



# FOOD PRICES: DRIVERS AND WELFARE IMPACTS IN EMERGING MARKET ECONOMIES



# SIEMS EMERGING MARKET BRIEF

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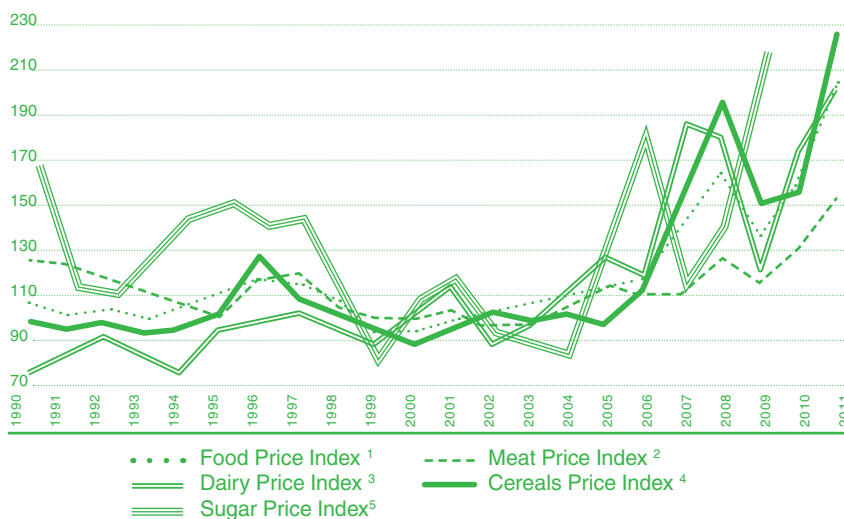
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# I. INTRODUCTION

Growing protests against high food prices in both the developing and developed world have elevated food prices to one of the top issues in the international agenda. Global food price increases in recent years have been astronomical. For example, in March 2008, the price of traded wheat had gone up by over 130 percent compared to year before levels, while the price of traded rice had gone up by over seventy percent during the same period. Since 2002-2004, average food prices have doubled. While most prices sharply declined during 2009 due to the economic crisis, since then most agricultural commodity and food staples prices have recovered and surpassed the peak observed during 2008. As Figure 1 shows, this phenomenon is relatively new as food prices were relatively stable until the middle of last decade. However, if unabated, these price increases threaten to erase much of the gains in poverty reduction that have been achieved

Since 2002-2004, average food prices have doubled

FIGURE 1/ Annual Real Food Price Indices 1990-2011  
(2002-2004=100)



Source: FAO

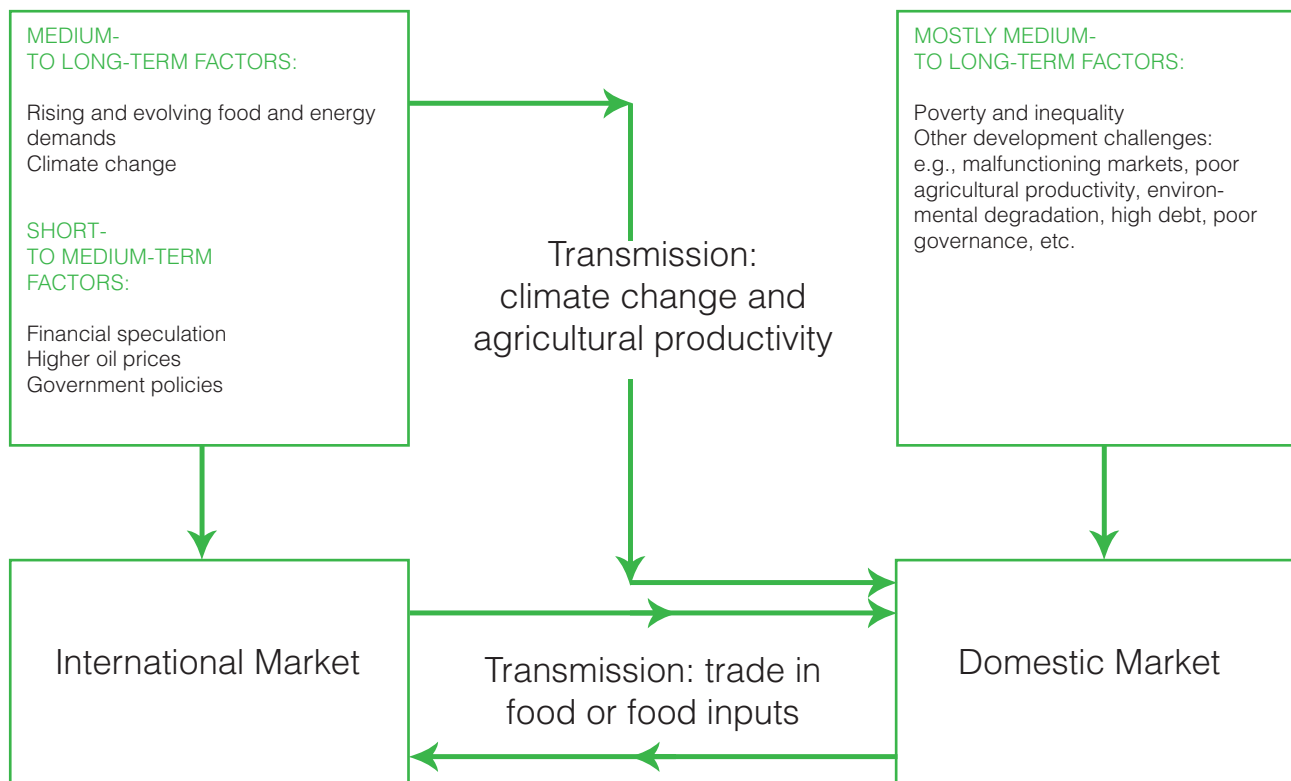
<sup>1</sup> Consists of the average of 5 commodity group price indices mentioned above weighted with the average export shares of each of the groups for 2002-2004: in total 55 commodity quotations considered by FAO commodity specialists as representing the international prices of the food commodities noted are included in the overall index.  
<sup>2</sup> Computed from average prices of four types of meat, weighted by world average export trade shares for 2002-2004. Quotations include two poultry products, three bovine meat products, three pig meat products, and one ovine meat product. Where more than one quotation exists for a given meat type, they are weighted by assumed fixed trade shares. Prices for the two most recent months may be estimates and subject to revision.  
<sup>3</sup> Consists of butter, SMP, WMP, cheese, casein price quotations; the average is weighted by world average export trade shares for 2002-2004.  
<sup>4</sup> This index is compiled using the grains and rice price indices weighted by their average trade share for 2002-2004. The Grains Price Index consists of International Grains Council (IGC) wheat price index, itself average of 9 different wheat price quotations, and 1 maize export quotation; after expressing the maize price into its index form and converting the base of the IGC index to 2002-2004. The Rice Price Index consists of 3 components containing average prices of 16 rice quotations: the components are Indica, Japonica and Aromatic rice varieties and the weights for combining the three components are assumed (fixed) trade shares of the three varieties.  
<sup>5</sup> Index form of the International Sugar Agreement prices with 2002-2004 as base.  
 All indices have been deflated using the World Bank Manufactures Unit Value Index (MUV) rebased from 1990=100 to 2002-2004=100.

in the last decade and reduce the growth rate of the most dynamic emerging market economies.

Governments around the world have responded to the immediate crisis by taking a number of measures to secure their food stockpiles and keep food prices within their borders down, such as relaxing tariffs on food imports, increasing restrictions on food exports or subsidizing food purchases. However, some of these policies may have exacerbated the broader crisis by further contributing to an already thin world food market and undermining the very incentives that could boost food production and help to prevent future food crises.

The intention of this report is to offer a preliminary diagnostic of some of the important factors which may have contributed to the immediate crisis. Some of these factors are more immediate and possibly short-term in nature (e.g., volatility in the commodities markets due to short-term financial speculation) while other factors will impact countries' food security in

FIGURE 2: Anatomy of the Global Food Crisis



Source: Conceicao and Mendoza (2008)

the medium- to longer-term. These secular factors include the rising and changing patterns of consumption in fast-growing and large developing countries like China and India, a possible increasing trade-off between bio-fuels and food, and the effects of climate change. Figure 2 summarizes the content of this article and illustrates a preliminary “anatomy” of the present global food crisis. Two of the main transmission mechanisms that make the crisis “global” in nature include the trade in food or inputs to produce food and the effects of climate change on agricultural productivity. Another potential factor relates to the behavior of financial investors in commodity markets but this aspect receives only a very preliminary treatment in this paper.

# II. FOOD PRICE DRIVERS



Recent analyses point to several potential drivers of food prices. We classify them here as short versus medium and long-term external factors that, in addition to country-specific reasons, are possibly behind the recent increase in global commodities market prices.

On top of these factors, there are at least two main transmission mechanisms to consider. One has to do with the international trade in food and the inputs to produce food, such as oil and fertilizers. Factors affecting the demand and supply of these items will thus affect both net exporters and net importers of these items. The other factor to consider is the rising group of environmental externalities linked to climate change and its effect on agricultural productivity and the world's food supply.

## SHORT-TERM EXTERNAL FACTORS

We describe three short-term factors that have been blamed by analysts for recent commodity price increases and volatility: financial speculation, higher oil prices, and government interventions.

### FINANCIAL SPECULATION

The increasing liquidity observed in international financial markets until 2008 favored investments in securities and derivatives linked to commodities markets. After the crisis, the decline in stock markets and depressed housing values has helped to heighten the appeal of commodity futures as an asset class. Thus, financial speculation is likely to have played an important role in the volatility—and sharp increases during some periods—for some agricultural commodity prices (Domanski and Heath, 2007; Helbling et al., 2008). There is suggestive evidence that there is indeed a speculative bubble at least in some commodities. It is difficult to reconcile such abrupt volatility and sharp increases in some commodities with changes in fundamentals. The role of index investors has increased substantially, bringing a new class of investor and a new way of investing into commodity markets. The effects are being felt not only in price volatility, but are also affecting the extent to which hedging is economically feasible. Regulators have stepped in by raising margins and pushing for compulsory delivery of grains in order to help facilitate more orderly price discovery, even though it is difficult for regulators to avoid large speculative inflows, since often these move into commodity exchanges via over-the-counter derivatives (Epstein, 2008).

### HIGHER OIL PRICES

On the input side, the higher price of petroleum has helped raise the costs for producing agricultural commodities (namely the costs of fertilizers, some of which are petroleum-based), thus creating add-on effects to the cost of production and productivity. Shipping and freight costs could also have been affected, thus also potentially influencing the final prices of imported

agricultural commodities. In addition, higher oil prices and growing political mandates to respond to this trend have both helped to boost the demand for agricultural crops that are being used to produce biofuels, thus creating an additional link on the output side.

## GOVERNMENT POLICIES

Authorities have responded in a variety of ways to meet the challenges related to the recent increases in food prices. Some of these policies are meant to secure a country's food stocks and keep domestic prices affordable, including applying taxes on exports, export ceilings or bans. To the extent that the countries implementing these policies are major suppliers or presently major consumers of certain commodities, these policies could have also helped to precipitate tightness in global supply. For instance, rice is a highly "political crop" in some parts of the world and many countries seem to have overreacted by restricting exports or building up stockpiles in order to prevent any political repercussions from a possible rise in domestic rice prices. A casual review of the key policy moves by large rice exporters and trends in rice prices for different varieties suggest, at least in a very preliminary way, that the two are clearly linked, even as the direction of causality is still not clear.

As will be discussed later, there are other food crops, like maize, sugarcane, sugar beet, cassava, and wheat which are used as feedstock crops for the production of biofuels. Some of these crops are important components of the food basket in different parts of the world, thus suggesting a possible trade-off between food and fuel use that is greatly influenced by government-dictated policies.

## MEDIUM- TO LONG-TERM EXTERNAL FACTORS

On the demand side, rising and changing patterns of food consumption in the developing world and evolving patterns in biofuels development, as well as supply side factors such as the impact of climate change on agricultural productivity across different food crops and different regions in the world, also play a role in the food-related challenges faced by many countries in recent years, and are likely to continue to do so in the years to come. Moreover, some structural variables in international and domestic factor markets are partially responsible by the sluggish response in quantities to higher prices.

## RISING AND CHANGING PATTERNS OF FOOD CONSUMPTION

The economic rise of developing countries—notably countries with large populations like China and India—are creating a growing demand for raw materials and commodities, as well as undergoing rising and evolving demand for food, thus contributing to the commodity boom (Avendano et al., 2008; Gale and Huang, 2008).

China offers an interesting case in terms of rising and changing patterns in food demand. It is the top rice consuming country in the world, and its rice consumption rose from about fifty million metric tons per year in the 1960s, peaked at about 137 million metric tons by 2001, and in 2007 stood at about 127 million metric tons. China has traditionally been a net rice exporter, but in recent years its net exports have declined markedly, from about 3.5 million metric tons in 1997 to about 0.7 million metric tons in 2007. These figures are miniscule compared to China's total rice consumption, but they are large relative to recently thinning world rice markets. Even more, while total rice consumption in China might not increase as markedly as in the past decades, countries like India, Indonesia, and Bangladesh, the next top rice-consuming countries will see increasing domestic demand for rice.

Furthermore, during the last forty years, per capita meat consumption has increased dramatically in a number of emerging market economies (Table 1). For instance, the average Chinese went from consuming 9kg of meat per year in 1970 to almost 54kg in 2007. This amount is expected to rise to approximately 60kg by 2020. For that reason, between 1990 and 2007, China's share of global poultry consumption nearly doubled and its share of global beef consumption increased six-fold (Table 2). In 2007, China accounted for about half of the global consumption of pork. All this helps to explain, in part, China's increasing demand for other crops that are used for feedstock. As shown in Table 2, other fast growing countries like Brazil are also beginning to account for larger shares in global meat consumption. The United States is included in Tables 1 and 2 as a comparator country.

Looking to the future, global demographic changes and changing patterns of income distribution over the next fifty years are expected to lead to an increased general demand for food, as well as different patterns of food consumption. It is predicted that global cereal demand will increase by 75 percent between 2000 and 2050, while global demand for meat is expected to double during that same period. The increase in demand for the latter also implies a concurrent increase in feedstock demand. It is expected that more than three-fourths of this growth in demand for both cereals and meat will be accounted for by developing countries, notably China and India.

## BIOFUEL DEVELOPMENT

Rising global energy demand, not just among the industrialized countries but also among the fast growing emerging market economies, combined with efforts to address climate change by trying to minimize carbon emissions, has prompted growing interest and policy emphasis on alternative fuel sources. One of these sources, biofuels, could also affect the supply of food in at least two important ways.

**TABLE 1: PER CAPITA MEAT CONSUMPTION FOR SELECTED COUNTRIES, 1970-2007  
(IN KILOGRAMS PER PERSON)**

	1970	1980	1990	2000	2007
<b>Brazil</b>	30.8	41.7	50.2	81.0	82.4
<b>China</b>	9.0	14.6	25.8	49.9	53.5
<b>India</b>	3.6	3.7	4.6	5.0	5.2
<b>Russia</b>	n/a	n/a	39.0	51.0	60.9
<b>United States</b>	105.8	108.1	112.8	122.0	122.8

Source: FAOSTAT Online.

**TABLE 2: POULTRY, PORK AND BEEF CONSUMPTION FOR SELECTED COUNTRIES, 1975-2007  
(IN PERCENT SHARE OF GLOBAL CONSUMPTION)**

	1975	1980	1990	2000	2007
<b>a) Poultry</b>					
Brazil	5	7	7	10	11
China	0	0	9	18	17
India	0	0	1	2	3
Russia	n/a	n/a	5	3	4
United States	34	31	28	22	20
<b>b) Pork</b>					
Brazil	2	2	2	2	2
China	18	23	35	47	46
India	0	0	0	0	0
Russia	n/a	n/a	5	2	3
United States	14	16	11	10	9
<b>c) Beef</b>					
Brazil	5	7	10	11	12
China	1	1	2	10	12
India	1	1	4	3	3
Russia	n/a	n/a	10	4	4
United States	29	26	22	23	21

Source: FAOSTAT Online.

First, certain food crops like maize, sugar, and cassava could be directly used in biofuel production, and there is a potential trade-off between food versus fuel in terms of the use of the final output. For example, in terms of global maize usage during 2004-2007, biofuel production in the US alone accounted for fifty million tons while other uses (including for food and feedstock) accounted for an additional thirty-three million tons. Since only fifty-one million tons of maize were produced during this period, these consumption statistics imply a significant decline (by over thirty million tons) of the global maize stockpile.

Second, to the extent that land area devoted to biofuels as opposed to food production might become an increasingly binding trade-off, this might also exert possible pressure on resources critical to food production. Coun-

tries' policies, notably biofuel subsidies, will also be a factor to consider here, given that biofuel production receives considerable subsidies.

Looking forward, recent estimates by the International Food Policy Research Institute suggest that if existing biofuel investment and production plans by the major producing countries is carried out, by 2020, world prices for feedstock crops will have increased by an additional eleven percent for cassava, twenty-six percent for maize, eighteen percent for oilseeds, about twelve percent for sugar and eight percent for wheat (Table 3). Higher price changes could take place if more aggressive biofuel expansion takes place. There are, however, some potential mitigating factors in the food-versus-fuel trade-off, such as substantial increases in crop yields due to investments in new technology or increased efficiency in ethanol production, or the development of alternative to biofuels altogether, such as solar and wind energy.

#### CLIMATE CHANGE AND AGRICULTURAL PRODUCTIVITY

There are also important factors on the supply side impacting food inflation. The staple food for the vast majority of the global population is comprised of wheat, maize, sorghum, and rice. Each of these crops has its own important demand and supply drivers which determine the path of their total global stocks over time. Some of the major suppliers and some large consumers of agricultural crops in the world markets have suffered lackluster or poor harvests, notably because of recent bad weather and droughts. The combination of weak supply and strong demand has thinned the world export markets for key agricultural crops, thus contributing to the consequent increases and volatility in prices.

Various scientific studies have highlighted strong evidence that the impact of climate change on agriculture in the relative short run (as well as in the long run if this challenge is not addressed) will be quite severe. For instance, detailed crop- and region-specific forecasts of the possible effects of climate

**TABLE 3: CHANGES IN WORLD PRICES OF FEEDSTOCK CROPS AND SUGAR BY 2020 (IN PERCENT COMPARED TO BASELINE LEVELS)**

<b>Crop</b>	Scenario 1:	Scenario 2:
	Biofuel expansion <sup>a</sup>	Drastic biofuel expansion <sup>b</sup>
<b>Cassava</b>	11.2	26.7
<b>Maize</b>	26.3	71.8
<b>Oilseeds</b>	18.1	44.4
<b>Sugar</b>	11.5	26.6
<b>Wheat</b>	8.3	20.0

Source: IFPRI IMPACT projections in constant prices (Von Braun 2007).

Note: a Assumptions are based on actual biofuel production plans and projections in relevant countries and regions. b Assumptions are based on doubling actual biofuel production plans and projections in relevant countries and regions.

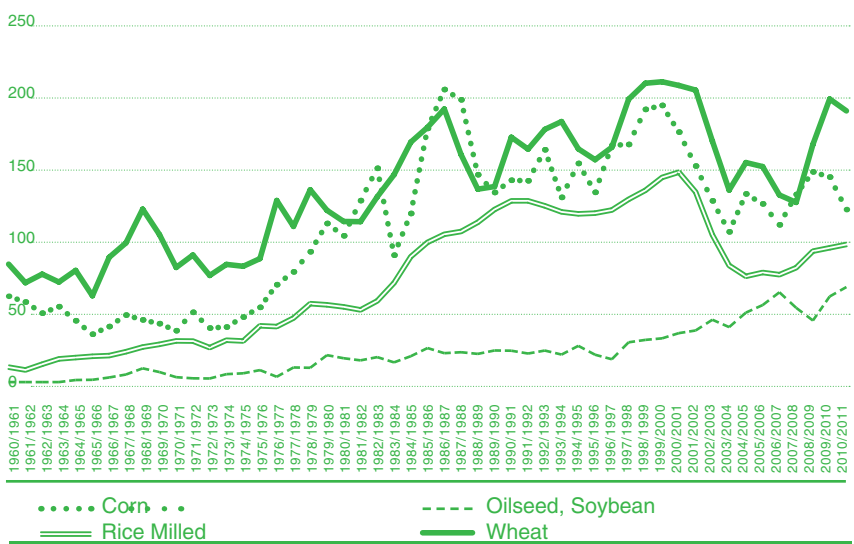
change by the Woods Institute for the Environment at Stanford University suggested that certain food crops will have a high probability of being hit hard by climate change: wheat in Central and South America; rice, maize and millet in parts of West and South Asia; maize, wheat and sorghum in different parts of Africa; and maize and rice in Southeast Asia. In addition, an influential study by Cline (2008) suggested global warming could diminish world agricultural productivity. An examination of the distribution of these predicted effects also reveals that most losses will be concentrated in developing countries.

### NATIONAL AND INTERNATIONAL FOOD MARKET STRUCTURE

In 2006, global cereal stocks were at their lowest levels since the early 1980s. Stocks in China, which constitute about forty percent of total stocks, declined significantly from 2000 to 2005 and have not recovered in recent years. Similarly, in recent years, global production has not caught up with global demand, so that global ending stocks for the major food crops have been declining since the early 2000s with a recovery during 2009 (Figure 3). Part of the reason for this is that world cereal production has only been expanding modestly, while growing demand for food and for crops to be used as either feedstocks or biofuels has been consistently rising.

The effects of a food crisis could also be exacerbated by bottlenecks and malfunctions along the domestic food supply chain. The food import market is often dominated by a few major players. Consequently, the practice of high mark-ups on imported goods, as well as possible hoarding at various points of the supply chain, has also possibly exacerbated the rise in food prices. Clearly,

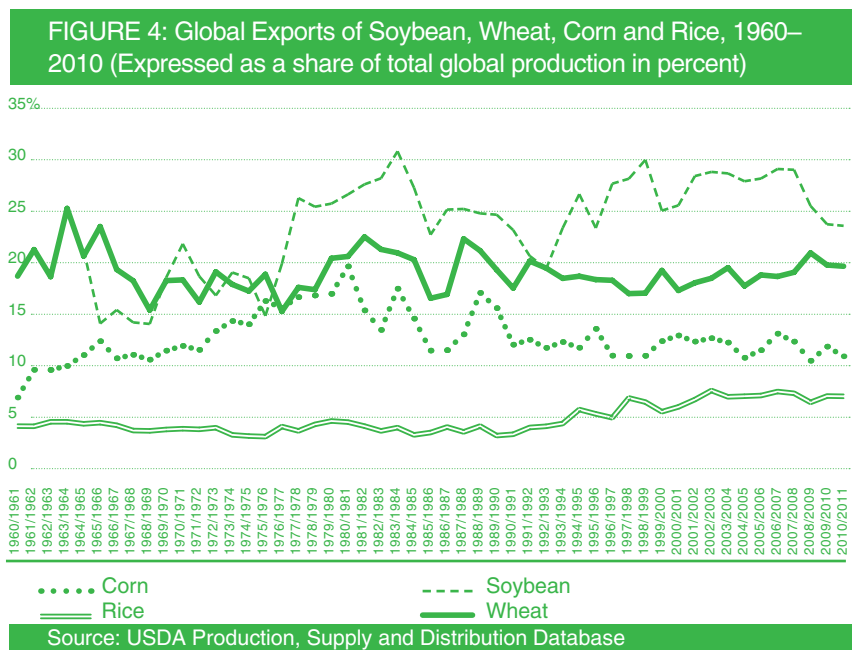
**FIGURE 3: Global Ending Stocks for Wheat, Corn, Rice and Soybean, 1960-2010 (In 1000 metric tons)**



markets develop and function only with adequate investments in markets underpinning public goods, including critical regulatory and physical infrastructures. Yet in many countries, market institutions remain underdeveloped.

In addition, the structure of the international food supply chain could also play an important role in precipitating or amplifying the transmission of shocks related to food. Only a fraction of total global food production is actually traded (Figure 4). Exports as a share of world production of corn have hovered at around ten percent in recent years, while that of wheat and soybeans was at about twenty percent each. The case of rice, the main staple for billions of people, is even more dramatic with less than seven percent of the production reaching international markets.

Of this already thin global food trade market, export supply is also highly concentrated. About ninety percent of corn and soybean exports are accounted for by only three countries: Argentina, Brazil and the United States. Five countries (India, Pakistan, Thailand, the United States, and Vietnam) account for over eighty percent of global rice exports. And as mentioned earlier, because the rice export market is thin, even China, which accounts for only about 3.6 percent of global rice exports, could have a significant impact on the global rice supply. As for wheat exports, over half of the global total is accounted for by five countries or regions (Argentina, Canada, the EU, the Russian Federation, and the United States). Any changes in export policies or in the harvest fortunes of major producing countries could have a large impact on the international food markets.



# III. WELFARE IMPLICATIONS IN EMERGING MARKET ECONOMIES



The commodity price boom has produced both winners and losers among developed and developing nations. Those countries that are net exporters of raw materials (agriculture and mining) have largely benefitted at the aggregate level from improvements in their terms of trade. While two-thirds of the countries in the world are net food importers, most of the selected emerging market economies in Table 4 are net exporters of raw food. This is the case for instance of three of the four BRIC countries, with the exception being Russia. Brazil, China, and India have become net food exporters despite having been food importers a few decades ago. If one examines the broader agricultural trade balance, spanning raw food, cash crops and agricultural raw materials, about fifty percent of the countries in the world are net exporters.

Focusing only on the selected emerging markets in Table 4, Brazil, Argentina, and Thailand are the largest agriculture net exporters. We should also point out that many countries are large net importers of food while simultaneously large exporters of agricultural commodities and vice versa. For example, among large countries, Indonesia runs a deficit in raw food but a large surplus in all agricultural exports, while China has a large trade surplus in raw food but has an even larger trade deficit in all agriculture.

The analysis at the aggregate country level, however, can be misleading. To understand the welfare implications of food price increases for emerging market economies it is important to look within each country. The populations in net food importing countries are not the only ones vulnerable to food price shocks. There are two main reasons for this.

First, international trade either in food or in the inputs to produce food (like oil and fertilizers) implies that factors affecting these international markets could also be transmitted to any country that trades, spanning both

**TABLE 4: FOOD AND AGRICULTURE NET EXPORTS FOR SELECTED EMERGING MARKET ECONOMIES (IN \$ MILLION)**

	Raw Food Net Exports		All Agriculture Net Exports	
	1980/1981	2004/2005	1980/1981	2004/2005
<b>Argentina</b>	1,186	5,578	1,875	8,986
<b>Brazil</b>	-705	6,307	3,422	23,231
<b>Mexico</b>	-934	592	-1,019	-2,509
<b>China</b>	-947	3,283	-1,532	-14,108
<b>India</b>	31	1,865	760	2,416
<b>Indonesia</b>	-455	-873	2,261	3,947
<b>Thailand</b>	1,657	3,862	2,350	7,037
<b>Russia</b>	n/a	-5,254	n/a	-978
<b>South Africa</b>	791	1,437	1,703	2,378

Source: Ng and Aksoy (2008)

net food importers and exporters. The pass-through of international prices to domestic prices will vary across countries depending on factors such as the movements in exchange rates, domestic physical infrastructure, market structure, and government policies to stabilize prices.

Second, in many other developing countries—including large nations like India, Indonesia and even food exporters like Brazil and Argentina—the impact of higher food prices will be greatest among the low income population since food outlays are a large share of their disposable income. As Table 5 shows, both poverty and inequality are high not only in low income countries but also in middle income countries like South Africa.

In all the countries listed in Table 5, large segments of both the rural and urban populations are poor, and a large share of their expenditures is devoted to food. For people living on less than \$1.4 (in 2005 PPP \$) a day in India, for example, over seventy percent of household expenditures are devoted to food. Even if we relax the cut-off to include a larger swath of the population, the food expenditure shares are still large. A significant portion of the developing world is comprised of low income households and this helps to shed further light on why food is such an important distributional and also political issue in many countries, given that a significant majority of

For people living on less than \$1.4 (in 2005 PPP \$) a day in India, for example, over seventy percent of household expenditures are devoted to food

**TABLE 5: POVERTY RATE, GINI INDEX, AND SHARE OF FOOD IN CONSUMPTION OF THE POOR IN EMERGING MARKET ECONOMIES**

	HDI Rank <sup>a</sup>	Gini Index <sup>b</sup>	Poverty Rate <sup>c</sup>	Population below national poverty line (%) <sup>d</sup>		
				Rural	Urban	National
Brazil	73	57.0	21.2	41.0	17.5	21.5
India	119	36.8	80.4	30.2	24.7	28.6
Indonesia	108	34.3	52.4	n/a	n/a	16.7
Mexico	56	46.1	11.6	27.9	11.3	17.6
Peru	63	52.0	30.6	72.1	42.9	53.1
South Africa	110	57.8	34.1	n/a	n/a	n/a
Thailand	92	42.0	25.2	n/a	n/a	13.6

Sources: a Of 169 countries in total. Data for 2010, from UNDP (2010).

b Value of zero represents absolute equality; and a value of 100 absolute inequality. Data for various years, from UNDP (2007).

c People living on less than \$2 a day. Data for the most recent available year during the period 1990–2005, from UNDP (2007).

d Population below national poverty line. Data for the most recent survey year, from World Bank (2008).

e Hammond et al. (2007).

their populations are likely harmed by adverse movements in food prices.

All this might help to explain why many countries have taken immediate steps to try and temper the effects of food price inflation, even as they might also have some segments of the population possibly benefiting from higher prices on the supply side. As for the future, a recent study of rural and urban poverty over the period 1993-2002 provides evidence that, globally, the poor are urbanizing faster than the population as a whole (Ravallion et al., 2007). This, in turn, suggests that more poor people will be concentrated in urban centers and they will constitute a growing population segment that are net buyers of food and vulnerable to food price shocks. This phenomenon is already affecting fast growing and urbanizing countries like China and India.

Share of household expenditure devoted to food (%)<sup>a</sup>

People living on "X" 2005 PPP \$ per day, where "X" is:				People living below the national
X<1.4	1.4<X<2.7	2.7<X<4.1	X<8.2	
37	37	33	30	22
74	75	73	71	68
63	57	51	53	52
47	41	36	33	24
59	59	53	50	46
54	50	45	43	28
57	48	43	37	27

# IV. A ROADMAP FOR FOOD POLICY

The preceding analysis offers a preliminary diagnosis of what might be some of the underlying factors behind the world's present food challenges. Designing the appropriate immediate and the medium- to longer-term policy responses will need to consider the nature of these different factors and a more in depth analysis than the one carried out here. However, there is probably enough information to draw some conclusions and identify areas for policy intervention.

## DEMAND FOR AGRICULTURAL COMMODITIES WILL CONTINUE TO GROW OVER THE NEXT SEVERAL DECADES, BUT AT A SLOWER PACE.

This is due to the anticipated slowdown in world population growth to an average of one percent per annum to 2030 from 1.7% over the past thirty years. According to FAO projections, demand for agricultural products is expected to slow. The slowdown will be led by China, where over the next three decades, aggregate food consumption is expected to grow at only twenty-five percent of the rate seen in the past three decades, while the population will grow at one-third of the past rate (Standard Chartered, 2010).

## CURRENT HIGH PRICES WILL PRODUCE A STRONG SUPPLY-SIDE RESPONSE IN THE COMING YEARS.

As immediate concerns about food stockpiles subside somewhat, and with eventual calm in the financial markets, this will likely contribute to a tempering effect on food prices. However, if biofuel development and climate change begins to impose a tightening effect on the food supply side, food prices could remain somewhat higher than in the past. This precludes, of course, a variety of actions that could help mitigate these forces, including a significant productivity boost based on existing land used, a major expansion in crop acreage, or a combination of these two.

## COUNTRIES WILL REMAIN VULNERABLE TO IDIOSYNCRATIC FOOD SHOCKS.

In some parts of the developing world, immediate humanitarian aid is required, and collective action by the international community is necessary in order to prevent further harm and suffering. More broadly, countries will need to think about the development of social safety nets so that these may be able to help mitigate the effects of food-related shocks such as the one unfolding. These safety nets could involve direct transfers ensuring that the poorest and most vulnerable groups in society get adequate food and nutrition. More evolved mechanisms might also be possible, such as "market-based" hedging instruments that would cover the excess fiscal costs of food subsidies in case the price increased or an adverse climate event affects domestic production.

## ACHIEVING FOOD SECURITY REQUIRES ADDRESSING IMPORTANT DISTRIBUTIONAL ISSUES ACROSS AND WITHIN COUNTRIES.

Low income countries are particularly vulnerable to food price shocks including those transmitted through trade or arising from other sources. However, even within middle income countries, both net food importing and exporting alike, a large part of the population still maintains a significant portion of their expenditures on food, which suggests that large groups of the population could be adversely affected by food inflation. A finer disaggregation might also reveal that vast numbers of the urban poor as well as the rural net-food-buying poor are also vulnerable. These distributional dimensions suggest that targeted strategies are required in order to reach the most vulnerable, both within countries and across borders.

Low income countries are particularly vulnerable to food price shocks including those transmitted through trade or arising from other sources

## INVESTMENTS IN AGRICULTURAL PRODUCTIVITY COULD BE TIMELY AND EFFECTIVE IN BOOSTING FOOD SUPPLIES AND REDUCING POVERTY AND INEQUALITY.

For some countries, the increased food prices could provide an opportunity for a positive supply response to be developed in the medium- to longer-term. Some countries are in a position to do this on their own. However, others may require assistance from the international community. The latter group is likely to be comprised mostly of the least developed countries. For these countries, important investments to boost agricultural productivity, combined with the terms of trade improvement for agricultural products, could incentivize and help poor farmers to produce and supply more.

## COUNTRIES NEED TO TAKE IMPORTANT STEPS, BUT UNILATERAL ACTION IS LIKELY TO BE INSUFFICIENT.

Some of these immediate responses to the crisis which have sought to secure national food stocks such as through export taxes or bans may have also contributed to even tighter international supplies. These types of policies undermine the very incentives necessary to implement a strong supply response in order to boost food supply. They also only address the short-term symptoms of the present food challenge, but do not respond to the underlying long-term factors behind it. The previous review of different crisis factors in this paper clearly underscores that the latter are well beyond the capacity of any one country to address. Collective and coordinated action—notably among the major producers and consumers—is probably necessary in order to avoid exacerbating already tight food supplies, as

well as address growing food challenges in a sustained way. Examples of possible collective action initiatives to enhance food security include joint investments in agricultural R&D, as well as the possible creation of regional grain reserves or insurance mechanisms.

## POLICY COHERENCE IS ESSENTIAL IN ORDER TO ADDRESS COMPLEX AND EVOLVING FOOD, WATER AND ENERGY ISSUES.

A growing economy and population require, at the most basic level, adequate supplies of food, energy and water. These resources are inextricably inter-related. Biofuels begin to offer a more cost-efficient and widely used substitute for traditional fossil-fuel based energy sources alleviating the constraints imposed by oil. However, in the absence of significant technological advancements, biofuel uses of food crops (or the de facto competition on land use) could result in a more binding trade-off between food and fuel. Both agricultural and energy production are water intensive activities. In moving forward in this area, it is important to consider how policies designed to develop viable energy alternatives or to increase agriculture production do not end up creating adverse effects on human development on other fronts. Solutions probably lie in increased efficiency and technology, but also in the joint administration of the natural resources. Collective action is key, but so too is *coherent* action.

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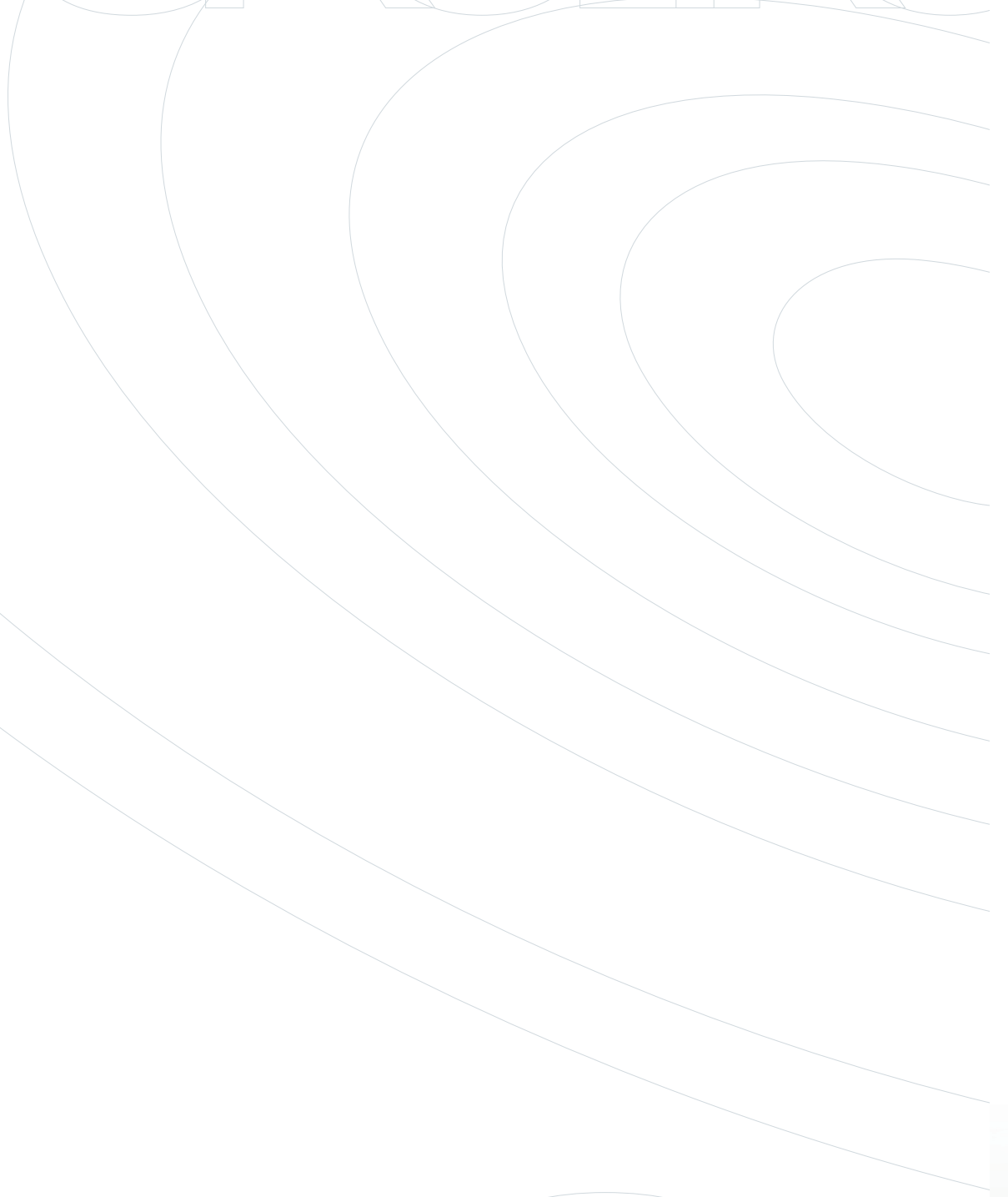
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