for many countries. Because holding larger stocks will turn out to be very expensive, a scenario can be imagined where the larger stocks gradually build renewed confidence in the world rice market, prices become more stable, and stocks will then be reduced gradually as the reality of the fiscal burden sinks in.

Concluding thoughts

The policy discussion here has been almost entirely about stocks and trade, with little discussion of policy initiatives needed in the spheres of production and consumption. There has been little discussion of access by poor households to rice—the basis of food security for individuals. Such a discussion would focus much more on the causes of poverty and approaches to reducing it in a sustainable fashion.

These are the truly important variables in the world rice market. Productivity growth in rice production has slowed visibly in the past two decades, and renewed investments in speeding that growth are urgently needed (Asia Society 2010). Rice consumption patterns are changing rapidly, with consumption by the poor rising (often stimulated by subsidies) and consumption falling in the better-off, especially urban, households. The world rice economy, and the various domestic participants in it, is a dynamic system subject to shocks and self-reinforcing, herd-like behavior that creates price spikes and collapses. This instability has enormous costs, economically and politically, to farmers and consumers. But Asia is considerably richer now than it was even a decade ago, and rice is no longer the overwhelming determinant of food security for most of Asia's consumers, or of income for its farmers. The new reality of a less rice-dependent Asia in purely economic terms means we should be able to do better politically for a commodity that still feeds two-thirds of the world's poor.

Although less urgent, Africa's stake in a more stable global rice economy is rising. Further, the Asian approach of linking a dynamic agricultural sector to rapid structural transformation, accompanied by sharp reductions in poverty in less than a generation, would also seem to offer hope to African countries seeking rapid reductions in poverty and enhanced food security.

**Annex 1. The Political Economy of Food Security:
Players, Fears, Hopes and Options**

Players	Fears	Hopes	Options
Farmers	Bad weather Crop failure Low prices	High yields Good prices Jobs off-farm	Switch crops New technology “Demonstrate”
Consumers	Food shortages Price spikes Lose their jobs	Safe food in markets Stable prices (safety nets)	Hoarding Diversify diet Riots
Politicians	Food riots Not re-elected Coup/forced exit	Low prices Farmers’ votes Consumers’ votes	Tariffs and price stabilization Subsidies Safety nets
NGOs	Hunger GMOs No one listens	Low prices Vocal clientele Empowerment	Scaremonger Mobilize citizens Partnerships
Scientists	Climate change Pests Diseases	GMOs Biochemistry Better infrastructure	Work late in the lab Lobby for more research funding
Companies	Falling yields Trade barriers Expropriation	Profits Access to markets Light regulation	Invest Lobby for policy change Change countries
Donors	More hunger Volatile prices Irrelevance	Projects work Policy advice followed Continued funding	Research on causes of hunger and food shortages Invest in infrastructure

[Based on a less detailed table in the *Economist*, January 29, 2011, p.57]

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Core literature on food price instability

Theodore W. Schultz. 1945. *Agriculture in an unstable economy*. New York: McGraw-Hill.

Although concern over unstable agricultural prices and incomes is centuries old—the English Corn Laws date to 1688 and were concerned with both—the first modern treatment of the causes and consequences of instability in agriculture dates to this volume by T.W. Schultz. He was emphatic in attributing much of the causation of unstable agricultural prices to macroeconomic instability rather than the peculiarities of individual crop supply and demand, a position that put Schultz at odds with much of the agricultural economics profession at the time. In his later volume, *The Economic Organization of Agriculture*, published in 1953, Schultz carried his perspective to its logical conclusion: “The instability of farm prices is an important economic problem. It is, however, exceedingly difficult to organize the economy so that farm prices will be on the one hand both flexible and free and on the other hand relatively stable.” Schultz resisted efforts to stabilize individual commodity prices from then on.

Newbery, David M. G., and Joseph E. Stiglitz. 1981. *The theory of commodity price stabilization: A study in the economics of risk*. Oxford: Clarendon Press.

This volume had a sharp impact on the development community when it appeared three decades ago. One of the first major efforts to put development economics on a firm micro foundation, it treated commodity price instability as a problem for households and firms, which needed to cope with the risk of price fluctuations. A dynamic optimization model that incorporated risk into household decision making was expanded to prove that international commodity agreements (ICAs) to stabilize prices on world markets could not work—eventually they would run out of funds to buy at low prices or commodities to inject into markets at high prices. The profession has taken to heart the key conclusion from this analysis: it is impossible in theory and in practice to stabilize commodity prices. Of course, this holds only globally, not for individual countries, and all the costs and benefits are micro-based. No costs to the macro economy stemming from unstable commodity prices, or benefits from stabilizing them, are dealt with in the analysis.

Timmer, C. Peter. 1989. Food price policy: The rationale for government intervention. *Food Policy* 14(1): 17-27.

At one level this paper is an attempt to confront the conclusions from Newbery and Stiglitz (1981) with the reality of successful food price stabilization efforts in a number of countries in Asia. The rationale for these stabilization programs is developed at length, with considerable attention to the macro dimensions of food price instability, which rely heavily on signal extraction problems for investors. Without food stability at the macro level in major urban markets—proxied in Asia by stable rice prices—countries have a very hard time lengthening investors’ time horizons to fit the needs of modern economic growth. Stable food prices speed up that growth.

Williams, Jeffrey C., and Brian D. Wright. 1991. *Storage and commodity markets*. Cambridge, UK: Cambridge University Press.

This volume builds on a half-century of work on the supply of storage as the basic analytical framework for understanding inter-temporal price formation. A unique feature of commodity storage—it cannot be negative—is used to build a dynamic model of commodity prices. The

model is very successful in reproducing the common features of commodity prices, especially their tendency to be low and stable for long periods of time, and then subject to sharp upward shocks. This volume remains the basic reference on how storage affects price formation.

Timmer, C. Peter. 1995. Getting agriculture moving: Do markets provide the right signals? *Food Policy* 20(5): 455-472.

This paper appeared in a special issue of *Food Policy* that honored Art Moshier and his insights on how to “get agriculture moving.” One of the key questions in the agricultural development literature is the role of price incentives to stimulate adoption of new technology. The basic argument in this paper is that prices on world markets for the key food staples—rice, wheat and maize—often do not reflect either their long-run scarcity value with respect to investments in agricultural development, or their potential to create added value in the form of rural incomes, and thus faster poverty reduction. Donors should not use short-run prices in world markets to judge the impact of their investments in agricultural research and infrastructure, but should look at long-run trends and the feedback from current investment decisions to future food abundance and scarcity.

Timmer, C. Peter. 2000. The macro dimensions of food security: Economic growth, equitable distribution, and food price stability. *Food Policy* 25(4): 283-295.

This paper demonstrates the interactions among the rate of economic growth, of who participates in that growth, and the level of food prices, as they affect the numbers of people counted as “food insecure.” The basic methodology follows from earlier work by Reutlinger and Selowsky (1976), but introduces food price instability as an important causal factor changing the level of food security. An important conclusion is that stable food prices make the achievement of “macro” food security much easier, and “pro-poor” growth makes “micro” food security feasible. In combination, a rapid escape from poverty and hunger is possible.

World Bank. 2005. *Managing food price risks and instability in an environment of market liberalization. Agriculture and Rural Development Department Report No. 32727-GLB. Washington, DC.*

Many of the papers in this volume also appeared in a special issue of *Food Policy* edited by Derek Byerlee, Thom S. Jayne and Robert J. Myers that appeared in May 2006. The volume was the result of a free-ranging conference arranged by the World Bank, but this summary reflects a clear neo-classical approach that allows unrestricted price formation with follow-up activities to protect food consumption of the poor if prices suddenly spike. Producers are urged to use modern financial derivatives to hedge their risks from price volatility, whereas poor consumers will need to rely on government-sponsored safety nets when food prices spike. This “Washington Consensus” view of how to deal with food price instability has been challenged by the food crises in 2008 and 2011.

Rashid, Shahidur, Ashok Gulati and Ralph Cummings, Jr., eds. 2008. *From Parastatals to private trade: Lessons from Asian agriculture*. Baltimore, MD: Johns Hopkins University Press for the International Food Policy Research Institute.

This volume makes the case that food price stabilization implemented via parastatals was necessary and effective for Asian countries to introduce Green Revolution technologies to small

holders in the context of poor marketing infrastructure. However, as infrastructure and private marketing capacity have developed rapidly, and food parastatals have been subject to gross mismanagement and corruption, the time has come to turn most of food marketing in Asia over to the private trade. The editors/authors are especially knowledgeable about India.

Abbott, Philip C., Christopher Hurt, and Wallace E. Tyner. 2008. *What's driving food prices?* (also supplements in 2009 and 2011). Farm Foundation Issue Report (FFIR), Oak Brook, IL.

This was among the first scholarly efforts to understand what was driving the food price crisis in 2008 and has been the standard since. The update for 2011 argues that the drivers are somewhat different than in 2008, when exchange rate movements received a great deal of attention. In 2011, the authors place most of the blame on US and EU bio-fuels policies and on the Chinese decision to build substantial stocks of soybeans even as the world price was rising. They are increasingly nervous that demand growth for food will outstrip growth in production, with continuing high and unstable prices.

Timmer, C. Peter. 2010. Reflections on food crises past. *Food Policy* 35(1): 1-11.

Similarities and differences between the rice price crisis in 1972/73 and the one in 2007/08 are analyzed, especially from the perspective that long-run cycles in funding for agricultural research and infrastructure are the basic cause of periodic food crises. The changes in political economy of responses to spikes in rice prices between the two episodes are dramatic, and are determined largely by how well insulated domestic consumers were from world markets. Case studies of Indonesia, India and Thailand also show a significant difference in policy response in the face of democratic pressures, which were present only in India in 1972/73, but were a force in all three countries in 2007/08.

Dawe, David, ed. 2010. *The rice crisis: Markets, policies and food security*. London and Washington, DC: Earthscan.

This volume grows out of a FAO-sponsored conference early in 2009 to examine what went wrong with the world rice market. It pulls together a number of country studies as well as several analyses of how the world rice market functioned in 2007/08. The Dawe and Slayton chapter in particular analyzes the role of Japan and its WTO stocks of rice in pricking the speculative bubble in world prices that had formed as a result of panicked buying by the Philippines and widespread hoarding at all levels of the rice system—hoarding that was caused by the expectation of higher prices themselves. The need for more open trade policies, and larger rice reserves as a way to build confidence in such trade, is stressed in the conclusion.

Gilbert, Christopher L. and C. Wyn Morgan. 2010. Food price volatility. *Philosophical Transactions of the Royal Society* 365: 2023-2034.

This commissioned review of the literature on food price volatility provides a very careful and sober assessment of recent claims that price volatility is increasing (the evidence is not in, but volatility in the 1970s was as great as now). Gilbert has done much of the high-quality analysis of commodity price trends and variations over the past two decades, and this article summarizes his findings very effectively. Evidence is provided that financial speculation did increase volatility of food prices in 2001, but not as much as in energy and mineral markets. The paper

makes a clear case for why the world rice market is quite different from the markets for wheat, maize and soybeans.

Naylor, Rosamond L., and Walter P. Falcon. 2010. Food security in an era of economic volatility. *Population and Development Review* 36(4): 693-723.

This paper summarizes results from a major research program at Stanford on food security and the environment. It clarifies the debate over how to measure food price volatility and how those measures have changed over time, for the key food staples (and petroleum). The impact of food price volatility on the rural poor is examined in depth, perhaps for the first time. Concerns are raised about the restrictions on trade, and especially the widening of FOB-CIF price bands for important food importing countries, that seem to represent a structural shift after 2008.

Discussant comments on “Managing Price Volatility: Approaches at the global, national, and household levels”

T. S. Jayne, Professor of International Development, Michigan State University

When I was a graduate student in the mid 1980s, I remember reading a number of Peter Timmer’s works, which were on the syllabi of almost all of the development oriented courses that I took at Michigan State University. Professor Timmer was, and still remains, one of the luminaries of our field, and because of that, I feel a bit reticent to say that I find myself in disagreement with him on a number of his points. I believe that several of Timmer’s key conclusions derive from his many years of working primarily on rice-based food systems in Asia, whereas my conclusions derive more from my work on maize-based systems in Africa. I think it is not a case of one of us being right and the other being wrong, but rather a reflection largely of the structural differences between Asia and Africa with respect to cropping systems, governance, country size, infrastructure, and human capital. Our collective challenge, therefore, is to highlight these differences and to see what policy lessons each region can learn from the other.

I will illustrate these differences by first summarizing the major points of Timmer’s presentation, and then explain my problem with each of them, especially as they apply to Africa. I will then conclude with my list of policy *do*’s and *don*’ts for helping governments manage the problems associated with food price volatility.

Timmer makes three basic points:

1. Price volatility is a major *economic* problem – price stability contributes to economic growth.
2. Food price volatility is a major *political* problem. Policy analysts need to address these real problems to be taken seriously by policy makers. He stresses that “greater attention needs to be devoted to ‘2nd-best’ approaches at the national level mainly because policy makers tend to ignore standard economic arguments discouraging major interventions in food markets.
3. Timmer offers four guidelines for policy makers:
 - a. Help households cope with price risks;
 - b. Help countries stabilize domestic food prices, with minimal spillover to global markets;
 - c. Help regional organizations provide productive forums for coordinated food reserve policies;
 - d. Stop thinking of price stabilization as something to be avoided but rather something to be done, and done better.

These points are all articulately and compelling argued in Timmer’s paper, yet I have some fundamental misgivings. Why?

Price stability contributes to economic growth, but price stabilization efforts too often do not contribute to price stability. The empirical evidence of governments’ track record in stabilizing food prices has been mixed at best (Kherallah et al. 2002; Dehn et al. 2005; Byerlee et al. 2006;

Tschirley et al. 2006; Rashid et al. 2007; Chapoto and Jayne 2009; Sarris and Morrison 2010). In Africa, two of the countries that have taken the most aggressive steps to stabilize food prices in the region, Zambia and Malawi, have experienced the most volatile food prices of all the countries examined in a comparative analysis by Chapoto and Jayne (2009). Clearly, the weight of the research evidence in Africa shows that price stabilization has only rarely contributed to price stability, and in many cases it has exacerbated it, at massive costs and foregone investment in other areas where positive impacts might otherwise have been achieved. While the stabilization objective may be noble, most measures to implement it have been counterproductive in Sub-Saharan Africa.

In other developing areas, such as Latin America and Asia, governments have had more success in stabilizing prices, but even here many researchers question whether the payoffs to price stabilization are really worth the costs (Rashid et al. 2007). Moreover, the political economy literature underscores many cases in which government actions taken ostensibly to stabilize markets for the benefit of farmers and consumers are often the smokescreen for patronage activities that may undermine the interests of the majority (Bates 1981; Bates and Kruger 1993; Sahley et al. 2005; van de Walle 2001). I personally saw, as a Peace Corps Volunteer in Ghana in the early 1980s, how the hard efforts of smallholder farmers could be undermined by the stroke of a pen by unfortunate and often self-serving actions taken by politicians.

My conclusion regarding Timmer's first main point is that, despite agreeing that there are indeed benefits to price stability, government attempts in many developing countries to stabilize prices often create instability in the food markets. I am aware of little evidence to support the view that countries that attempt to stabilize have greater productivity growth or food security than those that do not.

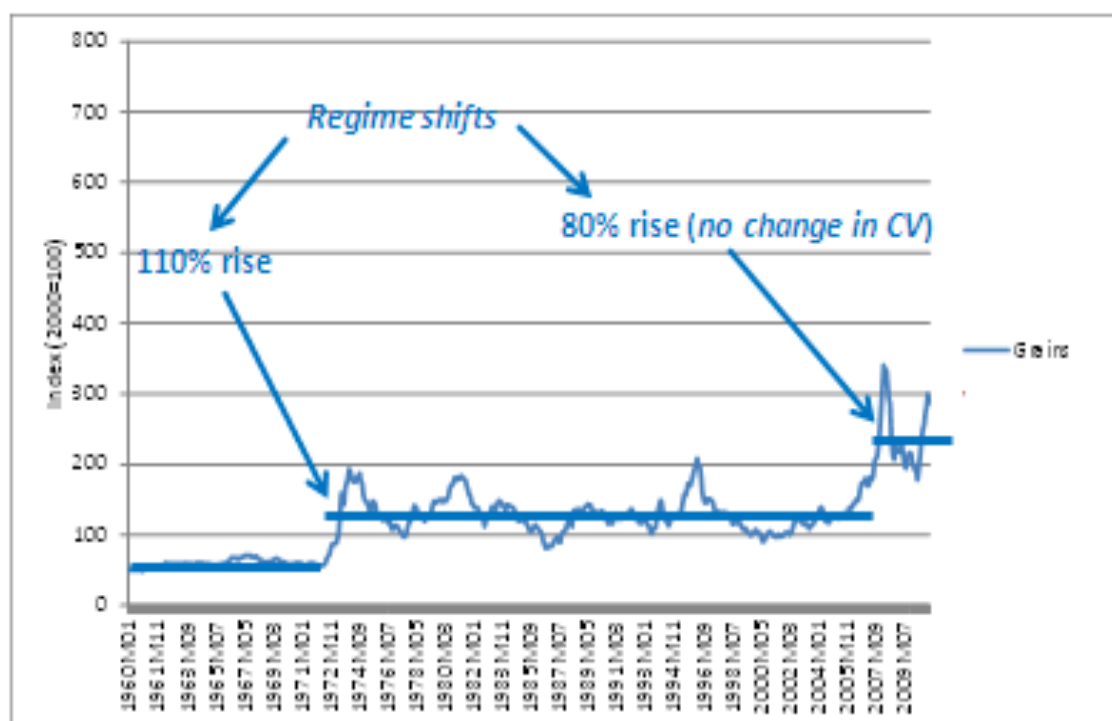
Timmer's second point is that food price volatility is a major *political* problem, and that policy analysts need to devote greater attention to "2nd-best" solutions that take into account politicians' concerns in order to be taken seriously by them. I believe that there is a lack of clarity about what the fundamental problem really is. As Barrett and Bellemare (2011) recently pointed out, there is sometimes confusion between price instability and rising food prices. Food price instability can cause confusion in price signals, but most analyses show that high food prices are the much more important and dangerous problem. Barrett and Bellemare argue that they "find no rigorous evidence" to indicate that political unrest is associated with food price instability.

It is also instructive to ask whether there is evidence to suggest that food prices are becoming more unstable or less affordable to the world's poor. Figure 1 shows the world food price index from 1960 to 2010 in nominal terms. There appear to be three distinct structural periods over this time frame: one in the 1960s and up to 1972; one starting in 1972 when food prices jumped amid panic of a world food crisis but then stayed relatively constant over the next three decades up to early 2008; and, one that seems to have started in 2008 with the increasing integration of food and fuel markets, the expansion of the biofuels industry, and the rising growth in the demand for food associated with income growth in middle-income countries. A major conclusion evident from Figure 1 is that while the nominal price of grains has increased over time, there has been no

major change in the instability of food prices (as measured by the coefficient of variation) between these three periods.¹⁵

Figure 1. Are food and fertilizer prices becoming more unstable?

**World Bank World Price Indices for Grains and Fertilizer (Pink Sheet)
1960-2011**



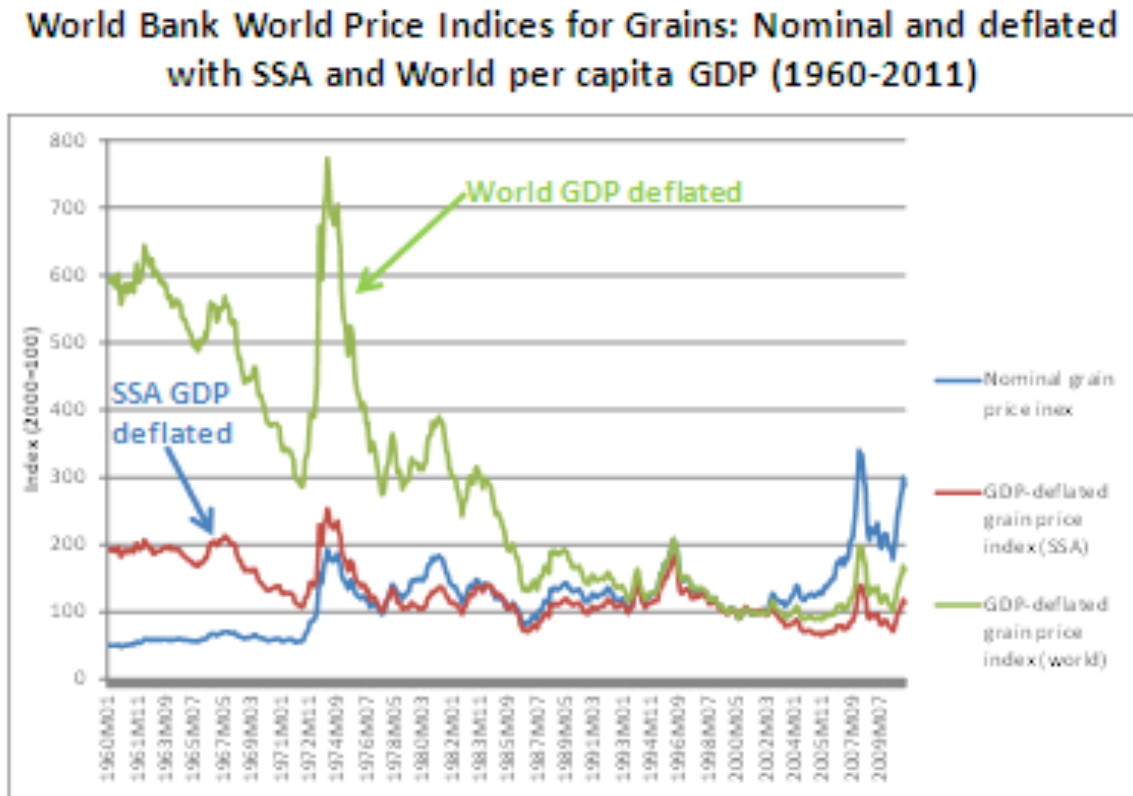
Source: World Bank 2011.

Furthermore, when food prices are deflated by the world GDP deflator to provide a rough measure of the cost of food relative to incomes (Figure 2), it becomes clear that food has become considerably less costly over time, and the episodes of price run-ups, as in 2008-09, look considerably less severe. Even deflating prices using the Sub-Saharan Africa GDP deflator, shows that food prices have fallen in real terms and become less unstable. In short, incomes are growing faster than food prices -- a testimony to long run economic growth and agricultural productivity growth. Other studies from Africa examining food prices relative to wage rates and urban worker incomes reach very similar conclusions (Mason et al. 2011; Headey 2010). Obviously, many consumers' wages did not rise as fast as the GDP deflator, but even if they rose

¹⁵ I thank Dave Tschirley for Figures 1 and 2, which he prepared using World Bank data at: <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTDECPROSPECTS/0..contentMDK:21574907~menuPK:7859231~pagePK:64165401~piPK:64165026~theSitePK:476883.00.html>

half as fast, the real cost of food has surely declined over the past 40 years for the vast majority of the world's consumers.

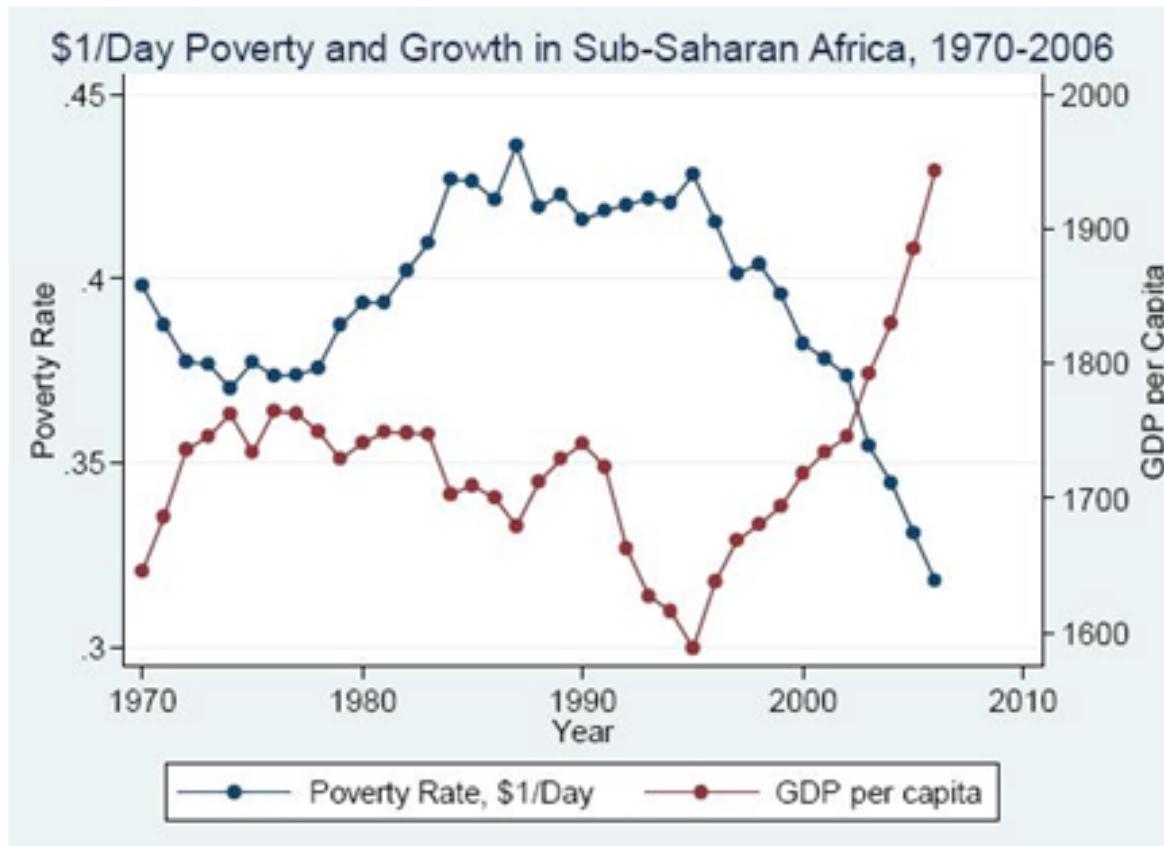
Figure 2. Higher food price levels?



Source: World Bank 2011.

Africa is also apparently in the midst of a 15-year trend in rapid income growth and poverty reduction (Figure 3). Earlier this year, the World Bank documented the rise of the African middle class. In the past 10 years, the middle class has risen from 50 million to 200 million. About 1 in 5 persons in Africa are now regarded as middle class. There is obviously still very far to go, but the macroeconomic and sectoral reforms that most of Africa underwent in the early and mid-1990s – as politically painful as they were – appear to be reaping major benefits.

Figure 3. Trends in poverty rates and income per capita, Sub-Saharan Africa



Source: Sala-i-Martin and Pinkovskiy 2010.

Based on the foregoing evidence, I conclude that there is little evidence to suggest that food prices are becoming more volatile: GDP and wages are rising faster than food prices in most developing areas, including most of Africa, hence the problem of food affordability is generally declining over time, and should continue to do so if governments continue to make the right investments to promote long-run and sustainable agricultural productivity growth; farmers producing a surplus are hurt by low prices, but these surplus-producing farmers are usually considerably better off than the rural poor, who tend to be net buyers of food and are hence made worse-off from efforts to raise food prices (Naylor and Falcon 2010). Efforts to raise farm prices often hurt the poor and tend to have a regressive effect on income distribution; and *high* food prices (not volatility *per se*) constitute the major problem. The strategies for addressing structurally high food prices differ from the strategies to address price volatility. The best defense against unaffordably high food prices is income growth, so a focus on the public investments and policies that can best achieve that seems the preferred option.

With respect to Timmer’s conclusion that good economics must take account of political realities, my conclusion is, “let’s not be so quick to give in to 2nd best approaches.” Dismissing

1st best strategies as not worthy of consideration because politicians will not accept them strikes me as settling for less than what could be achieved. How many seemingly unattainable policy reforms may have seemed politically impossible to achieve for so long but indeed occurred with surprising quickness? The break-down of the Berlin Wall, economic liberalization in eastern Europe, and more recently, major political change in the longstanding autocratic regimes of the Middle East were all once viewed as politically infeasible not long before they actually happened.

Africa's agricultural policy environment is fundamentally less shackled by state control now in 2011 compared to the late 1980s when many African governments controlled food markets, prices, external trade, and exchange rates as a matter of state sovereignty. In short, it is important not to underestimate what kind of 1st best policy reform is possible. I entered the agricultural field in order to identify and make the case for the policies and investments that would most effectively promote the welfare of poor people in the developing world. I would like to keep the pressure on to ensure that public funds are allocated in the way that makes the greatest contribution to long-term poverty and hunger reduction.

I would thus have liked to have seen Timmer put more focus on the policy and investment strategies that represent the best prospects for sustainable poverty reduction and livelihood improvement, rather than focus on 2nd - best options involving very expensive price stabilization. To be fair, however, I recognize that his lecture today was but one in a series, that volatility was his topic, and that the merits and demerits of alternative investments are the topics of other presentations.

So, concretely now, what should be done? Timmer's paper highlights the importance of helping households cope with price risks, helping countries stabilize domestic food prices (with minimal spillover to global markets), helping regional organizations provide productive forums for coordinated food reserve policies, and encouraging governments to think of stable food prices as a "good" rather than a "bad." Timmer also highlights the importance of long-run investments too, such as crop science, infrastructure, and basic education, but does not underscore the major trade-offs involved. Last year, the Zambian government's efforts to stabilize maize prices cost 2 percent of its GDP, more than the treasury's entire annual outlay to the Ministry of Health. Think of the added gains in child and maternal health and the long-term productivity impacts that could have been achieved if 2 percent of Zambia's GDP could have been invested in addressing its severe health problems!

My list of concrete actions for Sub-Saharan Africa would encourage a shift in public budgets from price stabilization (some of which is often destabilizing) to investments with a proven track record in reducing poverty and promoting income growth: sound macroeconomic management, crop science / R&D, improving farmer knowledge and management through viable agricultural extension systems, basic education and health, marketing infrastructure, and more rules-based as opposed to unpredictable government actions in markets (trade bans, sudden changes in marketing board operations, etc). The weight of research evidence from the development economics literature over the past 40 years highlights these investments as having the greatest positive impact on agricultural development, income growth, and the livelihoods of the poor.

In a world of constrained resources, every dollar spent on price stabilization is a dollar potentially not spent on crop science, R&D, farmer extension systems, health and education,

sustainable use of the world's available water, and other investments necessary to enable more of the world's farmers to respond to high food prices and to raise the world's food production. And, therefore, cope with the huge growth in world demand.

In the long run, I believe that Timmer and I agree on the way forward – using public resources to promote productivity growth. In part, I learned this from Timmer himself a long time ago! Where we differ is in the short-run.

What should be done in the short run? First, distinguish between emergency reserves and buffer stocks. The former are smaller, meant to cover an immediate shortfall until imports can arrive. The latter are explicitly meant to stabilize prices and so need to be large. In spite of a compelling theoretical rationale, buffer stocks have a very poor record in many developing countries, Africa in particular. Second, there is a need to combine relatively small emergency reserves (two to three months maximum) with robust and layered safety nets, involving school feeding programs, conditional cash transfers, and temporary food aid.

What should not be done—at least in Sub-Saharan Africa? I believe that advising governments to undertake large-scale food procurement and buffer stock policies would be disastrous for many developing countries and their citizens. It is true that stabilizing well could be good economics. But stabilizing badly is neither good economics nor good politics.

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