South Asia Economic Focus
A Review of Economic Developments in South Asian Countries

Food Inflation
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South Asia Region

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A Note on Fiscal Years and Financial Reporting by South Asian Countries

South Asian countries’ national income and product account data refer to fiscal years that cut across calendar years, except for Maldives and Sri Lanka which report according to calendar year.

The fiscal years for the respective countries are:

- Bangladesh and Pakistan: July 1–June 30
- Nepal: July 16–July 15
- India: April 1–March 31
- Bhutan: July 1–June 30
- Maldives and Sri Lanka: January 1–December 31
- Afghanistan: 1 April–31 March

Reporting practices vary. Bangladesh, Nepal, and Pakistan report their fiscal data in the second year of the split, while India and Afghanistan report at the beginning of the fiscal year split.

Picture Credits

Welcome to the first issue of South Asia Economic Focus, a biannual series prepared under the aegis of the Chief Economist’s office. This series reviews contemporary economic developments in South Asian countries, with each issue examining a single subject in depth. The analysis seeks to identify key factors underlying the issue, outline the policy challenges it poses to individual countries and the region, and offer practical solutions where possible. The publication is intended for audiences within the Bank, its partners and client countries in order to enrich fruitful discussion and policymaking.

The current issue was prepared by Ulrich Bartsch and Chandana Kularatne with inputs from John Baffes, Sudeshna Banerjee, Julie Dana, Madhur Gautam, Mohinder Gulati, Maros Ivanic, Maria Mini Jos, Ashi Kathuria, Annette de Kleine, Jie Li, Luc Laviolette, Nkosinathi Mbuya, Cem Mete, Mohua Mukherjee, Claudia Nassif, Shilpa Phadke, Martin Rama, Mansoora Rashid, Cristina Savescu, Monika Sharma, Hassan Zaman, TG Srinivasan and the World Bank’s country economists in the region, and with editorial support from Peter Honey and Robert Reinecke.
Executive Summary

While South Asian countries weathered the Global Financial Crisis (GFC) relatively well, and have since emerged from their economic slowdowns, inflation has accelerated above comfort levels. Food prices were the biggest contributor to CPI inflation, although core inflation (calculated by excluding food and energy items) is accelerating in most countries. In fact, it overtook food inflation in India by the end of 2010.

This report focuses on the impact of policies and exogenous shocks on food inflation. It deals with four elements: 1) the pass-through of global food (and other commodity) prices, 2) macroeconomic policies, 3) market regulation and short-term supply shocks, and 4) long-term structural shifts and the terms of trade between agriculture and other sectors of the economy.

1. Food inflation is partly caused by increases in global food prices. They have risen markedly since mid-2010, which is part of a more general phenomenon of rising global commodity prices. Policies in the region differ in the extent to which they allow external trade of food commodities, and pass-through of international prices to consumer prices.

2. While South Asian countries have made cautious progress toward rolling back macroeconomic stimulus measures they had adopted in the wake of the GFC, they have some way to go to reset their macroeconomic policy stances to neutral. South Asian countries have relatively high fiscal deficits and public debt burdens, and fiscal policies are still more expansionary than before the GFC. Monetary policy rates are low, and have not risen as fast as inflation. Policy rates are lower than rates in other regions, but growth in monetary aggregates is broadly in line with macroeconomic stability in most countries.

3. Short-term supply shocks to agriculture are mostly weather related. While sharp, often geographically concentrated price spikes are to a large extent caused by insufficient infrastructure (roads, cold storage), red tape also restricts food markets in some countries from discharging their resource allocation function smoothly.

4. Demand for food is undergoing structural shifts as incomes rise. Growth in consumption of pulses, fruits, meat, eggs, and dairy items is more than double the consumption growth in cereals. Inflation in these items has been higher than in cereals. Public intervention in agricultural marketing in India and Pakistan has high fiscal costs and narrowly supports cereal production, while high food inflation and continuing high rates of food insecurity are linked to an inadequate supply response in non-cereal food products. Input subsidies, on the other hand, contribute to the overuse of water resources, high losses of electricity utilities, and deteriorating soil conditions because of skewed application of fertilizer. While these policies therefore do not contribute to increasing agricultural productivity, their fiscal costs divert resources away from interventions that actually could expand production: for example, investments in agricultural research, education, and rural roads are amongst the most effective public spending items in promoting agricultural growth and reducing poverty.
The poverty and nutritional impact of food price spikes on the poor is significant since they spend a larger fraction of their income on food than relatively better-off individuals. Since the last food price spike in 2008, governments in South Asia have strengthened safety nets, but gaps persist. The largest safety net interventions in the region—India’s and Pakistan’s public distribution systems for staple foods—are characterized by high leakages and therefore costs, while errors of exclusion are actually larger than the reverse; that is, large numbers of the deserving poor are not covered. These food based safety net interventions spill over into agricultural policies, which lower the agricultural supply response to rising non-cereal prices.

The report proposes five policy options for consideration: 1) in the face of rising inflation caused by rising food prices, demand management policies in South Asia may need to be deployed earlier than in advanced countries because of the high share of food items in consumer baskets; fiscal consolidation would be a priority; 2) foodgrain stock management needs to improve, in particular in India; 3) over the longer term, policies aimed at increasing agricultural output and productivity would alleviate pressures on food prices; these would include a focus on technology, improved water management, rural infrastructure, agricultural diversification, and private sector investment in marketing and the agro industry; 4) governments should exploit the efficiency gains they could achieve (in terms of protecting and improving nutritional status) through provision of more nutritious foods (e.g. foods fortified with essential vitamins and minerals) and by increasing beneficiary knowledge on how to maximize household resources for nutritional impact; and 5) governments should explore developments of market-based tools and assistance for managing risks, particularly those that affect the government’s budget.
Why Food Prices Matter

International food prices are on the rise again for the second time in four years, and are raising concerns about the impact on poverty, overall inflation, and external and fiscal balances in developing countries. Higher and more volatile food prices threaten food security by diminishing the ability of people to access food when they need it. In particular, sudden and large food price increases—by eroding household purchasing power—complicate their efforts to adjust and often result in reduced calorie intake and deteriorating nutritional content, in turn pushing more people into poverty.

This report examines food and overall inflation trends in South Asia, which is experiencing relatively high inflation, and is home to a large number of poor. There are many more poor people who are net buyers of food than there are those who benefit from higher prices of agricultural products even in the predominantly rural countries of South Asia. The report examines both short-term and longer-term drivers of rising food prices in the region, including developments in international commodity prices, domestic supply shocks, accommodative demand side policies, structural changes in demand patterns, and long-term agricultural productivity trends. The impact on poverty is examined, as is the region’s preparedness for food price shocks.

The priorities laid out in the Bank’s Post-Crisis Directions paper (2010) and the mandate given to the Bank by the G20 are to focus on food price volatility, agriculture and food security, and agricultural productivity. In line with these priorities, the report ends with some policy directions to manage the macroeconomic impact of food price inflation, and the potential spill-over into generalized inflation, to manage the social impact of the food price hikes, and to hedge against risks associated with food price volatility.

The report is organized as follows: Section II discusses the anatomy and short- and longer-run drivers of rising food prices in the region, including developments in international commodity prices, domestic supply shocks, accommodative demand side policies, structural changes in demand patterns, and long-term agricultural productivity trends. The impact on poverty is examined, as is the region’s preparedness for food price shocks.

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in South Asian countries. Section IV presents an assessment of the impact of food price increases on poverty and an assessment of the preparedness of South Asian countries social protection schemes to cope with this impact. Section V concludes with some policy directions that could be pursued by South Asia to improve agricultural productivity and mitigate the impact of food price volatility on its population.
Determinants of Food Inflation

1. The Trajectory of Inflation in Recent Years

Inflation rates in South Asia averaged close to 10 percent in the years leading up to the global commodity price boom of 2007–08, reached a high of 20 percent in the summer of 2008, and slowed markedly with the collapse of international commodity prices and economic slowdowns associated with the GFC. Inflation in most countries fell to the low single digits toward the end of 2009. Since then, average inflation has been on an upward trajectory and reached 10 percent by the end of 2010. South Asian countries broadly share this rebound in inflation with other emerging-market countries because the rebound is driven in part by the trajectory of international commodity prices (see Figures 2.1 and 2.2, Box 2.1).

Food prices were the biggest contributor to CPI inflation, although core inflation (calculated after removing food and energy prices) was trending up in most countries. In fact, in India core inflation was driving overall inflation in 2010, although food inflation was the biggest contributor to inflation in the years prior to 2010. Inflation in India has risen every year since 2007, notwithstanding the see-saw trajectory in global commodity prices over 2007–09.

Non-cereal prices are rising fastest during the current food inflation episode, unlike during the last such episode in 2007–08, when cereal price increases were responsible for a larger share of food inflation. In India for example, the recent surge in food prices is due to a spike in fruit and vegetable prices, which increased by 22.8 percent (Figures 2.3 and 2.4). Items such as milk, eggs, meat, fish and spices also experienced double-digit inflation rates. The same is true for Bhutan and Nepal as prices there closely track food prices in India.1

The South Asian countries have different inflation stories:

Prices in Afghanistan rose at the end of 2010 because of difficulties in trade relations with its neighboring countries. Economic growth is high because of largely donor-financed construction spending. Substantial differences between the Afghan and Pakistani governments regarding the interpretation of the Afghanistan–Pakistan Transit Trade Agreement

FIGURE 2.1 WPI Inflation in Major Emerging Market Economies
(y-o-y change in percent)
(APTTA) have resulted in a postponement of its implementation. The areas of contention relate to bank guarantees, international requirements for sealed trucks, biometric systems and the installation of tracking systems. Meanwhile, thousands of containers bound for Afghanistan are stranded in Pakistani ports. Iran blocked fuel supplies to Afghanistan in December 2010. It is estimated that 30–40 percent of Afghanistan’s fuel is imported from Iran. The blockade halted 2,500 trucks and led to a 70 percent increase in fuel prices in January 2011. The ban was lifted in early February, but the government has since tried to source fuel from other countries. Price increases in transportation and fuels were 12.2 percent and

Source: CEIC.

Note: Consumer price index (CPI) based; CPI for Industrial Workers for India.

Source: CEIC.
FIGURE 2.4  South Asia: Contribution to CPI Inflation  
(percent change, y-o-y)

Source: CEIC, CSO-Afghanistan.
Notes: For India: CPI Industrial Workers; Afghanistan, Bangladesh, Nepal, Sri Lanka and Pakistan: National CPI, Calendar Year (January–December).
26.2 percent, which indirectly affected the price of food items.

In Bangladesh, food price increases are the main driver of overall inflation, and are driven by international prices. Non-food inflation was 3.8 percent in January 2011. Growth in monetary aggregates is high and above the government’s target because of high growth in credit to public and private enterprises. Budget execution is better than expected, despite pressures from rising food and fuel prices, because of high revenue buoyancy. However, the fiscal stance for 2011 is likely to be expansionary with a deficit of 4.6 percent of GDP, compared to 3.1 percent in fiscal 2010.

Price developments in Bhutan closely track Indian prices. The Bhutanese currency, the ngultrum, is pegged to the Indian rupee, and India is Bhutan’s key trading partner.

India’s inflation was lower than the regional average prior to the international commodity price boom and only reached the low double digits at end 2008, partly because government policies shielded consumers from higher international energy prices. Inflation started rising in mid-2009 because of the impact of deficient monsoon rains on agricultural production and food prices, and some delayed pass-through of higher oil prices. Indian inflation reached a high of 16 percent in January 2010, the highest in the region at the time, but has since declined to slightly below 10 percent, which is about average. Core inflation has been on a rising trend since mid-2009 and reached 8.9 percent in March 2011. If the recent momentum is maintained, WPI inflation will again reach double digits by September 2011.

Maldives is one of the most open economies in the world, largely because imports are so significant (almost 70 percent of GDP in 2010). Food and fuel products make up almost 40 percent of imports and comprise 40 percent of the CPI basket. The recent rise in international food and fuel prices, therefore, raises concerns over a mounting balance-of-payments deficit and consumer price inflation. Economic growth is dominated by developments in the fiscal balance, which has been improving but is still not in line with macroeconomic stability.

With accommodative monetary policy leading to high liquidity associated with remittances, inflation in Nepal rose to nearly 15 percent in 2008 and has remained in double digits since. In addition, during most of fiscal 2010, Indian inflation was higher than that of Nepal which, given the open border, resulted in imported inflation. However, the two rates have been converging in recent months. As of mid-January 2011, annualized inflation was running at 11.3 percent.

Pakistan not only imported higher inflation from international commodity prices, but macroeconomic imbalances and the floods of 2010 also provided domestic sources for price rises. Inflation hovered around 25 percent from mid-2008 to early 2009, came down somewhat at the end of 2009, but is now again around 14 percent, the highest in the region. The surge after January 2011 resulted from supply shortages mainly in food items after the devastating floods.
of 2010, a widening fiscal stance partly because of a 50 percent wage hike for civil servants, financing of the fiscal deficit through monetization, but also from otherwise welcome adjustments to unsustainable structural policies: an upward revision in electricity tariffs by 17 percent, and an end to interventions by the State Bank of Pakistan in the foreign exchange market to finance oil imports, which resulted in some rupee depreciation. However, the rupee has rebounded somewhat in recent months.

In Sri Lanka, inflation remained under 7 percent throughout 2010, but rose to 9.8 percent in April 2011. Food prices have determined inflation. Fuel prices have had a minimal impact on inflation, because international oil prices were not passed on to consumers until April 2011. Retail gasoline and diesel prices are unchanged since the end of 2009, as the government absorbed price increases by lowering fuel taxes.

Inflation rates in Sri Lanka and Afghanistan show the strongest correlations with international commodity prices, rising in 2008 before falling sharply in the last quarter of the year. However, while Sri Lanka’s inflation was close to zero through mid-2009, Afghanistan’s was strongly negative.

2. Short-term Pressures: Global Food Prices, Aggregate Demand, and Domestic Supply Shocks

Global Commodity Prices

From mid-2010, there has been a steep rise in the prices of most agricultural commodities, including food crops. In February 2011, the World Bank Food Price Index surpassed the record high of June 2008 (Figure 2.5). It had registered the largest annual increase since July 2008. A large contributor to the increase in global food prices on the supply side is the rising cost of energy (Figure 2.6). Higher energy prices translate into increased costs of fertilizers, costs of fuel for transportation and running machinery, and lower production of food stuffs because of competition for land from the production of crops for biofuel. On the demand side, fast income growth in large developing countries has put pressures on the supply-demand balance (See Annex 1).

Wheat prices have risen markedly since mid-2010 while rice prices have remained mostly flat. However, unlike the food price hike of 2007–08, where 48 percent of the increase in the overall food index was due to rising grain prices, fats and oils, meat, soybeans sugar are contributing the bulk of the rise in food prices (Figures 2.7 and 2.8).

Moreover, food prices have displayed extraordinary volatility over 2007–2010 with volatility in grains, vegetable oil, and soybeans rising. Since the 1960s, sugar has consistently been the most volatile
agricultural commodity over each decade, while meat prices have been least volatile on average. The increase in volatility is due to an increase in the frequency of supply shocks combined with limited reserves and an increase in the production of biofuels, and an increase in global macroeconomic volatility post-2000.

Increasing investment fund activity in commodity futures exchanges is frequently cited as a contributor to commodity price inflation. Despite much contention over the issue, however, empirical evidence shows small or no impact. Most of the evidence suggests that investment fund activity will probably not alter long term price trends, but it may induce higher price variability by exacerbating the length and amplitude of price cycles (see Annex 2).

**Global Price Pass-through**

South Asian countries vary in the extent to which international food prices feed through to consumer prices depending on their openness to global markets and the extent to which food prices are insulated from international prices through subsidies and price caps. Inflation rates in Maldives, Sri Lanka and Afghanistan show the strongest correlations with international commodity prices. All countries in the region import a large share of their consumption requirements of edible oil (see Figure 2.9).

The degree of pass-through of international prices depends on the commodity. Bangladesh, India and Nepal allow limited pass-through of international rice prices to the domestic market. For instance, in Bangladesh the pass-through of rice prices is estimated at only 16 percent while there is complete pass-through of international wheat prices where imports account for 80 percent of domestic consumption. Overall, for Bangladesh, the domestic food price change (caloric-weighted) between 2009Q1 and 2010Q4 is approximately 38 percent while for international prices it is 35 percent. Therefore in general, food prices in Bangladesh rose with international prices (Figures 2.10 and 2.11).
Link Between Energy and Food Prices in South Asia

While there is a clear link between energy prices and food prices globally, the relationship is tenuous in South Asia because governments regulate domestic energy prices and pass-through of international prices is limited. Therefore, the contribution of domestic energy prices to food price inflation has been limited so far. In India, the prices of diesel, kerosene and LPG are regulated while petrol prices were deregulated in principle last year but still have been adjusted only partially. Bangladesh and Sri Lanka allow gasoline prices to adjust over time, but keep diesel heavily subsidized in order to protect their farmers. Only Pakistan has a formula-based price adjustment mechanism for both diesel and gasoline (Figure 2.12). Governments in the region are keeping electricity prices artificially low to the agricultural sector and, therefore, electricity prices do not play a major role in food prices. In India, many farmers receive free, unmetered electricity.

Domestic Supply Shocks

Domestic supply shocks contributed to food price inflation in some South Asian countries. For instance, Pakistan faced higher wheat prices given the crop damage from the flooding of August-September 2010. This led to a jump in food inflation to 21.2 percent in September 2010, from 12.8 percent in July 2010 (y-o-y). The impact of higher wheat prices has been particularly large since wheat is the main grain staple. In India, inflation started rising in mid-2009 because of the impact of deficient monsoon rains on agricultural production, and unseasonal rains and transport disruptions in November 2010. In Sri Lanka, vegetable prices surged after devastating floods in early January. Bean prices rose 55 percent and coconut prices 70 percent compared to a year earlier. Some non-essential foods that are preferred additions to dishes rose even more over the year—red onions by 245 percent and chilies by 77 percent.

Macroeconomic Policies

Even though the main driver of inflation in South Asia is food inflation, core inflation has been rising from 2009 pointing to general demand side pressures. Current account deficits are also widening in the region. While the level is not worrying as such, the widening supports the view that aggregate demand is getting ahead of supply. On average, the countries had current account deficits of 2.4 percent in 2010 as compared with 1.7 percent in 2009. The deterioration in the current account deficit also reflects the real appreciation of regional currencies with the rising inflation rate differential between South Asian countries and their trading partners.

Source: FAO.
Meanwhile, surveys show that inflation expectations are rising and this holds risks for further upward pressure on core inflation. For example, household surveys in India reveal 1-year ahead expected inflation has risen to 13.1 percent in 2010Q4 from 6.2 percent in 2009Q1. The perceived current rate of inflation has also risen to 11.8 percent from 5.8 percent over the same period. If this trend continues, households could revise their inflation expectations upwards in tandem with perceived inflation in 2011 (Figure 2.13). Rising inflation expectations and escalating food inflation are encouraging workers to demand higher wages, which contributes to higher core inflation.

The growth in aggregate demand in the region is supported by an accommodative macroeconomic policy stance. South Asian governments widened their policy stances in the wake of the GFC, but for most it is probably now time to reset macroeconomic policies to neutral. Steps toward fiscal consolidation have been cautious at best so far despite the fact that South Asia’s deficit and public debt to GDP ratios are amongst the highest in the world (Figures 2.14 and 2.15).

With regard to monetary policy, monetary aggregates expanded in line with the economic recovery in most countries despite low policy rates compared with other regions. Credit expansion is still mostly low compared with the growth rates prevalent during 2004–07. Monetary conditions in India have been tightened since late-2009, and are broadly neutral as indicated by a monetary conditions index (MCI, Figure 2.16). The index combines money supply growth, interest rates and changes in the exchange rate. IMF research shows that changes in the first two account for about 25 percent of inflation and changes in the latter about 10 percent.

While rising core inflation and widening current account deficits hint at general demand-side pressures, capacity utilization rates draw a mixed picture. In India, capacity utilization indicators are stable, while the recent industrial production and imports data point to a slowdown rather than overheating (Figure 2.17). Different estimates of potential output measures across the region’s economies (Afghanistan, Bangladesh, India, Sri Lanka) suggest output gaps narrowed or closed in 2010.

3. Long-term Effects: Productivity Slow-down and Structural Demand Shifts

After the rapid advances during the “Green Revolution” in the 1960s and 1970s, agricultural growth rates in South Asia have been low and fairly stable, although short-term volatility of agricultural output has been high. The production of cereals and pulses has been increasing by around 2 percent per year since the early 1980s, while the growth in the production of vegetables and fruits has been around 4 percent. There are, however, weak indications of
declining growth rates of agricultural production in the region (Figure 2.18).

With population growth continuing at around 2 percent per year and income growth accelerating, it is not surprising that imports of the staple items: wheat, rice, maize, and vegetable oil, have increased sharply.
from around 5 million metric tons in the early 1990s to double that level at the end of the 2010 decade.

With rising incomes, consumption growth has been accelerating and is now significantly higher than production growth for major food groups. This is most notable in India, where household surveys suggest that the consumption of food is increasing by around 3 percent per year. Within the food group, however, growth in consumption of pulses, fruits, meat, eggs, and dairy items is around 4 percent, while the growth rate in consumption of cereals is around 1.5 percent (Figure 2.19). While the data from the Indian household surveys are highly volatile, they do indicate a gap between accelerating demand and slowing supply growth. Accordingly, the domestic terms of trade have been shifting in favor of agriculture ever since the late 1980s, when the productivity advances of the “Green Revolution” petered out (Figure 2.20).

Within this overall picture, the demand pressure on cereals is relatively lower as demand is shifting toward a higher-protein diet. Accordingly, higher-protein food articles and fruits and vegetables have been the main drivers of food inflation since 2008. The shift to higher protein foods is noticeable across the region (Figure 2.21).
The shift to a higher-protein, fruit- and vegetable-rich diet is also supported by Indian household survey data showing consumption baskets for different household groups: richer households spend a higher share of their incomes on non-food items and, for food, a higher share on pulses, fruits, vegetables, eggs, meat, and dairy (Figure 2.22). Therefore, as incomes rise, households’ consumption patterns shift. This shift also emerges in comparing the average shares of various food items in household consumption, based on Indian household surveys of the last 20 years (Figure 2.23). For example, in 1987–88 rural Indian households spent over 40 percent of their food budgets on cereals, but by the 2007–08 survey this had fallen to around 30 percent. A similar shift occurred among urban households, though less pronounced. Such shifts represent differential growth rates of consumption for different food items.
China and India have many characteristics in common. Notably, both countries have more than 1 billion people each; they are the fastest growing economies in the world; and food prices have played a significant role in recent increases in their inflation rates. In China, inflation rose to 5.4 percent (y-o-y) in March 2011, a 32-month high. A combination of domestic weather-related shocks and the global food price increase contributed to rising food prices. Vegetable prices, the key driver of inflation in 2010, peaked in February 2011 and have moderated since. Unlike in India, non-food inflation in China has been relatively moderate, registering 2.3 percent in March 2011. However, throughout 2010 and the first quarter of 2011, non-food inflation has been rising and is a growing cause for concern among policy makers. Rising residential property prices—with inflation averaging 12 percent for new housing in 70 major cities—have also been a feature of inflation in China, and have been fueled by rapid credit growth.

The Chinese government has taken several steps to contain inflation. First, it ended the large fiscal stimulus implemented in 2008 to support the economy in the wake of the global financial crisis, reducing the budget deficit from 2.8 percent in 2009 to 1.6 percent in 2010. Second, the central bank raised the reserve requirement for banks six times in 2010 and three times in the first quarter of 2011 (to 20.0 percent for large banks). It also lifted the benchmark interest rate between January 2010 and March 2011 to 6.06 percent. These actions helped moderate growth in domestic credit to the private sector to 20.3 percent in December 2010 from 33.1 percent a year earlier. Third, China took actions to curb house prices, including raising mortgage interest rates and down payments, and directing banks not to lend for purchases of third (or more) homes. Fourth, the real appreciation of the yuan, by about 4 percent, helped tighten monetary conditions. In addition to normalizing the overall macroeconomic policy stance, the government took measures to boost food supply and reduce the cost of production and logistics, including releasing grain from China’s large reserves, increasing subsidies to farmers, exempting transport of vegetables from road toll, and boosting food imports. More recently, it limited the increase in domestic fuel prices arising from higher oil prices, and applied moral suasion on manufacturers of food and consumer products.
**BOX 2.1 Inflation in China – What is Different? (continued)**

- Property prices are still rising but at a lower rate....
- As monetary policy tightens...

**FIGURE 2.18 Production Growth of Major Staple Food Items**

(y-o-y change in percent, actuals and long term averages)

**FIGURE 2.19 India: Growth Rates in Consumption**

(per capita, in percent)

Source: FAO.

Source: CSO NSS different rounds, author's calculations.
FIGURE 2.20  India: Terms of Trade between Agriculture, Industry, and Services

Source: CEIC.

FIGURE 2.21  Annual Per Capita Consumption

Source: Joshi et al. (2007).
FIGURE 2.22 India: Household Survey Data on Consumption of Food and Non-Food
(Consumption pattern across mean per capita expenditure deciles, 2004–05)

Notes: Computed from unit-level data using 61st round of NSS, Consumption Expenditure (Schedule1); the last thick round. MPCE refers to monthly per capita consumption expenditure. Households were split into consumption quintiles, and then average expenditure of households in each quintile of the different consumption categories were computed. The components of the food subcategories are: cereals—cereals and cereal substitutes; pulse fruit—pulses and pulse products, milk and milk products, egg, fish and meat, vegetables and fruits; oil bev—edible oil, sugar and beverages; salt spice: salt and spices; non-food 30—total non-food expenditure computed on the base of a 30-day recall period.

FIGURE 2.23 India: Shares of Food Types in Food Baskets, 1987/88–2007/08
(in percent)

Source: CSO NSS.
Notes

1. The Bhutanese currency, the ngultrum, is pegged to the Indian rupee.

2. Econometric evidence suggests a 10 percent increase in energy prices leads to a 2–3 percent increase in food prices (Baffes, 2010). Oil prices increased by 223 percent between 2004 and 2010 leading to a 50 percent increase in food prices.

3. Maldives is one of the most open economies in the world, largely because imports are so significant (almost 70 percent of GDP in 2010) while in Sri Lanka domestic prices follow world prices even though it produces 95 percent of the food it consumes.

4. Although in India there is sometimes a considerable lag between change in international gasoline price and domestic gasoline price. The Indian government increased both diesel and petrol prices in May 2011 with petrol prices rising by 44 percent since February 2010.

5. In Bangladesh and Sri Lanka the loss is borne by the Bangladesh Petroleum Corporation and the Ceylon Petroleum Corporation, respectively. As such, it is not a direct transfer from the government but recorded in the respective company’s profit and loss accounts.

6. For instance, in January, the Pakistan government increased fuel prices, decreased them a few days later and increased them yet again in early March, before halving them once again.

7. Some delayed pass-through of higher oil prices also contributed to higher overall inflation during this period.

8. Between January 2007 and December 2010, there was a real appreciation of the Sri Lankan rupee of 27 percent, the most amongst all South Asian currencies.

9. IMF (2010) finds a 1 percentage point increase in expected inflation leads to a 0.2–0.4 percentage point increase in core inflation for India.

10. See The Reserve Bank of India’s Inflation Expectations Survey of Households conducted in 2010Q4 (Round 22).

11. In Sri Lanka, the minimum wages for formal private sector employees under Wage Boards increased, raising the overall nominal wage rate index for the whole sector by 32.0 percent in 2010. Informal sector wages in the Agriculture and Construction sectors also increased by 9.1 per cent and 7.3 per cent, respectively, in 2010. Monthly minimum wage hikes in Bangladesh for government workers of 80.4 percent occurred with effect from July 2010 and in India the average wage rates in the Indian Railways increased by 30.2 percent in 2009–10. Pakistan experienced a 50 percent wage hike for civil servants.

12. South Asia had the largest fiscal deficit among developing countries in 2010, estimated at 8.4 percent, as compared with 6.7 percent on average during the period 2007–09. There is wide variation in fiscal deficits in the region in 2010, ranging from 2.5 percent for Bangladesh to 22.5 percent for the Maldives. In India, the general government deficit rose to 9 percent of GDP in FY2009–10, with 6.8 percent of GDP central government deficit. Only a marginal contraction in central government deficit is estimated to have been achieved with 6.7 percent of GDP in FY2010–11, although some further contractionary impulse was probably coming from India’s states, where borrowing limits were tightened. Maldives is struggling to correct macroeconomic imbalances driven by large fiscal deficits of 20.7 percent in 2010 while in Sri Lanka the deficit expanded to 6.8 percent. Large outlays for interest payments are slowing progress toward fiscal consolidation, and while improving in some countries (Afghanistan, Maldives, and Sri Lanka, for example), and the low tax base in countries such as Pakistan makes consolidation particularly challenging. Domestic commodity price distortions continue to raise big fiscal concerns for South Asia.

13. In 2009 and 2010, real policy interest rates have been consistently negative in India, reaching a low of −11.5 percent in January 2010 (real interest rate calculated as the difference between the Reserve Bank of India’s repo rate and the concurrent CPI inflation rate). In Bangladesh and Pakistan, real interest rates were negative throughout 2010. During 2010, the authorities began tightening monetary policy. India’s central bank has raised interest rates nine times since end-2009, but policy rates were still negative in real terms in early May 2011 (the nominal benchmark repo rate was set to 7.25 percent on May 3, 2011, while WPI inflation was 9 percent in March). Only in Sri Lanka, policy rates have been moving in the opposite direction, with declining policy rates and positive real interest rates during 2010. With real interest rates at 0.2 percent in January 2011, the monetary policy stance is relatively accommodative.

14. In Sri Lanka, growth in credit extension to the commercial sector rose steadily in 2010 to 27 percent of GDP, its highest rate since July 2007. In Bangladesh, credit to the private sector also grew steadily at 27.6 percent, in 2010, up from 19.2 percent in 2009. Broad money supply has been climbing between 2009 and 2010 in Bangladesh, Pakistan and Sri Lanka, growing at 22.2 percent, 14.9 percent and 18 percent at the end of 2010, respectively. In India, growth in non-food credit accelerated to 23 percent in the first quarter of 2011. Credit to industry was up by 26.5 percent from the previous year, significantly driven by the financing of telecom license fees.

15. The MCI uses coefficients from Kannan, Sanyal and Bhoi (2006).


17. Closer analysis of the data shows that changes in trend growth for pulses and cereals are not statistically significant; i.e., it is uncertain that production growth rates are indeed declining. Production of vegetables and fruits is so unstable that there is no certainty of a growth trend; i.e., the production increase between 1981 and 2009 is not statistically significant.
The Impact of Agricultural Policies on Food Supply

SOUTH ASIAN GOVERNMENTS TODAY follow very different approaches to marketing staple foods, but are quite uniform in their attempts to support farmers and food production with input subsidies. While India and Pakistan maintain heavy government control over the marketing of wheat and India also of rice, the other countries have liberalized their agricultural sectors to a much larger extent. The Indian and Pakistani systems reduce the ability of the private sector to manage temporary, geographically limited supply disruptions. They are partly responsible for high food inflation over the short-term. On a more structural level, they distort agricultural incentives, and have high fiscal costs. They are maintained by the two governments’ reliance on large-scale distribution of subsidized food items as crucial safety net measures.

Input subsidies in the major countries contribute to overuse of water resources, high losses of electricity utilities, and deteriorating soil conditions because of wrong application of fertilizer, and therefore contribute to the long-term slow-down in productivity growth in agriculture. The fiscal costs of current policies divert resources from more efficient interventions: for example, investments in agricultural research, education, and rural roads are amongst the most effective public spending items in promoting agricultural growth and reducing poverty.

1. Historical Perspective

In the 1950s and 1960s, South Asian countries had similar policies with regard to government involvement in the marketing of food commodities, but their policies started diverging in the late 1970s. Liberalization started first in Sri Lanka, then in Bangladesh, and finally in Nepal in 1998. India and Pakistan, in contrast, still maintain a lot of the features of the systems they had established in the 1960s for their main staples, wheat and rice. Especially in India, the government maintains a pervasive system of public procurement, storage, and distribution which gives the private sector only a limited role in the handling of the two staples. Pakistan maintains a similar system for wheat only, because rice is far less important in consumption. Afghanistan faces the uphill struggle of rebuilding its economy after decades of conflict, and the agricultural sector is affected by the widespread cultivation of poppy (see Box 3.1).

Systems for government intervention were set up with three main objectives: to increase production, stabilize market prices and risks, and provide subsidized food to vulnerable households. In the first of these objectives, the countries were remarkably successful. Cereal production in most countries more than doubled between 1961 and the early 2000s, while it almost quadrupled in Pakistan. Per capita availability of food increased in most countries (Figure 3.1). However, production increases were most impressive in the 1960s.
Afghanistan produces more than 90 percent of the world’s opium supply on small portions of its agricultural land, generating about 15 percent of national GDP. Opium is Afghanistan’s most important agricultural crop in value terms, providing much-needed livelihoods and jobs for segments of the rural population in the short run—but distorting the incentives for developing a sustainable, formal agricultural sector in the long run. In addition, the large criminal profits associated with the drug industry seriously undermine governance and fuel corruption, dysfunctional politics, and ultimately insecurity and conflict. Thus moving away from reliance on opium is a priority development objective for the medium term. But, since opium is a high-value, storable commodity with a ready market and a secure cash crop for an insecure environment, this will be no easy task.

Progress in eliminating opium cultivation in some areas over a number of years suggests that phasing out opium in Afghanistan over the next 10–20 years is not impossible. Success factors are multi-faceted: In addition to having a credible threat of law enforcement against opium cultivation and trade (but not massive eradication of standing crops in the fields, which is a symptom of failure to deter and fuels resentment and conflict), key ingredients include:

- Reasonably good local resource endowment (agricultural land and irrigation) to encourage a variety of agricultural activities, not just opium;
- Close access to markets for licit agricultural crops (e.g., city vegetable markets), so farmers can sell produce without traveling far, crossing many checkpoints, or paying many bribes;
- Proximity and access to sizable labor markets (found in cities), so family members of rural households can seek work but also return home if there is no day-labor available, thereby avoiding transport and lodging costs associated with more distant labor markets;
- Opportunities for a variety of other activities such as dairy, transport and other services; and
- The modicum of security usually found near larger cities is most suited to development of sustainable, non-opium agriculture.

The success stories usually associated with areas around cities, such as Jalalabad in the east, will not be easy to duplicate in more remote regions lacking infrastructure. What is required is sustained, broad-based, programmatic rural development, ranging from irrigation investments to horticulture, community development, and better health for livestock (see DFID and World Bank, Economic Incentives and Development Initiatives to Reduce Opium Production, 2008). Value chain development for both exports and import substitution will be critical, and encouraging the private sector through innovative programs will be much more effective than fragmented investments in parts of the value chain.

Yet, it is also clear that wheat is not the crop of Afghanistan’s future; nor can it replace opium. Export prospects for wheat are extremely limited given the large production of neighboring countries. Moreover, as a low-value, relatively less labor-intensive, yet relatively water-intensive crop, wheat is not well-suited for expansion in a country with Afghanistan’s resource endowment: limited arable land, sparse irrigation, water a binding constraint, and abundant labor supply. Shifting all of Afghanistan’s land currently devoted to opium cultivation to wheat, even if it were possible, would leave significant parts of the rural population less employed, poorer, less food-secure, and more vulnerable, with many households forced to take extreme measures, such as cutting health expenditures, stopping education of children, or even out-migrating to neighboring countries.

Thus, although efforts to enhance Afghanistan’s self-sufficiency in wheat are justified and have good prospects for success, the way forward for Afghan agriculture as a whole—which will also help address the opium problem—is to develop licit, high-value, labor-intensive cash crops. This will only be achieved with necessary investments and improvements (including private-sector milling and increased grain storage capacity) in key factors such as those listed above.
and 1970s, while the 1990s saw a distinct slowing down in agricultural production growth, and some studies show that total factor productivity actually declined.\textsuperscript{2} India and Pakistan became net exporters of cereals in the 1990s. With strong production growth, Sri Lanka continues to depend on rice imports, but the share of net imports in availability has declined significantly. In contrast, net imports of cereals as a percentage of availability remained fairly stable in Bangladesh, whereas Nepal has gone from net exporter to importer since the 1980s, although the share of imports in availability is small.

After several bumper harvests, India actually now faces a “problem of plenty”: stocks of wheat and rice far exceed requirements and storage capacity. Given the current international concerns about rapidly rising food prices, in particular those of wheat, the “problem of plenty” could easily turn into an “embarrassment of plenty”: a lifting of India’s ban on exports could have a significant downward impact on international wheat prices.

The question is whether the systems that served India and Pakistan well in the last fifty years are likely to prove equally successful in meeting the considerable challenges of the coming decades: fast income growth and continuing population growth in the context of increasingly binding land and water scarcity. Evidence in the form of an emerging gap between demand and production growth highlighted in Section II, the rising fiscal costs of the systems, and the continuing gaps in providing food security to large segments of the population tilt the likely answer to the negative.\textsuperscript{3} The systems’ concentration on grains also reduces farmers’ incentives to respond to structural shifts in demand.

2. **Government Involvement in Agricultural Marketing**

Governments in the region are active in the agricultural sectors by providing public investments in infrastructure and research, and various input subsidies. Only in India and Pakistan, however, do governments play an intricate part in the marketing of food grains and impose strong restrictions on private-sector storage and trading.\textsuperscript{4} This section discusses government involvement in wheat and rice marketing in India and Pakistan, and effects of other (input) policies in the South Asia region.

### India

The government notifies Minimum Support Prices (MSPs) for 24 food articles on the basis of costs for procurement by the Food Corporation of India (FCI), although only wheat, rice, and coarse grains are procured in meaningful quantities.\textsuperscript{5} Covering sometimes vast distances, the FCI transports grains from surplus to deficit states and releases grains to the Public Distribution System (PDS) to be sold at subsidized prices (see Section IV). The FCI also holds buffer stocks in wheat and rice. It procures about one third of overall production of wheat and rice.\textsuperscript{6} The FCI maintains an open procurement policy, which means it buys at the MSPs any quantities of grain being delivered to its procurement centers within a specified time period. The amount of procurement therefore depends on the attractiveness of the MSPs relative to the prevailing market conditions.\textsuperscript{7}

Record quantities of procurement after the MSP increases in 2008 resulted in stocks of 40–50 million tons in 2010, which was roughly twice the level the government deems necessary as buffer stocks and far exceeded the FCI’s secure storage capacity. The “problem of plenty” of the large accumulation of stocks is not new: in 2002, stocks had reached 60 million tons under similar circumstances.\textsuperscript{8}
High stocks lead to high wastage because of inadequate storage capacity and technology. The World Bank has estimated that the FCI lost 10–16 million tons of grains in 2000.9 The FCI’s inefficiencies not only lead to high losses of the grains it handles, they also drive up the costs of food handling. Comparisons show that the FCI’s handling and storage costs are significantly higher than those of the private sector.10

The increase in procurement has led to a significant increase in the fiscal costs of the system. Food and fertilizer subsidies have increased to over 1.5 percent of GDP since fiscal 2009, from around 1 percent in the mid-1990s (Figure 3.2). The last time subsidies approached 1.5 percent of GDP was in fiscal 2003, another year in which procurement expanded strongly and grain stocks reached 60 million tons. Outlays on food subsidies are far higher than public investment in agriculture and outlays for extension services, which could increase agricultural production and lead to lower prices over time.

Pakistan

The government employs a system similar to India’s for public procurement, storage, and subsidized distribution of wheat only. Provincial Food Departments (PFDs) and the Pakistan Agricultural Storage and Supply Corporation (PASSCO) are responsible for implementing the procurement targets set at the federal level. Public procurement absorbs 15–40 percent of total production of wheat. About 95 percent of procurement by PFDs is undertaken in Punjab province. Restrictions on the transport of wheat between provinces and ad hoc trade restrictions are used to protect prices. International trade of agricultural commodities is handled exclusively by the Trading Corporation of Pakistan (TCP). Trading decisions are not always well designed: the 2008 harvest was overestimated and 3 million tons of exports were allowed, forcing the government to import almost the same quantity at higher prices later. In the face of an expected bumper crop harvest, the government allowed exports of 1 million tons of wheat in January 2011, the first time since the wheat price rally in 2007.

Bangladesh

The country has come a long way from the pervasive food rationing and government procurement system it maintained prior to the 1980s. There is currently no large-scale government intervention in grain markets. Competitive private traders purchase and retail food; their numbers rose to 48,000 in the 1990s from about 4,000 in the 1960s. Public distribution of grains is limited to cover social safety schemes, the military, police and low-paid public servants. The government maintains public grain stocks for its safety-net programs and emergencies. It targets a level of 1.5 million tons for its public grain stocks, including emergency reserves of 1 million tons (equivalent to two weeks of consumption) with the remainder as safety net.

Nepal

The government initiated liberalization reforms in 1986, including removal of the MSP. The government also removed some agricultural subsidies as part of the structural adjustment program supported by the IMF in the 1980s. In 1998, the government downsized its public distribution system, through the Nepal Food Corporation (NFC) and began restructuring it in 2000. Increasing open market operations led to a decline in food procurement by the NFC and consequent declines in government stocks. Liberalization followed estimates that marketing costs for private traders were lower than those of the NFC by over 40 percent prior to 2000. The government also liberalized trade policy: it eliminated all quantitative restrictions and lowered...
tariffs to the lowest average in South Asia. However, a ban on exports was imposed in 2008 to safeguard domestic supply of food. The reforms have improved some indicators of food security in Nepal (rising per-capita food availability and lower malnourishment), notably in the Terai plains, but the benefits have not spread evenly; remoter areas, such as the Hills, remain relatively insulated from the improvements.

**Government Policies and Short-term Inflation**

In India and to a lesser degree in Pakistan, large-scale public procurement hampers the private sector not only by pre-emption, but also by taxes and rules for moving grains across state borders, and caps on storage of grains designed to facilitate public procurement. Indian traders also face a requirement of transport in jute bags rather than in bulk. The private sector’s costs are increased by the uncertainty created by frequent *ad-hoc* changes of rules, in particular the stipulations under the Essential Commodities Act (ECA). The low private sector involvement in grain marketing leads to insufficient investment in the supply chain, and especially in storage facilities.

Marketing rules go beyond grains and put a wedge between retail and farm-gate prices for agricultural produce in general. Farmers in most places are obliged to sell products exclusively through *mandis* or wholesale markets, where a relatively small number of licensed traders can engage in oligopolistic behavior. While many states have made changes to the Agricultural Product Marketing Act (APMA), the system is still in place in many areas (see Box 3.2). The margin between wholesale and retail prices has been increasing over a number of years. Reforms to APMAs in some states opened the doors for contract farming, which has resulted in increased incomes for farmers, higher private investment in agriculture, and improvements to the supply chain.

The lack of development of market infrastructure in the wider sense (including oligopolistic conditions in *mandis*) exacerbates food price volatility. Markets are not integrated across areas, and buffer stocks are not available to tide over temporary disruptions. Apart from policies in India and Pakistan, the dearth of physical infrastructure across South Asian countries is to blame to a large extent, in particular rural roads and cold storage facilities, which leads to large losses of perishable goods, or lowers incentives to produce these goods in the first place.

In India, the simultaneous occurrence of high food inflation and large food-grain stocks has become a matter of widespread concern. In the past, domestic open market sales were often announced, but the take-up by the private sector usually fell well short of target. The reason was the FCI’s attempt to sell grain at prices higher than the procurement prices to cover some of its costs, which resulted in low or no off-take when MSPs were relatively high. Stringent controls were also imposed on buyers, partly to avoid the sale of grains back to the FCI during the next procurement round. Grain released through open market operations was therefore sold only to millers in bulk.

**Structural Effects of Government Marketing Rules**

The concentration of the government’s food policies on the FCI in India, and PASSCO in Pakistan, and their concentration on cereals from a few surplus producing states have in turn resulted in a skewed development of agriculture. Farmers in areas where the government is most active have little incentive to respond to structural demand shifts and diversify production, because that would greatly increase their exposure to risks. Food production (but not necessarily that of wheat and rice) could also increase through extending the benefits of the Green Revolution to eastern states. Yields on the most productive land are multiples of the yields in more traditionally operated farms (Figure 3.3). Use

**FIGURE 3.3** India: Rice and Wheat Yields in Major Producing States, 2006–2009

*(3-year average, in million MT)*

<table>
<thead>
<tr>
<th>State</th>
<th>Rice</th>
<th>Wheat</th>
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<tbody>
<tr>
<td>Madhya Pradesh</td>
<td>500</td>
<td>3,000</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>500</td>
<td>2,500</td>
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<tr>
<td>Bihar</td>
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<tr>
<td>Assam</td>
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<td>1,500</td>
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<tr>
<td>Orissa</td>
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<td>1,000</td>
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<tr>
<td>Maharashtra</td>
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<td>Jharkhand</td>
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<td>West Bengal</td>
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<td>Punjab</td>
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</tr>
</tbody>
</table>

*Source: CEIC.*
of high-yield varieties and fertilizer is still much lower in rain-fed areas.\textsuperscript{16}

\section*{3. Policies for Agricultural Inputs}

Countries in South Asia broadly share their approaches to agricultural inputs: subsidies for credit, fertilizer, and irrigation are meant to improve small-farmer livelihoods and agricultural production. They fail on both fronts. While they probably have been the key to small-scale farmers adopting new technologies, especially during the initial stages of the Green Revolution in the late 1960s and 1970s, it is increasingly apparent that large-scale farmers now reap the most benefits from input subsidies, and public procurement.\textsuperscript{17} Subsidies also command important shares of government budgets, though investments in agricultural research, education, and rural roads are more effective public spending tools for promoting agricultural growth and reducing poverty.\textsuperscript{18} Public investment in agriculture is crowded out by food and input subsidies.\textsuperscript{19}

Input subsidies have the detrimental side effects of “too much of a good thing”. Fertilizer subsidies lead to a skewed application of different types of fertilizer and nutrient deficiencies in the most intensively farmed areas.\textsuperscript{20} Water subsidies (through lower prices of diesel and free electricity for irrigation pumps) have led to widespread overuse of underground aquifers and increased salinity of soils. In fact, a water crisis may be looming in a number of districts in India and Pakistan, which have seen a rapid decline in groundwater levels Figure 3.4).\textsuperscript{21} Water access exacerbates inequities, while under-pricing of canal irrigation

\begin{box}

\begin{center}
BOX 3.2 \textbf{Agricultural Produce Markets Act (APMA)}
\end{center}

The Agricultural Produce Markets Act regulates the buying and selling of agricultural products in India’s states. Through the act, or local versions of it, states have established more than 7,000 wholesale markets (also known as mandis or APMC markets), and regulate all aspects of marketing, including the levy of a user fee, or cess.

The acts make mandis mandatory for the trading of agricultural produce. A limited number of licenses issued to traders and commission agents restrict the choice of sellers and buyers. This stifles competition, and generates economic rents for license holders. It also leads to under-investment in physical infrastructure and, ultimately, lowers prices received by farmers and increases prices paid by consumers.

Recognizing the “malfunctioning of regulated markets” and the “need for more transparency and accountability in the functioning of these markets”,\textsuperscript{4} the government of India (GoI) proposed that states adopt reforms along the lines of a model state APMA. The model act provides for, among others, establishment of private markets, direct purchase centers, consumer

\begin{footnotesize}
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Free or heavily subsidized electricity for irrigation also plays havoc with the finances of electricity utilities, which have become a major fiscal burden. Among the states with the worst overexploitation of groundwater in India are two, Punjab and Haryana, from which the FCI procures most farms' output.

The access to water and water-use efficiency are some of the most pressing challenges Pakistani agriculture is facing. Some studies show an intricate, well entrenched system of “facilitation payments” made by farmers to increase access to canal irrigation water in the absence of official water pricing. The Indus Basin irrigation system in Pakistan is the largest integrated irrigation system in the world. It covers 13.5 million ha of cultivable land, of which nearly 9 million ha can be irrigated throughout the year. Waterlogging and soil salinity have become the major problems impeding agricultural growth and development. Agricultural productivity declines unless adequate drainage and salt export facilities are available, which have high energy and capital requirements, or water use efficiency is increased significantly to reduce negative impacts on the environment.

Efforts led by NGOs for Poverty Reduction through Irrigation and Smallholder Markets (PRISM) combine small-plot irrigation technology and integrated service provision (ISP) to enhance small farmers' ability to participate effectively in markets for high-value agricultural commodities. Data from field projects in Nepal and India suggest that the PRISM approach can lead to significant additional income for small farmers and other micro and small enterprises in agricultural value chains.
Irrigation has been the key to agricultural production in Mesopotamia (parts of present day Iraq and Iran) for 6,000 years. The region has low rainfall and is supplied with surface water by two major rivers, the Tigris and the Euphrates.

The main challenges to irrigated agriculture in ancient Mesopotamia have always included:

- **Silt of canals** – silt built up quickly in the canal beds, threatening to block them;
- **Soil salinity** – evidence points to significant events in about 2000 BC, 1100 BC, and after 1200 AD;
- **Water politics** – Tensions often arose between upstream and downstream users. For instance, long ago in Sumeria, the people of Lagash felt disadvantaged because their city was far downstream in the Euphrates canal system. So they cut a canal to tap Tigris water rather than rely solely on the Euphrates. But after doing so they were dismayed to find the Tigris water brackish, which rapidly salinized the soil and destroyed their farming culture.
- **Over-exploitation of resources** – After a wave of Moslem expansion overtook Mesopotamia, the Abbasid Caliphate rose up to rule Baghdad for 500 years, from 762 AD. It renovated and greatly extended existing irrigation schemes in huge projects. This elaborate system provided the basis for the enormously rich culture of Baghdad, which is still remembered in legends such as those of Scheherezade, the Caliph of Baghdad, and the Arabian Nights.
- **Institutional failure** – When the Abbasid economy began to fail in the 12th century (mostly from overspending), the canals became silt-choked, the irrigation system deteriorated, and the lands became more salinized. The deathblow was an act of nature: massive floods in about 1200 AD changed the courses of the Tigris and Euphrates, cutting off most of the water supply to the Nahrwan Canal. The government was too weak (or bankrupt) by then to institute repairs, and the agricultural system collapsed. By the time the Mongols conquered the region in 1258 AD, they occupied what was effectively a wasteland. Iraq has remained mostly a desert ever since.

Source: Khan et al. (2004).
India’s western state of Gujarat is an outstanding performer in agriculture—agricultural output has grown by almost 10 percent per year over the last decade, more than three times the all-India figure. Research by the International Food Policy Research Institute (IFPRI) points to three main sources of rapid growth in Gujarat’s agriculture: (1) cotton output growth (from 3.05 million bales in fiscal 2003 to 11.2 million bales in fiscal 2008, driven primarily by Bt, or insecticidal, cotton since 2002); (2) output from the high value segment (i.e., livestock, fruits and vegetables); and (3) wheat, which grew at an average of 28 percent annually between fiscal 2001 and 2008, when production jumped from 0.6 million tons to 3.8 million tons.

Four areas of reform have contributed to Gujarat’s agricultural success:

**Technology development and diffusion.** While the public sector has played a role in production and distribution of high-yielding variety seeds such as wheat, the private seed sector has taken a lead in developing and promoting the use of Bt cotton seeds. In Gujarat alone, 26 private seed companies have registered 113 varieties of Bt cotton. Not only has the yield more than doubled in five to six years, more than 50 percent of the total cotton area in Gujarat is now under Bt cotton.

**A holistic approach to electricity and water use.** Gujarat is a drought-prone state, with irrigation cover of just 36 percent of gross cropped area. Better water management includes concerted efforts to recharge the water table, regulate electricity for agricultural use (by separating feeder lines for irrigation and other uses) and providing subsidies to farmers who use water-saving technologies, such as drip irrigation.

Programs include:

- **Sujalam Safalam (Water Harvesting) Scheme** – Aims to improve surface water supply and recharge the water table through construction of check-dams and deepening of existing tanks so that farmers will use surface water instead of pumping from wells, which uses more energy.
- **Drip Irrigation Scheme** – This ambitious irrigation scheme aims to conserve energy by assigning 80,000 ha of land (with 50 percent grants) to farmers on condition they use drip irrigation. It is expected to cut the agricultural sector’s dependence on electric power.
- **Jyotigram Yojana for rural electrification** – This scheme provides agricultural consumers with continuous power from dedicated agricultural feeders for eight hours each day at preannounced hours.
- **Mass awareness drive for energy conservation** – This extensive public education program employs various agencies to lead energy-conservation workshops, seminars, exhibitions and live demonstrations. Energy audits of industries and the use of capacitors are promoted.

**Legislative reform.** Gujarat was one of the first states to amend the laws governing the marketing of agricultural produce and allow farmers to sell their output directly to private buyers rather than official procurement outlets. In fiscal 2005, Gujarat allowed companies to buy crops from farmers one year in advance, reducing their market risks by allowing them to hedge against price fluctuation. The hedging guaranteed a minimum price and allowed some flexibility to account higher prices at the time of a transaction. It also has encouraged contract farming by attracting private companies—for example, ITC and Pepsi—to enter into contracts with farmers.

**Technological advancement.** Rejuvenation of the agricultural research systems and introduction of innovative extension services made research and know-how available directly to farmers on their farms. Under the “Krushi Mahotsav” program, agricultural scientists, elected representatives, and farmers spend a month, during April/May, touring rural areas demonstrating the best technologies for soil health, organic farming, farming inputs, irrigation, etc.

Source: Gulati and Shreedhar (2009).
Notes

1. Ganesh-Kumar et al. (2010).
3. See Deaton and Dreze (2009) on the long-term decline in availability of food in India.
4. Bhutan has a bilateral agreement with India for the duty-free import of food articles. Food markets are influenced by the Food Corporation of Bhutan (FCB), which manages the acquisition, management and disposal of a small public reserve of rice, wheat, vegetable oil and sugar, and purchases of selected food commodities from India and subsequent selling at controlled prices in district-level retail shops. The FCB’s strategic food stocks consist of: rice (1,400 tons), wheat (180 tons), vegetable oil (58 tons) and sugar (200 tons).
5. Purchases are made in bulk only, which excludes marginal and small farmers from the price guarantee offered by FCI.
6. Procurement by the FCI absorbed 57 million tons and 55 million tons of mainly rice and wheat in fiscal 2009 and 2010. Procurement of other crops is limited and may not influence prices as much.
7. This is true to the extent that farmers are able to decide whether to sell to the FCI or private traders, a choice which is not always available because of crowding out of the private sector.
8. Basu (2010). See also World Bank (2004). A high proportion of the grains are stored by building pyramids of sacks of grain on cement platforms and covering them with polyester tarpaulins. The system leads to high losses from pests and moisture, and does not allow adequate “first in, first out” rotation, which results in ageing of stocks.
10. Ibid.
The Human Impact of Food Price Inflation

The poverty and nutritional impact of food price spikes on the poor is significant since they spend a larger fraction of their income on food than relatively better off individuals. The malnutrition status of poor households in South Asia—a result of poor diet, lack of access to health services, poor sanitary environment and lack of awareness—was already precarious before the increase in food prices. Afghanistan, for example, has the highest levels of chronic child malnutrition in the world. Most countries in South Asia have double the rates of child malnutrition of many Sub-Saharan African countries. The food price increase has further exacerbated this vulnerability. Since the last food price spike in 2008, governments in South Asia have strengthened safety nets, but gaps continue to exist. The largest safety net interventions in the region—India’s and Pakistan’s public distribution systems for staple foods—are characterized by high leakages and therefore costs, while errors of exclusion are actually larger than the reverse, i.e. a large number of the deserving poor is not covered. This section presents results of a simulation exercise aimed at estimating the likely impact of recent food price increases on the poor. The second part discusses safety net approaches and their effects on food security, and the World Bank’s engagement with governments in the region on safety nets.

1. Impact on Poverty

The poor experience large declines in their real incomes and poor food producers have little opportunity to respond by increasing output within a short period of time. The evidence from the 2008 food price spike suggests that in most countries poverty increases when food prices rise substantially, even in rural areas, because both rural and urban poor are typically net consumers of food.

In 2010–11, the rise in food prices is showing across a larger range of commodities than in 2008 when it was mostly confined to traded grains, which will make it more difficult for the poor to compensate for price increases by shifting their purchases to cheaper calories, foods which are poorer in protein and vitamins and minerals, as was the case during the 2008 crisis. Even short-lived food price hikes reduce calorie intake, compromise dietary diversity reducing access to proteins and essential micronutrient rich food and tend to have long-term consequences, especially on infants and young children. To understand the magnitude of the problem, we simulated the likely poverty impact of the food price increases that occurred between June and December 2010. The analysis is based on survey data for household food production, sales and consumption of key agricultural commodities. Given the relatively fast change in food prices, the analysis assumed that price changes have not yet translated into noticeable changes in wages. In addition, we have not incorporated possible policy measures that might insulate poor net buyers of
food from the price hike. The results presented below are therefore indicative only.

The simulations suggest that the number of poor increased by 1.4 percentage points in South Asian countries (Figure 4.1). In India and Nepal, the increase in the poverty headcount is less than the median while Bangladesh and Pakistan are above, with Sri Lanka at the median. For the impact on the poverty gap, in Nepal, Pakistan and Sri Lanka, the increase in the poverty gap is less than the median while the opposite is true for Bangladesh and India. Except for Nepal, the net change in the poverty headcount is greater than the impact on the poverty gap. Pakistan experiences the highest net percentage increase in the poverty headcount whereas Bangladesh experiences the highest percentage increase in the poverty gap due to the food price increase. Nepal faces the least net change in both poverty headcount and gap among the South Asian countries.

Across all the South Asian economies, the median of people exiting poverty is 0.06 percent while those entering poverty are 1.49 percent, driving 15 million South Asians into poverty. (Table 4.1). Of the South
Asian countries, while Bangladesh has the largest percentage change of individuals exiting poverty with the food price hike, it also has the greatest percentage of individuals moving below the poverty line. In Pakistan, there is no decline in poverty.

2. Mitigating the Impact

As shown in the previous section, the current food price shock is likely to increase the poverty headcount and the poverty gap in the region. Given that poverty is still a pressing problem in South Asia, governments are called upon to scale up and improve targeting of existing social protection programs, and where such programs are weak and nonexistent, to implement safety nets to mitigate the impact on the large number of poor. If food is distributed as part of a safety net response, it should be fortified with essential micronutrients to ensure its high nutritive value safety nets can have a greater impact upon protecting and improving nutritional status, through provision of more nutritious foods when food is distributed (e.g. foods fortified with essential vitamins and minerals) and by increasing beneficiary knowledge on how to maximize limited household resources for nutritional impact (e.g. adequate intra-household allocation of food to women and children).

Social Protection in South Asia since the last food crisis

Numerous social protection schemes currently exist in South Asia, including subsidies on food and energy, cash transfers, social pensions, social assistance, food transfers, workfare, stipends, and social care services. The largest South Asian countries have large systems for the distribution of subsidized food, while cash transfer programs are very small-scale, often short-term, and lacking robust systems for administration and delivery of program benefits and services. This has been changing in recent years, with growing investment in well targeted and administered safety net programs (SNPs) in the region. India, for example, has recently introduced a health insurance program for the poor (RSBY), which features a cashless and paper less system, with strong private partnerships and a robust monitoring and evaluation system. Pakistan has also recently initiated a national cash based safety net program (BISP), which relies on a modern targeting, administration and delivery system. As the development of safety net systems takes time, the current preparedness for a food price shock with respect to coverage of the poor, and the targeting and quality of administrative systems varies markedly across South Asian countries (Table 4.2).

The 2008 food crisis provides important lessons regarding the effectiveness of different safety net programs (see Box 4.1). At the time of the previous crisis, it became clear that emergency response

<table>
<thead>
<tr>
<th>TABLE 4.1</th>
<th>Changes in Poverty Headcount ('000)</th>
</tr>
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<tbody>
<tr>
<td>Bangladesh</td>
<td>–700 3,000 2300</td>
</tr>
<tr>
<td>India</td>
<td>–5,000 14,000 9,000</td>
</tr>
<tr>
<td>Nepal</td>
<td>–18 61 43</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0 3,300 3,300</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>–10 300 290</td>
</tr>
</tbody>
</table>

Source: Ivanic et al. (2011).

<table>
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<tr>
<th>TABLE 4.2</th>
<th>Safety Net Readiness Assessment in South Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>Criteria</td>
</tr>
<tr>
<td>Crisis Ready</td>
<td>Have one or more programs with high coverage of poor, highly progressive targeting and good administration</td>
</tr>
<tr>
<td>Moderate Base</td>
<td>Have one or more operating and progressively targeted programs to build on, but with less than full coverage and/or a need for administrative improvements</td>
</tr>
<tr>
<td>Weak Base</td>
<td>A large scale response would require fundamental changes to range, size, or targeting of programs and significant building of institutional capacity</td>
</tr>
<tr>
<td>Unprepared</td>
<td>Very small programs with little institutional development, often geared only to specific sub-groups of the population</td>
</tr>
</tbody>
</table>

Source: Authors.
Box 4.1 Recommendations for Safety-Net Policy Responses

Policy responses should be designed according to country context and need to be administered effectively and efficiently to reach the target group. A loose ranking of programs for the short-run response could look as follows.

**Direct Transfers**
- Where Conditional Cash Transfer (CCT) programs already exist, increasing their benefit or coverage may be a key part of the response. However, establishing new CCTs may take too long and exclude the neediest or those suffering from acute but transitory income shocks.
- Other good options would include raising benefits across a large spectrum of social transfers, such as social pensions, survivorship pensions, disability pensions, and unemployment benefits, where they cover the poor. Food stamps or vouchers have slightly higher administrative costs than cash, but can be politically popular.
- Food distribution in-kind is appropriate where markets are functioning poorly, where foreign assistance is only available in-kind, or where strategic grain reserves need to be rotated. In other circumstances, in-kind programs will have higher than necessary administrative costs per unit of value transferred as well as potential leakage as in Bangladesh. They also have a limit on how much support can be transferred per beneficiary. Different types of food distribution include take-home rations, school feeding programs, distribution of fortified foods, onsite feeding through health centers, and ready-to-use therapeutic foods in the home.
- Public works programs rarely achieve sufficient coverage to be the whole response to rising food prices, however, where public works programs exist, increasing their benefit or coverage may help. It is also important to ensure that public works programs, which often involve heavy physical labor, be designed so as to not further compromise the poor nutritional status of poor beneficiaries.

**Indirect Transfers**
- Fee waivers or vouchers for health and scholarships for education help households maintain access to services even if households become poorer.
- Lifeline pricing for networked utilities can be appropriate where the poor are connected to the network, have individual meters, volume differentiated tariffs are used, and the subsidized block of service is consonant with use by low-income households.
- General food price subsidies are distortive, costly, and hard to eliminate, although sometimes adroit choice of commodities can result in transfers that are nearly neutral in incidence and inclusive of the poor. They also have physical limitations (quantities of specific food items consumed) on how much income can be transferred in this way. General fuel subsidies tend to be very regressive and often not well targeted.

**Further considerations:**
- In some, but not all, cases it will be appropriate to scale back emergency social protection interventions again as food prices find their new long-term level and households and wages adjust to it. However, where safety nets were grossly inadequate it may be desirable to keep them at scale.
- Specific nutrition and health interventions are often needed to complement social protection programs.

*Source: World Bank (2011).*
mechanisms were not well developed and that putting in place best-practice safety net programs was required. As these programs would take time to be crisis ready, second-best options were therefore needed to respond to the immediate crisis needs. Improving coordination among related (small scale) programs enhances their ability for effective service delivery. Consolidation of various duplicative safety net interventions under one government authority, where politically feasible, is important for enabling efficient and timely responses to future crises.

**Country Stories**

**Afghanistan** is the least prepared country in South Asia because it currently has no scalable, targeted SNP. Existing interventions in Afghanistan remain small in terms of coverage and funding. The majority of the poor and vulnerable are not assisted directly through any government-sponsored programs. Food aid is the core safety net, delivered via small and scattered interventions including a mix of school feeding, food for work, and emergency feeding.

Over the course of 2010, the Ministry of Labor and Social Affairs, the line ministry responsible for social protection has been working intensively on preparations for an IDA-funded unconditional cash transfer (UCT) pilot, in close cooperation with other ministries and non-governmental bodies. It is anticipated that by early summer 2011, evaluation of the pilot would be completed and the scale-up of activities would be considered. The new program, if evaluated as a success, could become an intervention to respond to various shocks including increased food prices. A pilot community and geographic targeting approach is being put in place in response to the rising food prices. The World Bank supports this effort with US$2.5 million.

The capacity to respond to the food crisis by the government of **Bangladesh** is spread among several programs in operation for at least five years, each progressively targeted but with coverage of less than ten percent of the poorest quintile and concentrated in rural areas. The key programs used to respond to the food crisis are fairly well targeted to the poor. The main program providing coarse rice in rationed quantities in open markets (OMS) is a self-targeted program for the poor as the non-poor have few incentives to stand in long lines for small quantities of inferior quality rice. Thus OMS is self-targeting because it provides low-quality rice, which is not of interest for better-off consumers. Rice is sold at a subsidized price of 25 taka per kilogram for up to 5 kg per household using licensed dealers, which are allowed a commission of 1.5 taka per kilogram. The government increased the number of OMS dealers in Dhaka and coverage has been extended nationwide involving about 3,000 dealers. During the first eight months of fiscal 2011, 396,000 tons of rice was distributed through OMS, representing 72 percent of the annual target.6

The second scheme employs Fair Price Cards targeted at the most vulnerable as identified by committees composed of government officials, people’s representatives and school teachers. The government has so far distributed 69,600 tons of rice through Fair Price Cards in FY2010–11, and plans to increase the number of these cards to 2.23 million to cover the ultra-poor households, village defense police, and third- and fourth-class employees of public and private organizations. In addition to these main schemes, the government also allocates rice under Vulnerable Group Feeding (village level help in periods of distress), Vulnerable Group Development (food and training for women), Test Relief (food for worker as disaster response), Gratuitous Relief (food grants disaster relief), and Food for Work (rural infrastructure projects for women).

The Vulnerable Group Feeding (VGF) program is targeted at the more geographically food-insecure parts of Bangladesh using a food-vulnerability map developed by World Food Program (WFP). Within these districts, various targeting criteria are used to identify the extreme poor—around 60 percent of VGF beneficiaries are from the bottom 40 percent of the population. The recently established Employment Generation Program has been recently assessed as well targeted and generally effective. It could potentially be used as an additional mechanism of response and its ongoing presence already assists more than half a million poor households every year.

Current programs spend over 2.8 percent of GDP and reach 4–5 million beneficiaries (15 percent in rural and 5 percent in urban areas). Programs provide in-kind transfers, cash, or a combination of the two which could be scaled up to respond to a crisis.

The government has started a significant process to enhance decentralized service delivery and social accountability. Bangladesh is also aligning itself to promote a more efficient response during a crisis, in particular through the strengthening of results-based monitoring and evaluation (M&E).
In **India**, a plethora of SNPs exist, including for the provision of subsidized food, various other in-kind transfers (e.g., school feeding), public works, and other cash transfers such as social pensions for the elderly, widows, and disabled; housing; scholarships, and as noted above has a fairly recently-introduced social insurance (RSBY, a subsidized health insurance) and subsidized rural credit. Centrally-sponsored schemes and state-level programs exist side by side. Most of these programs still do not fortify the food which is distributed, despite this being a low cost and technically feasible approach which would yield significant nutritional benefits to poor households.

The largest program provides subsidized food through the Public Distribution System (PDS). Inefficiencies in the procurement and storage of food by the FCI were discussed in Chapter II. In addition, sales through the PDS are fraught with high leakages, on the one hand because of failures to identify the poor—both failures of inclusion of non-poor households and exclusion of poor households who really should have had access—and on the other hand by diversion of subsidized stocks to the open market. One recent study shows that 44 percent of persons who should have had access were excluded. Another study shows that a large share of relatively better-off households buy grains from the PDS, while only 30 percent of households in the lowest expenditure quintile buy from the PDS.

Data on food provisions to and purchases from PDS stores shows large differences between states (Table 4.3). Some states suffer from large-scale diversion of food meant for distribution to the poor, while others have plugged leaks quite successfully. A comparison of data

| TABLE 4.3 India: Household Consumption vs. Grain Deliveries to the PDS, 2007 |
|---------------------------------|-----------------|-----------------|-----------------|
| **Consumption from PDS as per HH survey** | **Grain deliveries to the PDS** | **Consumption/Deliveries** |
| **Rice** | **Wheat** | **Total** | **Rice** | **Wheat** | **Total** | **Rice** | **Wheat** | **Total** |
| (in thousands tons) | (in percent) | (in percent) | (in percent) |
| Bihar | 80 | 100 | 170 | 970 | 660 | 1,630 | 7.9 | 14.7 | 10.7 |
| Jharkhand | 100 | 50 | 150 | 540 | 290 | 830 | 18.5 | 16.0 | 17.6 |
| West Bengal | 350 | 210 | 560 | 1,030 | 1,500 | 2,530 | 34.3 | 13.8 | 22.1 |
| Assam | 330 | 10 | 330 | 1,130 | 260 | 1,400 | 28.7 | 2.8 | 23.9 |
| Gujarat | 120 | 220 | 340 | 450 | 440 | 880 | 27.5 | 49.5 | 38.4 |
| Rajasthan | 40 | 470 | 510 | 160 | 990 | 1,140 | 25.0 | 47.7 | 44.6 |
| Uttar Pradesh | 1,220 | 800 | 2,020 | 2,580 | 1,640 | 4,220 | 47.2 | 49.1 | 47.9 |
| Haryana | 60 | 140 | 200 | 60 | 260 | 320 | 35.6 | 53.2 | 49.8 |
| Orissa | 860 | 0 | 860 | 1,460 | 130 | 1,590 | 58.8 | 2.7 | 54.1 |
| Karnataka | 980 | 190 | 1,170 | 1,630 | 270 | 1,910 | 60.0 | 69.4 | 61.4 |
| Maharashtra | 720 | 780 | 1,490 | 1,120 | 1,270 | 2,400 | 63.7 | 60.9 | 62.2 |
| Madhya Pradesh | 330 | 810 | 1,140 | 430 | 1,320 | 1,750 | 75.5 | 61.5 | 64.9 |
| Andhra Pradesh | 3,010 | 20 | 3,030 | 3,600 | 40 | 3,640 | 83.6 | 46.8 | 83.2 |
| Kerala | 840 | 120 | 960 | 860 | 290 | 1,150 | 97.1 | 43.2 | 83.6 |
| Himachal Pradesh | 200 | 190 | 400 | 230 | 220 | 460 | 86.9 | 86.3 | 86.6 |
| Tamil Nadu | 3,260 | 120 | 3,380 | 3,620 | 90 | 3,710 | 90.1 | 133.3 | 91.1 |
| Punjab | 0 | 150 | 150 | 10 | 150 | 160 | 18.4 | 98.8 | 94.8 |
| Chhattisgarh | 790 | 10 | 800 | 750 | 30 | 780 | 106.3 | 28.0 | 103.0 |
| All-India | 14,290 | 4,640 | 18,930 | 22,290 | 10,830 | 33,120 | 64.1 | 42.8 | 57.2 |

on quantities of grains released to “fair price stores” on one hand, and household-survey data on the purchases of such grains on the other, shows nearly two-thirds of the wheat and 40 percent of the rice that is meant to go to poor households ends up in the open market. In Bihar and Jarkhand, for example, only 11 percent and 18 percent of the grain delivered to the PDS is accounted for in the 2007–08 round of the household survey.9 On the side of the spectrum are Chhattisgarh, Punjab, and Tamil Nadu, where nearly 100 percent of food delivered to the PDS is purchased through official channels.

The Government of India announced pilot programs for transforming subsidies on LPG and kerosene into direct cash transfers in the FY2011–12 Budget. While the modalities still have to be worked out, it is hoped that targeting can be improved and fiscal savings therefore realized. A successful implementation of these pilot programs would open the door for broader move away from subsidies toward cash transfers, although there is a vigorous debate in India about whether cash transfers can be a viable alternative to food subsidies.

As in India, the government of Pakistan maintains a large system to provide subsidized wheat and a few other goods to poor households. PASSCO and PFDs release wheat to flour mills at predetermined, uniform prices across the country. The release prices are generally below the open market prices and give the government a handle on wholesale wheat prices, although the wheat subsidy mainly benefits flour mills, which use wheat from public stores for some of their processing and buy additional wheat in the open market, while they sell their entire output at higher prices to shops. Wheat and other commodities are also sold at subsidized prices directly to urban consumers by the Utility Store Corporation (USC) at prices that are 3–15 percent below market prices.

Wheat subsidy is incurred at both federal and provincial level. At the federal level, the government absorbs the cost differential between the domestic support and sales price, and extends budgetary support to the Trading Corporation of Pakistan (TCP) and PASSCO for losses incurred in their wheat trading operations. At the provincial level, wheat subsidies are incurred to meet the shortfall that occurs in the transaction of wheat by the Provincial Food Departments (PFDs), particularly incidental charges being borne by the provinces, and direct subsidies to the consumer via various schemes (e.g., Ramzan package or Sasti Roti). To the extent comparisons are possible, the costs incurred by PASSCO and PFDs are significantly higher than those of private traders, indicating inefficiencies in handling wheat.10

The system of government intervention is inefficient in the sense that producer surplus losses and budgetary costs from subsidies are significantly higher than gains for consumers. A recent partial equilibrium analysis of costs and benefits of the government’s wheat policy concluded that the millers absorb most of the benefits from government subsidies, while consumers benefit at the expense of farmers.11 Lower farm-gate prices lead to lower production of wheat, as shown by another recent study which uses a computable general equilibrium model to simulate the effects of a removal of producer taxes and consumer subsidies.12

The authors conclude that removal of the distortions in wheat prices would be welfare-improving across all household groups. Income effects would dominate price effects; i.e., income from increases in factor prices would outweigh welfare losses from higher prices of wheat. Higher prices of wheat from a removal of subsidies would be mitigated by increasing production.

To provide a more direct safety net support, and eventually phase out untargeted subsidies, Pakistan has initiated a new cash transfer program, the Benazir Income Support Program (BISP), to protect vulnerable households against chronic poverty and adverse economic or agro-climatic shocks. Over the last two years, targeting, administrative and technical capacity has been strengthened considerably. By early July, beneficiaries will be determined on the basis of a new transparent targeting system. The introduction of this national safety net has led Pakistan to more than double its SSN spending-to-GDP ratio from 0.4 percent to nearly 1 percent. The volatile security situation still presents a challenge for program implementation in parts of Pakistan.

Sri Lanka has the large-scale Samurdhi program. It was conceived to alleviate poverty and create opportunities for the youth, women, and the disadvantaged. The bulk of program resources are distributed as consumption grants to households, with eligibility determined by a community based targeting system. Consumption grants are provided in the form of food stamps, which account for 80 percent of the program’s budget. Samurdhi also provides basic banking services, insurance, and food-for-work schemes. Food stamps can only be used in “cooperative” stores, which are a part of a de facto government owned distribution network.
The program also employs a large number of village level community workers, the *niyamakas*.

The Samurdhi program shares the targeting difficulties of the Indian PDS: Samurdhi misses almost 40 percent of households ranked in the lowest expenditure quintile, while a substantial number of households with higher relative welfare receive Samurdhi consumption grants and other forms of Samurdhi assistance. Around 44 percent of the total Samurdhi transfer budget is spent on households from the third, fourth, and fifth quintiles—those who are well-off in relative terms. The Government is currently investing in a modern administration and targeting system for the Samurdhi program to improve its ability to reach the poor.

In the *Maldives*, the government provides small cash transfers, alongside energy subsidies meant to assist poor households. To phase out untargeted subsidies and ensure transfers reach the poor, the Government is developing a national targeting system to better direct cash transfers and subsidies to the poorest households in the country.

In *Nepal*, according to a recent survey of 1,680 rural households, two thirds of the poor faced shocks in the last year, and a majority of these were drought and weather related. Coping mechanisms are still largely informal with only 5 percent reporting government or NGO support as a coping strategy. However, that said, quarter of all surveyed households participate in at least one safety net program.

Compared to other South Asian countries, Nepal has seen the sharpest increase in social protection spending over the last three years. Spending on social protection (including civil service pensions, social assistance, and unconditional cash transfers) went up to 2 percent of GDP in 2010/11, from 0.5 percent of GDP in 2004/05. The expansion is primarily due to increases in the target population, such as lowering the age criteria for the old age allowance, and the individual benefits for the unconditional cash transfer programs, as well as the introduction of new programs. Benefit levels in existing programs, including the old age and single women’s allowances, have been raised to keep pace with inflationary pressures. The cash transfer programs through Ministry of Local Development alone reach almost 1 million beneficiaries. A recent Bank study finds that given that categorical nature of the programs, the social pension programs reach all income groups, but that limited resources and weak administration systems mean that the programs does not reach all eligible beneficiaries. That said, individuals that the program does reach register a high level of beneficiary satisfaction with program delivery. Cognizant of these issues, the Government is investing in improving the financing, governance and administration of its main cash transfer program.

### 3. Bank Support to Safety Net Programs in South Asia

The Bank has been engaged on safety net issues in South Asia (with the exception of Bhutan). The particular focus of our engagement is to improve the design and administration of safety net systems (including their coherence and coordination) so that countries are better able to both address chronic poverty and help households cope with economic or agro-climactic crisis. The Bank has been active for several years in this area and our assistance involves not just diagnostics on program effectiveness but also both analytic and advisory services as well as financial support to improve program design and implementation. The specific nature of our engagement is detailed below.

The World Bank has helped *Bangladesh* by modifying and supporting the 100-day employment guarantee program with a $150 million loan. With the revised design, which includes improvements in for example program registry, MIS and the payment system, the program should be more responsive during any future crisis. With World Bank grant support, the Government is also in the process of designing a cash transfer program conditional on beneficiary households utilizing nutrition services for their children under the age of two, and for continued attendance at schools by their children. The pilot will also include a base unconditional amount to act as a safety net.

In the *Maldives*, the Bank supported the design and implementation of social pensions for those older than 65 through the Bank’s pensions and social protection project. The Bank is also providing technical assistance through this project to support the development of a national targeting system.

The modernization of administration and delivery of the government of *Nepal’s* safety net program, both workfare and social pension program, is being strengthened through the Bank’s Social Safety Net Project. A conditional cash transfer is also being piloted and evaluated to assess how safety nets can support improvements in human capital of the poorest
and most vulnerable groups (and protect this against income shocks).

In Afghanistan, the Bank is supporting the development of safety nets through the Afghanistan Pensions and Social Safety Net project. A pilot program is being designed and evaluated for potential scale up nationwide.

The Bank is supporting the development of a modern safety net through the BISP program in Pakistan. As the development of the national system will take time, the bank has also financed short term emergency support for militancy affected families through the KP/FATA project and emergency cash support to families affected by the recent flood through the Flood Emergency Cash transfer project. The Bank is also supporting the Government transform its unconditional cash transfer program to a conditional cash transfer program to support human capital development of the poorest populations, including avoiding adverse impact on health and education of the poor during crisis.

The Bank is also supporting the Government of Sri Lanka’s Samurdhi program through IDF and other financing to improve its targeting and administration.

Given the lessons learnt from the crises, going forward the Bank will focus on these priority areas:

- Developing real time monitoring instruments to understand the level of risk and response readiness of client countries;
- Developing and strengthening safety net systems, including establishing modern targeting, governance and administrative structures to ensure effective delivery to target groups;
- Linking safety net programs to participation of the poor in health/nutrition and education programs and employment schemes to (i) reduce the impact of price changes on human capital formation and (ii) to reduce benefit dependency and promote economic integration;
- Promoting an integrated response of actions, combining diverse safety net instruments, along with other sectoral interventions in nutrition and agricultural investment;
- Making financing and technical expertise available in a timely manner, yet ensuring consistency of short term response with longer term investment in safety nets; and
- Working to enhance the evidence base of how impacts are manifest and what works in times of crises.

Notes

4. Where available, we used country-level data on actual changes in domestic food prices from Food Price Watch (World Bank, 2011). For other commodities, where prices are unavailable, import shares reported in Version 7 of the GTAP database to link global prices with domestic consumer prices is used (see Hertel, 1997). In the case of Afghanistan, we were unable to estimate the impact of price changes on each household’s real income because an estimate of the quantity of goods produced by each household is unavailable. Instead we estimated the net change in food consumption from the increase in price, as observed through household consumption data.
5. See also Annex 5 for a table on food crisis response safety nets in South Asian countries.
6. To improve the quality of the diet of households who benefit from the schemes, this rice could be readily fortified with essential vitamins and minerals.
9. Ibid.
11. Ahmad et al. (2010).
12. Ibid.
Policy Options

With food being such a large component of consumption basket and even without formal wage indexation, food inflation—whether their origin is from supply shocks or from excess demand—can get passed through to overall inflation. Unlike advanced countries, where the received wisdom is to “look through” these increases, this may not be the best strategy in South Asia, and this means that demand management policies need to be deployed earlier than in advanced countries. In the case of South Asia, many central banks have begun the process of normalizing monetary policy with interest rate hikes, but in many of them, ex-post real rates are still negative suggesting room for further tightening. Some tightening of monetary conditions has been achieved by appreciating real exchange rates. In nearly all countries in the region, the process of normalization of fiscal policy is not complete and in many cases, fiscal balances have deteriorated. Fiscal consolidation is therefore a priority in many countries both for demand management and to rebuild fiscal space to cope with future shocks.

Foodgrain stock management. Important in the whole region, but especially in India given the current situation of high prices coexisting with excessive stocks, and potentially a new more extensive “right to food” based entitlement. A study is underway by CACP covering optimal level of stocks, efficient management of food grains, and the role of the private sector in procurement and distribution. More could be done to expand the fortification of stocks with essential vitamins and minerals.

Increasing agricultural output and productivity. Considerable work exists on the necessary policies. For example, the Government of India recognizes the need for a comprehensive strategy with a focus on technology, improved water management, rural infrastructure, agricultural diversification, food security, and private sector investment in marketing and agro industry. The success of Gujarat offers salutary examples of how such a comprehensive approach could work.

Safety nets. Increasing the role of the private sector in food grain marketing in India and Pakistan requires delinking of safety nets from direct public procurement of wheat and rice from farmers. This does not necessarily entail an end to the distribution of subsidized food from public stores as shown by the examples of Sri Lanka and Bangladesh. Also, countries could better protect and improve nutritional status through provision of more nutritious foods (e.g. foods fortified with essential vitamins and minerals) and by increasing beneficiary knowledge on how to maximize household resources for nutritional impact (e.g. adequate intra-household allocation of food to women and children).

Managing Risks. Over the last few years, volatility in exchange rates, interest rates, and commodity prices
has reached peaks similar to those seen during the financial crisis, a trend which seems unlikely to ease given uncertain political and economic conditions. Increased market volatility has generated renewed interest among borrowers in market-based tools and assistance for managing risks, particularly those that affect the government’s budget. (See Annex 6)
Country Pages: Eight countries – Eight Graphic Economic Narratives
**Afghanistan**

Strong, but volatile real GDP growth...

**FIGURE A GDP Growth**

![GDP Growth Graph](image)

Source: CSO.

Private consumption is the motor of growth from donor inflows and the security economy...

**FIGURE C Contribution to Real GDP Growth, Expenditure**

![Contribution to Real GDP Growth, Expenditure Graph](image)

Source: CSO, IMF and WB calculations.

... driven by the services sector and fluctuating agriculture output.

**FIGURE B Contribution to Real GDP Growth, Production**

![Contribution to Real GDP Growth, Production Graph](image)

Source: CSO, IMF and WB calculations.

... but trade is declining,

**FIGURE D Trade in Percent of GDP**

![Trade in Percent of GDP Graph](image)

Source: DAB, IMF.

... the current account deficit has shrunk...

**FIGURE E Balance of Payments**

![Balance of Payments Graph](image)

Source: DAB.

...and the afghani continues to appreciate.

**FIGURE F Nominal Exchange Rates, to Afvs**

*Index Mar, 2009=100*

![Nominal Exchange Rates, to Afs Graph](image)

Source: DAB.
Bangladesh

Real GDP growth is projected to rise on the back of strong domestic demand, private investment, and exports...

**FIGURE A GDP Growth (%)**

...while inflationary pressures have worsened, driven largely by a double-digit rise in food prices...

**FIGURE B Inflation (%) Y-o-Y**

...with exports and imports rising in the first part of the year, in contrast to the sharp fall in remittance which has since recovered slightly...

**FIGURE D Cumulative Growth (%) in Remittance and Imports**

...narrowing the external current account surplus and pushing down reserves...

**FIGURE E Current Account Balance and Foreign Exchange Reserves**

...leaving fiscal space to deal with stresses likely to emerge from high food and fuel prices.

**FIGURE F Revenue and Annual Development Program**
Bhutan

Real GDP has averaged more than 8 percent of GDP, but growth rates show high volatility…

**FIGURE A** GDP Level and Growth

...driven by fluctuating contributions from the electricity and construction of hydropower projects…

**FIGURE B** Contribution to GDP Growth, Production

...and fiscal prudence has resulted in manageable fiscal balances in recent years…

**FIGURE D** Fiscal Balance

...the nominal exchange rate has fluctuated but appreciated against the dollar in recent years.

**FIGURE F** Nominal Exchange Rate

...current account deficits averaged about 7 percent of GDP, but strong donor inflows brought positive balances…

**FIGURE C** Government Revenue

**FIGURE E** Balance of Payment

**Source:** BMACoordinate Framework Coordination Committee of Bhutan, Ministry of Finance, January 2010. The 2010/11 figures are Revised Estimates.
India

A strong agricultural rebound in 2010 bolstered GDP growth, but industrial performance fell in Q3…

**FIGURE A** Quarterly GDP by Sector of Production
(y-o-y change, in percent)

While wholesale price inflation moderated, core inflation increasingly drove overall inflation...

**FIGURE C** Components of Wholesale Price Inflation
(y-o-y change, in percent)

With a strong revival in exports and slowing of imports in the second half of 2010/11, the current account deficit stabilized...

**FIGURE E** Current Account Deficit
(in US$ billion)

…private demand was strong, while investment led the recovery in 2010. But recent quarters saw a strong drop-off…

**FIGURE B** Quarterly GDP by Sector of Use
(y-o-y change, in percent)

…and with a stable rupee-US dollar exchange rate, the inflation differential with major trading partners led to real appreciation.

**FIGURE D** Real Exchange Rate
(1993=100)

…non-food credit growth recovered, but is still low compared with the 2005–2007 period.

**FIGURE F** Non-food Credit
(y-o-y change, in percent)

Source: CSO, RBI, CEIC.
Nepal

Growth accelerated to about 5 percent, post-conflict, with consumption the main driver and investment and exports playing lesser roles…

**FIGURE A Real GDP growth decomposition by expenditure (in percent)**

…leaving high food and imported inflation to drive the CPI into double digits, though non-food inflation has been contained…

**FIGURE B CPI Nepal and India (y/y change)**

…but accommodative monetary policy and high remittance allowed consumption-fueled imports and high trade deficits. Slowing remittance brought reserve losses, lower M2 growth.

**FIGURE D Remittances and Trade Deficit (as percent of GDP)**

…leading to fewer real estate transactions and a sharp rise in speculative gold imports, while the asset quality of banks with high real estate exposure looks threatened.

**FIGURE F Land revenue and gold imports (in NRs. million)**

Rapid private sector credit expansion fueled a real estate boom, now busting on a liquidity crunch, lower M2 growth and central bank interventions…

**FIGURE C Overall and Primary Balances (in percent of GDP)**

…partly because fiscal prudence has been maintained...

**FIGURE E Private credit growth and interbank interest rates (in percent)**
Maldives

Economic growth is in sync with the fortunes of tourism...

**FIGURE A** Real GDP Growth, %

...which outstrip the contributions of government and construction...

**FIGURE B** Contribution to Real GDP

...while higher import prices drive up food inflation...

**FIGURE C** Inflation, Malé

...and Eastern visitors begin to overstep the Western trend.

**FIGURE D** Tourist Arrivals Composition

Trade plays a key role...

**FIGURE E** Trade, as a percent of GDP (including Services)

...while BOP pressure begins to undermine the currency peg.

**FIGURE F** Balance of Payments, % of GDP

Source: MMA.
**Pakistan**

Devastating floods in July–August 2010 interrupted recovery and resulted in weak real GDP growth...

**FIGURE A GDP Growth**

...mitigated by strong growth in workers’ remittances, bringing in a positive current account for the first three quarters of 2011...

**FIGURE B Current Account Balance**

...but the biggest concern remains the large fiscal deficit arising from flat tax revenue collection and expansionary spending...

**FIGURE D Fiscal performance (as % GDP)**

...leading the central bank to keep the policy discount rate high.

**FIGURE F Interest Rates**

...this, along with external disbursements, has improved the international reserve position, with mild appreciation of the exchange rate...

**FIGURE C SBP Forex Reserves and Nominal Exchange Rate**

...which contributes to persistent and worrisome double-digit inflation...

**FIGURE E Trend in Inflation...**
Sri Lanka

Strong and consistent real GDP growth...

**FIGURE A** Real GDP Growth, %

...driven by services and supported by manufacturing and construction...

**FIGURE B** Contribution to Real GDP, %

...combined with higher consumption to fuel GDP growth...

**FIGURE C** Contribution to Real GDP Growth, %

...though trade declined...

**FIGURE D** Trade, as a percent of GDP (Servicetrade not included)

...but inflows to financial account remain steady...

**FIGURE E** Balance of Payments, % of GDP

...and the Sri Lankan rupee appreciated against many major currencies.

**FIGURE F** Nominal Exchange Rates, LKR / Foreign Currency (Index, End April 2009 = 100)

Source: CBSL.
References


World Bank (2011a), South Asia Region Country Updates for Spring Meetings.


Developments in Global Commodity Markets

**Food Supply and Demand Projections**

According to FAO projections, the global cereals market is expected to tighten considerably in 2011 with total utilization exceeding world production. The evolution of global prices for the remainder of 2011 will depend mostly on harvests of the winter crop, with any negative news on weather and harvest leading to further price increases. The winter crop accounts for the bulk of annual global wheat output and the overall wheat area for 2011 is now forecast to increase only marginally by about 1 percent over 2010. Early indications suggest crop sowings were marginally reduced in the Russian Federation but close to last year’s levels in Ukraine.

Overall, the world stock-to-utilization balance for cereals appears to be in a relatively healthier state than in 2008. However, the wheat markets appear to be more susceptible to price volatility than rice markets. The stock-to-utilization ratio is forecast to be higher for rice than for wheat, which largely explains the expectations in wheat markets driving price increases in the last few months (Table A1.1).

Modest but steady increase in global grains consumption, variable global grains supply due to weather shocks, trade policy responses to shocks, and resulting draw-downs of stocks held by the major grains exporting countries have combined to increase both uncertainty in global grains markets and broader food price volatility since 2005. Global grains consumption has increased by 26 percent since 1998/99, driven by

<table>
<thead>
<tr>
<th>TABLE A1.1 World Wheat and Rice Balances (million tons)</th>
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<tbody>
<tr>
<td>Production</td>
</tr>
<tr>
<td>Supply</td>
</tr>
<tr>
<td>Utilization</td>
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<tr>
<td>Ending stocks</td>
</tr>
<tr>
<td>World stock- to utilization-ratio %</td>
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</tbody>
</table>

| Production | 440 | 458 | 455 | 466 | 2.3 |
| Supply | 544 | 569 | 580 | 591 | 1.8 |
| Utilization | 436 | 445 | 449 | 460 | 2.5 |
| Ending stocks | 111 | 125 | 130 | 136 | 4.8 |
| World stock- to utilization-ratio % | 24.9 | 27.4 | 27.2 | 29 | 6.6 |

Source: FAO. Production data refer to first year shown. Supply is measured by adding production to opening stock.
population growth in developing countries, higher consumption of animal protein in response to rising incomes, and increased demand for biofuels. In the same period grain production increased by 20 percent, but with erratic weather causing significant production variability over years. Global stock draw-downs compensated for the production shortfalls with overall stocks falling below 20 percent of consumption by 2006/07 (Figure A1.1). FAO projects annual cereals demand growth of 1.4 percent between 2000 and 2030, including demand for grains used for biofuels, compared to 2.2 percent during the preceding 40 year period. While such a long-term rate of demand growth may at first appear modest, it still requires an increase in supply, and in this respect to a very large base. This poses an increasing challenge for growth of agricultural productivity in the face of growing land and water constraints and greater incidence of extreme weather events. In some regions demand is outstripping supply, and unless there is growth in productivity they will become increasingly import dependent and vulnerable to variations of global prices.

The world grains stock-to-use ratio is often cited as a measure of both the physical liquidity of grain markets and an indicator of the likelihood of grain price increases. Historical evidence suggests that grain prices spike when global stock-to-use ratios are low. Both the FAO and USDA publish stock-to-use estimates. They reflect the difference between estimated production and carry-over stocks on the one hand, and estimated consumption and trade on the other. The stock-to-use measure thus includes (conceptually) all commercial, public and household stocks, whether or not the stocks in question are actually available for international sale. Over half of global stocks of rice and wheat are estimated to be held by China and India, where public-sector stocks play a major role. There is global uncertainty as to the triggers for release of these stocks, their actual magnitudes, and their condition, and it is not clear whether perceptions of these factors are adequately reflected in international prices. International markets, however, are clearly very sensitive to changes in perceptions of stocks likely to be available for sale. When the USDA downsized its estimates of US corn production in the fall of 2010, the upward impact on global corn prices was sharp and immediate. For the time being, stock-to-use ratios for major individual exporters tend to be a better indicator of grain price volatility than global stock-to-use measures. The US, for example, which accounts for 55 percent of global exports of corn, presently has a domestic corn stock-to-use ratio of 5 percent, an all-time low. This can be compared with a published—and historically ample—global corn stock-to-use ratio of 20 percent. For wheat, France, a major exporter to North Africa, has a 7 percent stock-to-use ratio, which is very low compared to the global figure of 26 percent. The bottom line is that improvements in understanding of which stocks will actually influence international prices may themselves help increase market price predictability.

The current global grains market situation is similar to the food price spike in 2007/2008 in three respects, as listed below:

- **Higher energy prices.** Agriculture is significantly more energy intensive than industry with inputs such as irrigation, fertilizers and transport most heavily affected.
- **Depreciation of the US dollar against major currencies.** Trade in many agricultural commodities is denominated in US dollars. Expressed in other currencies, price increases and volatility are less dramatic.
- **Financial investment in agricultural commodities remains high.** The Chicago Board of Trade alone accounted for an estimated US$ 5 trillion in wheat, corn and soy futures trading in 2010 (28 percent over the previous year, but down from US$ 6 trillion in 2008). Clearly the value of these financial transactions far exceeds the
respective US crops (although the exchange is also used for hedging transactions for non-US crops). However, there is no evidence that the significant increase of financial investment in agricultural derivatives influences the level of prices (see Annex 5).

Yet, the current situation also differs from 2008 in several critical respects. Firstly, recent international price increases are more widespread across agricultural commodities than in 2008 and include increases in sugar, edible oils, beverages, animal products, and raw materials such as cotton, rather than being predominantly driven by major grains. Secondly, weather is more clearly a major factor, and the frequency of droughts, floods and extreme temperatures seems to be increasing. On the positive side, trade policy responses so far have been less damaging than in 2008 when they greatly exacerbated shortages.

The bottom line is that agricultural commodity price uncertainty and volatility are likely to continue in the foreseeable future, largely due to the continuing uncertainty on the supply side. In the short-term, assuming a normal 2011/12 crop year, international food prices are expected to decline from the current peak, but they are likely to remain above their pre-2007 levels. Over the longer term, energy prices and total factor productivity are two key forces likely to shape world food price levels.

Since prices of staples remained 25–35 percent higher in many developing countries in 2009 compared to 2006, even when global prices fell, many farmers had an incentive to increase production. Higher local production allowed developing countries in aggregate to enter 2010/11 with higher production (3.8 percent), higher stocks (3.4 percent), and more trade (5.4 percent) than in 2009/10. This which helped offset sharp, weather-induced production declines in developed countries.

Moreover, the surge in wholesale food prices is slowly filtering into retail prices in poor and rich nations alike.

This rise in commodity prices is not restricted to a particular group of commodities but broadly affects agricultural, energy and metal prices. (Figure A1.2) In nominal prices, between 2009 and 2010, agricultural prices rose on average by 17.0 percent, energy prices by 26.5 percent and metals and minerals by 47.5 percent. Both the average agricultural and energy price indices have surpassed the peak reached during the food and fuel price rise of 2008. In fact, prior to the current price rise, agricultural, energy, and metals and mineral prices in 2008 reached their highest level since 1960.

Even though average real agricultural and metal and mineral prices in 2010 surpassed their 2008 levels, the average real agricultural price in 2010 is still below its record high of 280.65 in 1974. For 2010, the agricultural average real price index is 191.81. Average real commodity prices for agricultural energy and metals and minerals are also on an upward trend in 2010 after declining in 2009. The average real energy price in 2010 is 224.77, still below its historic high of 273.56 in 2008 (Figure A1.3).

Although each market has very different demand and supply dynamics, the uniformity of the price increases across a variety of commodity markets reflects both the interconnectedness of markets and the macroeconomic trends influencing prices in these markets. There are numerous factors that may be contributing to this commodity price surge and each factor may have a varying impact on the individual market’s price increase. For example, buoyant demand from emerging economies, supply constraints and restrictions to trade,

Commodity Prices

The recent rise in global commodity prices, from July 2010, is fueling headline inflation in both advanced and emerging economies. Of all the different commodity groups, the global price rises and price volatility of agricultural commodities has percolated to the top of the political agenda in many of the emerging economies and, in particular, the South Asia region’s economies.
particularly for food, have all contributed to the latest global commodity price rise. The role of emerging markets in driving this price hike is related to rising income levels in these economies coupled with an improved standard of living, population growth and increased urbanization. Also, the weakness of the US dollar has fueled the increase in commodity prices, particularly crude oil.

Agriculture

From mid-2010 there has been a steep rise in the price of most agricultural commodities, including food crops. In February 2011, the World Bank Food Price Index registered 292.61, slightly above the record high of 292.60 recorded at the height of the food crisis in June 2008. This is the largest annual increase since July 2008. The average growth for the first three months of 2011 is 33.1 percent over the previous year. The rise in nominal agricultural prices is a function of recent supply shocks and long-term structural change in global demand. In general, long-run worldwide demand for food has been driven by three factors: (1) rising population growth; (2) rising levels of affluence; and (3) increasing demand for biofuels. For instance, demand pressure from across the emerging world, particularly in China and India—with 2.5bn people between them—has placed upward pressure on the cost of food. Additionally, arable land is being lost with the increasing use of corn, wheat and sugar cane for the production of biofuel, ethanol in particular. Record ethanol production in the US will also swallow up nearly 40 per cent of the US corn crop in 2010/11, from 31 percent of output in 2008/09. This jump in food prices may push up long-term general price expectations. In addition, real food prices registered 249.9 in February 2011, which were last witnessed in April 1975. Real food prices have been steadily rising since January 2001 after declining from record highs in November 1974. (Figure A1.4)

Average food price volatility has increased in the 2000s, with volatility in grains, vegetable oil and soybeans rising each decade (Figure A1.5). Since the 1960s, sugar has consistently been the most volatile agricultural commodity over each decade, while meat prices have been least volatile on average. The increase in volatility is due to an increase in the frequency of supply shocks combined with limited reserves and increase in the production of biofuels, increase in global macroeconomic volatility post-2000 and the emergence of India and China.

Falling stocks and rising consumption-to-production drive up cereals prices (Figure A1.6). In the second half of 2010, cereals prices grew by 17.9 percent on average, with corn prices contributing 73.2 percent to the increase. This trend has continued, with February 2011 recording the highest year-on-year growth for cereals: 54.1 percent since August 2008. A rapid rise in corn prices since July 2010 has been the main driver of growth in cereals prices registering 15 percent and 33 percent quarter-on-quarter growth in the third and fourth quarters of 2010. Corn prices hit 30-year highs with stocks dwindling rapidly. Given that the US is the world's
largest corn producer, the decline in US corn stocks-to-demand is a harbinger of higher corn prices in the future. In 2009/10, for the first time since 2006/07, consumption surpassed production with corn stocks declining by 1.8 percent. Corn (US No. 2, Yellow) prices rose by 52.9 percent in January 2011, its highest annual growth rate since August 2008. The growth rate in corn prices has been rising exponentially since July 2010, averaging 34.6 percent in the last seven months. The USDA expects corn stocks to decline by 3.5 percent in February 2011 from those of the previous month. Increased demand for high-fructose corn syrup from countries such as Mexico, as they substitute away from higher priced sugar, contributes to higher demand for corn. China, after years of self-sufficiency, was a net importer of corn in 2010, partly because of drought—bringing in nearly 1.3 million tons compared to 47 thousand metric tons the previous year. This aggravated the global shortage of corn stocks. In addition, rising wheat prices prompted corn substitution, further raising corn consumption, lowering stocks and raising prices.

In February 2011 wheat prices hit their highest level in 34 months. In February benchmark wheat prices escalated on average by 79.4 (y-o-y), reaching a US$ 350 per ton. This is the highest rate of increase since April 2008. Wheat prices have been affected by a string of supply shocks: drought-induced crop failures in leading cereals exporters Russia, Ukraine and Kazakhstan; concern about the La Nina weather phenomenon bringing dryness in the crop belts of Argentina (the world’s second-largest corn exporter) and Brazil; and a cold snap in the US, the world’s biggest wheat exporter, all of which make approaching harvests seem fragile. Poor harvests have led traditional wheat exporters to impose export restrictions. The cumulative impact of these supply shocks has already dented wheat stocks. February 2011 production fell by 218 thousand metric tons, a decline of 0.12 percent over the previous month.

China, the world’s biggest wheat producer, with 18 percent of the global harvest, may have to buy large quantities on global markets, putting even more pressure on wheat prices. These production shocks, coupled with narrowing of domestic stocks worldwide, have resulted in hoarding of wheat by North African and Middle Eastern countries, which are relatively dependent on international markets for food supplies. Since wheat is a large contributor to food inflation, governments are prone to hoarding it as a hedge against shortages. This “accordion effect” of buying more now to guard against higher prices later serves to bring forward price increases. Between June 2010 and December 2010, the price of wheat increased by large amounts in Kyrgyzstan (54 percent), Bangladesh (45 percent), Tajikistan (37 percent), Mongolia (33 percent), Sri Lanka (31 percent), Azerbaijan (24 percent), Afghanistan (19 percent), Sudan (16 percent), and Pakistan (16 percent). Overall, high prices have induced farmers across key producing regions (the European Union, Russia, and Ukraine) to increase acreage. The concerns about fragility notwithstanding,
better yields are expected for 2011, barring adverse weather events similar to 2010.

Rice prices recorded in March 2011 declined 1.9 percent over the previous year. This represents 15 consecutive months of declining rice prices. The falling rice price is indicative of rising levels of production and ample global stocks. Good harvests in Thailand and Vietnam, the world’s two largest exporters, keep the export market well supplied and the cost of the rice below the record level of US$ 960 per ton in May 2008. However, month-on-month the benchmark rice price has risen between July and December 2010—partly in response to rice importers in Asia having stepped up buying. In the last week of January 2011, Bangladesh, one of the world’s top three rice importers, raised its overseas buying target to 1.2m tons, up from an initial estimate of 600,000 tons. Coupled with this, crop failures in Indonesia brought on by heavy rain are contributing to the recent price rise, given that Indonesians eat more rice per capita than any other country. The domestic price of rice was significantly higher in Vietnam (46 percent) and Burundi (41 percent) between June–December 2010. Rice prices have increased in line with global prices in Indonesia (19 percent), Bangladesh (19 percent), and Pakistan (19 percent). These Asian countries are large rice consumers, especially among the poor. Rice price increases in Sri Lanka (12 percent) and China (9 percent) were relatively moderate in the second half of 2010, while in Cambodia and the Philippines the retail price of rice remained largely unchanged during this period.

Both corn and soya bean meal are important ingredients in animal feed as carbohydrate and protein. The tightening market partly reflects stronger appetites for meat in emerging markets. The rising incomes in emerging markets have shifted consumption towards middle-class foods with high protein content. Beef prices rose from US$ 2,648 to US$ 4,140 per ton between October 2009 and March 2011, representing close to a 56 percent increase. The rising average price of meat and poultry is likely to continue in 2011 if the forecast of rising demand by mainly BRIC economies is realized. In addition, rising demand for meat has increased imports of soya bean meal which rose in China by 18.6 percent in 2009/10 (y-o-y). The demand for milk powder is also a “middle-class” good whose price has risen in the past year with increased demand from Brazil, China and Russia.

Unlike the food price hike of 2007/08, there is a shift in the composition of demand towards, not only mean, but also fats and oils and sugar are contributing more to the rise in food prices. Between July 2010 and March 2011, fats and oils contributed 40 percent to the average annual growth.

Sugar prices rose consistently throughout the global financial crisis, hitting a 30-year high. US raw sugar prices hovered close to 40 cents per pound between January 2010 and March 2011, the highest since January 1975. World sugar prices rose by approximately 100 percent between May 2010 and January 2011, and declined marginally by March 2011. Prices have been driven by supply shortfalls from Brazil, the largest exporter, and weather shocks in Australia. Globally, stocks of sugar declined by 6.4 percent in the September-October marketing seasons of 2008/09 and 2009/10. Recently, cyclone Yasi provided a supply shock to worldwide sugar output, damaging cane crops in Australia, the world’s third-largest exporter of the sweetener. In addition, failing expectations for the crucial Indian crop, and speculation that Russian imports could be brought forward, contributed to rising global sugar prices. Rising sugar consumption in BRIC and developing countries has also helped fuel the price rise.

Vegetable oil prices have risen at an annual rate since October 2009. Since the fourth quarter of 2010, coconut oil prices risen every month above 100 percent annually. Coconut oil prices have risen by 192 percent between October 2009 and January 2010. With most South Asian countries using coconut oil for cooking, this will have an impact on the region. For instance, the price of cooking oil rose by 43 percent in Bangladesh over the past year.

Fertilizer prices have risen steadily by 47 percent between September 2009 and January 2011. Fertilizer prices are affected by crude oil prices, with modern farming relying on hydrocarbons in the form of fertilizer and fuel for tractors and transport (Figure A1.7). Thus, fuel prices influence fertilizer prices which in turn influence food prices. Therefore, as the growth of India and China impacts the cost of energy this inflates the input cost and subsequently the price of food. Moreover, food prices are less volatile than fertilizer prices; the latter having risen more than food prices during the 2008 food price crisis, lowering the relative food-to-fertilizer price ratio (Figure A1.8). The relative food-to-energy price ratio was constant during the food-price crisis of 2008. This shows that farmers may not be able to reap the full benefits of higher food
prices because input costs, such as fertilizer and fuel prices, may be rising faster than the earnings from their food production.

**Energy and Metals**

Crude oil prices reached their highest levels in two years in January 2011, surpassing US$ 100 a barrel.\(^{20}\) The surge continued through March, when they were 36 percent higher than a year earlier. The inability of production to keep up with growing demand has led to a decline in world stocks by 0.1 percent and net demand rising by 0.7 percent annually in 2010. Though stocks are falling, they are still at comfortable levels, unlike the 2008 fuel price crisis. When the global financial crisis depressed world oil demand, the Opec cartel’s effective idle capacity surged to a peak of more than 6 million barrels per day in early 2009. Since then, rising consumption in emerging markets has eroded Opec’s effective spare capacity to below 5 million barrels per day, by the IEA’s estimate. Recent political uncertainty in the Middle East-North Africa region is limiting supply further.

Moreover, there has been a huge structural shift in oil demand. Fifty years ago, the centre of gravity for demand was in the US and Europe. Nowadays it has shifted to Asia. Oil demand in emerging markets provides the bulk of incremental growth. We expect non-OECD oil demand growth to expand at four times the rate of OECD growth in 2011.

With rising crude oil prices, alternate sources of energy such as natural gas are becoming increasingly popular. However, the rising supply of shale gas in North America is keeping gas prices low. The US residential gas price has fallen steadily from US$ 15.50 per thousand cubic feet to US$ 9.80 between August 2010 and January 2011.

Since coal is relatively cheaper than crude oil, rising demand has led to rising coal prices throughout 2010. In January 2011, coal prices rose to US$ 137 per ton, an annual increase of 41.2 percent. Bad weather has hit key coal exporters Colombia and Australia, as the market is extremely vulnerable to cold weather. Furthermore, China is poorly endowed with alternative energy sources and the speed of its coal-based electricity expansion has forced it to start importing coal for the first time. China uses coal to produce electricity, needed for smelting aluminum. This too has pushed up coal prices.

**FIGURE A1.7 Fertilizer Vs Crude Oil Price Index**

Although aluminum prices rose by 32 percent to US$ 2,555 per ton from mid-2010 to March 2011, aluminum remains a long way from its peak of US$ 3,380 per ton, in July 2008. (Figure A1.9) Aluminum is used for numerous consumer and industrial products, from cars and aircraft to drinks cans. Thus aluminum prices are also rising with growing demand from emerging markets, given that it is the most widely used metal after steel. This has pushed the benchmark aluminum price to US$ 2,500 per ton for the first time since the collapse of Lehman Brothers. Aluminum prices may continue on this upward trajectory due to supply constraints in the market. China has curbed
production of aluminum in order to reduce energy consumption.\textsuperscript{21} Electricity accounts for 40 percent of that country’s production costs, and Copper prices have historically been higher than aluminum prices. Indeed, copper is now nearly four times as expensive as aluminum—the highest such ratio on record, reaching a peak of US$ 9,868 per ton in February 2011—a 52 percent increase over mid-2010. Demand for copper is driven mostly by its use as a conductor of electricity. China’s expansion of its electricity grid is fueling the worldwide price of copper, with imports of the metal hitting record levels. The limited supply response is contributing to the price hike. Copper prices reached US$ 10,000 a ton in the first week of February 2011.

**Outlook**

Food prices are expected to rise 8 percent above 2010 levels, assuming a normal crop year, and that oil prices do not rise further wheat and maize are expected to average 13 and 12 percent higher than 2010 levels while rice prices are expected to remain almost unchanged. Soybean and palm oil prices are expected to be 11 and 17 percent higher.

Metals prices are expected to rise by almost 20 percent in 2011 on persistently strong demand, led by China, and weak supply response for some metals, notably copper and tin.

**Notes**

1. This section draws heavily on World Bank (2011a, 2011b).
2. FAO (2002).
4. The USDA made major revisions to its estimates of Chinese stocks in 2001, but this had little impact on global price behavior at the time, possibly because China in 2002/2003 was a significant grains exporter (Wright 2009, op. cit).
5. USDA (2011).
10. For instance, oil price increases impact the price of food: a 10 percent increase in crude oil prices is associated with a 2.7 percent increase in the World Bank Food Price Index. See Baffes (2010).
11. The World Bank Food Price Index is deflated using the World Bank Manufactures Unit Value Index.
12. In the run-up to the 2007/08 crisis, the OECD estimated that about 60 percent of increased demand for corn was due to policies on biofuels and energy in developed countries, which could lead to similar increases in the future.
13. Cereals comprise corn, rice and wheat and barley.
14. Russia and Ukraine placed a moratorium on exports with the onset of drought.
15. The United Nations’ Food and Agriculture Organization announced that 12.75 million acres of China’s 35 million acres of wheat fields had been affected by drought.
16. Rice was a key reason for the contagion that precipitated the 2008 crisis, when many large exporters banned its export.
17. Indonesia imported 1.2m tons of rice this year.
18. It takes about 11 pounds of grain to produce 1 pound of beef; 7 pounds of grain to produce 1 pound of pork; 3 pounds of grain to produce 1 pound of chicken.
19. BRIC countries represent 36.4 percent of total sugar consumption in 2010/11, a rise 2 million metric tons over previous year.
20. In late-February 2008, crude oil reached a record high, above US$ 146 per barrel.
21. Aluminum production is energy intensive. It takes about 15.7 kilowatt hours of power on average to produce one kilogram of workable aluminum.
In the context of the post-2005 commodity price boom, speculation has been one of the most frequently discussed and, perhaps, poorly understood concepts. We note that the financial and popular media speculates widely, giving most attention to investment fund activity in commodity futures exchanges; some say the funds have caused a speculative bubble, while others argue that they have not only not affected prices at all but that they have injected liquidity into the market, thus facilitating price discovery. We argue here that although the views on the effects of such investment activity on commodity markets are very strong and diverse, the empirical evidence is weak, showing small or no impact. We conclude by noting that while it is unlikely that investment fund activity will alter long-term price trends, it may induce higher price variability by exacerbating the length and the amplitude of price cycles.

What Is Speculation?

Kaldor (1939) defined speculation as “…the purchase (or sale) of goods with a view to resale (repurchase) at a later date, where the motive behind such action is the expectation of a change in the relevant prices relatively to the ruling price and not a gain accruing through their use, or any kind of transformation effected in them, or their transfer between markets.” Thus, according to Kaldor, most financial activities would be classified as speculation. In the context of the current debate, six types of “speculative” activities have been mentioned in the literature (see Table A2.1). First is that it takes place in the futures exchanges. These speculators are indispensable entities of commodity futures exchanges since they provide the necessary liquidity and ensure that the market clears.

A second type of speculative activity is when market participants hold inventories beyond what is justified by business needs or when they hold large quantities of commodities with the expectation that an upward movement in prices will generate profits (often referred to as hoarding). Unless such activity entails market manipulation, holding inventories is the inter-temporal equivalent of Adam Smith’s “invisible hand”: traders buy at current prices to sell later when (in their opinion) the market will be tight, thereby balancing the market and hence reducing price variability. There is no evidence that hoarding took place during the recent boom, as known inventories of most (non-perishable) agricultural commodities reached historical lows. Two exceptions may be rice, during mid-2008 (in various East Asian countries), and cotton in late 2010 (in China).

Third, market manipulation often takes place. There have been many such cases. For example, in the 1950s US onion producers argued that traders in the Chicago Mercantile Exchange cornered the market. This led to the passage of the Onions Futures Act which prohibited futures contracts on onions. Other cases include that of the Hunt brothers, who attempted to corner the silver market in the late 1970s and early 1980s; Sumitomo’s chief copper trader, Yasuo Hamanaka, who cornered the copper market in the 1990s; and British Petroleum’s cornering of the propane market in 2006 (it resulted in a US$ 300 million fine). Although there are no known (or proven) cases for market manipulation during the recent boom, even if cases become known, they are likely to be isolated events.

The last three are financial activities often pinned to speculation: hedge funds, commodity trading accounts (or advisors), and investment funds (including various investment, pension, and sovereign wealth funds):

- **Hedge funds** undertake investment and trading activities in a broad range of assets, including commodity markets. The fund may trade and invest in commodity asset classes in order to “hedge” the diverse risks inherent in their portfolios. In such a case, taking a position in the futures market for a particular commodity or commodity class can represent an investment
in a non-correlated asset that provides diversification benefits to the overall portfolio. Hedge funds have existed for decades and their effect on commodity markets is typically short term (i.e., they affect short-term price movements).

- **Commodity trading advisors (CTAs)** are asset managers who operate almost exclusively in commodity markets. They invest in portfolios under management and for clients with the objective of earning profits from market volatility. Because CTAs use fundamentals and/or technical analysis as their guiding principles, they may enhance price discovery and thus reduce market price variability since they identify movements in fundamentals in advance of other market participants.

- **Investment funds**—relatively recent phenomena—represent in many respects the flow of “new” money into commodity markets. It is this type of activity that rests (or should rest) at the core of the current debate. The next paragraphs elaborate on the origins of this investment activity.

### The Origins of Investing in Commodity Markets

The commodity price increases of the last decade have often been linked to “new” money that found its way into commodity markets, setting the stage for the so-called “financialization” of commodities. A number of events led to this. First, the publication of an influential book argued that commodities should have been part of every investor’s portfolio (Rogers 2004). A little later Gordon and Rouwenhorst (2006) compared a hypothetical commodity-based portfolio with bond and equity portfolios and concluded that the risk premium on commodity futures is essentially the same as equities, commodity futures returns are negatively correlated with equity returns and bond returns, a reflection of the different behavior of such asset classes over the business cycle.

Second, during the early part of the past decade, investment fund managers—including those of sovereign wealth and pension funds—notes that existing classes of assets (such as money funds, equities, and bonds in both developed and emerging economies) were becoming increasingly correlated amongst themselves. In their search for new uncorrelated assets they began including commodities in their portfolios.

Third, during the past decade or so, many high-income countries have pursued lax monetary policies which may have caused what many describe as “excess liquidity”. Many authors (e.g., Eckaus (2008), Wray (2008) and Calvo (2008)) have argued that such liquidity may have found its way into commodity markets, causing the “third” price bubble (following the equity/dot.com and housing bubbles).

Finally, numerous authors argued that commodities (especially in the extractive industries) have entered a super cycle, that is, a prolonged period of increasing

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<table>
<thead>
<tr>
<th>Activity</th>
<th>Function</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speculation in futures exchanges</td>
<td>Important activity for the functioning of futures markets</td>
<td>Injects liquidity into the market and improves price discovery</td>
</tr>
<tr>
<td>Market manipulation</td>
<td>Isolated cases such as the cornering of the copper and silver markets</td>
<td>These are illegal activities</td>
</tr>
<tr>
<td>Building up inventories</td>
<td>Accumulation of physical stocks with the expectation that price increases will generate profits</td>
<td>Traders buy at current prices to sell later, when the market will be tight, thus balancing the market and reducing price variability</td>
</tr>
<tr>
<td>Commodity Trading Accounts (CTAs)</td>
<td>Professionally managed commodity investment vehicles that take consideration of market fundamentals</td>
<td>They enhance price discovery since they examine the fundamentals very carefully and use technical analysis</td>
</tr>
<tr>
<td>Hedge funds</td>
<td>Short-term profit seeking</td>
<td>Believed to be associated short term volatility (i.e., day-to-day)</td>
</tr>
<tr>
<td>Investment funds</td>
<td>Taking long positions in futures exchanges by investment, pension, and sovereign wealth funds</td>
<td>They may amplify commodity cycles due to their size and nature of investment, but are unlikely to affect long-term trends</td>
</tr>
</tbody>
</table>
prices. Heap (2004), in an influential report argued that a super cycle is underway, driven primarily by economic growth (and hence commodity-demand growth) in China. He noted that there have been two super cycles over the past century (at the beginning of the 20th century and during the Korean War). Indeed, World Bank (2009) showed that as of the early 1990s, demand for metals by China was so large that it effectively reversed global metal intensity (i.e., metal use per unit of world GDP) and by 2010 it reached levels similar to those of the early 1970s. Econometric work by Cuddington and Jerrett (2008) and Jerrett and Cuddington (2008) for the metals market confirmed the super cycle hypothesis.

Blaming “Speculators”: Who Said What?

Historically, blaming speculation in futures markets has originated from politicians and populists, often reflecting ideology or the search for scapegoats to blame for unpopular price increases (Jacks 2007). Most economists and market participants, however, have been strong defenders of futures markets, which are viewed (rightly) as the most important price discovery mechanisms. Surprisingly, the “speculation” debate of the recent commodity boom appears to have divided even economists and market participants, as the rest of this section elaborates.

Krugman, in a series of blogs and editorials, rejected the view that speculation fueled the commodity boom. He argued (New York Times, May 13, 2008) that, “If the price is above the level at which the demand from end-users is equal to production, there’s an excess supply—and that supply has to be going into inventories. End of story. If oil isn’t building up in inventories, there can’t be a bubble in the spot price.” Krugman also dismissed the idea that commodity trading activity in futures exchanges may have affected spot commodity prices at all: “... a futures contract is a bet about the future price. It has no, zero, nada direct effect on the spot price” (New York Times, June 23, 2008).

Wolf shared similar views. He wrote in a Financial Times editorial (May 13, 2008) that “if speculation were raising prices above the warranted level, one would expect to see inventories piling up rapidly, as supply exceeds the rate at which oil is burned. Yet there is no evidence of such a spike in inventories.” Similarly, Wright (2009) noted that if long futures positions were behind the grain price spike of 2008, stocks would have increased. Frankel cited the Congressional testimony by the chief economist of the Commodities Futures Trading Commission to support in his weblog (July 25, 2008) that, “The evidence does not support the claim that speculation has been the source of, or has exacerbated the price increases.” The evidence refers to Congressional testimony (April 3, 2008), which concluded that: "Looking at the trends in the marketplace, combined with studies on herd behavior and the impact of speculators in the markets, there is little evidence that changes in speculative positions are systematically driving up crude oil prices.”

Verleger (2009: 1), citing analysis and data from the International Energy Agency (2009), concluded at his US Commodity Futures Trading Commission testimony that the 2007/08 crude oil price spike was caused by the incompatibility of environmental regulations with the global crude supply. Speculation, he argued, had nothing to do with the price increases. Yet, Verleger (p. 2) acknowledged that the possible liquidation of futures positions was one of the key reasons tied to the collapse of oil prices from July 2008 to December 2008; which begs the question why the decline in oil price would have been caused by liquidation of futures positions when the increase was not caused by activities in that sphere?

The IOSCO Task Force of Futures Markets (2009), formed at the request of the G-8, reviewed several reports by international organizations, central banks and regulators and concluded that economic fundamentals, rather than speculative activity explained commodity price changes during the boom period. The report recommended that regulators should (p. 3): (i) understand with greater clarity the role of speculative and commercial activity in commodity futures markets; (ii) gain a more comprehensive view of trading activities in, and the structure of, the underlying markets that may affect price formation on commodity futures markets; and (iii) detect, deter, and prosecute manipulation and other trading abuses involving commodity futures, and related commodity markets. IOSCO’s conclusions, however, are somewhat inconsistent. If regulators do not have clarity on the role of speculative and commercial activity in commodity futures markets and they need to gain a more comprehensive view of trading activities, how did they conclude that such activities did not play a role during the recent boom?

At the other end of the spectrum, Soros (2008) called commodity index trading at his US congressional
testimony intellectually unsound, potentially destabilizing, and distinctly harmful in its economic consequences. Eckaus (2008) noted that while the most frequently cited factors—increased demand, dollar depreciation, geopolitical concerns, and issues regarding depletion of resource—played some role in the crude oil price increases after 2004, speculation played a much larger role than most analysts believe. After comparing the oil price increases with the dot.com and housing bubbles, he asked (p. 8): “Is a speculative bubble irrational? No, it is rational to ride along and trade in a speculative bubble as long as it is expanding. The moment of truth comes only at the end, when the bubble bursts.”

Similarly, Khan (2009) examined a variety of indicators that might have affected commodity prices and concluded that while market fundamentals played a key role in the run-up of the oil prices after 2003, the price increase during the first half of 2008 was a price bubble. He argued that in the absence of speculative activity, oil prices would have been in the range of US$ 80–90 per barrel (oil prices averaged a little more than US$ 100 per barrel during the first half of 2008) and concluded that in order to avoid similar episodes in the future, more regulation should be put into place.

Medlock and Jaffee (2009) attributed the oil price increase of 2008 to the presence of non-commercial players, who (p. 3) “have increased their footprint in the marketplace dramatically since the late 1990s”. They also argued that trading strategies of financial players may have influenced the correlation between the US dollar and the price of oil. Wray (2008) argued that the commodity price increases was the boom following the equity and housing of the late-1990s and mid-2000s. He linked all three booms to the excessive monetary ease and limited degree of regulation and supervision of financial institutions, and assigned responsibility to various money managers who created numerous esoteric and complex instruments and practices that (p. 7) “spread as quickly as a deadly virus in a sci-fi flick”.

Calvo (2008), responding to Krugman and other commentators, noted that speculation and low inventories are not necessarily inconsistent with each other, and concluded that increases in commodity prices during 2007/08 were a result of portfolio shift against liquid assets by sovereign investors, sovereign wealth funds, partly triggered by lax monetary policy in the US. Roubini (2009) said of the early-2009 crude oil price increase: “…improving fundamentals … justify oil going from $30 to maybe $50. I think the other $30 is all speculative demand feeding on it—speculators and herding behavior.” De Schutter (2010) concluded that a significant portion of the increases in food price and price volatility during 2007 and 2008 could only be explained by the emergence of a speculative bubble.

**Yet, the Empirical Evidence Has Been Weak**

The empirical evidence on whether financial investment in commodities contributed to the recent boom is, at best, mixed (see Table A2.2). One of the first empirical studies was the IMF’s 2006 *World Economic Outlook* (IMF 2006). Based on a VECM model and monthly data for the 1995–2006 period, it examined the markets of crude oil, copper, sugar, coffee, and cotton and found no evidence that speculative activity affects price levels in either the short- or long-term. The IMF reached a similar conclusion in its 2008 *World Economic Outlook* when it examined 50 commodities and weekly data for the 1997–2008 period. Büyükaşhın and Harris (2009) used daily data from 2000 to 2009 and, based on Granger causality tests, found no statistical evidence that the numbers of contracts held by any group (including index traders) affected crude oil prices. A similar conclusion was reached by the US Commodity Futures Trading Commission (CFTC 2008).

Haigh, Hraniova and Overdahl (2007), using VAR and daily data for the natural gas and crude oil market, failed to observe a link between price volatility and changes in hedge fund positions. Kilian and Murphy (2010) examined the crude oil market within a VAR framework over 1973–2009 and eliminated speculation as an explanation of the 2003–08 crude oil price surge.

Irwin, Sanders, and Merrin (2009), and subsequently Sanders and Irwin (2010), based on results of Granger causality tests between open positions and futures prices for various agricultural commodities, expressed strong skepticism that futures trading activity had led to bubbles in agricultural futures prices. Verleger (2009) argued that money-flows into oil contracts did not affect futures markets; his conclusion was based on simple correlation analysis. Moreover, in a subsequent study Verleger (2010: 65) attributed the stability of energy prices during December 2009 and January 2010 partly to the increase of passive investors who allocated a portion of their portfolios to commodities, and noted further that credit for the absence of a
price surge during these two months should be given to the financial engineers who had the foresight to integrate energy markets with investors. Till (2009), based on daily data, examined the crude oil market and concluded that the balance of speculators in the US oil futures and options market was not excessive relative to hedging. Stock and Whaley (2010) regressed financial returns of twelve agricultural commodity prices (weekly data) on a number of variable including positions by speculators and concluded that inflows and outflows from commodity index investments do not cause futures prices to change.

Other authors have reached somewhat different conclusions. Robles, Torero, and Braun (2009) identified speculative activity in the futures market as a source of the 2007/08 agricultural commodity price

TABLE A2.2 Summary of Empirical Evidence

<table>
<thead>
<tr>
<th>Study</th>
<th>Model characteristics</th>
<th>Key conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LITTLE OR NO IMPACT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haigh, Hranaiova, and Overdahl (2007)</td>
<td>VAR, daily data, 2003–04, gas and crude oil</td>
<td>Failed to observe a link between price volatility and changes in hedge fund positions.</td>
</tr>
<tr>
<td>CFTC (2008)</td>
<td>Granger causality, daily data, crude oil</td>
<td>Failed to find that changes of traders’ positions caused changes in crude oil prices</td>
</tr>
<tr>
<td>Büyüksahin, and Harris (2009)</td>
<td>Granger causality, daily data, crude oil</td>
<td>Failed to find that changes of traders’ positions caused changes in crude oil prices</td>
</tr>
<tr>
<td>Verleger (2009)</td>
<td>Correlation analysis, crude oil</td>
<td>Money-flows into oil contracts have not affected oil prices</td>
</tr>
<tr>
<td>Till (2009)</td>
<td>T index, daily data, 2006–09, crude oil</td>
<td>The balance of outright speculators in the US oil futures and options markets was not excessive relative to hedging</td>
</tr>
<tr>
<td>Irwin, Sanders, and Merrin (2009)</td>
<td>Granger causality, daily data, 2003–08, ten agricultural commodities</td>
<td>Positions of long-only index funds do not lead futures prices.</td>
</tr>
<tr>
<td>Sanders and Irwin (2010)</td>
<td>Granger causality/T index, weekly data, 2006–09, twelve agricultural commodities</td>
<td>The evidence that index-fund positions impact returns across commodities is scant.</td>
</tr>
<tr>
<td>Stoll and Whaley (2010)</td>
<td>Granger causality, weekly data, 2006–09, twelve agricultural commodities</td>
<td>Inflows and outflows from commodity index investment do not cause futures prices to change.</td>
</tr>
<tr>
<td><strong>MODERATE IMPACT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gilbert (2007)</td>
<td>Granger causality, monthly data, 2003–08, five metals and four food commodities</td>
<td>Some evidence that index investment may have been responsible for raising some commodity prices during the recent boom.</td>
</tr>
<tr>
<td>Plastina (2008)</td>
<td>Granger causality, monthly data, 2006–08, cotton</td>
<td>Investment fund activity might have pushed cotton prices 14 percent higher.</td>
</tr>
<tr>
<td>Robles, Torero, and Braun (2009)</td>
<td>Granger causality, monthly data, 2002–2008, food commodities</td>
<td>Speculative activity might have been influential.</td>
</tr>
<tr>
<td>Tang and Xiong (2010)</td>
<td>Co-movement analysis, daily data, 1998–2009, twenty-four non-energy commodities</td>
<td>Large commodity price volatility of recent years was related to the presence of index investors.</td>
</tr>
<tr>
<td>Silvennoinen and Thorp (2010)</td>
<td>Bivariate conditional volatility, daily data, twenty-four commodities (agriculture, metals, and energy)</td>
<td>Higher commodity returns volatility is predicted, among others, by financial traders’ open positions.</td>
</tr>
</tbody>
</table>
Can Investment Fund Activity Affect Commodity Prices?

There are four reasons why that may be so. First, investment in commodities is a relatively new phenomenon, and funds have to date flowed mostly in, not out, implying that some markets may have been subject to extrapolative price behavior; that is, high prices leading to more buying by investment funds, in turn leading to even higher prices, and so on.

Second, index funds invest on the basis of fixed weights or past performance criteria. Hence, investment behaves differently from what market fundamentals would dictate, especially in the short run.

Third, most of the sovereign wealth funds (a key source of index-fund activity) are commodity-based. Therefore, when commodity prices increase, the value of these funds goes up, in turn increasing their exposure to commodities.

Fourth, the large size of these funds compared to commodity markets may exacerbate price movements as well. While there are no precise estimates on their size, a broadly accepted range, as of mid-2008 was US$ 250–300 billion (Masters 2008). A report by a major commercial bank estimated that an additional US$ 60 billion went into commodities during 2009, placing the 2009 total estimate to US$ 230–240 billion, marginally lower than in 2008 due to lower commodity prices. A more recent estimate by a major investment bank (October 2010) placed the estimate at US$ 350 billion. In view of the recent spike, it may have exceeded US$ 400 billion. Almost two-thirds of those funds are invested in energy markets. Although these amounts represent a little more than 1 percent of the global value of pension and sovereign wealth fund holdings in 2009 (the global value of these two groups was estimated at US$ 20 trillion and US$ 4 trillion) they are large compared to the size of commodity markets. Or, as Soros characteristically put it, “… the institutions are piling in on one side of the market and they have sufficient weight to unbalance it”.

Tentative Conclusion

In the context of the post-2005 commodity price boom, the question is often formulated as to whether “speculation” was behind the commodity price increases. There are two problems with the way in which the question is posed. Firstly, among the numerous types
of speculation often discussed in the literature, only one matters: investment-fund activity in commodity futures exchanges. Second, it is unlikely that even this type of activity would have a monotonic (i.e., increasing) impact on commodity prices.

Thus, the question should be reformulated along the following lines. “Is investment fund activity partly responsible for post-2005 commodity price movements?” A likely answer to this question could be: “Any commodity-related activity on the financial side is unlikely to alter long-term price trends, which will ultimately be determined by market fundamentals. But, such activities can induce higher price variability in the sense of exacerbating the length and the amplitude of price cycles.”

Notes

1. John Baffes, 8–1880, jbaffes@worldbank.org, June 1, 2011.
South Asian Food Demand and Supply Balances

**Afghanistan:** Grain production for 2010 is projected to be about 11 percent lower than in 2009, resulting from a drop in wheat production, from 5.1 million tons to 4.5 million tons. Afghanistan is therefore likely to face a wheat deficit of at least 1 million tons this year, with more details emerging toward the end of the growing season that runs to April. Nevertheless, the deficit is expected to be roughly twice that of the annual average of about 0.5 million tons over the past decade, although it has reached 2.3 million tons.

**Bangladesh:** Total rice production rose from 26.2 million tons in fiscal 2008 to 32.1 million tons in 2010. Aggregate rice (paddy) output in 2009 reached a record 50 million tons. For 2010, the output of (irrigated) main season rice is 28.5 million tons, or 3 percent above last year’s level. The winter wheat crop has also been good, with production at 1 million tons. Total wheat production has risen from 7.4 million tons in fiscal 2006 to 8.5 million tons in 2010. Despite this, rising grain consumption has led to an increasing need for imports. Bangladesh is likely to require higher grain imports this year above the 3 million tons of recent years to be able to retain public stocks at their target level of 1.5 million tons. Wheat imports have been high, reaching 1.8 million tons, which is double the level of domestic production. The Bangladesh government has been issuing tenders and buying relatively small shipments. The government is reportedly planning to purchase about 1 million tons by end-June 2011, but it has decided not to buy domestically in order to avoid pressure on prices (Table A3.1).

**India:** Food-grain production suffered a significant set-back following the 2009 shortfall in monsoon rains, but recovered well with the near-normal 2010 monsoon. The estimate for fiscal 2011 pegs output at around 232 million tons, about 6.4 percent above that for 2010. Despite the good 2010 monsoon, production is estimated to have been lower in fiscal 2011 than the recent record in fiscal 2009. At the same time, grain stocks (mainly rice and wheat) reached 40–50 million tons, which far exceeds secure storage capacity. Food grain output increased by only 1.6 percent in fiscal 2009, and is estimated to have declined by 7 percent in 2010. Wheat is a winter crop and was not strongly

### Table A3.1 Bangladesh: Production and Imports of Food Grain

<table>
<thead>
<tr>
<th></th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>Actual (Till Mar 13, 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>28.9</td>
<td>30.9</td>
<td>32.3</td>
<td>35.4</td>
<td>2.1</td>
<td>0.6</td>
<td>0.1</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Aus</td>
<td>1.5</td>
<td>1.9</td>
<td>1.7</td>
<td>2.7</td>
<td>2.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aman</td>
<td>9.7</td>
<td>11.2</td>
<td>12.2</td>
<td>13.5</td>
<td>12.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boro</td>
<td>17.8</td>
<td>17.8</td>
<td>18.3</td>
<td>19.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>0.8</td>
<td>0.8</td>
<td>1.0</td>
<td>1.2</td>
<td>1.4</td>
<td>2.4</td>
<td>3.4</td>
<td>2.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Total</td>
<td>29.8</td>
<td>31.7</td>
<td>33.2</td>
<td>36.5</td>
<td>3.5</td>
<td>3.0</td>
<td>3.5</td>
<td>3.8</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: BBS, DAE, and FPMU
affected by the monsoon shortfall in 2009. Production in fiscal 2010 actually increased slightly above that of 2009, and may have increased by close to 1 percent in 2011, to a new record 81.5 million tons (Table A3.2).

**Nepal:** The principal staple food is rice, which comprises two-thirds of total cereal consumption, with wheat constituting another 12–15 percent. In general, the price of rice is influenced by production and demand on the domestic side and policy decisions by India. As a net rice importer for most of the last two decades, Nepal has relied heavily on imports—from India, despite India’s occasional export bans. Because of Nepal’s long and largely unregulated border with India, price levels in Nepal are highly correlated with those in India. Even during India’s rice export ban, quantities imported from India were not notably affected. Because food availability and access in Nepal are geographically very unevenly distributed, the concept of national food security has little meaning. Rice consumption varies from region to region, because certain remote areas tend to be rice-deficient and people substitute with wheat.

**Pakistan:** Wheat production for fiscal 2011 is projected to be 23.9 million tons, about the same as in 2010. However, due to an estimated increase in consumption of 1 million tons, ending stocks are likely to be lower; nevertheless, at 9 million tons they are at the level envisaged for the strategic reserve, and the government has lifted the ban on exports. Despite a sharp decline in rice production resulting from flood damage to 34 percent of the growing area, Pakistan is expected to have an exportable surplus of 1.5–2.0 million tons, from production of 5 million tons.

**Sri Lanka:** The supply of key food items such as fish, poultry and vegetables continues to be disrupted by the effects of adverse weather conditions leading to sharp price pressures. The weather is also of concern with respect to the forthcoming spring crop, with lower supplies possibly raising prices and maintaining food inflation at 10 percent for the first half of 2011.
THE MODEL INCORPORATES A SET OF observed and estimated changes in domestic agricultural and food prices for the South Asia region countries. Where available, the model includes country-level data on actual changes in domestic food prices from Food Price Watch (World Bank, 2011). For other commodities, where prices are unavailable, we use import shares reported in version 7 of the GTAP database to link global prices with domestic consumer prices.

We then calculate their implications for individual households’ costs of living and agricultural incomes using an expenditure function to characterize household consumption, and factor in supply behavior and a profit function to represent household production activities through unincorporated enterprises such as family farms. Based on the simulated changes in individual households’ welfare relative to the US$ 1.25 extreme poverty line, we determine the changes in the poverty headcount and poverty gap for each country. Essentially, this involves estimating the impact of price changes on each household’s real income by multiplying the price change experienced by the household by the quantity of the good produced and by the negative of the quantity consumed by that household. The model also allows for households to substitute away from commodities where prices increased.

Impact of the Current food Price Hike

The median increase in the poverty headcount and poverty gap for South Asia region is 1.4 percentage points and 0.5 percentage points, respectively. In India and Nepal the increase in the poverty headcount is less than the median while Bangladesh’s and Pakistan’s are above, with Sri Lanka’s at the median. For the impact on the poverty gap, in Nepal, Pakistan and Sri Lanka, the increase in the poverty gap is less than the median while the opposite is true for Bangladesh and India. Except for Nepal, the net change in the poverty headcount is greater than the impact on the poverty gap.

Pakistan experiences the highest net percentage increase in the poverty headcount whereas Bangladesh experiences the highest percentage increase in the poverty gap due to the food price increase. Nepal faces the least net change in poverty headcount or poverty gap amongst South Asia region countries.

Across all the South Asia region economies, the median of people exiting poverty is 0.06 percent while those entering poverty are 1.49 percent. Of the countries, although Bangladesh has the largest percentage change of individuals exiting poverty with the food price hike, it also has the greatest percentage of individuals moving below the poverty line. Pakistan has no percentage change in the number of people exiting poverty.

The current food price surge has had a varying impact on the poverty headcount of South Asia region countries according to the magnitude of the price increase for each of the commodities and the consumption and income pattern generated by the sale of these commodities. The increase in rice price had the greatest impact on the rise in the poverty headcount and for the entire South Asia region. This is followed by wheat, then fats and oils (Figure A4.1).

In Bangladesh, where rice and wheat prices rose substantially, the rice price increase had the higher impact on the increase in the poverty headcount, since it has higher weighting on households’ net consumption. In addition, Bangladesh is a net seller of wheat, to the extent that an increase in the wheat price resulted in 0.02 percent decrease in the poverty headcount.

In Pakistan, people are net consumers of wheat and wheat has higher weighting than rice in the
consumption basket. Therefore, even though the increase in the domestic rice price is higher than that of wheat, the impact of the poverty headcount is attributable more to higher wheat prices.

In India, the price increase in fats and oils contributed to 58 percent of the increase in the poverty headcount, while in Sri Lanka the rise in the sugar price had the highest impact on the increase in the poverty headcount. Furthermore, although an increase in the price of rice has had the greatest impact on the gross reduction in poverty in India, since the country is a net consumer of rice, there is an increase in the poverty headcount when rice prices rise.

On average across the region, the increase in the rice price accounted for most of the increase in the poverty gap, most notably Bangladesh (86 percent of the increased gap) and India (39 percent) across all commodities. In Nepal, 59 percent of the increase in the poverty gap is attributed to the rise in oil and fats while in India it is 38 percent. As in the increase in the poverty headcount, wheat has the highest impact in Pakistan (69 percent) and sugar in Sri Lanka (45 percent) (Figure A4.2).

In the case of Afghanistan, the model is unable to estimate the impact of price changes on each household’s real income because an estimate of the quantity of goods produced by each household is unavailable. Instead the model estimates the net change in food consumption from the increase in price, as observed through household consumption data. From this analysis, Afghanistan appears to have been particularly hard hit by the increase in wheat prices. Wheat is the main staple of the Afghan diet, contributing 57 percent of the caloric content in the average bundle of food items consumed by the poor and near-poor. Furthermore, due to large fluctuations in weather and insecurity, wheat production is highly volatile and the country is dependent on its trading partners to meet frequent shortfalls. Analysis of the 2008 food price crisis sheds insight into the poverty impact in Afghanistan. The 2008 food price increases corresponded with a drought year resulting in wheat prices essentially doubling in rural and urban areas. This increase in wheat prices had large effects on overall wellbeing. The doubling in wheat prices resulted in an average decline of 20 percent in the real value of food consumption. With many people consuming at levels near the poverty line, subtracting from total consumption an amount equal to 20 percent of food consumption implied a 12 percentage point rise in poverty.

Notes

2. The actual and imputed price change for the following commodities is collected for the South Asia region countries: wheat, maize, rice, other grains, beef, sugar, fruits, coffee, cotton and oils and fats.
4. Note that the model focuses on the commodities where actual price change or imputed price (based on imports) for the South Asia region countries exists. The
model accounts for price changes for the majority of the food items.
5. Singh, Squire and Strauss (1986); and Deaton (1989).
6. We use the definition of Foster, Greer and Thornbecke (1984).
7. See Deaton (1989) for a justification of this approach.
8. We do this by introducing constant difference of elasticities (CDE) demand system parameters to allow us to capture the second-order impacts of price changes on households’ real incomes (Hanoeh, 1975). Note that this approach is consistent with imported goods being imperfect substitutes for domestically-produced goods, and the changes in domestic prices being a weighted average of the prices of imported and domestic goods.
Selected Food Crisis Response Projects
<table>
<thead>
<tr>
<th>Country</th>
<th>Social safety nets to for vulnerable groups</th>
<th>Measures put in place, with World Bank support, during the last food crisis</th>
<th>Country-specific lessons learned from the last food crisis</th>
<th>Recommended next steps</th>
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<tr>
<td>Afghanistan</td>
<td>No public safety nets for the poor. Cash transfers exist for families of martyrs and war-related disabilities, alongside in-kind food aid programs.</td>
<td>A pilot safety net program, using a community + geographic targeting approach is being put in place in response to the food crisis. The World Bank supports this effort by the safety net component of the Pensions and Safety Net project. The safety net pilot is expected to be scaled up, incorporating lessons learned from the pilot.</td>
<td>1. Timely monitoring and evaluation is critical. A scale up of the pilot project will incorporate the results of the evaluation.</td>
<td>Development of a well-administered and targeted safety net system.</td>
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<tr>
<td>Bangladesh</td>
<td>Employment Generation Program (workfare): Social pensions (for disability, widows and the elderly); Vulnerable Group Development provides 30 kg bags of rice for 24 months to poor women. Vulnerable Group Feeding scheme provides monthly food rations to households affected by disasters and lacking agricultural land and productive assets. Fair Price Ration Card scheme distributes cards to poor households enabling purchase of 20 kg bags of rice or wheat/month at a reduced rate. Open Market Sales program provides rice to rural and urban areas, especially in Dhaka—enabling anyone to buy up to 5 kg of subsidized rice each day. Other programs include Rural Employment and Road Maintenance Program; Food for Work, Test Relief, Hill Tract Area Development, and Food for Education and Gratuito us Relief.</td>
<td>Bank helped modify and support by loan a program formerly called the “100-day employment program”. The revised program entitled Employment Generation Program for the Poorest will be more responsive to future crises. Also, a RSR-funded conditional cash transfer pilot aimed at promoting education and nutrition of children from extremely poor families in rural and urban areas.</td>
<td>Crises may present opportunities to initiate much-needed reforms in the social protection sector.</td>
<td>The development a social protection strategy outlining a coherent social protection system that addresses program rationalization, and administration challenges (e.g., a unified targeting system, effective payment mechanisms, and a national beneficiary registry).</td>
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<tr>
<td>India</td>
<td>Range of safety net programs includes provision of subsidized food, in-kind transfers (e.g., school feeding), public works, and cash transfers such as social pensions for elderly, widows, disabled; housing; scholarships, and recently introduced social insurance (e.g., RSBY—subsidized health insurance), and subsidized rural credit. State-level programs include targeted welfare distribution and implementation of a national targeted public distribution system.</td>
<td>The Bank was not asked to work with the Government to respond specifically to the last food crisis.</td>
<td>—</td>
<td>There strengthening of systems for identification, targeting, awareness generation and benefit payment so that safety net programs can effectively target the poor in times of disasters.</td>
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<tr>
<td>Maldives</td>
<td>Small-scale cash transfer programs, alongside energy subsidies meant to assist poor households.</td>
<td>The World Bank supported implementation of social pensions for people older than 65 years. Policy dialogue on developing a targeting instrument for the national safety net program is ongoing. Objective is also to better target subsidies.</td>
<td>Consolidation of various safety net interventions under one government authority is essential to enable efficient and timely response to future crises.</td>
<td>The development of a well-administered and targeted safety net system.</td>
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<tr>
<td>Nepal</td>
<td>Social pension system includes old age allowance; single women's allowance; and public work programs.</td>
<td>The World Bank supported the government in scaling up work fare programs (with the World Food Program) through the Safety Net Project and provided additional financing. The project is also supporting the modernization of the administration of the government's cash transfer system.</td>
<td>Where no ongoing programs or engagement in the sector exist, it is difficult to respond to crises.</td>
<td>The development of a well-administered and targeted safety net system.</td>
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<tr>
<td>Pakistan</td>
<td>Benazir Income Support Program provides poverty-targeted unconditional cash transfers; Zakat; PBM and various other small-scale provincial safety net programs exist. The government is interested in introducing conditional cash transfer and skills-training components to the base BISP program, to encourage household investments in children's human capital and to increase the employability and productivity of adults.</td>
<td>The World Bank supported the reform of the Benazir Income Support Program through a development policy credit and technical assistance project. Reforms included adopting a national targeting system, separation of enrollment, eligibility determination, and payment systems, development of a beneficiary registry and other measures to strengthen program administration.</td>
<td>Putting in place best-practice safety-net programs takes time, particularly in low-income, low-capacity countries, even when the government is fully committed. Meanwhile, second-best options need to be employed to address immediate needs; these might involve employing poverty targeting mechanisms that are subjective, or utilizing existing payment delivery mechanisms that may not be technologically efficient.</td>
<td>Emergency-response mechanisms have been developed in response to the August 2010 floods: in three months, the government managed to support 1.3 million families with compensation grants. These structures need to be consolidated and made applicable to future emergency recoveries. The government is preparing an action plan for such a system.</td>
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<td>Sri Lanka</td>
<td>An unconditional cash transfer program, Samurdi, aims to provide assistance to the poor.</td>
<td>The World Bank was not asked to work with the government in the last food crisis. Nevertheless, the Bank managed to initiate and carry forward a dialogue through an RSR-funded grant on reforming the targeting mechanism of Samurdi and piloting it, along with an MIS system supported by an IDF, to improve both targeting and administration. The government, however, did attempt to put in place price controls in 2008.</td>
<td>Building trust and ensuring joint decision making in every step of the way with counterparts are essential to designing sustainable interventions.</td>
<td>The increase of the safety net coverage in the Northern Province, and improve targeting of Samurdi.</td>
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</table>
E VENTS IN RECENT YEARS HAVE HIGHLIGHTED that governments face significant fiscal risk from exogenous shocks. The fuel and food crises of 2007–08, and subsequent price increases in 2010, as well as the greater economic impact of natural disasters in populated areas, have a demonstrated negative impact on public finances and the availability of resources for development priorities and essential public services. For many of these risks, market-based approaches may help governments mitigate the financial impact of these shocks. But in practical terms, typically, there are several constraints, including:

- Governments typically do not focus on ex-ante management of food/oil price shocks and on assessing the risk as a contingent liability with fiscal implications.
- Interactions between public and private actors operating within food import/export supply chains are complex. Since price volatility affects different actors in different ways, there needs to be a range of solutions, ranging from fiscal responses to trading decisions to social safety net responses targeted directly to vulnerable producers or consumers. Identifying specifically who is at risk is an important first step.
- Governments may not have funds to cover hedging costs, which, in the case of the purchase of at-the-money option contracts (which create a price cap or a price floor), can range from 7–12% of the price level protected.
- If funds are available, governments are often reluctant to make the investment in hedging since such decisions are vulnerable to ex-post criticism (and associated political risk).
- Governments may lack the necessary legal and institutional frameworks to support hedging transactions.
- There may also be a lack of technical capacity to manage hedging programs.

Since many member countries are vulnerable to the risk of food and fuel price shocks, the World Bank Group is scaling up assistance in this area in an effort to a) sharpen the ability to diagnose the fiscal impact of exogenous shocks, b) incorporate the use of financial products into risk management strategies that are put in place ahead of a crisis or shock, and c) strengthen confidence in using market approaches and having sound policy around them.

Advisory Services on Risk Management

These customized technical assistance services can be designed to help governments evaluate exposure to and find ways to manage a wide set of fiscal risks and contingent liabilities associated with exogenous shocks such as natural disasters, commodity price shocks (in particular food, fertilizer, and energy), and climate change. The main components of a commodity risk management advisory program can include:

- Risk assessment to quantify the impact of specific risks on a government’s balance sheet and fiscal flows
- Development of a risk management framework, which includes specifying objectives of a risk management strategy, analyzing the government’s capacity to absorb risk, and evaluating strategic alternatives
- Cost/benefit comparison of available instruments, approaches, and hedging strategies
- Developing an enabling environment to implement transactions, which include governance and legal framework, coordination with other policies, information systems, public disclosure and audit processes, and monitoring procedures
- Education and capacity building of ministry staff, stakeholders, and decision-makers.

Facilitation of Commodity Hedges

Because of the complexity of local market and policy environments, solutions will need to be highly customized, drawing on a mix of different tools and responses.
Commodity hedging for governments and private sector entities could be facilitated by:

a. Providing assistance to help governments and private sector entities structure and execute physical hedging transactions with existing market suppliers, and/or banks (for example for food products that are not well integrated with international exchanges, such as rice, edible oils, and fertilizer)

b. Intermediation of financial commodity hedges (for example for oil/energy products and exchange-traded commodities).

The following table summarizes various commodity risk management instruments, along with benefits and costs/risks/constraints for each. Also included is a short description of the government of Malawi’s approach to hedging the risks associated with the price and supply of maize.

Example – Malawi Government Hedging of Maize Price & Supply Risks

In 2005/06, Southern Africa experienced a severe drought-related food shortage. Affected countries included Malawi, Zambia, Mozambique, and Zimbabwe and it was estimated that the volumes of imports needed to supply these countries would range from 1.5–2 million metric tons. In the past, Governments have attempted to manage this problem by subsidizing the price of maize but such responses tend to have a large cost both financially and in terms of negative impact on local and regional trade.

In June of 2005, the Government of Malawi announced that it would take an innovative approach to management of the food shortage by using South Africa Exchange Market (SAFEX)-based instruments to help cap the cost. The World Bank provided technical assistance to support this operation. This included training on futures and options and how the products could be used to manage specific exposures, risk assessment, communication with potential market providers, comparison of proposals, negotiation of contracts, and overall implementation.

Because the government was concerned not only about price increases but also about logistics constraints and delivery performance, the call option contract was customized as an OTC (“over-the-counter”) contract which would give more flexibility than a standard financial instrument. First, price protection was provided on a delivered basis, thus combining the price for white maize on the exchange in South Africa (SAFEX price) plus transport costs to Malawi. Second, the option contract carefully specified terms for physical settlement so that it could be used as a contingent import strategy if needed. Uncertainty about the extent of the food shortage, levels of commercial imports, transportation constraints, performance of local traders, the humanitarian response, and efficiency of procurement processes made the contingent import aspect of the contract very attractive to the Government. The contract with Standard Bank of South Africa, an OTC call option, represented one of the first-ever instances of macro level hedging by an African government. It covered imports of 60,000 mt of white maize, had a total value of approximately $17 million, and a premium payment of $1.53 million.

In November and December, 2005 as prices were increasing and the food shortage growing more severe, the government exercised the call option, elected for physical settlement, and allocated the majority of the maize to humanitarian operations. The maize purchased through the option contract had a better delivery performance than most other procurement procedures, and during the delivery period spot prices rose USD $50–90/mt above the ceiling price of the contract following increases in the SAFEX white maize price and transport costs over the period October–January. In May of 2006 and 2007, when the country was facing a projected maize surplus, the World Bank worked with the private sector to structure contingent export contracts, which were presented to the Government. The contingent export contracts (put options) were structured to help manage concerns about allowing exports and the risk of maize prices falling. Although the contracts were not taken up, they were useful as a demonstration of how contingent contracting could be used to help manage risks associated with maize surplus.

This approach has a number of indirect advantages in addition to the hedging benefits. Contingent import strategies based on call option structures help in planning because they can be put in place well ahead of eventual crises, then triggered or “called” on an as-needed basis. The approach showed the benefits of using customized risk management solutions to reduce the risk of increasing commodity prices and
supply uncertainty. It also demonstrated that market-based strategies can be less costly and more efficient than non-market based attempts to stabilize prices. For the Government of Malawi, which spent an estimated $110 million on the humanitarian response, the call option was a success. The challenge will be to test similar market-based approaches in an effort to replace traditional ex post reactions which can be costly, inefficient, and difficult to manage when the country is already in crisis.

Notes
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<tr>
<th>Product</th>
<th>Benefits</th>
<th>Costs/Risks/Constraints</th>
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</table>
| Forwards                 | • Since forwards are physical supply contracts, the risk management solution is embedded in the supply contract and there is no need for a separate contract / documentation.  
  • Pricing of forward contracts can be customized to the needs of the hedger—prices can be fixed, floating, or include caps/floors, and collars (a pre-agreed range or band).  
  • Depending on the pricing formula used, forwards will have same benefits as the financial products described below. | • May be complex for entities to implement if not directly involved in physical importing.  
  • Depending on the pricing formulas used, forwards will have same costs/risks/constraints as the financial products described below. |
| Futures                  | • No upfront costs.  
  • Provides ability to lock in forward prices through a financial contract. | • Prices are “locked in” and hedger has limited ability to take advantage of positive price movements that may occur in the future.  
  • Creates unknown and unpredictable future liability since hedger will owe the market counterparty if the market moves in an adverse direction.  
  • Requires financing of a credit line or a credit guarantee.  
  • Requires managing cash flow/liquidity requirements to support (potential) daily margin calls. |
| Options                  | • Provides ability to lock in maximum (minimum) prices while still providing hedger with ability to take advantage of positive price movements that may occur in the future. | • Has an upfront cost, which is market-driven and volatile but can range from 5–12% of the value of the underlying price for a 6–18 month coverage. |
| Swaps                    | • No upfront costs.  
  • Can be used to create similar price protection as with futures contracts  
  • Provides ability to manage two commodity exposures, or financial flows, at the same time. | • Creates unknown and unpredictable future liability.  
  • Requires financing of a credit line or credit guarantee.  
  • Requires managing cash flow requirements to support (potential) daily margin calls. |
| Commodity-linked bonds or loans | • Could be used on more macro level to connect borrowing or financing programs to the performance of a specific commodity index. | • Can be more complex to structure.  
  • May not be effective as a hedge for specific commercial exposures. |