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China's food security challenge: what role for Africa?

Highlights

- **Who will feed China?** Malthusian concerns around the world's ability to provide sustenance for a rising population have often, as now, centered on China. With unrivalled agricultural potential, Africa too has been thrust to centre stage. Emotionally-fuelled estimations of China's agricultural ambitions in Africa too often miss the mark. This paper assesses where (if at all) Africa fits into Beijing's long-term food security agenda.
- **Food demand is rising rapidly in China.** Rising incomes and urbanisation are leading to dramatic increases in food consumption in China. China now consumes the second most food in the world, behind the United States. It is expected that, by 2015, China's total food expenditure will double to over USD1 trillion (tr).
- **Meanwhile, China is facing increasing strains on agricultural supply.** Urbanisation and industrialisation are swallowing up farmland, and diminishing water tables. Between 1996 and 2006, China lost 9 million (mn) hectares (ha) of farmland.
- **Boosting domestic sources of supply will be Beijing's core response to these challenges.** Agriculture's broader role in maintaining social harmony in China is profound. Fortunately, China has the propensity and ability to boost domestic production. China is a net exporter of food and has enormous stockpiles of most soft commodities. Given pointed state support, China's agricultural output is expected to swell by 26% to 2019.
- However, clear demand overhangs exist, meaning that China will have to seek external sources of nutrition. Two principle channels exist:
- **First, China will look to enhance trade ties with food exporting nations.** Between 2001 and 2010 China's imports of soybeans rose ten-fold, from USD2.8 billion (bn) to over USD25 bn, and rubber imports from USD2 bn to USD17 bn.
- **Africa is a bit player in China's agricultural trade prospectus.** 99% of China's soybean imports come from the Americas, and three-quarters of rubber imports from the rest of Asia. In 2009, China-Africa agricultural trade was just USD4 bn, less than 4% of total trade. A disconnect exists between African agricultural export and Chinese agricultural import dynamics. That said, recent trade growth in certain commodities, such as cotton, has been impressive.
- **Second, China will align aid and outward investment in agriculture to access new opportunities.** Here, Africa's role is pronounced. While cooperation remains developmental, signs of commercialism and strategic intent are clear. In general, state-owned farming groups carry out Beijing's agricultural investments in Africa. As of 2009, China had carried out over 200 agricultural projects in Africa. Increasingly, these projects are run on a for-profit basis.
- **Estimations of Chinese "land grabs" in Africa are overstated.** Gulf States, as well as private investors from throughout the developing and advanced world have led the thrust of recent land acquisitions in Africa. Beijing, alarmed by local sensitivities, has remained cautious.
- **Africa desperately requires capital and skills to elevate food security.** Managed well, partnerships with China can be meaningful. However, domestic food security must be placed first. Then, and leveraging Chinese aid, crops suited for China's demand dynamics can and should be emphasised. Increasingly, green technology will provide cogent opportunities.

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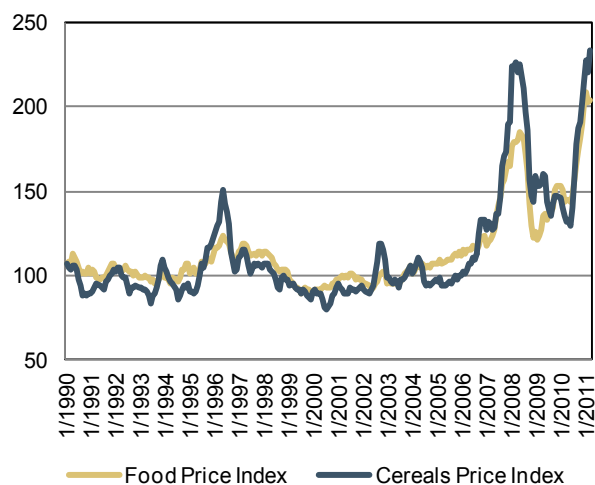
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Introduction

The world's population recently surpassed 7 bn people. Based on current growth projections, by 2050, 9 bn people will walk the earth. Malthusian concerns surrounding the world's ability to provide sustenance for this rising population abound. By 2050, according to the United Nations' Food and Agricultural Organization (FAO), food production will have to increase by 70% to feed the globe's larger, more urbanised, and increasingly affluent population. As such, a total average annual net investment in the world agriculture of around USD83 bn is necessary. Importantly, the nexus of demand is originating from the swiftly advancing, highly populated, emerging economies. Yet, for many emerging markets, rising demand is being met with diminishing local resources—most principally arable land and irrigable water. Two recent, and pronounced, global food price hikes underscore the challenged vista (Figure 1).

Figure 1: Recent food price hikes have caused alarm



Sources: FAO, Standard Bank Research

Within this climate, attention is turning both to those nations, or regions, facing the most acute (real or perceived) tensions, as well as those offering great agricultural potential. Unsurprisingly, China and Africa, respectively, have been thrust to centre stage. Emotionally-fuelled debates are common place because it is frequently assumed that China is laying an expansive agricultural cooperation framework across Africa, tapping into the continent's immense potential, as a means of securing long-term domestic food security.

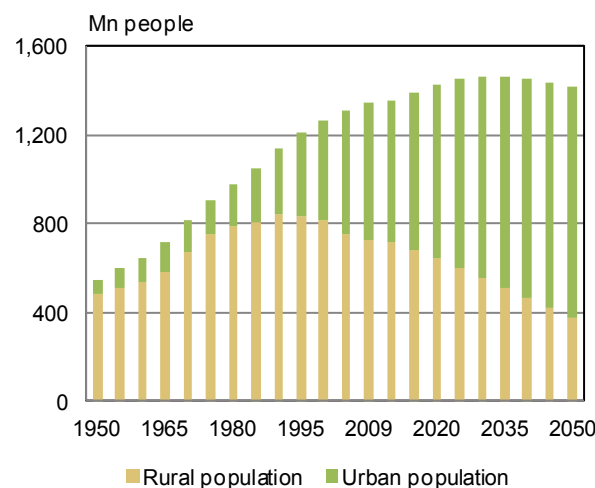
As with much of Sino-African discourse, predominant, and often untested, estimations are overbearing. Straining truth from fiction is vital, but difficult. This paper attempts to assess China's current agricultural demand and supply challenges, considering where (if at all) Africa is positioned with regards to Beijing's critical response to ensuring long-term food security for the country.

Rising demand in China

Food consumption in China has increased at an average annual rate of 23.4% (five-times faster than in India for example), from USD57 bn in 2000 to USD463 bn in 2010. While per capita food consumption levels in China are comparatively low when measured against other advanced and emerging economies, China's large (and still growing) population means that absolute consumption is profound. In fact, China consumes the second-most amount of food in the world, behind the United States (US).

The dramatic increase in China's demand for agricultural commodities is unlikely to abate. Two mutually-enforcing factors (rising incomes and urbanisation) principally underpin this assertion. Indeed, the pace of urbanisation has been so strong that, where in 1980 China's urban population amounted to around 190 mn people, or 20% of the population, today this figure stands at almost 650 mn, and roughly 47%, respectively. In a few years China will cross an important threshold in that, for the first time in the country's history, more than half of its population will be urbanised (Figure 2).

Figure 2: China's large, and increasingly urban population



Sources: United Nations (UN), Standard bank Research

Urbanisation has inspired, and been inspired by, increasing affluence in China. Indicatively, China's gross domestic product (GDP) per capita has grown more than five-fold in the past decade, from USD1,038 in 2001 to over USD5,100 today. Naturally, urban incomes have expanded at a faster clip, and are nominally more substantial, than rural equivalents (Figure 3).

Rising incomes are not only increasing the amount, but also the variety, of food consumed by China's largely urban middle class. In essence, as incomes elevate, per capita consumption of staple foods proportionately declines, while the demand for protein (particularly meat) increases, often substantially. Consumption patterns in relatively wealthy urban

centres confirm this reality: Chinese urban per capita consumption of beef and mutton has increased from 1.68 kilo-gram's (kg) in 1980 to 3.4 kg in 2008, poultry from 1.2 kg to 8 kg, and milk from 4.1 kg to 15.1 kg (Figure 4) (Text box 1). The weight of this new demand has meant that China currently produces and consumes more than half of the world's pigs each year.

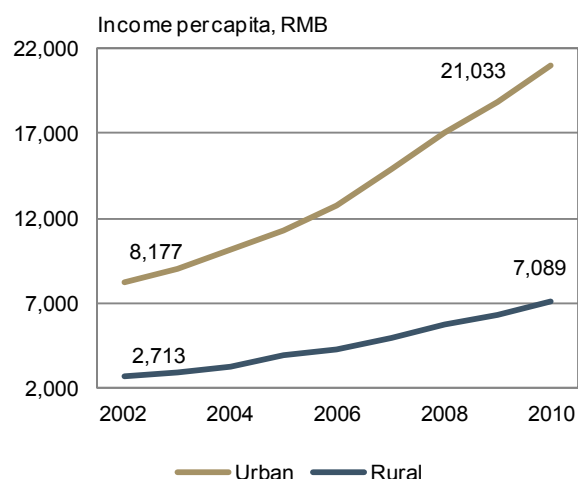
An inevitable offshoot of this shift has been a tremendous spike in demand for the agricultural produce that feed animals. To be sure, in China, much like in the US, the animal feed industry is by some margin the largest purchaser of corn, feed grains and soybean meal. Today, China consumes 25% of the world's soybeans, 20% of the world's corn and 16% of the world's wheat. Meanwhile, adding to supply tensions, industrial activity has also spurred demand for certain agricultural commodities. For instance, motor vehicle production in China has stimulated increased demand for rubber; in 2006 China accounted for almost one-quarter of worldwide rubber consumption. And, between 1998 and 2007, textile manufacturing tripled demand for cotton.

Looking ahead, food demand will increase further. Income growth – especially compensation to employees—in both rural and urban areas—will prove a compelling force in driving personal consumption. Meanwhile, favourable demographics, urbanisation, a generalised asset-deficit, low levels of indebtedness and currency appreciation will provide support for consumption. As a result, the average per capita consumption of meat in China is expected to increase from 71.2 kg's in 2010 to 82 kg by 2015. Similar growth is expected in fruit and vegetables (Figure 5). It is expected that China's total food consumption expenditure will double to over USD1 trillion (tr) by 2015. And, of course, should an average person in China consume just half of the average American, total Chinese consumption would be more than double the US'. In short, demand for agricultural produce will continue to rise and supply will need to respond.

Increasing strains on agricultural supply

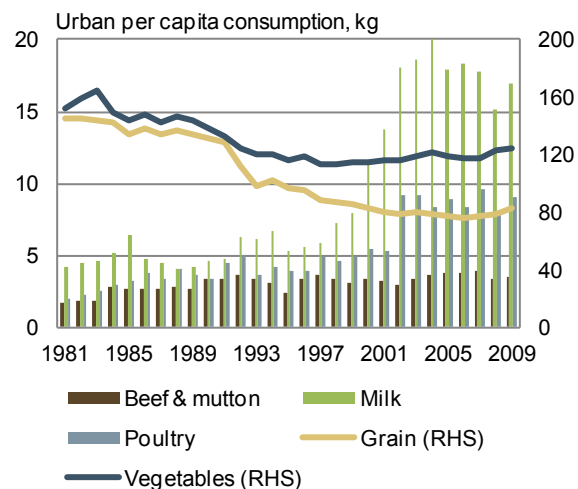
While demand is relentlessly surging, China's agriculture sector is facing pressure on a number of fronts. Perhaps most prominently, the rapid acceleration in urbanisation and industrialisation have served to swallow up farmland, and diminish China's water resources. Environmental concerns are epitomised by spreading desertification; about 4.5 bn tonnes of soil are scoured away each year by erosion in China, at an annual estimated cost of RMB200 bn (approximately USD32 bn) this decade alone (Marks, 2008). Between 1996 and 2006, China is believed to have lost almost 9 mn ha of farmland. It is believed that China's total cropland is expected to decline from 135 mn ha in 2003 to 129 mn ha in 2020. Importantly, 120 mn ha is considered the "red line" for Chinese food security.

Figure 3: Income growth in urban and rural areas



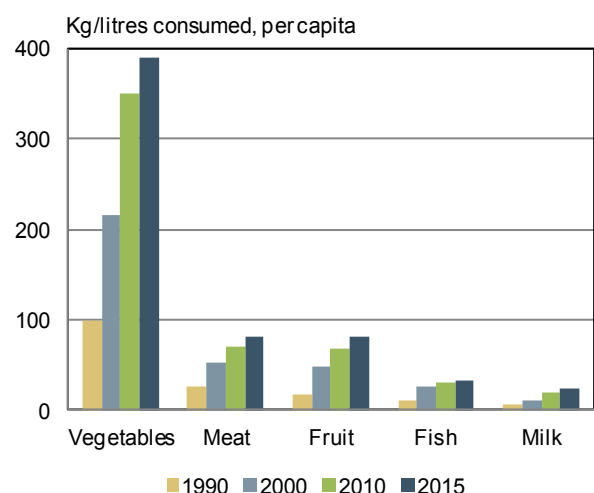
Sources: CEIC, Standard Bank Research

Figure 4: Evolving eating patterns in urban China



Sources: United States Agriculture Department, Standard Bank Research

Figure 5: Across the board, China's appetite is larger



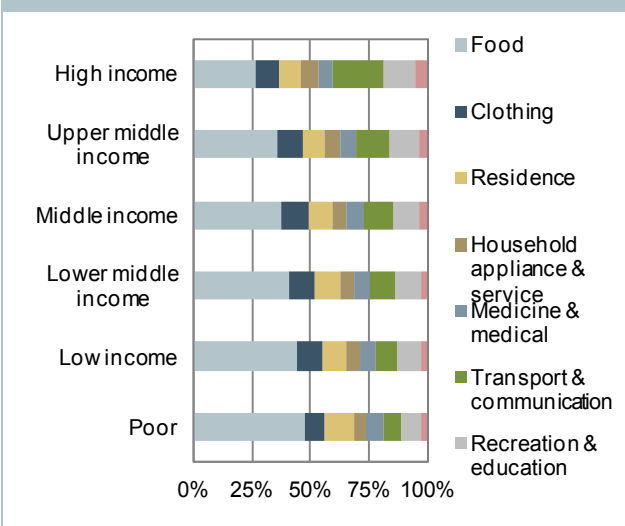
Sources: Economist Intelligence Unit (EIU), Standard Bank Research

Text box 1: Demand—the tale of two China's

While stylised generalisations of Chinese consumption patterns are alluring, it is important to understand the demand divergence brought about by gulfs in income in China. While definitions can be controversial, in many regards China remains a low-income, developing, country. Consider that output per capita is around USD5,000 per annum (p.a.), positioning the country as the 91st (out of 183) wealthiest in the world. Similarly, China's income per person is just USD1,500 p.a. (albeit up from USD445 p.a. in 2000). More than two-thirds of China's population (nearly one bn people) have an average annual consumption of USD900. Half of these people live in rural areas and almost 70% are involved in farming. This tier of Chinese society, "surviving China", spends proportionately more of its income on food, purchases less food per capita, but, by virtue of its absolute size, consumes the largest share of staples, like rice.

Yet, within China, an emergence of a smaller, wealthy group, has left "surviving China" behind. First, drawn to economic incentives in special economic zones along China's coast, the factors of production (labour, capital and entrepreneurial zeal) have siphoned to urban areas. Since 1980, the urban population of China has swelled by around 450 mn people, at a compound annual growth rate of 4% p.a. The groundswell of new entrants into the urbanised formal economy makes up a second stylised group in China, "consuming China". On average, annual consumption is USD3,300 p.a. (three-times larger than rural incomes). Importantly, "consuming China" is growing, having more than doubled since 2005 to over 300 mn people this year. While, consistent with Engel's Law, "consuming China" may spend proportionately less of its income on food (Figure 6), the volume of food consumed elevates, adding to supply strains.

Figure 6: Composition of Chinese expenditure



Sources: Dragonomics, CEIC, EIU, IMF, Standard Bank Research

Meanwhile, by 2000, almost half of China's cities were already facing water shortages. Worryingly, agriculture is unable to compete with industry in terms of the productivity of water usage: for instance, one thousand tonnes of water produces one tonne of wheat, which has a market value seventy times lower than the manufactured output the same amount of water yields. Since the early 1990s, industrial water demand in China has grown at an annual rate of some 6%. If the same pattern holds, industrial water use will increase four-fold by 2025. Meteorologists have estimated that the western regions of China will lack about 20 bn cubic meters of water from 2010 to 2030, and in 2050 the regions would still need 10 bn more cubic meters of water.

China's agricultural supply response

Much analysis simplistically ends with an assessment of China's profound agricultural challenges without delving into the manner in which Beijing is coordinating a national response to these shifts, both through domestic and foreign policy adjustments. Freeman et al. (2007) have suggested that China has five core short and long-term policy options in order to ensure long-term food security—these being: investment in the development of domestic agricultural production; reduction of import costs; protection of domestic supplies by restriction of exports; use of aid and cooperation mechanisms to boost production abroad; and the adoption of policies to boost outward investment in agriculture. For Africa, aid and outward investment (which are largely congruent on the continent), as well as China's trade-related options matter most as it is here where the continent is best positioned to play a role in elevating medium and long-term food security in China.

1. Domestic agricultural production

China's propensity and ability to boost domestic agricultural production in light of increased demand is incontrovertible. Indeed, turning to domestic sources of supply will be Beijing's principal objective, particularly in light of agriculture's broader role in maintaining social harmony in China.

- Given the large weight of food in the consumer basket (especially for "surviving China"), the agricultural sector plays a critical role in keeping people fed (rice is a staple of 60% of the population).
- Rising food prices have a profound influence on the inflation trajectory, meaning that managing supply and demand equilibrium in China is important. Recent pressures in this regard have been profound; China's inflation has averaged 6% so far this year, with as much as 2 percentage points (pps) of this increase due to rising pork prices alone (Figure 7).

- The agricultural sector employs one-third of China's total labour force. In fact, nearly seven out of every ten rural workers are employed in agriculture.
- Related to this, the holy grail for Chinese policy makers is to raise incomes in rural areas. The divergence in incomes between rural and urban households has widened by around 10 pps each decade since 1985 causing deep cleavages between different strata of society (Figure 8). Farming (and even food prices) is a primary tool for rebalancing China's income distribution towards rural areas.

Given the sectors importance, it is no surprise that agriculture is placed at the centre of a host of structural and cyclical priorities in China, exemplified by its prominence in the 12th Five Year Plan (Text box 2). A range of policies have been supportive of the agricultural sector in China since 1978 when reforms of the agricultural sector in China spurred on wider economic liberalisation.

Text box 2: Agriculture in the 12th Five Year Plan

Promote *modernisation*, while deepening urbanisation, by improving the long-term supporting apparatus for industrial agriculture and upgrading transport, logistics and storage infrastructure;

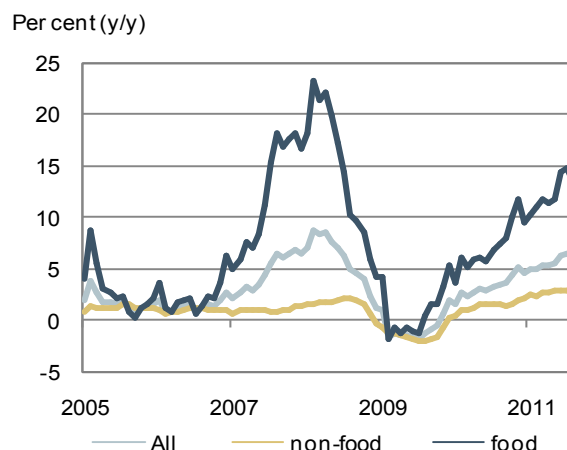
Maintain *security* by preserving farmland of approximately 1.2 mn square kilometres; protect arable land from erosion; enhance irrigation, water storage capacities, and anti-drought/flood programmes; and ensure quality/safety of raw foods;

Grow *productive capacity* by accelerating farmland consolidation, extend benefits from individual farmers, and increase production of grains to 540 mn tonnes.

While Organisation for Economic Cooperation and Development (OECD) nations have reduced agricultural subsidies by 6% in 2010 (to USD227 bn), resulting in farmers' incomes derived from subsidies falling from 22% in 2009 to 18%, China has increased its subsidies by 40% (to USD147 bn). More effectively, farmers are permitted to apply for 30-year leases. Extending property rights to farmers have proven to be four times more effective in generating income than subsidies because, according to the Landesa Survey, farmers with rights to the land are twice as likely to make capital investments (80% do so within 12 months of receiving rights). In 2010 alone, these investments boosted rural incomes by nearly USD500 bn.

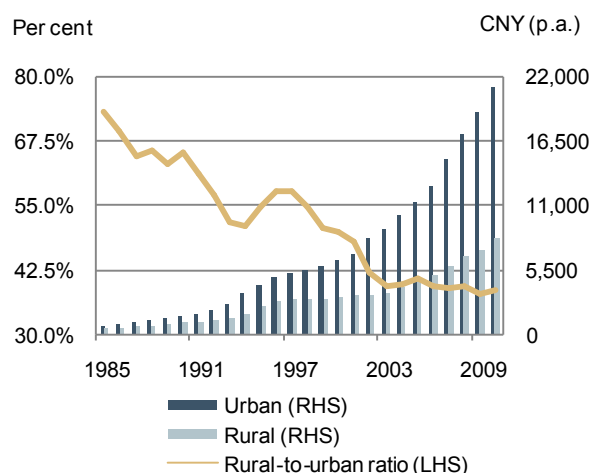
Government prioritisation has worked so far: China is currently a net exporter of food—notably corn and rice (Figure 9). China has also accumulated enormous stockpiles of most soft commodities—importantly wheat, rice and grain (Figure 10).

Figure 7: Path of food prices shape general costs



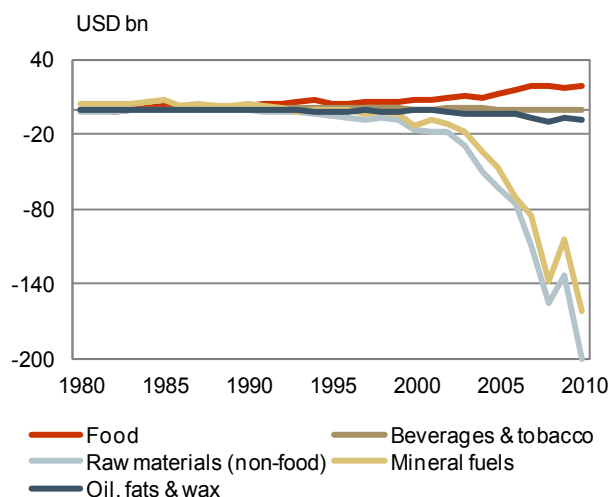
Sources: Bloomberg, Standard Bank Research

Figure 8: Household income inequality



Sources: CEIC, Standard Bank Research

Figure 9: China is a net exporter of food



Sources: ITC, Standard Bank Research

China has not had to pursue sizeable sources of soft commodities offshore because its vast geographical reach means that different regions inside China have been able to develop various comparative advantages. For instance: Hainan (melons), Heilongjiang (green food), Shaanxi (apples), Xinjiang Ugyur (cotton) and Shandong (vegetables) have emerged as pockets of specialisation. As a result, agriculture plays an important role in linking different regions in China (Figure 11).

Investments in agriculture-related machinery has complemented specialisation. Consider that total agriculture machinery power has jumped from 525 mn kilowatts (kw) in 2000 to 874 mn kw in 2010. Complementing more capital investments, the consolidation of farming plots (often under cooperatives) have flourished (often facilitated by the fact that farmers can assume 30-year land leases).

The confluence of specialisation and targeted investment, along with consolidation (unlocking efficiencies and economies of scale), has led to a flurry of innovation, led by globally competitive companies such as Sinograin (corn), Wilmar (soybeans) and others.

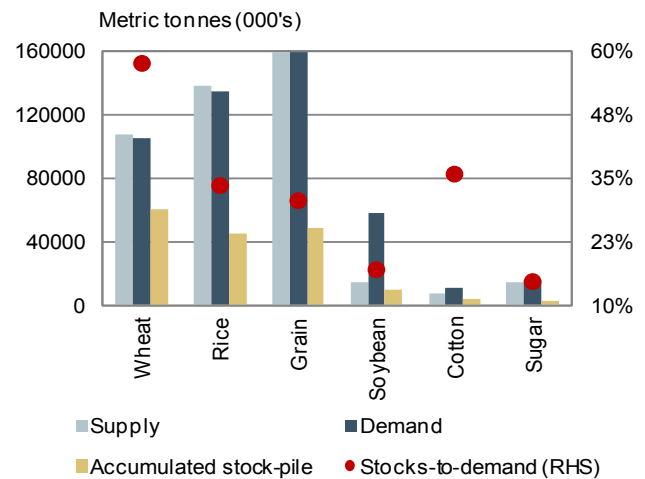
China ranks first in worldwide farm output of barley, cotton, millet, oilseed, peanuts, potatoes, rice, sorghum, tea and wheat. China's agricultural productivity (yields) are significantly superior to global norms—except corn and soybean, which is broadly on a par with global competition (Figure 12). Consider that in late September, an agricultural scientist from China, Yuan Longping, set a new world record of 13.9 tonnes of rice output per ha (up from 13.5 tonnes).

Each of these drivers have allowed China to remain broadly self-sufficient in agricultural production—doubling and then re-doubling agricultural output. According to a recent OECD report, China's agricultural output is predicted to see growth of around 26% to 2019. Hence, for Beijing, much of the expected spike in food demand will be met with a substantial increase in productivity domestically, increasing yields per ha, modernising, commercialising, and improving the country's agricultural output.

2. Trade

While domestic investment will carry the majority of the burden brought about by increased demand for agricultural produce, externalisation will undoubtedly be an increasingly vital cog in addressing China's overall food security challenge. The principal means through which China will seek external sources of nutrition will be through the trade channel. We know that in the past 30 years China has been the most successful nation in the world at attaching itself to global supply chains: China now accounts for more than 10% of world trade (up from less than 2% in 1980), and has become the world's largest exporter and second largest importer. However, as a result of its bid to internalise the

Figure 10: Equilibrium in major markets, plus stockpiles



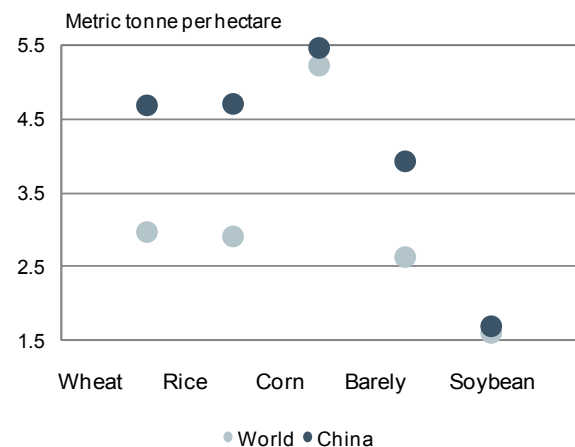
Sources: ITC, Standard Bank Research

Figure 11: Internal specialization and intra-China trade



Sources: CEIC, Standard Bank Research

Figure 12: China's superior yields in mainstream crops



Sources: FAO, Standard Bank Research

means for maintaining domestic food security; agricultural produce accounts for just 5% of China's imports (down from 16% in 1980).

Already, bolstered by accession to the World Trade Organization (WTO) in 2002, China has, over the course of the past decade, dramatically reduced tariffs on certain core agricultural commodities. For instance, in 2002 the maximum tariff on soybean imports was reduced from 114% to 3%, leading to a profound increase in soybean imports. It is necessary that the trend continues.

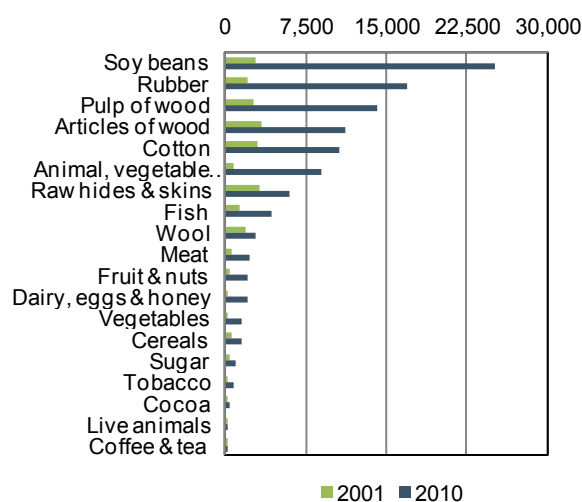
Considering China's soybean demand and supply dynamics provides a cogent indicator of the importance of elevated trade. Today, China is the world's largest soybean importer—virtually all of which is used in crush to feed its animals. Indeed, where in 2001 China imported just USD2.8 bn worth of soybeans, in 2010 this had increased almost ten-fold to over USD25 bn (amounting to 43 mn metric tonnes, compared to 12.7 mn metric tonnes imported by the entire Eurozone). Demand for soybeans in China is expected to increase to 60 mn metric tonnes by 2020. Considering that, according to the China Association for Grain Sector (CAGS), China would need to open up an additional 13.3 mn ha of farming land for soybean production in order to become self-sufficient in the commodity, it is clear that import channels will be critical.

Elevated import demand has not only been material in soybeans. Over the last decade, imports of several important, largely "land-intensive" agricultural commodities increased. In particular, between 1998 and 2007, the imports of products such as oilseeds, cereals, cassava, vegetables, wheat, palm oil and textile fibres have increased six-fold. Between 2001 and 2010, rubber imports increased from USD2 bn to USD16.9 bn. Several other products, while nominally smaller, have shown remarkable growth. For instance, imports of dairy, eggs & honey expanded by over 800% between 2001 and 2010, live animals by 690%, vegetables by 630%, and coffee & tea by 620% (Figure 13).

Demand overhangs are inevitable. For instance, in 2008 China imported around 28 mn tonnes of cotton against domestic production of 7 mn tonnes. And, while rice yields in China are impressive at 4.79 metric tonnes per hectare and stock levels (45,188 thousand metric tonnes) are as much as a third of annual demand, should the government require surplus stocks to manage price, new external sources will be important.

More affluent China will also increase demand for grain-fed meat—particularly pork, increasing demand for feedstock. According to the China National Grain and Oils Information Centre, in 2010 over 100 mn tonnes of corn were used by the livestock industry in 2010, a 27% increase from 2009. Meanwhile, China's move towards biofuels will also be profound. As part of initiatives to reduce greenhouse gas emis-

Figure 13: China food imports have risen (USD mn)



Sources: UN COMTRADE, Standard Bank Research

sions, China aims to replace 12 mn tonnes of oil with 2 mn tonnes of bio-diesel and 10 mn tonnes of bio-ethanol each year. Much of this will need to be supplied by imports. Last year alone, Chinese producers of bio-chemicals consumed 54 mn tonnes of corn (much of which was imported from the US) in 2010, up 12% from 2009.

As a result of these shifts, the Food and Agricultural Policy Institute (FAPRI) estimates that China's soybean imports will increase from 33.7 mn tonnes in 2007/8 to 52 mn tonnes in 2017/18 and palm oil imports from 5.5 mn tonnes to 10.8 mn tonnes in the same time period. Also according to FAPRI, China will adjust from a net wheat exporter of 2.3 mn tonnes in 2007/8 to a net importer of 1.4 mn tonnes in 2017/18, while cotton imports will double from 3 mn tonnes to 6.1 mn tonnes. Importantly, rice exports are expected to buck the trend, increasing from 435,000 tonnes to 739,000 tonnes. Of course, given China's size, any substantive increase in agricultural imports is likely to be meaningful globally.

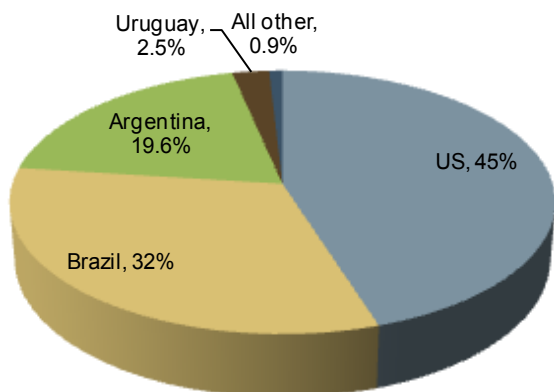
China will increasingly need to lean on international markets for the provision of certain core foodstuffs—particularly those used to feed China's animals. To be sure, the vast majority of imports will be produced close by, in Asia.

Africa is a bit player in China's agricultural trade prospectus

Currently, the majority of Chinese agricultural imports originate from Asia and the Americas, relegating Africa to the sidelines. For instance, in 2010, the Americas accounted for virtually 99% of all soybean exports to China (Figure 14). And, also in 2010, roughly three-quarters of China's rubber imports came from Asia (40% from Thailand and Malaysia). While wood imports were more geographically dispersed, in Africa, only Gabon and the Republic of Congo, provide 3% and 1.8% of China's total wood imports in 2010, respectively ranking in the top 15 top sources of the commodity.

Indeed, in 2009, total China-Africa trade in agricultural goods

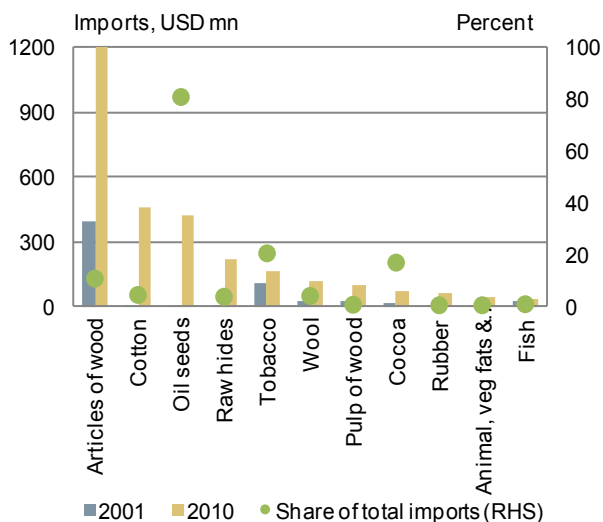
Figure 14: China's soybean import partners, 2010



Sources: USGS, Standard Bank Research

amounted to less than USD4 bn, compared to overall trade of over USD100 bn for the year. As indicated in Figure 15, only imports from Africa of articles of wood, tobacco, oil seeds and cocoa accounted for more than 10% of China's total imports of these select commodities in 2010. Furthermore, only 4.5% of China's cotton imports, 0.4% of its rubber imports, and 0.9% of its fish imports came from Africa.

Figure 15: Chinese agricultural imports from Africa, 2010



Sources: UN COMTRADE, Standard Bank Research

Despite relatively modest trade volumes, growth in demand for African agricultural commodities from China has been pronounced. Imports of cotton, for instance, have expanded from just USD8 mn in 2001 to USD462 mn in 2010, and oil seeds from USD146,000 to USD420 mn. Meanwhile, wood imports also jumped by over 200%, rubber from a standing start of USD12 mn to USD58 mn and raw hides from USD6.7 mn to USD221 mn between 2001 and 2010.

That said, there is a clear disconnect between the agricultural commodities which Africa principally exports and those which China is increasingly importing. In comparing lists of the top ten Chinese agricultural imports with the top ten African agricultural exports, Chaponniere et al. (2009) show how only two commodities, cotton and rubber, emerge—and even trade in these products remains relatively modest.

Meanwhile, reflecting the manner in which Africa's agricultural sector has consistently underperformed, Chinese exports of agricultural commodities to the continent have increased at a faster rate than African agricultural exports to China over the course of the past five years. Indeed, in 2008, while total Chinese agricultural imports from Africa touched USD2 bn, Chinese exports of agricultural products (principally rice, tea and vegetables), amounted to a little over USD1.5 bn. Quite clearly, while China is actively adopting increased agricultural trade as a means of supporting domestic food consumption dynamics, Africa, for now, does not feature prominently in Beijing's prospectus.

3. Aid and outward investment

While the proposition of Freeman et al. (2007) conceptually separates the use of aid and outward investment as agricultural policy tools available to China, in reality this separation, particularly within the African context, is unfeasible. Indeed, a marked feature of China's renewed engagement of core African markets has been the manner in which state-led developmental assistance has acted as a beachhead for wider corporate activity. In agriculture, while emphasis is placed more heavily on developmental objectives (as opposed to mining, for instance), signs of commercialism and strategic intent are increasingly visible.

Traditionally, Chinese attempts to aid African agriculture have focused on the transfer of technologies, training, and the establishment, and often operation, of demonstration farms. China has actively used these forms of assistance in forging or supporting strategic partnerships in Africa since at least the 1960s. In all, during the 1960s and 1970s, China assisted in building over 80 farms in Africa, covering a territory of roughly 45,000 ha. Some of these farms, such as the Mbarali Farm in Tanzania, included long-term technical assistance and, at one stage, was responsible for roughly one-quarter of the total domestic rice production, providing important support for national food security. Other notable operations originating in this period included the Ubungo Farm Implements Plant, also in Tanzania, which produced 85% of the country's hand-held farm tools, the Fano Farm in Somalia, and the Chipembe Farm in Uganda.

In the 1980s, while the focus remained on the above tenets of cooperation, a discernible shift towards ensuring that these demonstration farms became profitable emerged. This adjustment was influenced in large part by wider "go global"

initiatives incorporating virtually all large Chinese state-owned and private entities. Ultimately, state support became an imperative tool in emboldening China's commercial advance. Meanwhile, agriculture maintained its elevated role as a means through which Beijing sought to strengthen international partnerships in order, at least partially, to support domestic food security objectives. Thus, according to Chaponniere et al. (2009), by the end of the 1980s, nearly one-quarter of China's total aid programme in Africa concentrated on agriculture, touching more than 40 African countries.

More recently, material support has been lent to Chinese agricultural firms in Africa through the Forum on China Africa Cooperation (FOCAC), principally under FOCAC's China Africa Development Fund (CADF), which is administered by China Development Bank. CADF has already supported the establishment of 10 demonstration farms in Africa. Moreover, in the Outward Investment Sector Direction Policy of 2006, explicit provision was made for the support of the outward expansion of China's agriculture, forestry and fisheries sectors—specifically those encouraging the cultivation of natural rubber, oil-bearing crops, cotton and vegetables, as well as felling, transportation and planting of timber, animal husbandry and breeding, and fisheries. However, while no doubt important, China's support for the outward expansion of the agricultural sector is comparatively minimal. According to Freeman et al. (2007), China's outward investment in agriculture, forestry, animal husbandry and fisheries combined was only USD190 mn in 2006, 0.9% of total outward investment for the year. This in contrast to USD8.5 bn invested in resource extraction.

As of 2009, roughly 200 agricultural projects had been carried out by China in Africa, with a further 23 projects in the fisheries industry. The Chinese Ministry of Commerce has further claimed that over 1,100 Chinese agricultural experts are currently stationed in Africa, maintaining at least 11 agricultural research stations, and over 60 agricultural invest-

ment projects throughout the continent (Rubinstein, 2009).

The majority of these projects have been, and continue to be, carried out by a range of large and medium Chinese state-owned farming groups. At the state level, the China State Farm Agribusiness Corporation (CSFAC) has been most active. Having established its first farm in Africa in 1994, CSFAC now operates seven farming projects across the continent, covering an area of around 8,600 ha. Complementing state-level firms are regional or provincial organisations, such as the Hubei SFAC (which in 2005 established a 1,000 ha farm in Mozambique), Jiangsu SFAC and Shaanxi SFAC (which has established a 5,000 ha farm with an investment of USD62.5 mn in Cameroon, growing mainly rice).

Joint operations between state and provincial organisations are commonplace; for instance, CSFAC and the Jiangsu SFAC have collaboratively developed the China-Zambia Friendship Farm, which covers around 700 ha of land in Zambia, growing barley, maize and soybean. Another prominent state-level institution, the China National Agriculture Development Group Corporation is believed to operate seven farms in Africa. In all, Chinese reports claim that there are 15 Chinese farms in Zambia, covering an area of 10,000 ha, operated by six different Chinese state-owned enterprises (SOEs). Subsidiaries of these SFAC's are also active on the continent. A general characteristic of these farms is that they are run on a profit basis, with production based predominantly, at times exclusively, on local or regional demand dynamics. A larger 3,500 ha farm run by CSFAC in Zambia, for instance, provides around 10% of Lusaka's eggs.

Naturally, on the spine of state-sponsored activities, smaller Chinese private firms and individuals active in the broader agricultural or agribusiness space have secured new opportunities. Many Chinese agribusiness firms operating in Africa are also subsidiaries of larger private or, more often, state provincial agricultural firms (Table 1). Expansive and cross-

Table 1: Select Chinese agricultural and agribusiness SOEs operating in Africa

Company	Country	Core operations
Da Ping Fishery Group	Angola	Fishing, aquatic product processing & sale of fish meal.
Sichuan Sanhetian Bio-Tech	Ghana	Planting, processing and trade of medicinal plants
Shandong Xinwei Grain and Oil	Mozambique	Planting, processing and sale of sesame, cashew and peanuts.
CGC Overseas Construction	Nigeria	Agricultural trade, grain cultivation and processing, livestock.
Huaqiao Phoenix Group	South Africa	Forestry, poultry and livestock
Hainan Qilin Tech	Tanzania	Sisal R&D, cultivation, processing and sale.
China Africa Agric. Investment Corp.	Zambia	Production and sale of agricultural and livestock products.
Qindao Textile Union	Zambia	Planting, processing and trade of cotton
An Hui China State Farms Group	Zimbabwe	Agric trade and investment (incl. livestock & aquatic products)

Sources: MOFCOM, Standard Bank Research

sector Chinese activity in Mozambique is emblematic of these convergences. China has reportedly pledged USD800 mn through a range of agreements to modernise Mozambique's agricultural infrastructure, including the financing of a dam and canal to support commercial and smallholder farmers. Stated intentions include the desire to raise Mozambique's rice production by five-fold, from around 100,000 tonnes to 500,000 tonnes within the next five years. Currently, over 100 Chinese agricultural experts stationed in Mozambique, and a range of smaller firms and individuals have sought to capitalise on emerging ties. A memorandum of understanding allegedly signed between China and Mozambique in 2007, which would allow for the relocation of 3,000 Chinese farmers in the Zambezia and Tete Provinces, indicates these convergences. The USD5 bn CADF is also mandated to support Chinese entrepreneurs across a range of sectors, including agribusiness in unlocking new opportunities in Africa.

Text box 3: Chinese activity in Latin America

Recent Chinese activity in Latin American agriculture has been substantially more pronounced than in Africa. According to Deloitte research, between May 2010 and May 2011, China invested a total of USD15.6 bn in Latin America, a three-fold increase from the previous year—and increasingly emboldened by strategic agricultural investments, particularly in soybean production. In April 2011 China and Brazil sealed a USD7 bn agreement to produce 6 mn tonnes of soybeans per year. In the same month, Chongqing Grains signed a further USD2.5 bn agreement to produce soybeans in the Brazilian state of Bahia.

Trade ties have of course been of principle importance (consider that, in Goias State, almost 70% of the soy grown in 2010 was exported to China), but it is clear that China is increasingly looking to control sources of external production. However, initial forays in Latin America in this regard inspired a policy backlash. In the deals above, Barrionuevo (2011) asserts, Chinese officials were in favour of purchasing the land but were guided towards production agreements in line with stricter regulations governing foreign land ownership recently implanted by Brazil and Argentina, largely in response to rising Chinese interest. These new restrictions have reportedly put on hold upwards of USD15 bn worth of farming projects, including a wide range of foreign investors, in Brazil alone.

Accusations of land grabs have been controversial

In May 2008, amidst concerns stoked by the global food price hike, the Chinese Ministry of Agriculture (MoA) is reported to have proposed a new policy on outward investment in agriculture. According to the document, domestic Chinese companies would be encouraged to purchase or lease land abroad, with a focus on soybean production, so as to support domestic food security objectives. Areas priori-

tised for expansion included Africa, Central Asia, Russia, Southeast Asia and South America, with emphasis placed on those countries in these regions enjoying political stability, and strong relations with China. The policy proposal, having leaked into public discourse, ignited a flurry of accusations centering on the manner in which China was planning to engage in large-scale "land grabs" in vulnerable African states.

In response to the allegations, the MoA denied that any new policy stance had been adopted, despite claims that the document had apparently already been presented to State Council for ratification. Chinese officials have since deliberately rebutted these claims, asserting that Beijing has no intention of acquiring land in Africa to provide for elevated demand for agricultural commodities. This response is likely to have been inspired in part by the profoundly negative reaction to a wide range of land leasing deals signed in Sub-Saharan Africa over the course of the past decade—none more so than the failed attempt by South Korean firm Daewoo Logistics to secure large tracts of land in Madagascar for agricultural purposes—ultimately triggering a coup d'état in the country. China is also sensitive to publicly concede weaknesses in its own ability to provide adequate security and sustenance for its population. In December 2008, the National Development and Reform Commission announced a 20-year food security strategy in which foreign land acquisitions were not included as a pivotal feature, with the exception of soybean production in Brazil (Cotula et al., 2009) (Text box 3).

A range of recent studies, most presciently by the International Institute for Environment and Development (IIED) and the Oakland Institute, back up China's assertions. Indeed, while it is estimated that between 50 mn ha—60 mn ha of land has been acquired or leased for agricultural purposes in SSA over the course of the past decade, China's contribution to this thrust has been minimal (Cotula et al., 2009). In terms of government-to-government land leasing deals, activity from water-scarce Gulf states, such as Saudi Arabia and Qatar, has been pronounced, while private firms, such as India's Karuturi Global which operates agricultural and horticultural assets in Kenya and Ethiopia, continue to play important roles. Inspired primarily by global food prices, speculative interest in African farmland has also increased markedly (Freemantle, 2011).

Conclusion

On both the demand and supply side, China's agricultural sector is clearly facing strains. For now, Beijing can and will look to its own domestic sources to provide for the bulk of new demand, implementing new technologies to stave off the effects of a reduction in cropland. Yet, it is increasingly evident that China cannot ensure low-cost food for its large and demanding population without ramping up external sources

of nutrition. Such initiatives are not novel to China; Japan, for instance, has access to three times more cropland abroad than domestically. And movements are, for the most part, likely to be gradual, reflecting persistent debate within China as to the relative merits and risks associated to the externalisation of food production. Either way, given China's scale, and its pace of change, any shift in this regard is likely to have a meaningful impact on global agricultural markets.

In Africa, two core areas create an allure for China. First, given the manner in which the continent's agricultural sector has persistently underperformed, the provision of developmental and technical assistance allows Beijing an important avenue in fostering and building deeper bilateral ties. And, second, SSA's immense and largely untapped agricultural potential, is being increasingly viewed by China as a cog in an unfolding and inclusive food security strategy. For now, China's strategy is overtly developmental, and, though commercialism inspires many of the cooperative farming projects, profits are generated almost entirely in local and regional markets.

That said, and as indicated by China's expansive agricultural investments in Mozambique, it is clear that Beijing is seeking to build deeper relationships in agriculture with land-rich and politically stable countries "friendly" to China. Investments, backed by state-directed assistance, in these countries will increasingly look to produce the types of crops—such as soybeans and cotton—for which demand in China is elevated. Collaboration will also be pronounced in coffee, tea, rubber, wine, sisal; and tobacco production—emphasising select strengths already evident in Africa in the production of some of these commodities. Most of these initiatives will look to bolster China's agricultural trade ties with Africa, though some, as has been evident in nascent moves in Latin America, will position Chinese firms to control the external source of production.

For Africa, managing Chinese interest in its agricultural sector will be critical. The continent suffers from an acute lack of skills and capital in unlocking its inherent potential. Yet, as has been evident in many of the land leasing deals signed in SSA over the course of the past decade, too often investments are poorly structured, undervaluing the agricultural assets at stake. As a developmental partner, China's role cannot be understated. Increasingly, African countries must attempt to align Chinese aid packages with continental, or at least regional, agricultural programmes such as the Comprehensive Africa Agriculture Development Programme (CAADP), and the Alliance for a Green Revolution in Africa (AGRA), so as to maximise socio-economic gain.

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