

The Financial Crisis and Its Impact on the Global Agricultural Landscape

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Abstract

The financial crisis arose in the industrial countries, but has affected developing countries through higher interest rates, sharp changes in commodity prices and reductions in investment, trade, migration and remittances. Some also see the recent food price crisis as a strongly related phenomenon. For most low income countries, shocks that affect food prices or wage rates for unskilled workers seem likely to have the biggest impact on poverty. Policies to address the crisis must include measures: to deal with financial sector problems; the resulting reductions in aggregate demand; and the particular vulnerabilities of poor people.

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A specter is haunting the land—the specter of financial crisis and its aftermath. Since the financial crisis emerged in the heart of the most sophisticated financial centers of the world, its malign effects have radiated outward in ever-increasing circles. While the origins of the crisis lie in esoteric financial instruments, it has propagated to the ends of the earth through channels such as increases in interest rates; a collapse in trade; reductions in remittances; and declines in investment. Its effects on many people have been harsh, and many more adverse impacts seem likely to occur.

It is clearly important that policy makers in developed, and particularly in developing, countries respond effectively to the problems created by the crisis. More than usual, however, it is important to understand and address the causes of the problem, rather than merely the symptoms, since ill-advised responses may be ineffective or even aggravate the situation. The channels of effect to developing countries are extremely diverse (Blanchard 2008; Caballero, Farhi and Gourinchas 2008; Lin 2008a; McKibbin and Stoeckel 2009), including changes in capital flows, commodity prices, interest rates, remittances, risk premia, and trade opportunities. The channels of effect to rural people are even more complex, with linkages involving commodity prices, wage rates and employment likely to be particularly important.

How might we learn more about the causes and effects of the crisis? Clearly, some lessons can be drawn from the experience in earlier crises, but there are serious limits on our ability to learn from these because their causes were frequently profoundly different. Other lessons can perhaps be drawn from experience and knowledge of fundamental macroeconomic relationships, and information on the spreads between different types of interest rates. Finally, we may be able to learn something from quantitative economic analyses using models such as Warwick McKibbin's G-cubed model.

As always, forecasting is difficult—especially when it involves the future. Despite these hazards, we will try, in this short paper, to identify some of the key shocks, then to trace through some of the key channels of effect. In light of our reading of this context, we will then turn to consider some recommendations for policies to deal with the

crisis in a way that will return world agriculture to a better long-run path than the one that lead us to the current dire situation.

Causes and Macroeconomic Impacts of the Crisis

The crisis emerged during 2007 in the most sophisticated centers of modern finance, frequently from the most sophisticated firms led by managers who understood—or appeared to understand—the new paradigms of modern finance. But the crisis did not begin or end here. On some readings (see, for example, Caballero et al (2009) and McKibbin and Stoeckel (2009)), important seeds of the current crisis were sown in the collapse of the US dotcom bubble in 2001, the trend of financial sector deregulation since the 1980s and changes in patterns of global savings and investment.

Deregulation of the financial sector in the advanced countries started in the early 1980s, and resulted in various complicated and widely used financial innovations that attempted to reduce individual investors' risks but in hindsight increased systemic risks. Also in the United States, concern about the potential contractionary effects of the collapse of dotcom bubble resulted in a sharp loosening of monetary policy, with the US Federal Funds rate being reduced by over 5 percentage points, from 6.5 percent to one percent between 2001 and 2004, before being gradually increased between 2004 and early 2006. The expansionary monetary policy averted a deeper recession by stimulating a boom in the housing market, which soon turned into a housing bubble. Because of the large share of housing in household wealth, this bubble overcompensated greatly for the loss of wealth in the stock market decline of 2000-02. Higher housing prices fueled a consumption boom, and the Fed's continued expansionary monetary policy kept the US economy awash in excess liquidity.

Another factor contributing to demand in the industrial countries, and the demand for housing in particular was innovations in financial markets, particularly the emergence of securitized lending as a result of deregulations starting in the 1980s. Securitization offered the promise of a new golden age of risk management by eliminating the mismatch between the long-term assets and short-term liabilities of traditional banks that had been the cause of innumerable financial crises since the dawn of banking. Through

securitization, borrowers seeking long term liabilities could be matched with lenders seeking long term assets.

Higher demand relative to income in key industrial countries contributed to the emergence of trade and current account deficits in those countries. These were matched by surpluses in key developing countries associated with high savings rates in those countries motivated by their experiences in the East Asian financial crisis.¹ The traditional pattern in which capital flows from rich countries with high capital-labor ratios to poor countries with low capital-labor ratios was turned on its head. Instead, capital flowed from developing countries to some of the richest countries on earth. The increase in savings in a number of developing countries contributed to a situation of low world interest rates (Bernanke 2005).

The recycling of aggregate savings from poor to rich countries during the early years of the 21st Century was clearly troubling from a development perspective, but several features made it seem less of a concern. First, it was associated with rapid increases in private capital flows to developing countries--which grew by a factor of six between 2001 and 2007, to \$1.2 trillion dollars, before declining to \$707 billion in 2008 (World Bank 2009b). Over half of these flows in 2007 and 85 percent in 2008, were in the form of equity—either through direct or portfolio investment—which involve much less risk to the host country than foreign currency borrowing. The boom in private capital flows to developing countries was also associated with high growth rates in developing countries—with average developing country growth rates of over 5 percent per year between 2003 and 2007, as against 3.4 percent between 1980 and 2000 (Lin 2008a, p5).

The aggregate financial inflows into the industrial countries also seemed much more likely to be sustainable—or to end smoothly—than the inflows to developing countries that had underpinned earlier imbalances between income and expenditure in different regions. By contrast with the petrodollar recycling boom of the 1970s, where savings in oil exporting countries were recycled to developing countries through foreign-currency lending at variable interest rates (Feldstein 1999), much of the increase in

¹ Following the Asian financial crisis, decision makers and policy makers in many developing countries concluded that it was dangerous to rely on capital inflows—and particularly borrowing from abroad in foreign currency—to finance an excess of investment over domestic savings. Savings rates rose sharply in many developing countries, not just the traditional high-saving oil exporters, but also countries relying on exports of manufactures.

spending relative to income in developed countries was financed in seemingly much less risky ways.

Unfortunately, weaknesses in the financial regulation in many industrial countries interacted with innovations such as securitized lending to create serious financial sector vulnerabilities. Lax standards were frequently applied by firms originating loans they intended to sell in the secondary market. Very high ratios of loan to value were permitted on the assumption that continuing increases in housing prices would quickly raise the value of the houses against which the loans were secured. Many banks used optimistic models of the reductions in risk resulting from securitization to reduce the amount of capital they needed to hold, allowing them to further increase their lending—for instance by assuming the correlation between the probability of default on individual loans was low.

When the price of housing turned downwards, from 2006, many mortgage-backed assets, and their owners, turned out to be highly vulnerable. Default rates on mortgages rose rapidly as many home-owners faced large declines in prices and, frequently, increases in their interest rates. The non-recourse nature of US housing loans provided an incentive for home owners whose equity had become negative to default. The complexity and lack of transparency of many financial assets made it difficult to evaluate them, and resulted in the emergence of large risk premia on broad categories of assets. Conditions in financial markets deteriorated as institutions cut back on lending and sold assets—frequently at fire-sale prices—in order to preserve their capital (Blanchard 2008).

Heightened perceptions of risk, combined with the liquidity problems of the financial sector, resulted in a sharp contraction of credit. The spread between interbank lending rates and US treasury bills jumped sharply. The heightened perception of risk seems to have extended progressively beyond the countries with troubled financial sectors, with substantial increases in the interest rates on loans to developing countries from late 2008 (Blanchard 2008). The *World Development Finance 2009* (World Bank 2009b) expects capital flows to developing countries to decline sharply in 2009, primarily through a collapse in lending.

Some view the boom in commodity prices between 2007 and 2008 as a key element of the crisis (Caballero, Farhi and Gourinchas 2008). On this reading, the

collapse of the housing bubble in 2006 caused investors to reallocate their portfolios towards commodities, contributing to a doubling of the price of oil, and sharp increases in the prices of other commodities, between June 2007 and June 2008. One troubling feature of this explanation is that increases in inventories would have been needed for asset demand to explain increases in the prices of products like grains, and inventories of grains, and stocks of wheat and rice fell substantially in the marketing year from June 2007 to May 2008 (USDA 2009), although stocks of maize rose². On the other hand, the near simultaneous increase in the prices of a wide range of commodities—including some, such as oil, with high income elasticities of demand and others such as rice with low income elasticities of demand—is suggestive of common macroeconomic causes.

Researchers have only begun to investigate the causes and macroeconomic consequences of the crisis. Some, such as Medina and Garcia (2009), have attributed this decline, in part, to a collapse of over-optimistic expectations. This seems likely to be part of the truth—the crisis followed a long period of the “Goldilocks” economy, in which output grew relatively strongly and consistently, especially in developing countries. High rates of investment in many countries during this period contributed to a capital stock that currently exceeds current demand for this capital. Increases in income in a number of major developing countries also appear to have contributed significantly to the long run price of energy (Ianchovichina, Ivanic and Martin 2009).

It is widely agreed that a primary channel of transmission from the financial to the real sector has been through a decline in demand for investment goods and consumer durables (McKibbin and Stoeckel 2009). Demand for investment goods is always much more volatile than demand for goods for current consumption since the services provided by these goods depend on the stock of these goods held, and a small change in demand for this stock may translate into a large change in demand for these goods.³ Quantitative modeling by Dixon *et al* (2009) and by McKibbin and Stoeckel (2009) finds that the investment demand explanation is incomplete if the focus is on an individual country. With a standard macroeconomic model, an increase in the risk premium that reduces

² This explanation is more plausible in the case of oil, for which Caballero *et al* point out that inventories, may include stocks held in the ground, and hence not reported in inventory data.

³ In basic macroeconomic theory, this feature of the demand for capital goods is frequently termed the accelerator principle.

investment demand would be expected to result in a collapse in imports, but also a sharp devaluation and a sharp increase in exports from the directly-affected countries. This was certainly part of the response of the Asian economies to the Asian crisis (Martin and McKibbin 1999) in which the current account balance of several countries moved from large deficit to large surplus very quickly.

In the current crisis, the imports and exports of the directly crisis-affected countries—and virtually all other countries with available data—have both declined together since trade began to slide sharply⁴ in late 2008 (Freund 2009). A likely explanation for this phenomenon is that the crisis is truly worldwide, triggered by increases in the risk premia on private sector capital even in countries not directly experiencing financial crises. This explanation fits with the large increases in interest rates charged to developing countries from late 2008 (World Bank 2009b; McKibbin and Stoeckel 2009). While the high interest rates pose problems for developing countries, the fact that the United States and other initial-deficit countries have not become large net exporters in the way that the Asian crisis countries did following the Asian financial crisis has reduced the pressure on other countries to sharply change their current account balances.

Impacts (and potential future impacts) of the Crisis on Global Agriculture

Important recent impacts of the crisis have included: declines in commodity prices, particularly prices of goods which are used for investment, or as inputs into investment goods. Another consequence has been declines in migration—both between regions and between countries. Associated with this reduction in migration has been a reduction in the remittance flows on which many people in poor countries depend. Increases in the cost of finance for production and trade have had unfavorable impacts—both directly and indirectly—on producers and consumers in poor countries, and have been associated with a sharp reduction in lending to developing countries (World Bank 2009b). Declines in the

⁴ This decline was extremely rapid. From September 2007 to September 2008 the simple average of export growth rates for available countries was 18.5 percent. This corresponding rate to January 2009 was -34.5 percent, and remained around this level to June 2009, when some signs of a reduction in the rate of decline began to emerge, particularly from Asia.

demand for labor resulting from reductions in investment and in exports have put downward pressure on employment and wages for unskilled labor in many poor countries. Finally, the increases in interest rates, particularly for trade credits (World Bank 2009b), and rationing of credit appear have raised the costs of production and trade.

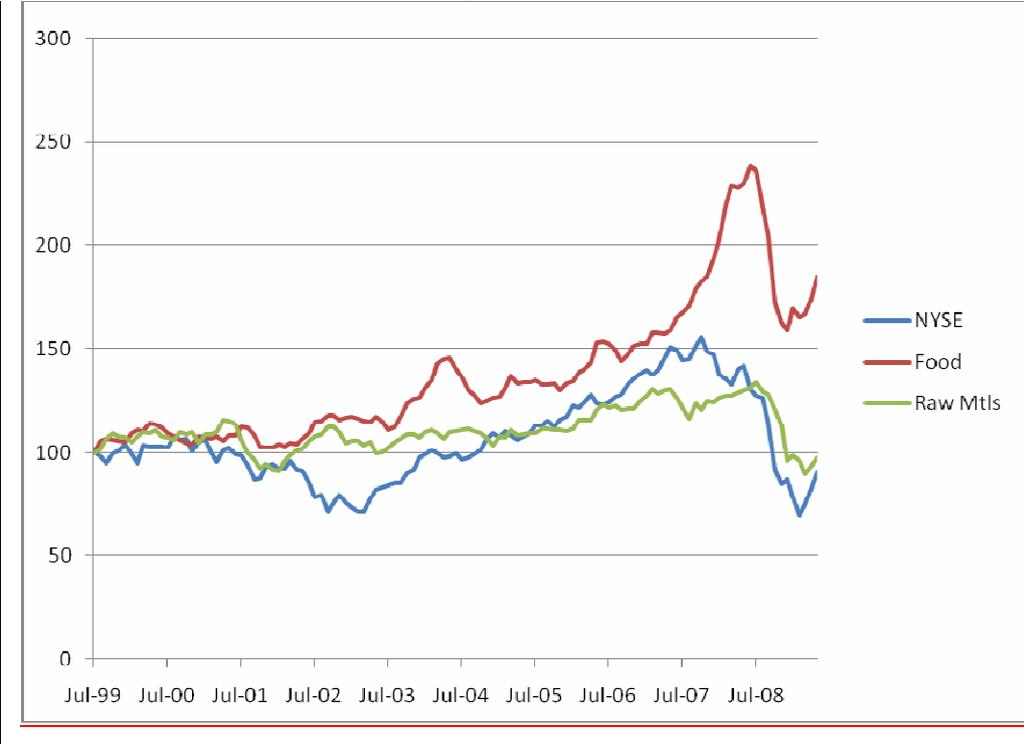
We must always be cautious in assessing the impacts of the crisis. As noted above, great uncertainty surrounds the precise nature of the shocks involved. Many of the policy responses to the shock—such as expansionary monetary policy—also appear to have their impacts with long and unpredictable lags. In a year’s time, we may be facing quite a different set of problems than those evident today. Under these circumstances, it is probably prudent to examine the vulnerability of poor people to different types of shocks, and the effectiveness of particular policies, rather than seeking to examine the impacts of shocks of the size observed to date. However, by examining the order of magnitude of particular shocks, and their “leverage” on poverty impacts, we may at least obtain some idea of which changes need to be monitored most carefully when assessing the implications of emerging changes during the progression of the crisis.

The declines in commodity prices began from very high levels in 2008 for many commodities and have proceeded unevenly across commodities. The prices of some products such as rubber, oil and minerals that are linked to investment demand have generally fallen more than the prices of pure consumption goods⁵. From experience in analyzing the consequences of the food crisis of 2008, we know that the effects of commodity prices on people in poor countries are very complex. It is tempting to conclude that, since farmers are poorer than urban residents in almost all poor countries, higher prices would therefore result in lower poverty. But declines in the prices of staple foods typically reduce poverty in poor countries because the poorest people spend such a large share of their incomes on these foods, and because many poor rural people, including farmers, are net buyers of these foods (Ivanic and Martin 2008). Declines in the prices of some higher-income-elasticity foods such as dairy products or beef may, however, increase poverty by lowering the incomes of small producers who produce and sell these commodities but are unable to afford to buy many of these foods. Declines in

⁵ Freund (2009) finds a similar relationship for trade. The declines in imports to the US and Japan of food and food products, and basic consumer items such as clothing, have been smaller than for other products in the US and Japan.

the prices of cash crops such as cotton, coffee, cocoa and rubber are, however, more likely to increase poverty because farmers in poor countries are typically net sellers of these goods, and poor people spend only small shares of their incomes on them.

Figure 1. Stock market and agricultural price indexes, July 1999 to May 2009, \$US index

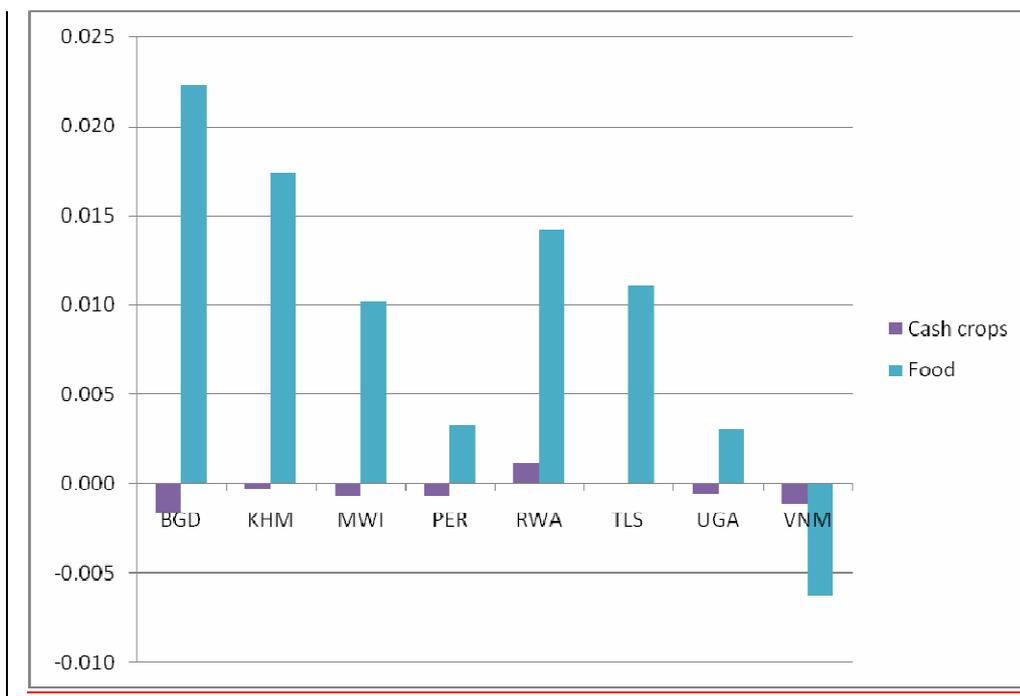


One simple indicator of the relationship between prices of agricultural commodities and financial sector shocks is given by the relationship between agricultural prices and stock market indexes. Figure 1 presents the relationship between the New York Stock Exchange Composite index and the IMF composite indexes, in US\$, of food and agricultural raw materials. Over much of the period considered, the three price indexes appear to have responded to some common determinants, with the price of raw materials being much more strongly correlated with the stock market index than is the food price. Two sections of the graph are of particular interest. The first is the period after the stock market decline beginning in late 2001, and the second the rise and decline in all three prices from around 2005. In the first period, it appears that the decline in stock

market prices was associated with a rise in agricultural commodity prices. In the second period, the three series moved in similar directions, although the turning points in the food market were slightly different, and food prices rose considerably more than the other series. Another important point is the volatility of all three series, and the particularly large increases in the price of food over this period.

As noted above, there are good reasons to expect differences in the impacts of food prices and raw materials prices on poverty in developing countries. Figure 2 shows the impact of a 10 percent increase in the price of food and the price of non-food cash crops on poverty in eight low income countries (Bangladesh-BGD; Cambodia-KHM; Malawi-MWI; Peru-PER; Rwanda-RWA; East Timor-TLS; Uganda-UGA; and Viet Nam-VNM). This figure suggests that increases in the price of food have relatively large positive impacts on poverty rates in the short run for seven of the eight countries. In the eighth country, Vietnam, poverty declines because of a large number of relatively poor farmers who are net sellers of food. By contrast, increases in the prices of non-food agricultural goods have a negative impact on poverty in seven of the eight countries. However, these negative impacts are very small relative to the increases resulting from changes in the price of staple foods.

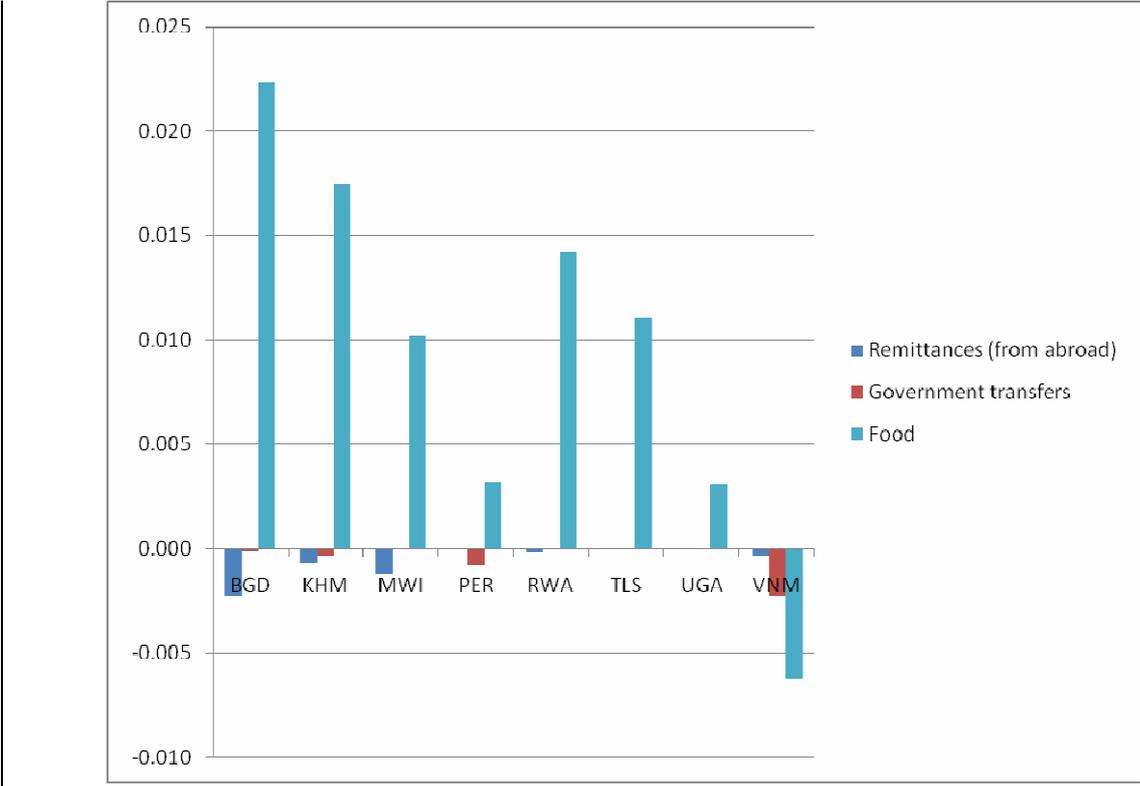
Figure 2. Impacts of changes in agricultural prices on poverty,



International movement of workers appears to have slowed very rapidly both in response to falls in demand for labor in key areas such as the Gulf countries, and to tightening of immigration policies. This has reduced the potential earnings of out-migrants, and the remittance flows to people remaining at home. Reductions in remittances have both direct effects on households, directly by reducing their purchasing power, and indirectly by reducing the demand for labor in nontraded sectors such as construction of housing, that are heavily influenced by spending from remittances. Because government revenues are likely to be under extreme pressure as a consequence of the crisis, there are also concerns that governments may reduce their transfers to poor households. World Bank (2009d) predicts that remittances will likely fall by 7.3 percent in 2009 to \$304 billion from \$328 billion in 2008. Reductions in government revenues are likely to exceed the average projected decline of 1.6 percentage points in GDP in developing countries other than China and India. Since government revenues frequently

change more than national income in response to changes in income, reductions in transfers of a similar magnitude would likely occur absent conscious reallocation of resources to transfers by developing country governments. Figure 3 presents estimates of the impacts on poverty of declines in remittances and transfers, together with the estimated impacts of food price changes.

Figure 3. Impacts of changes in prices of food, remittances and transfers on poverty

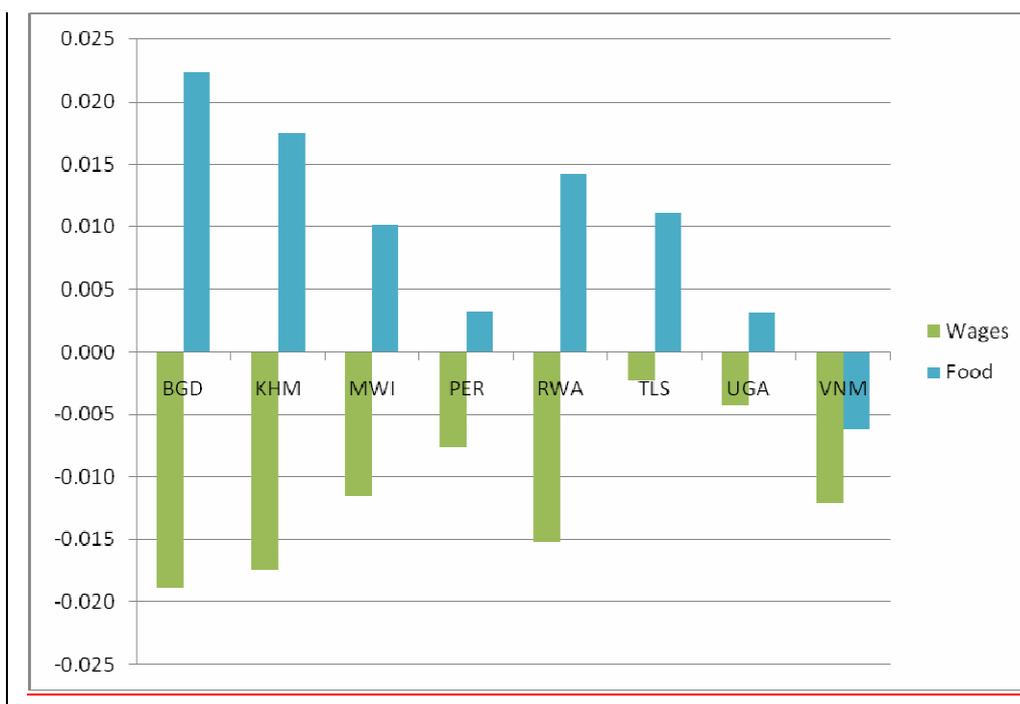


An important feature of Figure 3 is that the impacts of ten percent changes in remittances and government transfers on poverty appear to be much smaller than those of changes in food prices. Increases in remittances result in noticeable poverty reductions in Bangladesh, Cambodia and Malawi, while government transfers are more important than remittances in Vietnam and Peru. However, the results in the figure and crude estimates of the likely extent of shocks to these variables suggest that the poverty impacts of

changes in food prices are likely to require much more attention than changes in either remittances or transfers.

The combination of declines in domestic demand associated with the crisis, declines in export demand, and declines in demand associated with lower remittance flows can be expected to place downward pressure on wage rates for unskilled labor. The leverage on the household incomes of the poor associated with such shocks can be estimated using national models and matching the estimated changes in wage rates for unskilled workers to households' sales of unskilled labor outside their family enterprises such as farms. Figure 4 shows the effects of a ten percent increase in wage rates for unskilled workers together with the effect of a ten percent increase in food prices. The results in this figure highlight the importance of changes in unskilled wage rates for poverty—a result that holds for both rural and urban households—even though our unskilled wage rate applies only to sales of unskilled labor outside the family farm, and not to earnings of unskilled workers on family farms. While the impact of a change in the price of food on unskilled wage rates appears is much less than one (Ivanic and Martin 2008), the current crisis involves many changes, such as increases in interest rates, that can be expected to reduce the demand for unskilled labor, and hence real wage rates.

Figure 4. Impacts of changes in unskilled wage rates on poverty.



While international migration and remittances have received a great deal of attention, there have also been major changes in internal migration flows, particularly in large economies such as China. Reductions in demand for labor in the export sector have caused sharp reductions in the number of internal migrants working away from home, and reductions in the remittance flows. Another consequence is a need to find employment for these workers in other areas, such as agriculture, or the nontraded sectors whose outlook is clouded by the reductions in remittance flows. In this situation, a great deal may depend on the policies adopted to stimulate domestic demand for nontraded goods (He and Kuijs 2007).

Estimating the increases in production and trade costs associated with the financial crisis is difficult, particularly since the rise in the effective cost of capital associated with credit rationing as banks pull back from lending to particular activities are unobservable. It seems clear that the direct impacts on production costs in developing country agriculture are likely to be small, since subsistence farmers use relatively little

working capital. Impacts on trade in agricultural products seem likely to be larger given the higher working capital requirements of trade and the large apparent increases in interest costs on trade finance (World Bank 2009b, p50). Some, crude estimate of the implications of such cost increases may be obtained by making guesstimates of the amount of working capital involved in production and trade and estimating the impacts on developing country agriculture.

Potential Policy Responses

The specific interventions that are most appropriate will depend on the stage of development of the economy. However, it is clear that key responses to the crisis must involve: (i) interventions to respond directly to the financial sector problems; (ii) interventions to deal with the macroeconomic aspects of the crisis; and (iii) interventions that deal with the particular problems of the poor and vulnerable.

Dealing with Financial Sector Problems

The response to the crisis must begin by dealing with the financial problems of the financial sector that gave rise to the crisis. Unless these problems are resolved, no amount of fiscal or monetary stimulus can satisfactorily deal with the problem. Most of the need for reform of the financial sector identified by the crisis appears to be in the industrial countries—a situation quite different from the financial and debt crises of the 1980s and 1990s, when the problems highlighted were in developing countries. Major adjustments in financial sector policy are clearly needed, and it is important that the right lessons are used to guide policy reform (Demirguc-Kunt and Servén 2009). Key issues in solving these problems involve improving the regulatory framework, and ensuring that incentives to engage in risky practices are minimized. The nature of the reforms, and specific reform proposals, have been discussed at length elsewhere (see, for example, Demirguc-Kunt and Servén 2009) and we will not dwell on these issues in this paper.

Macroeconomic Policy Adjustments

Macroeconomic policy responses to the crisis involve monetary and fiscal policy stimulus to offset its contractionary effects, and dealing with the macroeconomic imbalances that required large—and ultimately unsustainable—current account deficits in key countries.

Policy responses to the crisis have included vigorous fiscal stimulus in many countries, frequently in conjunction with aggressive easing of monetary policy; direct action to shore up the balance sheets of banks and other financial institutions that might otherwise have ceased lending; and government support to or investment in larger corporations threatened with collapse; and resort to protectionism. Fiscal and monetary interventions have been unevenly applied, with some key current-account surplus countries with headroom for fiscal stimulus being reluctant to intervene, while some current-account deficit countries have stimulated heavily despite a long term need to reduce domestic absorption in order to rebalance their economies and reduce current account deficits. The future evolution of the crisis appears likely to depend heavily upon the effectiveness of these policy interventions; the extent to which stimulus can be withdrawn without triggering further downturns; and the extent of any unanticipated side-effects of stimulus. The risks of accumulating so much government debt that further stimulus becomes impossible, and the temptation to reduce the debt burden by inflation irresistible, should also be borne in mind.

The stimulus provided to date has clearly been important. Had intervention not occurred in a range of countries on the scale that we have seen, a prolonged period of deflation might well have ensued from the shocks that we have experienced, with the money supply in key countries declining and the general price level falling along with output and trade along the lines of the Great Depression of the 1930s (Kindleberger 1986). This traumatic event had particularly adverse and complex impacts on agriculture, with commodity prices falling to very low levels, but output remaining strong, apparently because the returns to many of the factors engaged in agriculture fell even more.

A repeat of the deflationary experience of the Great Depression seems unlikely given the extent to which the policy makers of today have studied this experience. However, the extent of the monetary stimulus being applied raises questions about risks of a surge in inflation when this stimulus has its long run impact on prices. Should inflation rise, it is likely that commodity prices would rise disproportionately (Feldstein 1980), reversing the initial depressing effects of the crisis on commodity prices, and potentially leading to another spike in commodity prices. Given the recognition of the high economic costs of inflation engendered in policy makers by the stagflationary experience of the 1970s and early 1980s, policy makers would be face difficult choices in balancing the need to reduce inflationary expectations with any continuing need for macroeconomic stimulus.

Given the deficiencies of aggregate demand resulting from the crisis, fiscal and monetary stimulus must be an important part of the response to the initial stage of the crisis. Much of this fiscal stimulus must be undertaken in the industrial countries, which have the ability to finance fiscal deficits in a non-inflationary manner. For at least two reasons, it would be desirable to facilitate greater fiscal stimulus in developing countries. A first is that fiscal stimulus should be spread as broadly as possible if it is to have the greatest impact. A second is that many of the highest-return projects that might be implemented as part of a global fiscal stimulus package are likely to be in developing countries (Lin 2009). Developing countries with limited ability to borrow have been heavily constrained in their ability to provide fiscal stimulus without resorting to the potentially inflationary process of printing money. Although proposals for large-scale funding of such stimulus have been offered, the response in terms of funding has been somewhat disappointing to date. One key concern is that the stimulus in both developed and developing countries should be sufficient to overcome the deficiency of aggregate demand, and not be withdrawn too soon (Guha 2009).

A concern for policy makers in individual countries is that part of any given stimulus will spill over to other countries, benefitting them instead of the country providing the stimulus. For this reason, stimulus policies need to be coordinated across countries so that each country benefits from the stimulus of others, as well as from their own. Analysis shows that, when countries seek to retain all of the benefit of their own

fiscal stimulus, the result is large reductions in the overall benefit from the stimulus (Medina and Garcia 2009; McKibbin and Stoeckel 2009).

A key, and related, challenge for policy makers in developing and developed countries relates to the macroeconomic imbalances that appear to have contributed to the emergence of financial sector problems. These have important similarities to and differences from two previous financial crises—the Latin American debt crisis of the 1980s and the Asian financial crisis that began in 1997. In all three crises, a key problem has been the accumulation of debt resulting from current account deficits in the years preceding the crisis. In the Latin American debt crisis of the 1980s, the underlying macroeconomic problem has frequently been characterized as the sovereign, foreign-currency debt built up by these countries as they helped recycle the petrodollar surpluses of the 1970s. The macroeconomic background of the Asian crisis was more one of private foreign-currency debt acquired to finance investment and consumption spending. The current crisis involves primarily private-sector domestic-currency borrowing in high-income countries—a type of debt that appeared much less risky than the debt involved in previous crises.

A key challenge for macroeconomic policy will lie in rebalancing away from — the deficits in key industrial countries—and the surpluses in other countries—that contributed to the emergence of the current crisis. This process has already begun, with the US current account deficit declining sharply as a share of GDP between 2005 and 2008, and global imbalances also declining (IMF 2009).

Dealing with the Problems of the Poor and the Vulnerable

Policies to deal with the problems of the poor and vulnerable identified during this crisis include longer term policies designed to raise income levels and hence to reduce the vulnerability of the people who are currently poor to all shocks, and particularly to shocks involving changes in the price of food. They also include policies that deal with the volatility associated with the crisis.

Raising the incomes of the poor is the most effective long term mechanism for reducing their vulnerability—and especially the vulnerability associated with higher

prices of staple foods. This is a huge challenge, and involves all fields of economic policy. For this, it appears that improving the technology of agricultural production is likely to be particularly important since it appears that investments in agricultural research can have particularly high rates of return. In his survey of the massive literature on the returns to agricultural research, Evenson (2001) reports an average internal rate of return of 49 percent on investments in applied agricultural research. Assuming a uniform stream of benefits and, following Evenson, a five percent discount rate, this implies a marginal return per dollar invested of approximately ten dollars. Clearly, the rates of return on funds invested in research appear to be extremely high, which alone makes a strong case for higher investment in agricultural research.

Some are pessimistic about the potential for agricultural productivity growth in developing countries. However, Martin and Mitra's (2004) study of productivity growth in agriculture showed that productivity growth in agriculture in developing countries was higher than in the non-agricultural sector during the period 1967-1992, which includes the peak period of innovation for green-revolution technologies. If such high rates of growth were feasible in this earlier period, it seems likely that high rates of growth in agricultural productivity would again be feasible given the apparent international support for increased investment in agriculture (Financial Times 2009), and the commitment of the World Bank (2009a) and other agencies to increased support.

The case for investing in improved agricultural technology is further strengthened by its potentially strongly favorable impacts on poverty reduction. Ivanic and Martin (2009) find that increasing food output by improving the technology available to all farmers can substantially reduce poverty. This felicitous result follows from the fact that improvements in the technology available to poor farmers increase their output in line with their initial production, rather than merely their net sales. Global improvements in technology also lower the price paid by consumers for food, a particularly important effect given the fact that the poorest households spend roughly three quarters of their income on food. If, by contrast, countries attempt to meet the expected increase in the demand for food by increasing protection, Ivanic and Martin (2009) find that the likely consequences are reductions in average incomes and increases in poverty.

A strong case can also be made for investing in rural infrastructure. Improvements in rural infrastructure raise the prices received for output from a region, and lower the cost of consumption goods brought in, and can be very effective in lowering poverty. Investments in infrastructure frequently have high benefit/cost ratios. Khandker, Barnes and Samad (2009) conclude that rural electrification in Bangladesh has a benefit-cost ratio of 2.3. Further, investments in infrastructure are highly complementary with investments in research and development. In fact, many innovations resulting from research, such as improved crop varieties require investments in infrastructure such as irrigation if they are to succeed.

In the long run, raising the incomes of the rural poor also involves ensuring that they have employment opportunities outside the agricultural sector in activities consistent with the country's comparative advantage. Hertel and Zhai (2006) emphasize the importance of rural education both in increasing lifetime incomes, and in facilitating mobility into non-agricultural employment.

Policies for dealing with the volatility associated with financial crisis can be divided into policies that attempt to reduce the shocks to which households are exposed, and policies that help people deal with them--including approaches that help households adjust to the shocks, and those that help them deal with their consequences. The second class of measures includes both targeted policies that focus only on the needs of vulnerable households, and less targeted measures that apply to a broader group of the population.

Given the importance of shocks to the prices of staple foods for poverty, attempts to stabilize these prices have been an important focus of policy concern. While there are considerable differences between countries and commodities in the impacts of changes in food prices on poverty, the increases in poverty appear appear to be larger and more frequent than reductions (Ivanic and Martin 2008). The early stages of the current crisis were associated with sharp increases in key commodity prices, which have since been partially, but not completely, reversed. Earlier crises such as the great depression have seen strongly depressed commodity prices over extended periods. As previously noted, there is a risk that emergence from the crisis will be associated with another round of increases in commodity prices.

Because large fluctuations in commodity prices from can be extremely disruptive, it is tempting for governments to attempt to stabilize these prices, either by insulating domestic prices from world prices, or by attempting to stabilize world prices. The use of trade measures to stabilize domestic prices relative to world prices is frequently associated with domestic storage policies, although there is no need for this linkage in case of a small, open economy. Domestic prices in such economies can be stabilized relative to world prices by changing the stance of trade policy without resort to costly stockholding policies. Stockholding policies reduce the destabilizing impact of price insulation on world markets, a policy with potential benefits to the rest of the world, although the costs of stockholding are borne by the country undertaking the stockholding.

The use of variable protection rates to insulate domestic prices from fluctuations in world prices is an extremely popular approach to this problem. Unfortunately, however, many policy responses that are simple and popular for individual countries can make the problem worse for other countries and the rest of the world. Responses such as the use of export restrictions by exporters, and temporary reductions in import tariffs in importing countries, and attempts to build stocks during periods of crisis can, as we saw in 2008, cause world prices to rise very substantially. The use of export subsidies and higher import tariffs in periods of low prices creates similar problems, further depressing world prices.

If all countries, or at least countries covering a large share of world production and consumption, use policies of this type, then the destabilizing impact of these interventions on world prices will be so large that the attempt to stabilize domestic prices will be ineffective. Unfortunately, there is a fallacy of composition involved—it still seems to each country that its policy of insulation has been effective, even when the collective effect has been to increase the volatility of world market prices and leave the volatility of domestic prices unchanged. Collective action in the form of an agreement—perhaps at the World Trade Organization (WTO)—not to intervene to reduce price the transmission of prices into the domestic economy could yield a better outcome than attempts by individual countries to stabilize their own prices. Unfortunately, an agreement along these lines in the WTO seems far away, because many countries are unwilling to relinquish their right to intervene in these important markets.

It would be very attractive to be able to stabilize world prices by some form of global stabilization scheme for key commodities. As noted by Wright (2009), the key to avoiding high prices is to ensure that sufficient stocks are available to avoid stock-out situations where demand cannot be met from stocks. While price band schemes that avoid peaks and troughs are appealing in principle, the combination of evidence from theoretical simulation studies, and the practical experience of many past international schemes suggest that schemes of this type are unlikely to be sustainable in the longer term. Research by Wright (2009) and others using forward-looking models of the behavior of commodity markets has shown that such stabilization schemes have a high probability of having prices at the lower or upper bound—at which stocks are being accumulated or decumulated in order to hold the price.

In light of these problems, a number of recent proposals (eg von Braun and Torero 2009; von Braun, Lin and Torero 2009; Lin 2008b) focus only on the problems associated with high food prices, without attempting to stabilize grain prices during other periods. These proposals include a small emergency stock to help deal with the specific problems associated with maintaining availability of food for the poor, and a virtual reserve approach designed to resist attempts by speculators to create price spikes. The proposal by von Braun, Lin and Torero (2009) also includes an internationally co-ordinated grain reserve, which has the advantage of being potentially much more efficient than national reserves—which frequently become insulated from world markets, and hence unhelpful in reducing volatility of world prices. The third element of these proposals is a “virtual reserve” under which the administering body would sell forward contracts in order to set a future price below the current spot price, hence reducing the incentive for speculative holding of grain in times of shortage.

A key challenge for the administrators of such a scheme would be to manage the risk of speculative attack on the ceiling price. Once a level or a limit on the increase in the price in a particular had been set and come under pressure, speculators might see themselves facing a one-way bet. If the ceiling held, buyers of futures contracts would not lose, while they would gain if the authority were forced to raise the ceiling. Whether or not the possibility of releasing the internationally co-ordinated grain reserves to

maintain the price below the ceiling will deter the speculative attack deserves further study.

At the country level, policies that attempt to insulate domestic prices from changes in world prices, or to insulate all consumers and producers from the effects of real exchange rate changes, may generate substantial costs relative to policies that focus on the needs of vulnerable groups using safety-nets. In grain markets, there is broad agreement that national stocks are likely to be inadequate because of concerns by stockholders about potential government policy responses in the event of a crisis. Given this, there is a case for governments to intervene to increase average stock levels for key commodities. Wright (2009) argues that these stocks should be targeted to meeting the needs of the vulnerable, rather than attempting to maintain stable prices for the population as a whole, given the problems associated with price stabilization schemes, and the fact that many richer people are able to manage the impacts of higher food prices on their real incomes.

During the course of the crisis, households have been, and will be, exposed to a wide range of different shocks. Many policies—including food aid programs, school feeding and food ration programs—have been put into effect since 2008 to deal specifically with the important shocks resulting from the food price spike. Importantly, many of the safety-net programs that have been developed or enhanced to deal with these shocks are able to deal with a broader range of shocks than those resulting from the food price crisis (World Bank 2009c). Given the unpredictable impacts of the shocks resulting from the financial crisis, there appears to be a strong case—as suggested by Kanbur (2009)—for developing more comprehensive safety-net programs to deal with shocks from a wide range of sources, rather than programs designed to deal with specific shocks.

Conclusions

The current financial crisis emerged from an unusual world in which the richest countries had become the largest consumers of savings generated in much poorer countries. This consumption was financed in part by financial innovations that extended credit to many previously unable to borrow, and which appeared to manage the associated credit risk

through the magic of securitization. Serious problems first became evident in 2007, as house prices began to decline. These problems were spread more broadly through the financial sector during 2007 and 2008, and much more widely from late 2008, when confidence diminished, interest rates paid by developing countries rose sharply, and world trade entered a precipitous decline. A sharp increase in commodity prices, and especially food prices was a key element of the preliminary phase of the crisis—although whether this rise was caused by portfolio managers seeking to diversify away from housing and towards commodities remains a subject of debate.

The impact of the crisis on poor people depends heavily upon its impact on the prices they face, and the transfers they receive. Food prices appear to be both subject to particularly sharp swings, and to have disproportionately large impacts on poverty because of the importance of spending on food by the poor. Changes in wage rates for unskilled labor sold outside the family firm also have relatively large impacts on the poverty rate. A 10 percent change in remittance flows or in government transfers has much smaller impacts in most countries, although the impact of changes in remittances is relatively large in Bangladesh and a change in government transfer payments has a relatively large impact in Viet Nam.

Three broad types of policy response need to be considered: (i) resolution of financial sector problems; (ii) dealing with macroeconomic impacts; and (iii) dealing with the specific problems of the poor and vulnerable. Much has been written about the need to resolve the financial sector problems in the industrial countries and much of this discussion has relevance for reform in developing countries (Demirguc-Kunt and Serven 2009). Macroeconomic responses to the contraction in demand are important and need to be conducted in a consistent fashion if all countries are to benefit and the temptation to engage in trade protectionism not too attractive. Unfortunately, it appears that there may not be sufficient funding available to developing countries for them to undertake as much stimulus as would be desirable.

Perhaps the most important responses for developing countries are those focused on the needs of the poorest. In the long run, a key goal is to raise the incomes of the poorest, since this will reduce the share of their expenditures on food, and their vulnerability to a wide range of shocks. Given the importance of shocks from the price of

food for the poor, policies need to address this source of vulnerability. Approaches that focus on reducing price spikes have received a great deal of attention, but these policies—which reduce the volatility of prices for all households—raise many difficult challenges.

In the longer term, the most promising approach to dealing with the vulnerability of poor households involves addressing very specifically the needs of poor and vulnerable households. A number of programs focused on the specific challenges associated with high and variable food prices have been developed in recent years. Given the wide range of shocks and potential shocks associated with the crisis, there seems to be a strong case for development of more general social safety net programs that can deal with the adverse consequences of a wider range of shocks.

References

- Bernanke, B. (2005), 'The global saving glut and the U.S. current account deficit' Sandridge Lecture, Virginia Association of Economics, Richmond, VA, March 10. <http://www.federalreserve.gov/boarddocs/speeches/2005/200503102/>
- Blanchard, O. (2009), The crisis: basic mechanisms and appropriate policies, Working Paper 09-01, MIT Department of Economics.
- Caballero, R., Farhi, E. and Gorinchas, P. (2008), Financial Crash, Commodity Prices and Global Imbalances, Paper prepared for the September 2008 Brookings Papers Conference on Economic Activity.
- Demirgüç-Kunt, A. and Servén, L. (2009), 'Are All the Sacred Cows Dead? Implications of the Financial Crisis for Macro and Financial Policies', Policy Research Working Paper 4807, World Bank.
- Dixon, P., Rimmer, T., Johnson, M. and Rasmussen, C. (2009), The effects of a credit crisis: simulations with the USAGE model, Paper presented to the 12th Conference on Global Economic Analysis, Santiago, Chile, June.
- Evenson, R. (2001), 'Economic Impacts of agricultural research and extension' in Gardner, B. and Rauser, G. eds. *Handbook of Agricultural Economics*, Vol 1, Elsevier Science.
- Feldstein, M. (1980), 'Inflation, tax rules and the prices of land and gold' *Journal of Public Economics* 14:309-17.
- Feldstein, M. (1999), 'International capital flows: introduction', in Feldstein, M. ed. *International Capital Flows*, National Bureau of Economic Research, Cambridge, MA.
- Financial Times (2009), 'G8 shifts focus from food aid to farming' *Financial Times* 6 July, p1.
- Freund, C. (2009), "July Trade Update—Improvement in Asia", Mimeo, World Bank.
- Guha, K. (2009), 'Stimulus cuts will harm weakest, says Zoellick' *Financial Times*, July 6, p4.
- He, Jianwu and Kuijs, L. (2007), Rebalancing China's economy: modeling a policy package, Mimeo, World Bank.

- Hertel, T.W. and Zhai, Fan (2006) 'Labor market distortions, rural-urban inequality and the opening of China's economy' *Economic Modelling* 23:76–109.
- Ianchovichina, E. Ivanic, M. and Martin, W. (2009), Implications of the Growth of China and India for the Middle East, *Middle East Development Journal* 1(1):79-103.
- IMF (2009), *World Economic Outlook: Crisis and Recovery*, International Monetary Fund, Washington DC. April.
- Ivanic, M. and Martin, W. (2008), 'Implications of higher global food prices for poverty in low-income countries' *Agricultural Economics* 39:405-16.
- Ivanic, M. and Martin, W. (2009), 'Increasing global food production: implications for poverty' World Bank.
- Kanbur, R. (2009), Systemic Crises and the Social Protection System: Three Proposals for World Bank Action, Presentation at World Bank, April
www.kanbur.aem.cornell.edu
- Khandker, S., Barnes, D. and Samad, H. (2009), Welfare Impacts of Rural Electrification: A Case Study from Bangladesh, Policy Research Working Paper 4859, March.
- Kindleberger, C. (1986), *The World in Depression 1929-1939*, University of California Press.
- Lin, J. Yifu (2008), 'The impact of the financial crisis on developing countries' Paper presented to Korea Development Institute, October 31.
- Lin, J. Yifu (2008b), "Preparing for the Next Global Food Price Crisis" Speech to the Center for Global Development, Washington DC, October 6.
- Lin, J. Yifu (2009), 'Beyond Keynesianism' *Harvard International Review* forthcoming.
- Martin, W. and Mitra, D. (2001), 'Productivity growth and convergence in agriculture versus manufacturing' *Economic Development and Cultural Change* 49(2): 403-22.
- McKibbin, W. and Martin, W. (1999), 'The East Asian crisis: investigating causes and policy responses' Policy Research Working Paper 2172, World Bank.
- McKibbin, W. and Stoeckel, A. (2009), The effects of the global financial crisis on world trade' Mimeo, World Bank.

- Medina, J.P. and Garcia, P. (2009), 'A Simple Global Perspective on the US Slowdown, Boom-Bust Cycles and the Rise of Protectionism' Paper presented to the 12th Conference on Global Economic Analysis, Santiago, Chile, June.
- USDA (2009), 'Grain: world markets and trade' Foreign Agricultural Service Circular Series FG 04-09, April.
- von Braun, J. and Torero, M. (2009), Implementing physical and virtual food reserves to protect the poor and prevent market failure, IFPRI Policy Brief 10, February.
- von Braun, J., Lin, Justin and Torero, M. (2009), Eliminating Drastic Food Price Spikes – a three pronged approach for reserves' Note for discussion, www.ifpri.org
- World Bank (2009a), *Agriculture Action Plan: FY2010-12*, World Bank, Washington DC.
- World Bank (2009b), *Global Development Finance 2009*, World Bank, Washington DC.
- World Bank (2009c), 'WB Renews its Support for Safety Net Programs in Latin America' <http://go.worldbank.org/N2O3DCATY0>
- World Bank (2009d), 'Migration and Remittance Brief 10', World Bank, Washington DC.
- Wright, B. (2009), A note on international grain reserves and other instruments to address volatility in grain markets, Background paper for the World Grain Forum, St Petersburg, June 6-7.