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Medium- to Long-Run Implications of High Food Prices for Global Nutrition

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Abstract

The combined food, fuel, and financial crises of 2007–2009 had severe and widespread negative impacts around the world. Two key questions challenging governments were: how long would the high prices last and with what effects on food security and nutrition over the longer run? This paper considers the drivers of the crisis and explores if, unlike past shocks, the recent price increases reflect structural changes in food price formation that will have lasting global implications. New cross-commodity relationships allowed prices to spike, although there was no shortage of food at the global level nor indeed a significant downturn in recent yields. Yet recent record levels of farm production were also mirrored by growing numbers of people chronically undernourished and/or micronutrient deficient. The gap between supply and need was underpinned by growing urban demand, consumption of processed and higher-value foods (including meat), biofuel policy, and purchasing power erosion, but also by short-term market-distorting policies implemented by governments responding to perceived shortages of food. Thus, the impact of future food price crises will depend largely on what policymakers chose to do in response to the peaks and what they do not do during the troughs. Appropriate investments are urgently needed not just in smallholder developing country agriculture, but in effective food policies and targeted programming that can reverse the recent negative trends in nutrition and that support access globally to improved diet quality as well as food quantity. J. Nutr. 140: 143S–147S, 2010.

Introduction

During the first decade of the 21st century, a series of pressures built up in the global economy that left governments and the world's most vulnerable people reeling. The World Bank estimates that the extremely poor increased in number between 2005 and 2008 by 130–155 million (1); the FAO estimates that 75 million people joined the ranks of the chronically undernourished (2); and the International Food Policy Research Institute argued that 16 million more children would be left malnourished if recessionary tendencies did not become resolved during 2009, which they did not (3).

Yet despite its apparent suddenness and scale, the crisis of the late 2000s was not unique. There were many moments during the previous (20th) century when alarms bells rang out because of concerns about imminent food shortage. For example, in 1915, the *New York Times* remarked that "food costs are increasing and subsistence pressure is ever becoming greater" (4), a pressure that continued for several years, leading to food riots in the streets of New York City in 1917 and the "spectacle of hunger in the richest country's richest city" (5). Japan too was "shaken by food riots" in 1918, followed by similar impacts in Europe and across many developing countries (6–8). There were many contributors to that early food crisis, including crop failures linked to droughts, rising demand for food as a result of income growth, commodity and currency speculation, inflation, trade constraints (in the form of steep tariffs imposed by governments to deal with the crisis), and low productivity due to widespread lack of access to credit, limited use of fertilizer (due to supply constraints), and scarce investments in the seeds, extension, or technology used by developing country smallholders.

Many of the same drivers and their consequences were apparent 100 y later. What is unclear in the immediate aftermath of the global crisis is how such conditions will play out over

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coming decades. It has been argued that unlike past upheavals, current price increases reflect "a structural upward shift in real agricultural commodity prices" (9) and that higher levels have "a structural component that may persist" (10). Yet, projecting the implications of recent shocks far into the future requires considerable caution. In the past, food crises have stimulated investment in the research, policies, and improved practices that ultimately gave lie to the darkest of Malthusian prophesies. Fearing the worst often brought out the best, which in turn proved that earlier projections must have been wrong. Indeed, as recently as 2005, FAO was decrying the long-term downward trend in food prices that "threatens the food security of hundreds of millions of people in the world's poorest developing countries" (11). Will the crisis of the late-2000s have the same outcome?

This paper uses a broad brush to highlight issues likely to determine future conditions and explore why recent patterns and trends in production and consumption may not be good predictors of what comes next.

What goes up…may not come down

The combined food, fuel, and financial upheavals of the 2007–2009 period highlighted a series of paradoxes concerning global poverty, agriculture, and nutrition that have implications for future trends. First, increases in food prices were set at a time of abundance, not scarcity. While stocks fell in 2008 to their lowest level since the 1980s and droughts affected grain-exporting nations like Australia, agricultural output was historically high and increasing. World cereal production rose almost 7% in 2008 over 2007, which was in turn 6% higher than in 2006 (12). Stocks have been replenished and cereal carry-over in 2010 is likely to be the highest since 2002, while the combined food price index compiled by FAO was still higher in early 2009 than at any time in the 2000–2006 period (the food price index is an average of the price indices of 6 separate commodity groups, weighted by average export share of those commodity groups in the 2002–2004 period). In other words, shortage of supply did not drive prices higher.

Second, record levels of production were mirrored by record levels of undernutrition. While the proportion of the world's population classified as chronically undernourished was halved between 1969 and the early 2000s, the absolute number was likely higher in 2009, factoring in the effects of the global crisis, than it had been in 1969 (13). The provisional estimate of undernourishment for 2007 was 923 million, which was calculated prior to the peak of the food price shock in 2008. Recent data revisions for 1990–1992 put the number of undernourished then at 842 million. Estimates for 1969–1971 vary, but a level of ~960 million has been reported. In other words, more food is not yet enough food.

Third, rising food demand comes against a backdrop of widespread neglect of agriculture. There was diminishing donor and government attention to this sector since the 1970s, at least in developing countries, where growth in demand has grown most rapidly (14). The share of total overseas development assistance dedicated to agriculture fell from over 15% in 1980 to <3% in 2007 (15). At the national level, agriculture's share of government expenditure declined from 15% in 1980 to 9% in 2002 in Asia and in Africa it fell from roughly 6 to 4.5% over the same period (16). Such declines led to shrinking and, in some cases, disappearing national agricultural research systems, public extension, seed multiplication, and rural credit.

This was not a universal problem, however. Global cereal yields have continued their upward trend, rising from 1.2 metric tons per hectare (mt/ha) in 1950 to 2.8 mt/ha in 1996 (17) and crossing the 3.0 mt/ha threshold around 2000. The global average in 2008/2009 was almost 3.4 mt/ha (18). Yet productivity growth has not translated into food accessibility for the billion people who remain undernourished. On the one hand, gains are not happening where need is greatest. Per capita cereal production (and in many cases yield growth) has stalled or reversed in much of sub-Saharan Africa, parts of South Asia, and across the North Africa/West Asia region (19). By 2030, developing countries are expected to produce only 86% of their own cereal consumption, with net imports needing to rise from 103 million mt in 2000 to around 265 million mt and urban growth will continue to push upwards the share of poor households whose consumption is largely dictated by market prices for food (20).

On the other hand, a growing share of food is channeled into biofuel production, processing value-added commodities, and feedstock. Each responds to certain types of consumer demand but not the immediate energy and other nutrient needs of undernourished people. In other words, more production has not meant more food is available.

Fourth, higher prices for agricultural goods have not automatically translated into higher benefits for small farmers (21). Developing country smallholders reliant on rainfed farming with limited access to improved seeds, extension advice, and fertilizer can only dream of reaping yields of 3 mt/ha. In addition, not only are most smallholders net purchasers of food, but a large share of the nonfarmer "bottom billion" are functionally landless rural laborers or the urban poor who rely almost entirely on the market for food (as of 2008, more of the world's total population became urban than rural for the first time in history).

In other words, high commodity prices have negatively affected the food budgets of the poor, while hindering their ability to offer a supply response to the high prices. The result, as noted by the United Nations Secretary General in 2008, is that, "the threat of hunger and malnutrition is growing" (22).

Fast forward

Most projections suggest that although food prices are expected to be lower in the decade from 2010 than during 2008, they will remain higher than during the decade leading up to the 2007/2008 peak (23,24). The Organization for Economic Cooperation and Development and FAO estimate that compared with an average for 1998–2007, prices projected to 2020 could be 40–60% higher in nominal terms for wheat and maize and as much as 80% for vegetable oils (9).

A continuation of higher prices, which may or may not be attenuated over the long run, can be ascribed to an entrenchment of the drivers that collectively brought about the crisis: namely, growing demand, growing cross-commodity price linkages (which are in turn affected by currency and commodity speculation), new demand in the form of biofuels but also in terms of urban dietary change, growing threats to the food system in the form of a variety of environmental shocks, and, not least, what governments chose to do or not do in response to each of the above.

Demand growth for food has historically been 1–1.5% per year, rising in recent decades to 2% per year (25). Goldman Sachs has projected that demand will rise to an annual rate of 2.6% after 2010 (26). Such growth is driven by a world population that by 2030 will likely have reached 8.5 billion (up from 2.5 billion in 1950), of which some 5 billion will be urban (27,28). What is more, although rates of improvement are likely to be slower than projected a few years ago, poverty and undernutrition are still expected to decline–with developing country per capita incomes tripling by 2030 (rising from $1550 in 2004 to $4650), and kilocalories available rising globally to 3050 per capita compared with 2360 kcal per person per day in the mid-1960s (1 kcal = 4.2 kJ) (1,21).

Higher incomes, more food available, and changing dietary patterns of mainly (but not exclusively) urban dwellers generate higher levels of consumption of processed foods, high-energy (sugary) drinks, and meat and dairy products, all of which exert pressure on available cereal supply. For example, the share of energy from all forms of beverages increased globally from 12 to 21% between 1965 and 2002, an overall increase of 222 kcal per person per day from beverages, resulting largely from increased intake of calorically sweetened beverages (29). Similarly, meat consumption in developing countries is expected to rise from only 10 kg/person annually in 1964–1966 to 37 kg per person per year in 2030, with dairy products rising from 28 kg to 66 kg per capita per year over the same period (21).

When use of biofuels is factored into food demand, and the World Bank has suggested that under certain conditions as much as "40 percent of global grain production could be going to biofuels by 2030" (1), then at least 1 billion tones of cereals will need to be produced on top of current (already record) levels of output by 2030 (25,30). There is, of course, considerable uncertainty surrounding long-term projections, especially given that technological innovations and policy shifts could lower the cost and/or profitability of bioethanol, which in turn would reduce the threshold price above which food crops are sensitive to oil prices (and to currency exchange rates tied to oil).

That said, countervailing pressures exist. For example, even without biofuels, energy prices will continue to play a role in food price formation given the close link between fertilizer prices and those of natural gas, which are closely tied to the price of oil. Fertilizer costs rose steeply during 2007/2008, putting any supply response to high commodity prices out of the reach of many poor farmers. Similarly, transport and food processing costs have become major components of prices as urban demand for value-added products has grown and irrigation systems also require fuel inputs. Over 45 million additional hectares will have to be irrigated by 2030 in the developing world to generate the additional billion metric tons of grains needed. That will require an increase of 14% in water withdrawals for irrigation globally, raising competition for water with urban and industry uses, and agriculture already accounts for 70% of all fresh water withdrawn for human use (17).

Climate change is likely to aggravate existing production and consumption constraints in food-insecure countries. Expected geographic shifts in ecosystems, increased scale and intensity of many (primarily drought and wind-related) climatic shocks, and the emergence of new or renewed crop, livestock, and human diseases all pose threats to food supply, marketing (cross-border trade), and rural income streams (30,31). Many more people are affected by disasters. There is a growing reservoir of vulnerable states, characterized by fragile economies and by livelihoods pursued by economically and physiologically vulnerable people (32). In such contexts, the capacities of households to cope with food insecurity continue to be eroded, which further opens people to the vagaries of climate, epidemics, or indeed of global market conditions.

Policy actions and reactions

The real question is, what should governments do about it? A major factor affecting outcomes for the poor is the role of national policy responses to real (or perceived) shortages. Governments follow familiar response patterns in the context of food crises, which may include ignoring the problem altogether, pursuing trade-based solutions that include reducing tariffs on food imports or restricting/banning exports, implementing consumer protection via price subsidies, rationing and/or targeted protection of the most vulnerable, and input subsidies or commodity price support. Each response was evident during 2007/2008, often associated with unintended consequences, such as doing nothing leading to food riots around the globe and bans on grain exports from some of the world's leading exporters contributing to raising prices still further. Indeed, such actions are not without cost. Egypt, Morocco, and Burundi spent >1% of their gross domestic products on food subsidies, while Bangladesh, Malawi, and The Philippines allocated between 2 and 4.5% of their gross domestic product to the cost of transfers to consumers and producers (including agricultural subsidies on fertilizer) (33).

The loss of income and reduced foreign exchange reserves inherent in most of these policy choices has pushed many governments to question the de facto paradigm that has underpinned recent approaches to food security; namely, reliance on global food markets and domestic market liberalization (1,34). Some countries such as Senegal, Malaysia, and China decided to shift toward a self-reliance model of food security rather than one based on exchange (33). Others attempted to control exports to protect domestic supplies (including India and Vietnam) or to buffer domestic agriculture through subsidies and loan schemes, such as Indonesia's support of input prices, India's plan to cancel the debt of 4 million farmers (at a cost of US $15 billion) (35), and also the European Union reverting in 2009 to purchasing and storing butter and milk to prop up farmer incomes (36). There have been attempts to isolate domestic markets from global shocks via regional schemes, such as the Southern African Development Community announcement in 2008 that it would set up a regional Food Reserve facility to serve member states. There have also been less conventional moves to circumvent conventional trade agreements, including barter trade in commodities from rice to vegetable oil (including Morocco and Russia) (37), preferential trade deals, such as "secretive" agreements between The Philippines and Vietnam on rice purchases that bypass international markets (38), and even geographic outsourcing of agriculture, i.e. using other countries' land, water, and labor to generate commodities dedicated for home country consumption (including Saudi Arabia, South Korea, and India, which have arranged purchase or lease of land in Indonesia, Madagascar, and Paraguay, respectively) (33).

Many such moves run counter to the intent of the Doha Round of trade liberalization talks and some have the potential to aggravate price dynamics in future situations of food stress, at least for the poorest food deficit countries. In other words, national responses to the current crisis may affect not only current trade, food security, and nutrition but also the evolution of future crises through their distorting effects on trade and investment patterns. Thus, although considerable attention has been paid to understanding the underlying economic drivers of the 2007/2008 crisis, more attention is needed to the economic and other policy complications associated with nationalistic responses that will frame the speed of immediate recovery and the policy space for maneuvering in future upheavals.

Conclusions

We've been here before, and we'll be here again. Periods of price volatility, constrained access to food on international markets (including food aid), and resultant distress for the poor (in terms of constraints on consumption of an adequate quantity and quality of nutrients) will again challenge the world community in coming decades even if food prices resume their historical downward trend in real terms. The layering of multiple drivers of price dynamics will keep many commodities prices higher in coming decades than in the past, with the result that while more people will be able to meet minimum needs as a share of the world's population, more people will continue to be undernourished in absolute terms, given their lack of access to appropriate diets.

What matters is what governments chose to do in response to the peaks and what they do not do during the troughs. Complacency in the face of record harvests carries the risk of continued low investments in agriculture despite the fact that higher investments in productivity enhancement will be crucial to meeting future demand and that much of this will have to take place in regions that have lagged for many years in yield gains and output.

Investments will also be essential in crisis preparedness and mitigation through nuanced plans that avoid hurting the chances of other nations to respond to their own needs, do not contribute to global commodity market uncertainty, and which succeed in protecting the consumption and nutrition of an increasingly bifurcated world (more urban and less rural). The Comprehensive Framework for Action, formulated under UN auspices during 2008 as a response to the price crisis, made explicit reference to the importance of "nutrition interventions and other safety nets" in meeting the immediate needs of people most affected (39). However, it also argued that to build resilience over the longer term, thereby contributing to global food and nutrition security, effective social protection systems would have to be expanded that directly promote sound nutrition and healthy lifestyle choices, smallholder farmers would have to be supported in sustainable ways, and international food chains and food markets would need to be strengthened such that interannual vagaries of price, weather, or stock levels would no longer threaten the stability of increasingly interconnected systems. Such investments have been called for in the past (40,41). How severe the impact of the next food crisis will be depends in large part on how seriously governments choose to take such calls this time around as prices moderate and the waters of the 2007/2008 price tsunami recede.

Other articles in this supplement include (42–57).

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