

# Food Price Watch



THE WORLD BANK GROUP

YEAR 4 • ISSUE 15 • NOVEMBER 2013

Prices of internationally traded food commodities continued to decline—by 6%—between June and October. These declines have added to the falling price trend since the all-time high of August 2012. Record harvests in wheat, maize and rice, along with stronger global stocks, a weaker dollar and releases of public stocks of rice, have driven down prices. Yet, international prices are not far from their historical peak; wheat markets remain tight despite rebounding harvests; and unfavorable weather conditions in South America, Black Sea countries, and India are increasing concerns. Domestically, food prices show their typical large variations across countries, mainly the result of seasonal factors as well as procurement policies and localized production shortfalls.

This issue of the Food Price Watch also explores the role that extra-large-scale farming, popularly known as super farms, may play in boosting agricultural productivity and poverty reduction. The jury is still out: social, environmental, and animal welfare concerns must be weighed with potentially promising benefits.

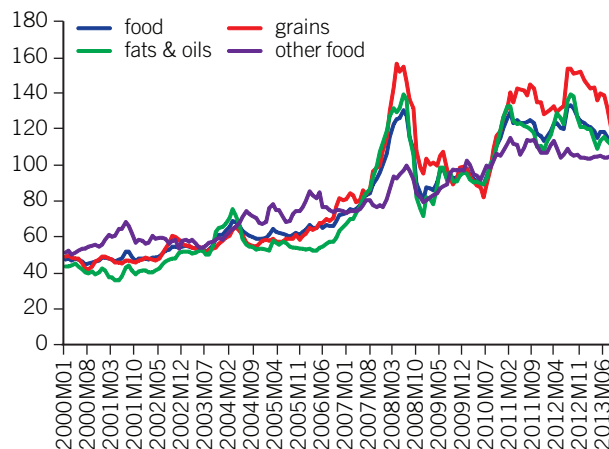
## Global Price Trends

**International prices of food continued to decline between June and October 2013, but remain high** (figure 1). The World Bank's Food Price Index decreased by 6% during that period. Price declines were sustained month-to-month until September, but remained virtually unchanged in October. The Bank's Food Price Index in October was 12% lower than a year ago and 16% below the all-time peak in August 2012. Hence, despite the steady declines in the last months, prices of internationally traded food still remain high.

**Prices of grains have driven the overall decline in food prices between June and October 2013.** Those prices were 19% lower in October than in June. Prices of fats and oils went up by 1% and those of others (which include sugar and meat) ticked down by 0.3% (table 1).

**But prices within grains have moved in different ways.** The price of internationally traded maize fell by 32%, with sustained drops in each of the last three months. Prices of rice (Thai 5%) also fell markedly—but less—between June and October, by 16%. In contrast, the international price of wheat increased during this period. The increase between June and October was 4%, with a sharp increase of 6% in

Figure 1. World Bank Global Food Price Index



Source: World Bank, DECPG.

Note: The Global Food Price Index weighs export prices of a variety of food commodities around the world in nominal U.S. dollar prices, 2010 = 100. Note that the previous base, 2005 = 100, has now been changed to 2010.

October alone. The Bank's average price of crude oil went up by 6% during this period, averaging US\$105 per barrel in October after nearing US\$110 earlier in September. However, these increases have not translated into fertilizer price increases.<sup>1</sup> The prices of soybean oil and sugar have experienced less marked variations and in opposite

**Table 1. Price Change of Key Food Commodities**

Indices	June 2013– Oct. 2013 (%)	Oct. 2012– Oct. 2013 (%)
Food	-6	-12
Grains	-19	-26
Fats and oils	1	-7
Other	0	-2
Fertilizer	-15	-27
<b>Prices</b>		
Maize	-32	-37
Rice (Thai, 5%)	-16	-21
Wheat (U.S., HRV)	4	-9
Sugar (world)	9	-8
Soybean oil	-5	-16
Crude oil, average	6	2

Source: World Bank, DECPG.

directions between June and October (table 1). Nonetheless, the increase in the price of sugar in October alone was 7%.<sup>2</sup>

**Continued favorable weather conditions and improved production prospects have translated into sustained price declines.** Favorable outlooks for the supply of cereals predict record harvests for wheat, maize, and rice. In the case of **wheat**, sharp production recoveries among European Union and Black Sea producers<sup>3</sup> have led to the expansion of global production from last year's dry weather-affected harvests. But stronger demand for wheat, especially from China, a weaker U.S. dollar, and increasing concerns following recent adverse weather have affected prices. Initially, price increases were almost imperceptible in August and September, but then increased sharply in October (by 6% as indicated above). Global stocks are expected to partially recover from last year's declines, but major exporters' closing stocks continue to remain low, still reflecting tight export availabilities.

The anticipated record **maize** harvest in the world's top producer and exporter, the United States (after last year's sharp decline), the significant output increases in EU and Black Sea producers,<sup>4</sup> and improved harvests in China have all contributed to plunging international prices in recent months. Along with production increases, weaker demand<sup>5</sup> is expected to raise stocks to levels unseen since 2000.<sup>6</sup> In the case of **rice**, current and historically high stocks, generally weaker currencies

among exporting countries, and anticipated production increases have all contributed to marked price declines. The largest increase in output is expected in India as a result of abundant monsoon rains, although the mid-October cyclone Phailin has seriously affected production in eastern states.<sup>7</sup> Furthermore, the release of rice from public stocks in Thailand<sup>8</sup> has also resulted in decreases in the price of Thai rice exports, contributing to the overall decline in the price of the internationally traded rice.

**However, deteriorating weather conditions and other uncertainties might further affect price trends.** Frost in Brazil and Paraguay, dry conditions in Argentina, and delayed plantings due to wet weather in producing regions in the Russian Federation and Ukraine all raise concerns for winter wheat harvests. China's rice production is reportedly expected to decline—for the first time since 2003—due to droughts in central provinces and excessive rains in northeastern and southern provinces. A recent cyclone and subsequent heavy rains are affecting rice harvests in India.<sup>9</sup>

Another source of uncertainty comes from the use of maize to produce ethanol in the United States. Although the use of maize is expected to increase this year (by 5%, after last year's first-ever decline in two decades),<sup>10</sup> the U.S. Environmental Protection Agency has recently proposed a reduction in the mandated volumes of maize-based ethanol in the United States for 2014.<sup>11</sup> Such downward adjustments are associated with technological limitations (a "wall" in the volume of ethanol that gasoline can be blended with) and weaker fuel demand in the United States. It follows that a decline in maize use for ethanol in a context of bumper crops will contribute to downward pressures on maize prices. However, if weather conditions were to deteriorate, the maize market may come under pressure given the still substantive share of the U.S. maize crop used for ethanol.<sup>12</sup>

The World Bank's *Commodity Market Outlook* argues that if history repeats itself regarding the time global stocks take to fully recover from large supply shocks, such as last year's droughts, some level of vulnerability will remain in global markets (especially for wheat and maize).<sup>13</sup> In fact, ending stocks for wheat this year are not expected to return to 2012 predrought levels. On a positive note, crude oil prices are not expected to continue rising because of supply increases (from Iraq and Libya) and "receding" risks associated with geopolitical tensions in the Syrian Arab Republic.<sup>14</sup>

## Domestic Price Trends

**Domestic prices of grains have followed different patterns across regions, mostly reflecting seasonal trends.** Prices of staples in eastern and southern Africa generally increased (except in South Africa) between June and October 2013 due to tight supplies in anticipation of upcoming harvests and last year's production shortfalls. In contrast, prices of cereals in western Africa declined during this period as harvests reached markets in the region.<sup>15</sup> In Central America and the Caribbean, prices of maize have also declined as good main season harvests reached the markets. In South America, however, limited supplies and deteriorated prospects for upcoming harvests have driven up prices of wheat to record highs in several countries.<sup>16</sup> In East and South Asia, a few countries have seen wheat prices increase markedly due to limited supplies and strong demand. In contrast, rice prices remained stable from counterbalancing forces: increasing supplies in anticipation of harvests and released public stocks are being balanced by public procurement policies and flood concerns. Wheat prices in Central Asia continue to hold steady in the face of strong export demand and weather-related concerns in large producing countries.<sup>17</sup>

Between June 2013 and October 2013, the largest wheat price increases (table 2) took place across monitored markets in Argentina (60%) as a result of recent bad weather; in Brazil (27%) and Bolivia (14%)<sup>18</sup> because of tight imports from Argentina; and in Ethiopia (30%), Sudan (23%), and Belarus (22%) because of limited supplies associated with several causes.<sup>19</sup> Sizable wheat price reductions were observed in Ukraine (30%, national average) because of rebounding supplies, and in monitored markets in Moldova and Armenia (13%) because of outstanding harvests and cheaper imports, respectively.<sup>20</sup> Domestic maize prices experienced large increases in monitored markets in Tanzania (74%), Mozambique (67%), Malawi (58%), and Ethiopia, Uganda and Chad (between 31 and 36%) due to seasonal trends; strong demand; limited supplies from previous and current harvests; and higher transportation costs.<sup>21</sup> Decreases in domestic maize prices in excess of 30% took place in Ukraine, Russia, and in monitored markets in Nigeria and Haiti as a result of increasing supplies from recent harvests. Between June and October 2013, rice prices increased by 17% in monitored markets in the Philippines due to production losses associated with cyclones and flooding,<sup>22</sup> and 14% in Peru, Togo, and Uganda.<sup>23</sup> The largest declines in the price of rice took place in markets in Rwanda (24%),

Somalia (19%), Haiti (11%), and Niger and Mozambique (7%) because of good production, adequate levels of (cheaper) imports, appreciation of currency, and humanitarian interventions.<sup>24</sup>

### Domestic price variations between October 2012 and October 2013 show the usual wide range in yearly prices.

The price of wheat in October 2013 was 140% higher than 12 months ago in Argentina (Buenos Aires), 56% higher in Sudan (Dongola), 48% higher in Bolivia (La Paz), 43% higher in Belarus and 42% higher in Brazil (both, national average), reflecting reduced supplies and the depreciation of national currencies.<sup>25</sup> Ukraine, the Democratic Republic of Congo, Colombia, the Kyrgyz Republic, Tajikistan, and Afghanistan report more moderate decreases in the domestic wheat price, between 9 and 23%, mainly due to larger supplies. Large increases in the annual maize price occurred in monitored markets in Malawi (Liwonde, 130%), due to increasing transportation costs and localized production declines, Somalia (Hargeisa, 52%), Mozambique (Ribau, 50%), Bolivia, Ethiopia and Uganda, as well as in Zambia and Nicaragua, of between 30 and 50%. These price increases are the result of multiple factors: tighter supplies; increasing demand for imports by neighboring countries; and public procurement programs.<sup>26</sup> Maize prices declined over the last year in Ukraine and Russia (national average, 36%), and, more moderately, between 12 and 15%, in monitored markets in Thailand, Rwanda, Mexico and Togo, generally due to adequate or increasing supplies. The price of rice increased in monitored domestic markets in Bolivia (42%), Bangladesh and India (28%), and increased around 20% in markets in Chad, Malawi and Mexico, influenced by unfavorable harvests, high import prices, public procurement programs, and currency depreciation.<sup>27</sup> In contrast, the annual rice price dropped between 18 and 25% in monitored markets of Mali, Thailand, and Somalia.<sup>28</sup>

## Super Farms

Despite several months of consecutive food price declines and significant improvements in extreme poverty reduction, progress in the reduction of global chronic hunger is fairly modest, as recently reported by the Food and Agriculture Organization (FAO), the World Food Programme (WFP), and the International Fund for Agriculture Development (IFAD).<sup>29</sup> The 842 million currently hungry people, and future increases in food demand as the global population

**Table 2. Largest Variations in Domestic Prices**

Quarterly Price Movements: June 2013 – October 2013			
Wheat	% change	Maize	% change
Argentina, Buenos Aires, flour, wholesale, US\$/kg	60	Tanzania, Dar es Salaam, wholesale, US\$/ton	74
Ethiopia, Jimma, white, wholesale, Ethiopian birr/local	30	Mozambique, Nampula, white, retail, metical/kg	67
Brazil, natl. avg., wholesale, Brazilian real/kg	27	Malawi, Liwonde, retail, kwacha/kg	58
Sudan, Dongola, wholesale, Sudanese pound/local	23	Ethiopia, Diredawa, wholesale, Ethiopian birr/local	36
Belarus, Minsk, flour, retail, Belarussian ruble/kg	22	Uganda, Lira, wholesale, US\$/ton	33
Bolivia, La Paz, flour, imported (Argentina), wholesale, boliviano/local	14	Chad, Moussoro, retail, CFA franc/kg	31
Pakistan, Karachi, flour, retail, Pakistan rupee/kg	10	Honduras, Tegucigalpa, white, wholesale, US\$/kg	-24
Bangladesh, Dhaka, flour, retail, taka/kg	-6	Rwanda, Kigali, wholesale, US\$/ton	-28
Armenia, natl. avg., flour, 1st grade, retail, Armenian dram/kg	-13	Togo, Anie, white, retail, CFA franc/kg	-28
Moldova, Chisinau, retail, Moldovan leu/kg	-13	Haiti, Port-au-Prince, meal (local), retail, gourde/local	-30
Congo, Dem. Rep. of, Kinshasa, flour, retail, franc Congolais/kg	-19	Nigeria, Kano, wholesale, naira/local	-35
Ukraine, natl. avg., 3rd class, bid EXW, processing, hryvnia/ton	-30	Russian Federation, natl. avg., offer EXW, wholesale, Russian ruble/kg	-37
		Ukraine, natl. avg., bid EXW, processing, wholesale, hryvnia/ton	-40
Rice	% change	Sorghum	% change
Philippines, metro Manila, milled, retail, Philippine peso/kg	17	Chad, Abeche, retail, CFA franc/kg	82
Peru, Lima, milled, corriente, retail, nuevo sol/kg	14	Somalia, Mogadishu, red, retail, Somali shilling/kg	51
Togo, Korbongou, imported, retail, CFA franc/kg	14	Ethiopia, Addis Ababa, red, wholesale, US\$/kg	39
Uganda, Kampala, wholesale, US\$/ton	14	Sudan, Al-Damazin, feterita, wholesale, Sudanese pound/local	33
Nicaragua, natl. avg., 2nd quality, wholesale, cordoba oro/kg	11	Niger, Zinder, local, wholesale, CFA franc/local	18
Mozambique, Milange, retail, metical/kg	-7	El Salvador, San Salvador, Maicillo, wholesale, US\$/local	-2
Niger, Niamey, imported, wholesale, CFA franc/local	-7	Lesotho, Maseru, meal, retail, loti/kg	-10
Haiti, Port-au-Prince, imported, retail, gourde/local	-11	Togo, Cinkassé, retail, CFA franc/kg	-23
Somalia, Mogadishu, imported, retail, Somali shilling/kg	-19		
Rwanda, Kigali, wholesale, US\$/ton	-24		
Annual price movements: October 2012 – October 2013			
Wheat	% change	Maize	% change
Argentina, Buenos Aires, wholesale, US\$/kg	143	Malawi, Liwonde, retail, kwacha/kg	130
Sudan, Dongola, wholesale, Sudanese pound/local	56	Somalia, Hargeisa, white, retail, Somali shilling/kg	52
Bolivia, La Paz, flour, imported, Argentina, wholesale, boliviano/local	46	Mozambique, Ribaué, white, retail, metical/kg	50
Belarus, natl. avg., flour, retail, Belarussian ruble/kg	43	Bolivia, La Paz, hard yellow, cubano, wholesale, boliviano/local	47
Brazil, natl. avg., wholesale, Brazilian real/kg	40	Ethiopia, Addis Ababa, wholesale, US\$/kg	41
Uruguay, natl. avg., flour, wholesale, Uruguayo peso/kg	38	Zambia, natl. avg., white, retail, kwacha/local	40
Ethiopia, Debre Marcos, white, wholesale, Ethiopian birr/local	36	Uganda, Lira, wholesale, US\$/ton	38
India, Patna, retail, Indian rupee/kg	27	Nicaragua, natl. avg., white, retail, cordoba oro/kg	33
Afghanistan, Kabul, flour, retail, afghani/kg	-9	Togo, Anie, white, retail, CFA franc/kg	-12
Tajikistan, natl. avg., flour 1st grade, retail, somoni/kg	-12	Mexico, Mexico City, white, wholesale, Mexican peso/kg	-13
Kyrgyzstan, Osh, flour 1st grade, retail, som/kg	-16	Rwanda, Kigali, wholesale, US\$/ton	-14

*table continues on next page*

**Table 2. Largest Variations in Domestic Prices, *continued***

Annual price movements: October 2012 – October 2013 ( <i>continued</i> )			
Wheat ( <i>continued</i> )	% change	Maize ( <i>continued</i> )	% change
Colombia, Bogotá, flour, wholesale, Colombian peso/kg	-18	Thailand, Bangkok, wholesale, Baht/ton	-15
Congo, Dem. Rep. of, Kinshasa, flour, retail, Congolais franc/kg	-22	Russian Federation, natl. avg., offer EXW, wholesale, Russian ruble/kg	-36
Ukraine, natl. avg., 3rd class, bid EXW, processing, hryvnia/ton	-23	Ukraine, natl. avg., bid EXW, processing, wholesale hryvnia/ton	-36
Rice	% change	Sorghum	% change
Bolivia, Cochabamba, grano de oro, wholesale, boliviano/local	42	Sudan, Al-Fashir, feterita, wholesale, Sudanese pound/local	77
Bangladesh, Dhaka, coarse, wholesale, taka/kg	28	Chad, Moundou, retail, CFA franc/kg	63
India, Patna, retail, Indian rupee/kg	28	Ethiopia, Addis Ababa, red, wholesale, US\$/kg	53
Chad, N'Djamena, imported, retail, CFA franc/kg	18	Somalia, Mogadishu, red, retail, Somali shilling/kg	44
Malawi, Lilongwe, retail, kwacha/kg	18	Togo, Anie, retail, CFA franc/kg	35
Mexico, Mexico City, Morelos, wholesale, Mexican peso/kg	17	Niger, Maradi, local, wholesale, CFA franc/local	33
Haiti, Port-au-Prince, local, retail, gourde/local	-10	Burkina Faso, Ouagadougou, local, wholesale, CFA franc/local	-14
Costa Rica, natl. avg., 2nd quality, retail, US\$/kg	-11	El Salvador, San Salvador, Maicillo, wholesale, US\$/local	-15
Colombia, natl. avg., 2nd quality, retail, Colombian peso/kg	-14	Mali, Bamako, local, wholesale, CFA franc/local	-38
Somalia, Galkayo, imported, retail, Somali shilling/kg	-18		
Thailand, Bangkok, 25% broken, wholesale, Baht/ton	-22		
Mali, Sikasso, local, wholesale, CFA franc/local	-25		

Source: Food and Agriculture Organization (FAO) and Global Information and Early Warning System (GIEWS).  
Note: Currencies as originally reported by FAO.

reaches 9 billion by 2050, continue to demand sustained increases in agricultural productivity.

Where will these increases in agricultural productivity come from? Currently the dominant view is that small-scale farming is critical to boost agricultural productivity and reduce poverty.<sup>30</sup> Yet, large-scale farming is increasingly viewed as an attractive complement; some in fact argue that *both* small- and large-scale farming practices are necessary to increase agricultural productivity and produce enough food to feed the world's poor.<sup>31</sup> Advocates argue that large-scale farming benefits include efficiency gains from scale economies (at least for plantation-type agriculture) and vertical integration<sup>32</sup>; favorable access to credit, finance, and technology; capacity to satisfy product certifications and standards; and ability to expand agriculture to previously uncultivated areas.<sup>33</sup> But there are also those questioning the complementarity between large- and small-scale farming (box 1) and pointing out potential environmental, social and economic concerns, especially in the context of weak institutions and state fragility.<sup>34</sup>

Super farms, typically exceeding thousands of hectares (ha) in the developing world<sup>35</sup> (box 1), are at the center of

this discussion. Much celebrated is the success of vast farms in Brazil's *cerrado*—some sprawling 100,000 ha—that have transformed once low-productivity land into a world powerhouse of soybean production.<sup>36</sup> More recently, a current joint venture between China and Singapore is projected to develop an extensive 145,000 ha “food zone” in the northeastern province of Jilin, China. The motivation is that the US\$18 billion 15-year project will reduce Singapore's vulnerability to food-related shocks and generate employment opportunities for Jilin residents. China is also expected to benefit from adopting the highly recognized regulatory and export standards of Singapore.<sup>37</sup> In Indonesia, large-scale operations in oil palm have reportedly created between 1.7 and 3 million new jobs.<sup>38</sup>

But there are also multiple risks associated with large-scale farming. Opaque deals known as “land grabs,” involving severely food insecure areas, outrageous conditions, and disappointing outcomes have attracted global interest.<sup>39</sup> This was the case in attempts to lease 1.3 million ha, or half the cultivable land of Madagascar, which is said to have contributed to the ousting of then President Ravalomanana, as well as vast land areas in South Sudan (up to 400,000 ha).<sup>40</sup> In Eastern Europe, rapid

## Box 1. Q&A on Super Farms

**What is a super farm?** There is not a widely accepted standard definition of the minimum area (or livestock head count) that a farm must have to be considered a “super” farm. Cotula et al. (2010)<sup>a</sup> use 1,000 ha as the threshold for large-scale agriculture, while Deininger and Byerlee (2011)<sup>b</sup> consider 10,000–15,000 ha the minimum range for a farm to be considered a super farm. Deininger and Byerlee (2011) report that the median farm size in Brazil’s cerrado is 1,000 ha, but many exceed 10,000 ha. In South Asia, a typical oil palm mill averages 10,000 ha. In Sub-Saharan Africa, some farms exceed 100,000 ha, while in Russia, some are larger than 300,000 ha.

**Are all super farms the same?** Super farms are quite heterogeneous in terms of the capital involved (foreign, national, or mixed; private, public, or combined), property terms (lease or purchase), exploitation model (land concentration or independent small farms) and degree and terms of integration (vertical or horizontal integration), among other criteria. What brings them together is their large scale of operations, large investment flows, and an unambiguous profit orientation.

**Is a super farm the same as a land grab?** No. Oxfam<sup>c</sup> defines a land grab as an acquisition of land that involves one or more of the following circumstances: violation of human rights; affected communities do not provide free, prior, and informed consent; lack a proper assessment of social, economic, environmental impacts; lack transparent and competitive contracts; and disregard of meaningful participation. There are legitimate large-scale farming operations that do not engage in these behaviors.<sup>d</sup>

**What are the benefits of super farms compared to small farms?** For decades, small family-operated farms have been thought to be more productive than larger commercial units. Family workers are typically more motivated than hired workers and require less supervision; small farms are more flexible and better able to adjust labor supply to seasonal and annual variabilities; and operators/owners have intimate knowledge of local conditions. Yet, large-scale farming can potentially provide multiple benefits. The unit costs of acquiring and processing information and technology decrease as the farm size increases. The high costs of gaining safety, environmental, or product identity certification make large operating units advantageous. In some cases, large operations can fill gaps in public services, constructing their own port terminals for exports. They can also access international capital markets and conduct their own private research and development. However, corruption and weak land governance may produce negative impacts from large-scale investments by promoting land speculation, causing inequality in land ownership, and generating environmental risks and sanitary and animal welfare concerns.

**Do they have a positive impact on poverty and employment?** Existing evidence points to the critical role that small-scale and family farming have in reducing poverty and employment because they are labor intensive in areas of high poverty incidence; favor food security in those areas; and have or may have strong economic links back into the community.<sup>e</sup> But this information should not be taken to imply that large farms do not have potential to impact poverty. Unfortunately, evidence on specific large-scale farming impacts is scarce: evidence points to sizeable employment and economic opportunities associated with these practices in Brazil, Indonesia, Liberia, Peru, and Ukraine. This is more so the case among relatively labor-intensive crops such as oil palm, sugarcane, rubber, or jatropha.<sup>f</sup> In Brazil, recent studies report increasing incomes, human capital accumulation, and poverty reduction in municipalities associated with large-scale sugarcane and soybean production. Yet studies also find in those areas increases in income inequality and social costs (for example, medical costs from respiratory illnesses associated with sugar burning).<sup>g</sup> But neither benefits nor harm should be assumed automatic or intrinsic and more evidence is needed.

**Can super farms complement small-scale agriculture?** A view typically held among international institutions is that small- and large-scale farming can coexist because they have different comparative advantages depending on land and labor abundance, functioning of institutions and property rights, and the extent of yield gaps and types of crops.<sup>h</sup> Another, more critical, view—held by some academics—argues that the monopolistic bargaining power of large-scale farming, the increasing demands of certification schemes, and the scale of new technology may crowd out small farming.<sup>i</sup>

*box continues on next page*

## Box 1. Q&A on Super Farms (continued)

**Under what circumstances can super farms generate positive impacts on food security and poverty reduction?** Multiple actions are needed from numerous stakeholders, such as governments, private sector, civil society, and the international community. Wide-ranging interventions include making information on land deals publicly available; prioritizing public investments on infrastructure and technology; improving competition and governance in land and agriculture markets; preventing skilled managers from going elsewhere; increasing use of truly participatory community tools; and designing, disseminating, implementing and monitoring responsible agroinvestment principles, among others.

### Sources:

- a. Cotula, L., S. Vermeulen, R. Leonard, and J. Keeley, *Land Grab or Development Opportunities? Agricultural Investment and International Land Deals in Africa* (Rome: ILED, IFAD, FAO, 2009).
- b. K. Deininger and D. Byerlee, *Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?* (Washington, DC: World Bank, 2011).
- c. Oxfam, "Our Land, Our Lives: Time Out on the Global Land Rush," Oxford Briefing Note, October 2012.
- d. See Deininger and Byerlee (2011) and Cotula et al. (2009) for country-specific case studies.
- e. See references in note 22 in main text. There are, however, those who question the validity of evidence on small farms because of technical reasons, such as, for example, the fact that size and productivity analyses do not include truly large-scale farming. Those views argue that the superiority of small farms cannot be established without proper evidence on large farms (P. Collier and S. Dercon, "African Agriculture in 50 Years: Smallholders in a Rapidly Changing World?" Expert Paper for the FAO Conference on "How to Feed the World in 2050," Rome, October 12–13, 2009).
- f. Deininger and Byerlee, "Rising Global Interest in Farmland."
- g. L. K. VanWey, S. Spera, R. de Sa, D. Mahr and J. F. Mustard, "Socioeconomic Development and Agricultural Intensification in Mato Grosso," *Philosophical Transactions of the Royal Society Biological Sciences* 368 (2013), <http://dx.doi.org/10.1098/rstb.2012.0168>; D. Weinhold, E. Killick, and E. Reis, "Soybeans, Poverty and Inequality in the Brazilian Amazon," *World Development* 52: 132–143 (2013); L. Martinelli, R. Garrett, S. Ferraz, and R. Naylor, "Sugar and Ethanol Production as a Rural Development Strategy in Brazil: Evidence from the State of São Paulo," *Agricultural Systems* 104: 419–28 (2011).
- h. World Bank Group Statement on Oxfam note, "Our Land, Our Lives," October 4, 2012, Press Release No. 2013/100/ARD. See, for discussion, Deininger and Byerlee, "Rising Global Interest in Farmland," and J. D. van der Ploeg ("Poverty Alleviation and Smallholder Agriculture: The Rural Poverty Report 2011," *Development and Change* 43[1]: 439–48 [2012]).
- i. Van der Ploeg, "Poverty Alleviation."

concentration of farming land in a context of land-use contraction has been associated with rapid increases in the price of land and lower productivity growth compared to smaller farms.<sup>41</sup> Super farms—including also large livestock agribusiness—have also raised serious concerns regarding the environment, spread of disease and animal welfare, associated with waste disposal, monocultures and zero-grazing practices, respectively.<sup>42</sup>

But contrary to small-scale farming, there is little reliable evidence assessing the impacts of super farms or establishing meaningful comparisons with small-scale agriculture.<sup>43</sup> What it is known, however, does not necessarily point to a larger size as the only or main factor responsible for either positive or negative impacts on productivity. The spectacular productivity achievements of the Brazilian cerrado are largely attributed to breakthroughs in the treatment of acidic soils and the adaptation of pasture varieties to such soils and soybeans to tropical latitudes.<sup>44</sup> Furthermore, even in abundant land contexts, performance of large-scale farming might be more closely associated with their establishment in areas better endowed with quality soil and infrastructure and their use of superior management skills than necessarily with economies of scale.<sup>45</sup> The risks of large farms aggravating corruption, bad governance, and economic and social distortions to local communities constitute a more considerable concern in

contexts that are starting with high levels of corruption and fragile institutions. It is in these contexts that abusive purchase or leasing conditions, monopolistic positions, and geopolitical frictions are more likely to emerge.<sup>46</sup>

Hence, it is unlikely that super farms will bring about agricultural and overall economic growth, food security, and poverty reduction in the absence of strong institutions, or without at least effective safeguards and responsible investment practices in place (even though there is not a dearth of such initiatives).<sup>47</sup> But this also applies to strong institutions in the context of small-scale farming. In short, while the jury is still out, it is clearly too early to brand super farms a solution to hunger and the world's increasing food demand. The stakes are too high, however, to rule out any potential source of agricultural productivity growth, production, or income.

## Notes

1. In fact, fertilizers prices dropped 15% between June and October, reflecting declining production costs from cheaper natural gas (World Bank, *Global Economic Prospects: Commodity Markets Outlook* [2013]).
2. The price of sugar has recently increased due to unfavorable weather conditions in the center-south region of Brazil, although in a context of abundant supplies. The decrease in soybean oil prices reflects good prospects, although recent weather concerns among key producers and firm demand in China led to slight price increases in September (which decreased again in October; FAO, *Global Food Price Monitor*, September 2013; Agricultural

- Market Information Systems [AMIS], *Market Monitor*, October 2013, No. 12; AMIS, *Market Monitor*, November 2013, No. 13).
3. FAO (*Crop Prospects and Food Situation*, October 2013, No. 3) forecasts annual increases in wheat production for 2013 of 8% in the European Union; 36% in the Russian Federation; 34% in Ukraine; and 66% in Kazakhstan.
  4. These increases constitute complete recoveries from last year's reduced harvests due to dry conditions. Production increases in 2013 are forecast to be 12% in the European Union; 13% in Russia; and 15% in Ukraine (FAO, *Crop Prospects*).
  5. Weaker demand for imports is reported in Indonesia, Malaysia, Nigeria and the Philippines, all large importers (AMIS, *Market Monitor*, November 2013, No. 13).
  6. FEWS NET, *Price Watch*, September 30, 2013. Especially strong is the rebound in major exporters' stock to disappearance ratios (FAO, *Food Outlook*, November 2013).
  7. The damage caused by cyclone Phailin and subsequent heavy rains in the states of Andhra Pradesh and Orissa have led to downward revisions of the forecasted production in India, with some analysts even suggesting that the year's rice harvest may fall below last year's (B. Mukherji, "Indian Rice Harvest to Fall This Year, Official Says," *The Wall Street Journal*, November 7, 2013; FAO, *Food Outlook*).
  8. The release of public stocks is justified by the need to accommodate for additional public purchases of the new harvest under the rice mortgage program extended into 2014. In addition to public stocks releases, the Thai baht has also depreciated, thus contributing to the overall fall in export prices.
  9. United States Department of Agriculture (USDA), *World Agricultural Supply and Demand Estimates* (WASDE), November 8, 2013.
  10. USDA, "Corn-Based Ethanol Expansion in the United States Has Slowed in Recent Years," Economic Research Service, <http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=40078>; USDA, WASDE, September 2013.
  11. U.S. Environmental Protection Agency, "EPA Proposes 2014 Renewable Fuel Standards/Proposal Seeks Input to Address 'E10 Blend Wall,' Reaffirms Commitment to Biofuels," Press Release, November 15, 2013, <http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceac8525735900400c27/81c99e6d27c730c485257c24005eeeb0?OpenDocument>. For analyses on the potential consequences of downward adjustments in biofuel mandates, see C. Podkul ("RPT-Ethanol, Oil Groups Blitz White House as Biofuel Rule Nears," October 30, 2013) and N. Snow ("AAA, API ask EPA to Lower 2014 Ethanol Mandates," *Oil and Gas Journal*, October 28, 2013).
  12. World Bank, *Commodity Markets Outlook*.
  13. *Ibid.*
  14. United States Energy Information Administration (EIA), "Short-Term Energy Outlook: Market Prices and Uncertainty Report," October 2013; World Bank, "Developing Trends: October 2013," Development Prospects Group.
  15. Famine Early Warning System Network (FEWS NET), *Price Watch*, September 2013, October 31, 2013.
  16. Argentina, Bolivia, Brazil, and Paraguay (FAO, *Global Food Price Monitor*, November 11, 2013).
  17. FAO, *Global Food Price Monitor*, October 9, 2013.
  18. Figures for Brazil and Bolivia refer to national average prices.
  19. Those causes refer to reduced production from last year's harvests (Ethiopia); currency depreciation and foreign exchange shortages to buy imports (Sudan); and decreased production this year (Belarus; FAO, *Global Food Price Monitor*, November 11, 2013; FEWS NET, *Price Watch*, September, October 31, 2013; FAO, *Crop Prospects*; FAO, *Global Food Price Monitor*, November 11, 2013).
  20. In places like the Democratic Republic of Congo (19%) and Bangladesh (6%), price declines are associated with increased supplies and continued public distribution, respectively.
  21. FAO, *Global Food Price Monitor*, November 11, 2013.
  22. This price increase in the Philippines does not reflect the impact of the unprecedented and terribly devastating cyclone Haiyan.
  23. FAO, *Global Food Price Monitor*, November 11, 2013; FAO, GIEWS Country Briefs, several countries, <http://www.fao.org/giews/countrybrief/> (2013).
  24. Currency appreciation occurred in Somalia and humanitarian distribution in Niger (FAO, *Global Food Price Monitor*, November 11, 2013; FEWS NET, *Price Watch*, September, October 31, 2013).
  25. Currency depreciation occurred in Brazil and Sudan.
  26. Increased demand of imports from neighboring countries affected Uganda and Zambia, while public procurement programs also had an impact on domestic prices in Zambia (FAO, *Global Food Price Monitor*, November 11, 2013; FEWS NET, *Price Watch*, September, October 31, 2013).
  27. Public procurement programs in Bangladesh and India and currency depreciation in Malawi (FAO, *Crop Prospects*).
  28. Prices went down in Mali due to increased imports and improved security situation; public stock releases and decreased export prices in Thailand; and above average level harvests in Somalia (FAO, *Global Food Price Monitor*, November 11, 2013; FEWS NET *Price Watch*, September, October 31, 2013).
  29. FAO, IFAD, and WFP, "The State of Food Insecurity in the World: The Multiple Dimensions of Food Security 2013" (2013).
  30. See among others, T. W. Schultz (*Transforming Traditional Agriculture* [New Haven: Yale University Press, 1964]); C. Barret ("On Price Risk and the Inverse Farm Size-Productivity Relationship," *Journal of Development Economics* 51[2; 1996: 193–216]); R. Eastwood, M. Lipton, and A. Newell ("Farm Size," in *Handbook of Agricultural Economics*, ed. P. L. Pingali and R. E. Evenson [North Holland: Elsevier, 2010]); the World Bank (*World Development Report 2008: Agriculture for Development* [Washington, DC, 2007] and "Agriculture Action Plan," <http://go.worldbank.org/6JHOE507JO>); IFAD (*The Rural Poverty Report 2011* [Rome; IFAD]); and FAO, IFAD, and WFP (*State of Food Insecurity in the World New Realities, New Challenges: New Opportunities for Tomorrow's Generation* [Rome: FAO]).
  31. World Bank Group statement on Oxfam note, "Our Land, Our Lives" (October 4, 2012, Press Release No. 2013/100/ARD).
  32. Whether agricultural production is subject to economies of scale is far from settled. Even though such increasing returns are conceptually plausible, there is, at best, not much conclusive empirical evidence supporting this claim (K. Deininger, D. Nizalov, and S. Singh, "Are Mega-Farms the Future of Global Agriculture?" World Bank Policy Research Working Paper 6544, July 2013).
  33. This is especially important in land-abundant contexts with low population density and scarce immigration (K. Deininger and D. Byerlee, "The Rise of Large Farms").
  34. J. D. van der Ploeg, "Poverty Alleviation and Smallholder Agriculture: The Rural Poverty Report 2011," *Development and Change* 43 (1): 439–48 (2012); Oxfam, "Our Land, Our Lives: Time Out on the Global Land Rush," Oxford Briefing Note, October 2012; GRAIN, "GRAIN Releases Data Set with over 400 Global Land Grabs," <http://www.grain.org/article/entries/4479-grain-releases-data-set-with-over-400-global-land-grabs> (2013).
  35. It is also worth noting that super farms are not unique to the developing world. There are sprawling farms with vast tracts of land and large animal headcounts all over the world, from the United States, the United Kingdom, and Australia to middle-income countries such as Brazil, Chile, and Vietnam as well as poor and fragile countries such as the Democratic Republic of Congo, Liberia, and Sudan, to name a few. Neither do super farms imply that investments exclusively flow from rich countries into developing countries. For example, China has engaged in large-scale farming in Africa, while also developing large farms at home. Similarly, Brazil is exploring new deals in Mozambique in addition to the already discussed cerrado. Trinidad and Tobago has been exploring the possibility of developing such activities in Guyana (*Straits Times*, "Super Farm," July 25, 2013, [http://www.straitstimes.com/sites/straitstimes.com/files/20130725/ST\\_20130725\\_FARMPINAL\\_3761443.pdf](http://www.straitstimes.com/sites/straitstimes.com/files/20130725/ST_20130725_FARMPINAL_3761443.pdf); *Trinidad and Tobago Newsday*, "Mega Farms Not Competing with Local Farmers," August 22, 2013; UNAC, Via Campesina Africa, <http://viacampesina.org/en/>; GRAIN, "Brazilian Megaproject in Mozambique Set to Displace Millions of Peasants," November 29, 2012).



36. *The Economist*, "Brazilian Agriculture: The Miracle of the Cerrado," August 26, 2010. As a result, Brazil, within a couple of decades, has become a peer of the traditional top five global grain exporters—Argentina, Australia, Canada, the European Union and the United States—and the only one with a tropical weather.
37. *Straits Times*, "Super Farm," July 25, 2013, <http://www.straitstimes.com/infographic/story/super-farm-20130725>; Future Directions International, "Singapore Secures China as Future Food Source," Strategic Analysis Paper 24, September 2010." Investment in high-tech research and development and the development of a complete industrial chain serving other parts of China and the region are also benefits expected from this project.
38. K. Deininger and D. Byerlee, *Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?* Washington, DC: World Bank (2011).
39. These operations also typically include massive land acquisition and large foreign investors (K. Deininger and D. Byerlee, *Rising Global Interest in Farmland*). This report indicates that only 203 out of 414 deals tracked between 2004 and 2009 with information on land size could be complied. Disappointing outcomes refer to failure to engage in expected activities; levels of investments or employment promised; or failures in engagement with local communities in meaningful ways (L. Cotula, S. Vermeulen, R. Leonard, and J. Keeley, *Land Grab or Development Opportunities? Agricultural Investment and International Land Deals in Africa* (Rome: IFAD).
40. Cotula, Vermeulen, Leonard, and Keeley, *Land Grab or Development Opportunities?*; P. Collier and S. Dercon, "African Agriculture in 50 Years: Smallholders in a Rapidly Changing World?" Expert Paper for the FAO Conference on "How to Feed the World in 2050," Rome, October 12–13, 2009.
41. A. Kramer, "Russian's Collective Farms: Hot Capitalist Property," *New York Times*, August 30, 2008; V. Lapa, A. Lissitsa, and A. Tovstopyat, "Super-Large Farms in Ukraine and Land Market," paper presented at IAMO Forum (2008); K. Deininger, D. Nizalov, and S. Singh, "Are Mega-Farms the Future of Global Agriculture?"
42. Collier and Dercon, "African Agriculture"; Deininger and Byerlee, "The Rise of Large Farms"; POST (UK Parliamentary Office of Science and Technology), "Livestock Super Farms," POSTNote No. 404, March 2012; Cotula, Vermeulen, Leonard, and Keeley, *Land Grab or Development Opportunities?*
43. Deininger and Byerlee (*Rising Global Interest in Farmland*) is an exemption, providing a comparative analysis in terms of unitary yields, costs, labor, and wages/incomes between small- and large-scale farms across crops in seven countries. They show that even for the small sample used, there is not a systematic superiority of either large- or small-scale agriculture across the analyzed parameters (that is, yields, costs, and wages/incomes).
44. Embrapa, Brazil's agricultural research corporation, had a critical role in those technological breakthroughs (*The Economist*, "Brazilian Agriculture"). Some analysts also indicate that local small and medium scale farmers may have also played a significant and pioneering role in the spectacular development of Brazil's cerrado.
45. Also, the initial concentration of land affects the pattern of entry and exit of farms over time. Deininger, Nizalov and Singh ("Are Mega-Farms the Future of Global Agriculture?") report these results for Ukraine, making use of 10-year farm panel data. Furthermore, there is increasing evidence that yield growth may not be monotonic with respect to farm size, but rather that productivity describes an inverted U pattern (V. Lapa, A. Lissitsa, and A. Tovstopyat, "Super-Large Farms in Ukraine"; Deininger, Nizalov, and Singh, "Are Mega-Farms the Future of Global Agriculture?")
46. Collier and Dercon, "African Agriculture."
47. Examples of these efforts include the "Voluntary Guidelines on the Responsible Governance of Tenure Land, Fisheries, and Forests in the Context of National Food Security (VGs)" and the "Principles for Responsible Agro-Investment (PRAI)," with the wide participation of international organizations, bilateral donors, governments, and civil society organizations. In addition, the Land Governance Assessment Framework is a diagnostic tool developed by the World Bank and several partners that assesses the status of land governance at the country level. "Grow Africa" is another multistakeholder platform to accelerate investments in agriculture in Africa under the umbrella of the Comprehensive Africa Agriculture Development Program. Among private stakeholders, The Guardian reports the recent commitment pledged by Coca-Cola to conduct third-party social, environmental, and human rights' assessments of the major sugar suppliers for its products and enforce the principle of free, prior, and informed consent across its operations and partners (M. Tran, "Coca-Cola Vows to Axe Suppliers Guilty of Land Grabbing," *The Guardian*, November 8, 2013).

