The coming surge in food prices

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- Even with lacklustre growth in advanced economies, another multi-year surge in food prices is likely given rapidly growing demand for food in the developing world, constraints and uncertainties surrounding food supply and the development of increasingly powerful feedback loops.

- We construct a Nomura Food Vulnerability Index for 80 countries.

- We also discuss: Macro implications, trading recommendations from our fixed income and equity strategy teams and specific stock ideas.

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See the important disclosures and analyst certifications on pages 78 to 81.

Foreword

This publication underscores Nomura's dedication to undertaking thematic research on global issues. We hope to inform our clients' thinking on key issues and provide a framework for our short- to medium-term economic and market forecasts.

Nomura is the largest global investment bank in Asia and has also invested heavily in research resources around the world. As such, Nomura has over 30 economists across all major regions; an Equity Research Department with 170 writing analysts covering more than 1,700 listed stocks; and a Fixed Income Research team with approximately 150 client-facing analysts.

Our clients have noticed this investment and their support has been reflected in the recent *Institutional Investor* magazine surveys, where Nomura's equity research teams ranked #1 in China and Japan and #2 in Asia and Europe.

In an increasingly globalized world, clients benefit from Nomura's focus on cross-region and cross-division collaboration among our research teams. This is critical to providing fully integrated products with consistent top-down views. Some recent examples include: *The Ascent of Asia* (February 2010); *Autos and auto parts – Global* (April 2010); *GEMaRI: Nomura's Global Emerging Market Risk Index* (June 2010); and *Alternative Energy – Global* (July 2010).

With this latest report – *The coming food price surge* – our economists, strategists and equity analysts took a deep dive into the fundamentals surrounding the global demand and supply for food. Our team concludes that food prices could be set for another multi-year surge. This report examines which economies are most vulnerable to rising food prices at the macro level and then explores the strategic implications for investors.

Nomura looks forward to future studies that carry on the tradition of collaborative research designed to give our clients investment insight and ideas on global thematic issues.

Michael Guarnieri   Paul Norris

Global Head of Fixed Income Research   Global Head of Equity Research

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Executive summary[1]

We expect a multi-year food price surge...

The surge in commodity prices in 2003-08 was the largest, longest and most broad-based of any commodity boom since 1900. The prices of energy and metals surged the most, but it was the agricultural market that saw the most fundamental change. It may not take much of a disruption in food supply to trigger another surge in prices given that the dynamics have become a whole lot more uncertain as a result of new and some increasingly powerful influences acting on both sides of the food supply-demand equation. Indeed, droughts this year in Russia and Kazakhstan and severe flooding in Pakistan and China have sent global wheat prices higher, while meat and sugar prices have hit 20-year highs, despite lacklustre growth in many of the advanced economies.

... on rising demand, supply constraints and feedback loops

We expect another multi-year food price rise, partly because of burgeoning demand from the world's rapidly developing – and most populated – economies, where diets are changing towards a higher calorie intake. We believe that most models significantly underestimate future food demand as they fail to take into account the wide income inequality in developing economies. The supply side of the food equation is being constrained by diminishing agricultural productivity gains and competing use of available land due to rising trends of urbanization and industrialization, while supply has also become more uncertain due to greater use of biofuels, global warming and increasing water scarcity. Feedback loops also seem to have become more powerful: the increasing dual causation between energy prices and food prices, and at least some evidence that the 2007-08 food price boom was exacerbated by trade protectionism and market speculation.

We show how high food prices affect economies

We assess how a steep secular rise in food prices can affect the macro economy and financial market prices, and we explain how the impact could be devastating for poor countries that import most of their food and spend a large share of personal incomes on food. Such countries may experience: a sharp decline in GDP growth, a surge in CPI inflation, worsening fiscal finances, higher interest rates, a depreciating currency and widening credit spreads. On the other hand, rich countries that are large net exporters of food could benefit.

We construct the Nomura Food vulnerability Index

We construct the Nomura Food Vulnerability Index (NFVI), providing a summary ranking of each of the world's 80 largest economies, in terms of their exposure to another food price surge. NFVI identifies Bangladesh, Morocco, Algeria, Nigeria, Lebanon, Egypt and Sri Lanka as the most vulnerable to high food prices, while at the other extreme are New Zealand, Uruguay and Argentina. We use NFVI to quantify the impact of the 2007-08 food price surge, by comparing the 25 most vulnerable and 25 least vulnerable economies. We find that the most vulnerable group would indeed experience relatively weaker GDP growth, significantly higher CPI inflation, worsening fiscal positions, higher policy rates, widening credit spreads and widening government bond spreads to US Treasuries.

In terms of fixed-income strategy, we recommend using a combination of structured products – to buy a basket of agricultural commodities – and relative basket trades – in rates, FX and CDS spreads. We recommend paying 2y interest rate swaps of the 10 countries with the highest exposure to food in their CPI basket against receiving the 10 with the lowest. The impact on FX is more clouded, but we expect owning a basket of currencies selected from those with the lowest exposure to food in the CPI basket and most likely to experience an improvement in terms of trade against a basket of the opposite to be profitable. We use the NFVI in combination with a starting debt-to-GDP threshold to buy CDS protection on those sovereigns most likely to see fiscal deterioration against those least likely to. Trades in the inflation-linked space are limited, but we believe there is value in buying European inflation breakevens against US BEIs.

In the equity space, the total market capitalisation of the food sector is tiny compared to that of, for example, financials or property. However, while the investment universe may appear limited, investors ought also to consider companies involved in the shipping and storage of soft commodities, seed and fertilizer producers, and those that produce farm machinery, tractors and irrigation systems. Equally, we would suggest investors consider timber and other industrial soft commodities. We highlight four companies that we believe stand to benefit the most from rising food prices within the Asia ex-Japan region: China Agri-Industries (606HK Buy), China Yurun Food (1068 HK, Buy), United Phosphorous (UNTP IN, Buy) and Wilmar (WIL SP, Buy).

A complex equation

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"As I was growing up in the northeastern industrial city of Jilin, my family's most prized possession was a Butterfly sewing machine. We had to buy everything with coupons and Spring Festival was the only time of the year when we could afford to have a feast of pork and fish."

~ Wang Xiangwei, deputy editor of the *South China Morning Post,* reflects on the 60th anniversary of the founding of the People's Republic of China (*SCMP*, 1 October 2009).

Experts vary widely on global food price forecasts

The surge in commodity prices in 2003-08 was the largest, longest and most broad-based of any commodity boom since 1900 (Figure 1). It was also unusually driven by both supply and demand factors. Prices of energy and metals surged the most, but it is in the agricultural market where there seems to have been the most fundamental change to supply-demand dynamics, often described by economists as a "structural break". These new forces are complicating predictions of the future global supply-demand balance of food. No wonder there is such a wide variation in forecasts of global food prices by the experts:

- World Bank (2009): "Today's high prices should induce sufficient additional supply to keep commodity prices well below their recent highs over the medium to long term – although they are not expected to descend as low as they were in the 1990s."[2]

- United Nations Environment Programme (2009): "The world price of food is estimated to become 30-50% higher in the coming decades and have greater volatility."[3]

- Food and Agricultural Organization of the United Nations (2009a): "With the significant exception of oil prices, the factors that contributed to high food prices [in 2007-08] remain unchanged. Supplies have not increased substantially and stocks remain low."[4]

**In real terms, food prices remain near multi-decade lows**

The IMF's composite food price index (a nominal index) is down from its record high level in 2008, but looked at in real terms it remains close to multi-decade lows (Figure 2). We would caution against complacency, however. The fall in agricultural prices from their H1 2008 highs was caused more by the global recession and the tumble of oil prices than by an expansion in food availability. In most developing countries, despite burgeoning demand, supply did not respond significantly to high food prices (FAO, 2009a, p.4). It may not take much of a disruption in food supply to trigger another surge in prices given that the dynamics have become a lot more uncertain as a result of new influences acting on both sides of the food supply-demand equation. Furthermore, based on the historical pattern of the Southern Oscillation Index, the world is due for another severe El Niño event, which will likely cause big global weather disruptions.

Figure 1. Characteristics of major commodity price booms

Common features	1915-17	1950-57	1973-74	2003-08
Average global growth	-	4.8%	4.0%	3.5%
Major conflict and geopolitical uncertainty	WWI	Korean War	Yom Kippur & Vietnam War	Iraq conflict
Inflation	Widespread	Limited	Widespread	Limited
Significant investment	Related to WWI	Post-WWII rebuilding		Investment No boom in China
Price surge in	Metals, agriculture	Metals, agriculture	Oil, agriculture	Oil, metals, agriculture
Initial price rise led by	Metals, agriculture	Metals	Oil	Oil
Preceded by extended period of low prices or investment	No	WW II destroyed capacity	Low prices and a supply shock	Extended period of low prices
Increase in prices (previous trough to peak, %)	34	47	59	131
Years of rising prices prior to peak	4	3	2	5

Source: World Bank and Nomura Global Economics.

Figure 2. Nominal and real food prices since 1957

Index, 2002-04=100

— Food price index
— Real food price index (deflated by US CPI)
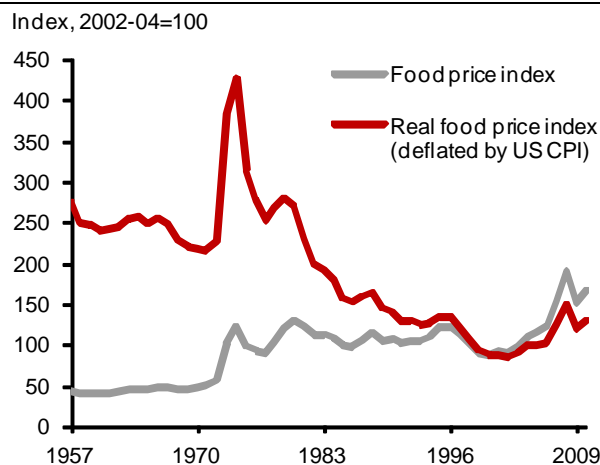
Note: The FAO food price index is used from 1990-2010, and is a composite index of 55 different food items including cereals, meats, dairy, edible oils and sugar. From 1957 to1989, we spliced on the IMF's food price index, which includes prices of cereals, vegetable oils, protein meals, meats, seafood, sugar, bananas and oranges. Source: FAO, IMF, CEIC and Nomura Global Economics.

[2] World Bank: Global Economic Prospects: Commodities at the Crossroads, 2009, p.53.

[3] UNEP: The Environmental Food Crisis, February 2009, p.7.

[4] FAO: The State of Agricultural Commodity Markets: high food prices and the food crisis - experiences and lessons, 2009a, p. 25.
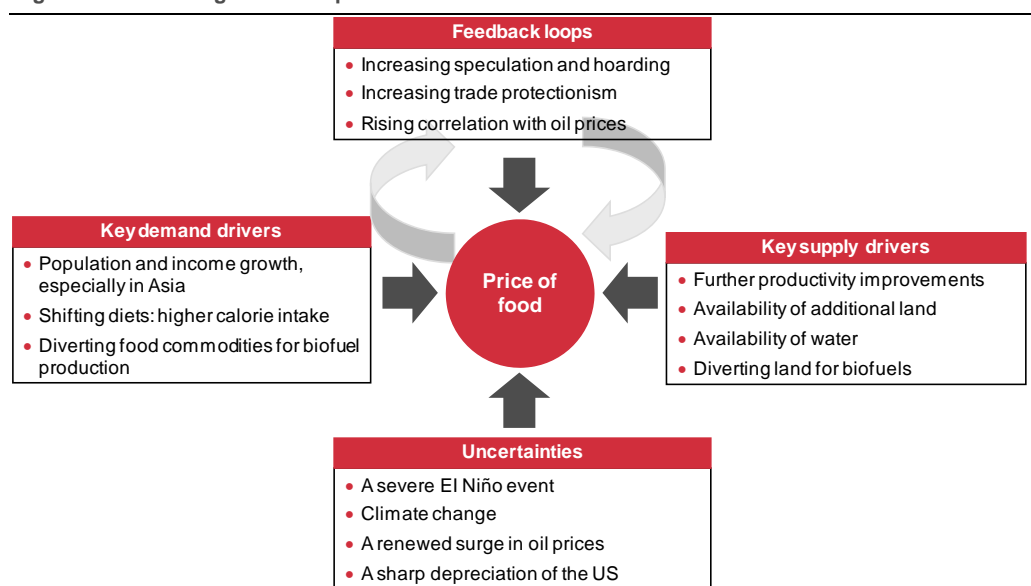
Best remedy for high food prices is high food prices

It is the nature of soft commodity prices to show pronounced cyclical behaviour, because supply decisions must be made well before the commodity is sold and price set. Theoretically, the effect of these lags on prices has long been captured by the cobweb model (Kaldor, 1934): producers respond to higher food prices by planning to increase supply; however planting/harvesting/ breeding takes time; the supply that is eventually drawn forth forces prices down. Hence the old adage, the best remedy for high food prices is high food prices.

The food price equation has become a lot more complex

The cobweb model is too simplistic to explain food prices in an increasingly complex world. Burgeoning demand for food from the world's rapidly developing – and most populated – economies is happening at a time when uncertainties on the supply side have increased because of increasing use of biofuels, global warming and rising water scarcity (Figure 3). Feedback loops also seem to have become more powerful: on top of the traditional vicious spiral caused by panic and hoarding is the increasing dual causation between energy prices and food prices; and at least some evidence that the 2007-08 food price boom was exacerbated by trade protectionism and market speculation. The demand-supply balance for food has become a very complex equation, which explains why predictions of food prices are so varied, and why we believe another surge in food prices is a distinct possibility.

Figure 3. Drivers of global food prices

Feedback loops
- Increasing speculation and hoarding
- Increasing trade protectionism
- Rising correlation with oil prices

Key demand drivers
- Population and income growth, especially in Asia
- Shifting diets: higher calorie intake
- Diverting food commodities for biofuel production

Price of food

Key supply drivers
- Further productivity improvements
- Availability of additional land
- Availability of water
- Diverting land for biofuels

Uncertainties
- A severe El Niño event
- Climate change
- A renewed surge in oil prices
- A sharp depreciation of the US

Source: Nomura Global Economics.

The demand side

"We are living in a world today where lemonade is made from artificial flavours and furniture polish is made from real lemons." ~ Alfred E. Neuman.

**Population and income drive food demand**

The two fundamental drivers of the demand for food are population and income growth. From 2000-10 to 2015-30, the World Bank (2009, p.66) is projecting world population growth to slow from an average of 1.2% per annum to 0.8%, and world per capita income growth to slow from 1.8% per annum to 1.7%. It is largely because of these projections that the World Bank does not expect another surge in food prices. However, we believe that researchers at the World Bank and other institutions have failed to properly take into account the high and rising income inequality in the developing world. Income inequality, when properly accounted for, can dramatically alter projections of food demand, especially if the working assumption is that the world's largest and most populated developing economies – China and India – continue to grow rapidly.

The <USD3,000 sweet spot

The low income elasticity sweet spot

Unlike other commodities, the sensitivity of the demand for food to an increase in income is much greater for low-income earners. In economists' parlance, the highest income elasticity of the demand for food is in the low-income bracket. As countries become richer, the income elasticity drops quickly, and in rich countries food demand is dictated more by population growth than income growth, since well-off (and well-fed) consumers spend extra discretionary income on durable goods and services (including weight-loss programs!) rather than food. For example, in low-income countries (defined by the World Bank as those with an average Gross National Income (GNI) per capita of below USD1,000), demand for grains rises quickly as income increases – a 10% increase in incomes is associated with a 6% increase in demand for grain – but as GNI per capita reaches about USD3,000, the income elasticity starts to decline, falling close to zero in high-income countries, where GNI per capita is above USD12,000 (Figure 4).[5]

Figure 4. Estimated global impact of a 10% increase in incomes on commodity demand (%)
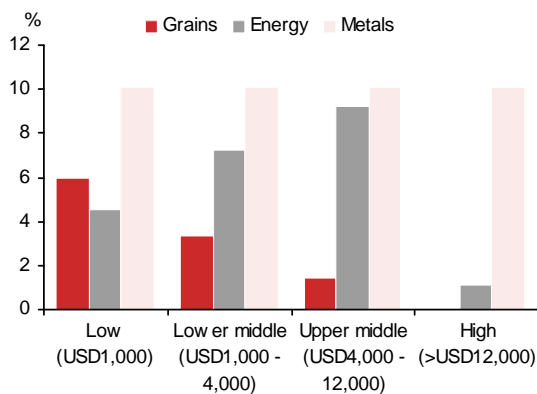
Note: The four income groups are classified by the World Bank and are measured in terms of GNI per capita, in USD, at 2008 market exchange rates. Source: World Bank and Nomura Global Economics.

The neglect of income inequality

Income inequality must be considered to gauge food demand

This low income elasticity demand for food "sweet spot" matters greatly when projecting the demand for food by developing economies once the massive income inequalities are taken into account. In the developing world, income inequality has generally increased in many, if not most, countries since 1980, particularly in Asia ex-Japan, home to over half of the world's population (World Bank, 2007, p.80). Based on United Nations data[6], a simple average of the Gini coefficients for the countries in Asia ex-Japan is 40.6, on par with the US (40.8), but above the UK (36.0), Germany (28.3) and Japan (24.9) (for a Gini coefficient, 0 corresponds to perfect income equality and 100 to perfect income inequality). The important implication for projecting

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[5] In consumer theory, for income levels above USD3,000 certain types of food, such as grain, can be considered an inferior good, as consumer demand decreases as income increases. The sensitivity of the demand for metals to income is much higher but tends not to change as income levels rise. Energy is the reverse of grains, with the demand for energy rising more rapidly than incomes in lower middle- to upper middle-income countries.
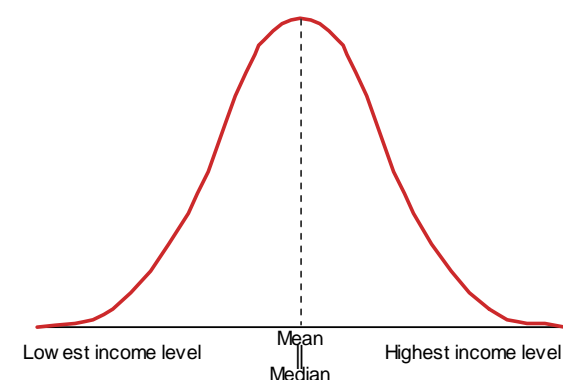
[6] See http://hdrstats.undp.org/en/indicators/147.html.

food demand is that rather than being symmetrical, or normally distributed, Asia ex-Japan's income distribution of households is heavily skewed toward low-income earners.
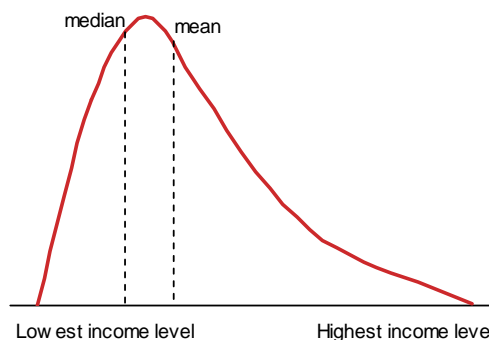
Median income is a better gauge than average income

It is very common to follow the World Bank's approach of using the average or mean GNI per capita of a country to gauge purchasing power of consumers. This approach has the advantage of data being readily available and it is appropriate for a normal income distribution, but when the income distribution is skewed, and when the income elasticity of demand varies in relation to the level of income – as in the case of food – the median income is more accurate (Figures 5 and 6). Based on household income surveys we find strong evidence that Asia's household income distribution has a very long right tail (see the Picture book: Distribution of household income).[7]

Figure 5. A normal income distribution	Figure 6. A positively skewed income distribution
Source: Nomura Global Economics.	Source: Nomura Global Economics.

73% of Asia ex-Japan's population is below mean income

Whereas the World Bank's outlook for food prices is based on the assumption that half of Asia ex-Japan's 3bn population is below the mean GNI per capita (USD2,985 in 2009, on a current exchange rate basis), because the distribution is skewed, we estimate that the share is actually 73% (column 4 in Figure 7). So rather than 1.5bn of Asia ex-Japan's population being below the mean income per capita, the number is more like 2.2bn (column 5 in Figure 7) – in other words, once allowing for the skew, the size of developing Asia's low-income population is likely some 700m larger, a discrepancy equivalent to more than twice the population of the US.

Figure 7. The mean (average) GNI per capita versus the median GNI per capita in Asia ex-Japan

|	Mean GNI per capita	Assumption: A normal distribution of income		Reality: A positively skewed distribution of income		Memo items: Median GNI per capita	Total population
	USD in 2009	Population below mean GNI per capita, % share	Population below mean GNI per capita, millions	Population below mean GNI per capita, % share	Population below mean GNI per capita, millions	USD in 2009	Millions in 2009
China	3700	0.5	667	0.72	964	2619	1335
Hong Kong	30977	0.5	4	0.79	6	17054	7
India	1085	0.5	585	0.74	871	805	1170
Indonesia	2251	0.5	116	0.68	158	1710	231
South Korea	17175	0.5	24	0.66	32	13877	49
Malaysia	6788	0.5	14	0.75	21	3963	28
Philippines	2005	0.5	46	0.71	65	1315	92
Singapore	35655	0.5	2	0.72	4	22933	5
Taiwan	16969	0.5	12	0.68	16	13420	23
Thailand	3766	0.5	32	0.75	48	2151	64
Total	**2985**	**0.5**	**1502**	**0.73**	**2185**	**2138**	**3004**

Source: *China Statistical Yearbook*, World Bank, CEIC and Nomura Global Economics.
Note: For some countries where Gross National Income (GNI) data were not available, Gross National Product (GNP) data were used instead.

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[7] Comprehensive country surveys of the distribution of household income are sparse. Apart from China where timely 2008 data are available from the 2009 *China Statistical Yearbook*, we utilise a cross-country World Bank survey in the early 1990s. While the surveys are not very recent, they are from a consistent source, and it is likely that the income distributions have not changed dramatically; in fact judging from China's annual household surveys they probably have become more skewed toward income inequality.
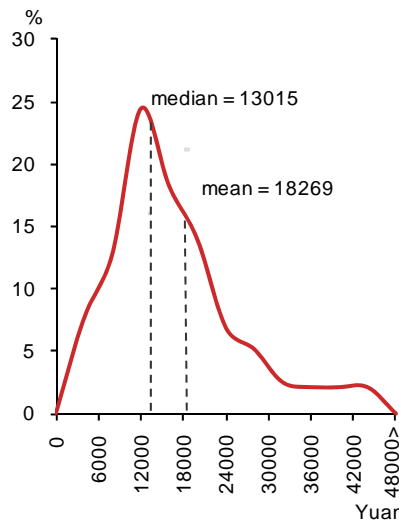
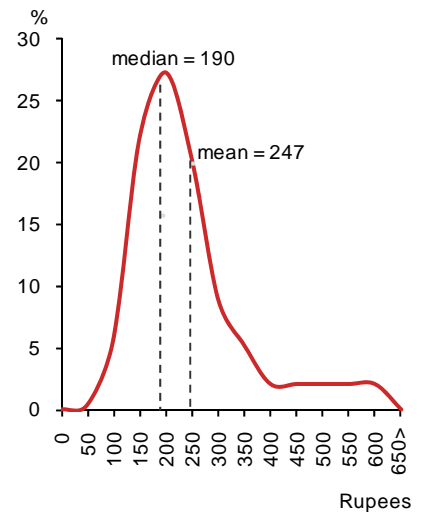# Picture book: Distribution of household income

China – Rural households, 2008

median = 5015
mean = 7186

Yuan
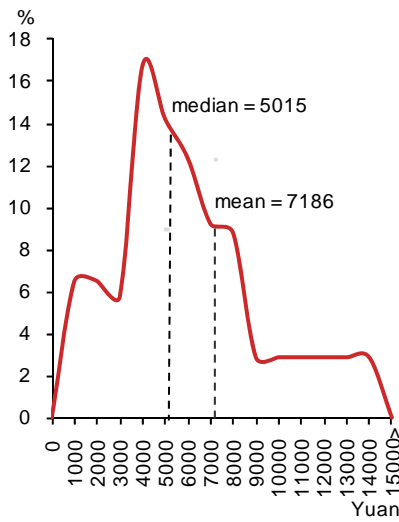
Source: *China Statistical Year Book 2009* and Nomura Global Economics.

China – Urban households, 2008

median = 13015
mean = 18269

Yuan

Source: *China Statistical Year Book 2009* and Nomura Global Economics.

India – Rural households, 1992

median = 190
mean = 247

Rupees

Source: World Bank and Nomura Global Economics.

Indonesia – Urban households, 1996

median = 66757
mean = 91903

Rupiah
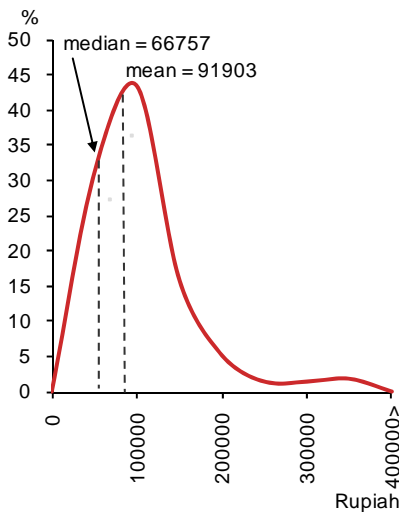
Source: World Bank and Nomura Global Economics.

Malaysia – All households, 1995

median = 2794
mean = 4786

Ringgit
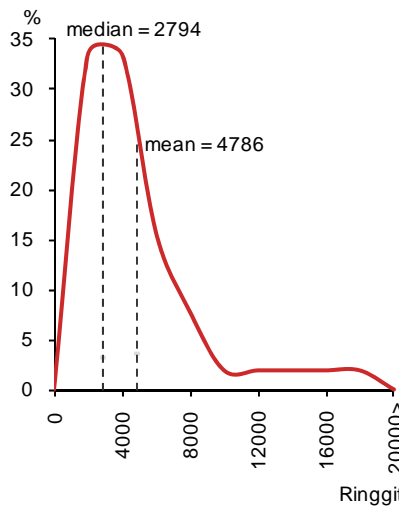
Source: World Bank and Nomura Global Economics.

The Philippines – All households, 1994

median = 8392
mean = 12797

Peso
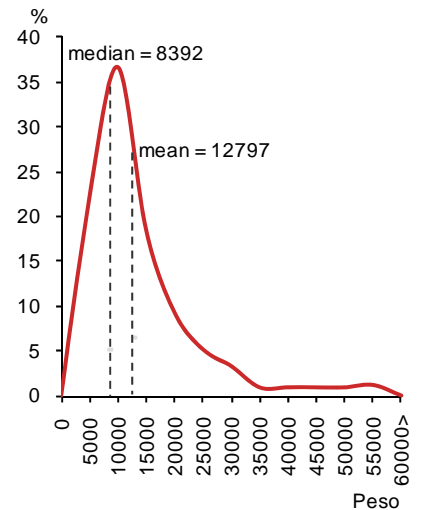
Source: World Bank and Nomura Global Economics.

Korea – All households, 1993

median = 4388313
mean = 5431080

Won
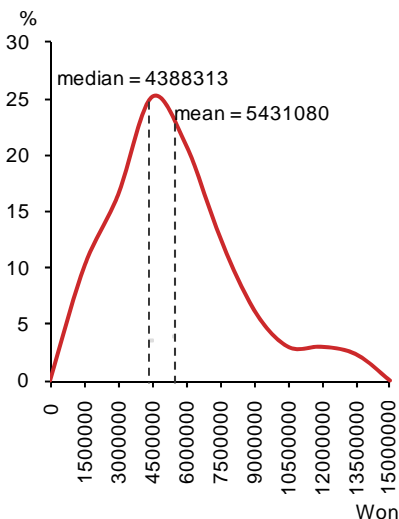
Source: World Bank and Nomura Global Economics.

Taiwan – All households, 1991

median = 120443
mean = 152300

NT$
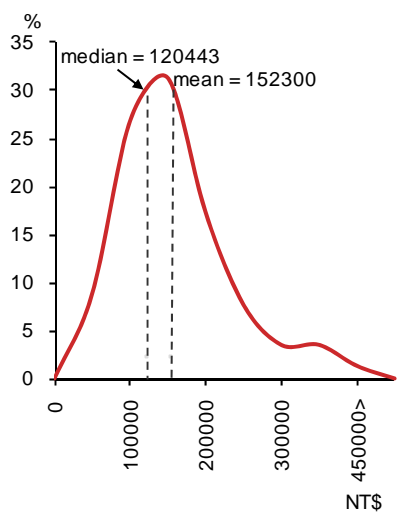
Source: World Bank and Nomura Global Economics.

Thailand – All households, 1992


median = 12035
mean = 21075

Baht
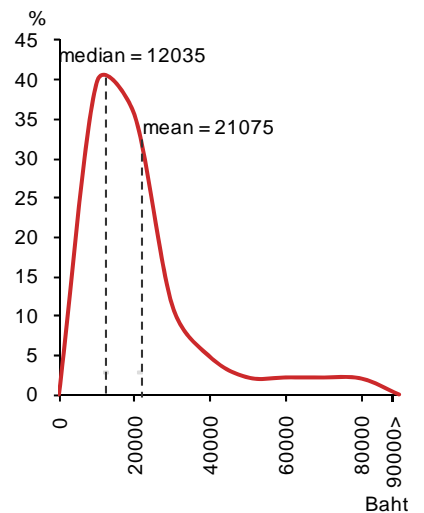
Source: World Bank and Nomura Global Economics.

The compounding effect of a higher calorie intake

Multiplier effects from increasing meat and dairy demand

What is more, the income elasticity for middle- to upper-middle income earners (GNI per capita of USD4,000-12,000) is higher for meat and dairy products than for grains, reflecting the change in diet to more expensive protein- and nutrient-rich foods as incomes rise (Figure 8). For example, in a recent study, the Hong Kong Monetary Authority (2010, p. 7) estimates that a 10% increase in overall real household spending per capita is associated with a 1.1% increase in spending on meat in the US, compared with an 11.5% increase in spending on meat in China. A surge in demand for meat and dairy can have large multiplier effects on the demand for grain and water, given that it takes, on average, 3kg of grain and about 16,000 litres of virtual water to produce 1kg of meat.[8]

Figure 8. GNI per capita versus livestock meat consumption by country in 2005
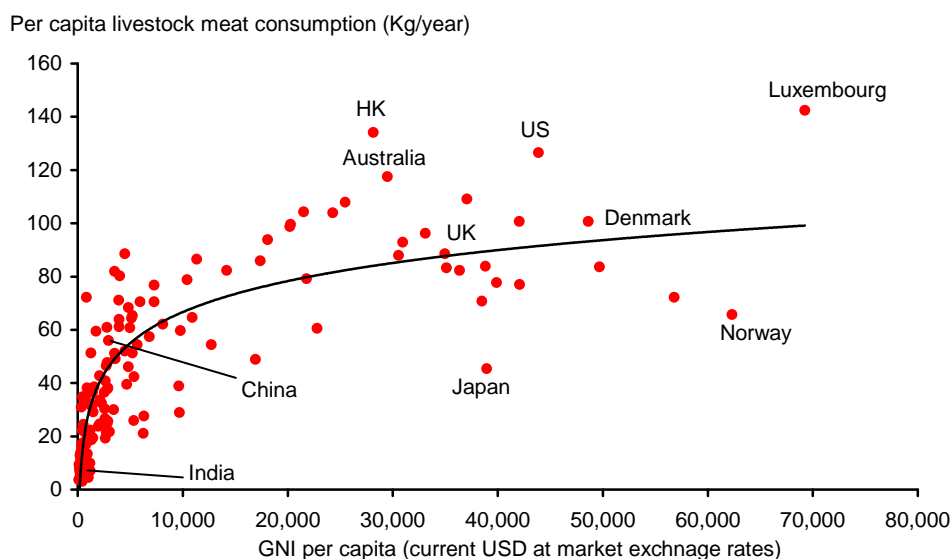
Source: FAO, World Bank and Nomura Global Economics.

China is following in Taiwan's footsteps

In Asia, the changing pattern of Taiwan's per capita food consumption over the past half century is an interesting case study, given that the Taiwanese diet is similar to that of the mainland Chinese. From 1985 to 1990, Taiwan's GNI per capita jumped from USD3,368 to USD8,325 (compared with USD3,427 in China in 2008), and during this period Taiwan's total per capita consumption of rice and vegetables declined, but consumption of meat, milk and fruit all increased substantially. We expect China to follow in Taiwan's footsteps (Figure 9). Of course, it is not only China but many developing countries where meat consumption is taking off. By 2050, developing country meat consumption will rise by 65%, while high-income countries' consumption will increase by 16%, according projections by the International Food Policy Research Institute.

Figure 9. Average per capita annual food consumption (kilograms)

Period	Grain	Vegetables	Meat	Milk	Fruit	Memo item: GNI per capita (USD)
Taiwan						
1975	162	110	27	15	55	979
1980	134	130	43	25	70	2,394
1985	110	103	56	32	112	3,368
1990	102	93	63	43	132	8,325
1995	100	102	73	59	137	13,103
China						
2000	265	132	39	3	46	934
2005	376	168	48	11	62	1,734
2008	444	171	42	15	65	3,427

Source: Taiwan Council of Agriculture, *China Statistical Yearbook* and Nomura Global Economics.

[8] United Nations Environment Program, *The Environmental Food Crisis*, 2009, p.26. Raising livestock is also draining on land-use and the environment, as the area required for production of animal feed is about one-third of all arable land, and as a result the livestock sector is estimated to be responsible for 18% of greenhouse gas emissions, a bigger share than that of transport (United Nations Environment Programme 2009, p25).

The developing world's youthful population

The developing world has a much younger population

The population in the developing world is expected to continue growing strongly. Based on projections by the United Nations Population Division, the developing world will contribute virtually *all* of future world population growth, from 6.9bn in 2010 to 9.1bn in 2050 (Figure 10). By 2050, 86% of the world's population will be found in today's developing countries. The population of the developing world is also younger, and studies have found that as adults age, they tend to eat less (Figure 11).[9] The World Bank (2009, p 72) estimates that three quarters of the additional global demand for food in the next two decades will come from developing countries. Based on our analysis of income distribution, we believe that the World Bank's estimate is still too low.

Figure 10. World population: actual and projections
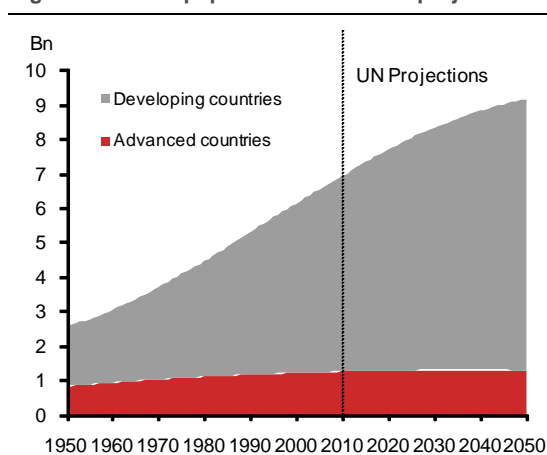
Source: UN Population Division and Nomura Global Economics.

Figure 11. World country ranking by median age, 2010

Country	Median Age	Country	Median Age
Japan	44.3	**Brazil**	**29.0**
Germany	42.3	**Vietnam**	**28.5**
Italy	43.3	**Turkey**	**28.3**
Spain	40.2	**Indonesia**	**28.2**
France	40.1	**Mexico**	**27.6**
Canada	39.9	**Iran**	**26.8**
UK	39.9	**Malaysia**	**26.3**
Russia	**38.1**	**India**	**25.0**
Korea	**37.9**	**S Africa**	**24.9**
Australia	**37.8**	**Saudi Arabia**	**24.6**
USA	36.6	**Bangladesh**	**24.5**
China	**34.2**	**Philippines**	**23.2**
Thailand	**33.2**	**Pakistan**	**21.3**
Sri Lanka	**30.6**	**Zimbabwe**	**19.0**
Argentina	**30.4**	**Nigeria**	**18.6**

Note: Developing countries are in bold. Source: UN Population Division and Nomura Global Economics.

Biofuels – a new, competing source of demand

Biofuel is competing with food production for agriculture crops

A new, and potentially secular, demand for agricultural commodities is their use in biofuel production. This is because production of corn, soybean, sugarcane, palm oil and ethanol for biofuel competes with food production.[10] Influenced by high oil prices, the potential for biofuels to emit lower-carbon energy (i.e. pollution) and as a means of bolstering fuel security, governments have been promoting greater biofuel use and subsidizing its production. For example, in the US there have been amendments to various environmental-related Acts favouring the use of biofuels, while the EU began instituting mandatory use of biofuels as early as 1992.[11]

It has forged a positive link between oil and food prices

Biofuels have forged a new link between food prices and oil prices, as the higher the price of oil, the more economically viable biofuel production becomes. In 2007, when oil prices were rising rapidly, the FAO (2009a, p.19) estimates that out of the increase of nearly 40m tonnes in total world maize use, almost 30m tonnes were absorbed by ethanol plants alone. No wonder the food price surge in 2007-08 sparked protests over biofuel production, when studies found that the corn equivalent of the energy used on a few minutes drive could feed a person for a day, and that a full tank of ethanol in a large four-wheel drive suburban utility vehicle could feed one person for almost a year (United Nations Environment Programme 2009, p38). The US Department of Agriculture and Department of Energy together estimated that if the amount of corn used for ethanol and the amount of edible oil used for biodiesel in the US had remained unchanged at their 2005-06 levels, prices in 2007-08 would have been 15% lower for maize and 18% lower for soybean (World Bank, 2010, p.13).

Rising biofuel demand poses a long-term threat

With the exception of ethanol production from sugar cane in Brazil, production of biofuels is currently not economically viable without subsidies and other forms of policy support (FAO, 2009a, p.20). The current procedures for producing biofuels are also environmentally unfriendly, as large amounts of greenhouse gases are emitted. Still, biofuels are likely to remain a drain on

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[9] See for example, "America's Changing Appetite: Food Consumption and Spending to 2020", Food Review, Vol. 25, Issue 1, 2002.
[10] While biofuels have been used since the early days of the automobile (Henry Ford's 1908 Model T car was designed to run on maize-based ethanol), limited supplies and the availability of cheaper and more efficient petroleum products diminished the use of biofuels (World Bank, 2009, p.79).
[11] With rising in oil prices, the US and EU governments spent a total of USD10.5bn on biofuel subsidies in 2006, (FAO, 2009a, p.20).

food production – just how much will depend of factors such as the level of oil prices, technological innovations and the degree of environmental degradation. The OECD-FAO (2010) forecasts global biofuel production to increase from an average of 89bn litres in 2007-09 to 200bn litres in 2019. Biofuels made up about 1% of total fuel used for road transport in 2005 and on one estimate may, in 15 to 20 years time, provide a full 25% of the world's energy needs.[12]

EM demand for food should not be underestimated

There are two possible counters to the view that the global demand for food is set for explosive growth. One is that weak economic expansions in the advanced economies in the coming years because of scars from the global financial crisis could keep food prices contained. But in our view, the burgeoning demand for food from emerging market economies will be much more important than that of advanced economies in the years ahead, especially once the declining income elasticity of food demand and the rising calorie intake in developing countries is taken into account.

Developing countries could turn into net food importers

A second counter is that the world's most populated developing economies – China, India and Indonesia – are currently largely self sufficient in food. True, but we would highlight that not enough has been done to encourage food supply globally, particularly in developing economies. Therefore, there is a risk of developing countries that are currently self-sufficient suddenly turning into net importers of some food items. For example, China in recent years has become a very large net importer of soybeans and in July its imports of sugar and maize shot up to decade highs. Many of the world's most populated economies are the ones developing extremely rapidly, some switching to net importers of certain food items; the impact on world food prices given the tight global demand-supply balance could be dramatic.

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[12] The estimate was made by Alexander Müller, the Assistant Director-General for the Sustainable Development Department of the FAO in April 2006, see: http://www.fao.org/Newsroom/en/news/2006/1000282/index.html

The supply side

"Part of the secret of success in life is to eat what you like and let the food fight it out inside." ~ Mark Twain.

The outlook for food prices is also a function of supply factors, such as the productivity of agricultural production, the efficiency of food consumption and the availability of land and water – all of which can be promoted by far-sighted government policies.
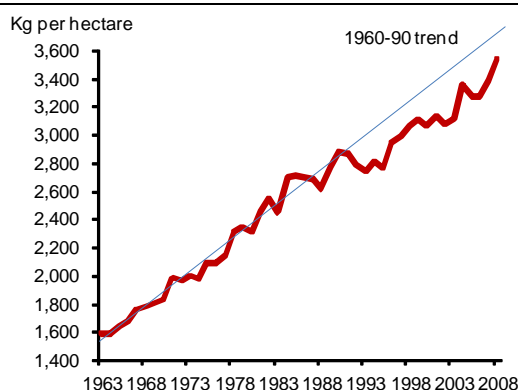
Lifting agricultural productivity

Agriculture productivity has been lagging

The increase in crop and livestock output over the last 50 years has been driven predominantly by productivity gains rather than increased available land. Most of the increase in productivity has come about through investing in simple improvements in agricultural techniques, including increased use of irrigation, fertilizers and commercially optimised seeds – the so-called "Green Revolution" technologies in the 1960s, 70s and 80s in developing countries.[13] In the past two decades, however, agricultural productivity – measured by growth in yields – has been less impressive, which is consistent with the lack of new investment in agricultural development and the exhaustion of the productivity gains that came from the Green Revolution, particularly in the developing world.[14]

**Human capital in agriculture also needs to be boosted**

For example, the increase in the world cereal yield (measured in terms of kilograms per hectare) has fallen below its long-run trend over the past two decades (Figure 12).[15] The quality of agricultural labour is also a growing problem, particularly in developing regions such as Africa, where a rising share of farming is conducted by the elderly with little knowledge of modern farming techniques (FAO 2009a, p.36). In China, with the population ageing rapidly and young people attracted to the cities in search of higher-paying jobs, the share of the 15-29 age cohort in the towns and counties has dropped from 30.8% in 1990 to 20.5% in 2008 (Figure 13).[16]

Figure 12. World cereal yield	Figure 13. China's 15-29 age cohort in towns and counties

Source: World Bank and Nomura Global Economics.
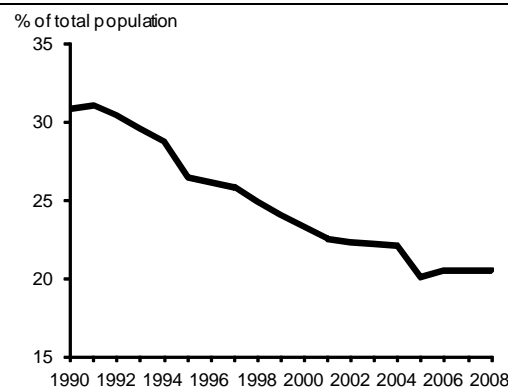
Source: CEIC and Nomura Global Economics.

New investments is lagging most in the developing world

The lack of new investment in agriculture reflects, until recently, a multi-decade decline in the real price of agricultural output, which reduces incentives to invest in physical and human capital to expand supply. Also, of the world's total official development assistance to poor countries, the share devoted to agriculture has fallen from 20% in 1979 to 5% in 2007, (FAO, 2009b, p.12). Even the surge in food prices over 2007-08 appears to have failed to rejuvenate agricultural investment in developing countries, partly because agricultural input costs – such as crude oil and fertilizer – surged by even more (Figure 14).[17] There is an increasing urgency to improve global investment in agriculture in areas such as R&D; food storage; telecommunication; distribution and transportation; and in broadening farmers' access to microfinance.

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[13] Growth in productivity was responsible for half of the increase in agricultural output since 1960 in China and India and 30-40% in other East Asian countries (World Bank 2009, p.80).

[14] For example, the number of agricultural tractors and machinery per 100 square kilometres of arable land worldwide increased from 109 in 1961 to 207 in 1990, but by 2007 has increased by only a further 8, to 215, according to World Bank data.

[15] For every USD100 of agricultural output, governments in advanced countries spend USD2.16 on agricultural R&D, whereas governments in developing countries spend only USD0.55 (United Nations Environment Programme 2009, p81).

[16] Over the same period, the share of China's 15-29 age cohort in cities declined from 31.3% to 23.3%.

[17] A large share of the recent investment has been in biotechnology in the US and a few other affluent nations (UNESCO, 2009, p.55).

Figure 14. Percentage changes in output and input prices for selected products and inputs

(Jan-Apr)	Meat	Dairy	Cereals	Oils	Sugar		Food price index[1]
2008-07	9	49	80	94	23		52
2007-06	5	35	32	29	-39		12
(Jan-Apr)	Ammonia	Urea	CAN	NPK	DAP	IRAC crude oil[2]	Input price index
2008-07	82	31	85	213	163	70	99
2007-06	4	29	15	41	33	-3	19

[1] Food price index: beans, butter, cocoa, cottonseed oil, hogs, lard, maize, steers, sugar and wheat. Input price index: ammonia, urea, CAN, NPK, DAP and IRAC crude oil. [2] Imported Refiner Acquisition Cost (IRAC) of crude oil in the United States of America. Source: FAO and Nomura Global Economics.

Improved efficiency in food consumption can lift food supply

It tends to receive less attention, but another way investment can lift food supply is to increase the efficiency of food production and distribution, by reducing waste during harvesting, processing, transport and at the final point of consumption. Examples include better cold storage in developing countries and new technologies offering more efficient recycling of food waste into animal feed. There seems enormous potential to reduce waste: for example, it is estimated that 30% of India's fruits and vegetables rots before reaching market; in the US, 30% of all food is simply thrown away each year (United Nations Environment Programme 2009, p32).

**Higher prices can be a key catalyst for new investments**

For all the supply side challenges, extreme predictions that the world will run out of food – the most famous by British scholar Thomas Malthus in 1798 – are over blown, given the enormous potential for new investments in agriculture, which is key to lifting agricultural productivity. To illustrate, the World Bank (2009, p86) simulates that should global agricultural productivity rise by its baseline projection of 2.1% per year over 2010-2030, then global food prices would fall by 0.7% per year relative to manufacturing prices. But if agricultural productivity rises by only 1.2% per year instead, then food prices would rise by 0.3% per year relative to manufacturing prices – reversing the trend decline of the past 100 years. There is no guarantee that public policies will succeed in encouraging greater private investment in agriculture, but there is another catalyst – the natural power of market forces: a surge in food prices which is our prediction.

Increasing land supply for agriculture

Supply can increase by cultivating unused land...

Besides lifting agricultural productivity, another way to increase food supply is by cultivating unused land. There is substantial additional land available for use in agriculture. The OECD-FAO (2009) estimates that some 1.6bn hectares could be added to the current 1.4bn hectares of arable land (Figure 15). The largest potential is the mass of land that is currently forested but suitable for rain-fed crop production – worldwide it is more than one-and-a-half times bigger than the total amount of land currently used for agriculture, with the largest untapped supplies in Latin America and sub-Saharan Africa.

Figure 15. Amount of arable land in 2007
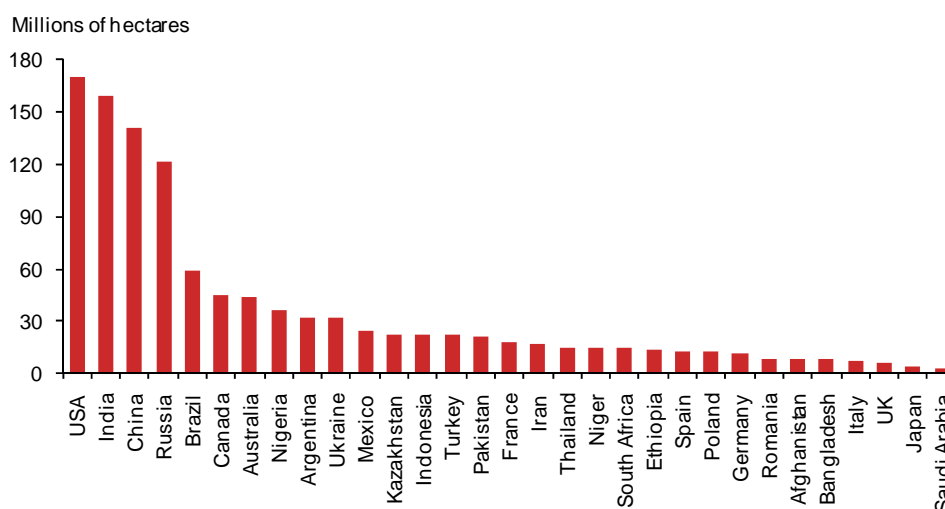
Source: FAO and Nomura Global Economics.

**... but urbanization and industrialization are competing**

The challenge, however, is that while the planet's potential land supply is far from exhausted, increasing the availability of land for agriculture competes against the trends of urbanization

and industrialization, particularly in developing countries. In 2010, 3.5bn people lived in the world's cities, a number that is projected by the United Nations Population Division to increase to 4.5bn by 2025 and to 6.2bn by 2050.[18] China, for example, lost 8.3m hectares of cultivated land over 1996 to 2008, largely because of urbanization and industrialization. Another competing force is the increase in biofuel production which has increased demand for food commodities and diverted cropland. For example, in 2007 the US expanded land area for maize production by 23% in response to rising maize prices, in turn driven largely by increased maize demand for ethanol production. This expansion resulted in a 16% drop in land area for soybean production and contributed to a 75% rise in soybean prices in the 12 months to April 2008 (World Bank 2008, p10).

Deforestation and running down food stocks – not an option

Furthermore, increasing the availability of land-use for agriculture by deforestation can accelerate land degradation, climate change and loss of biodiversity, leading to soil erosion and nutrient depletion, thereby reducing yields and hence productivity.[19] Land degradation is already a serious problem in many developing countries, caused by over-use of mineral fertilizers with detrimental effects on the nutrient balance of the soil and over-intensive cultivation. A temporary solution to inadequate supply is to run down existing food stocks, but global stock-to-use ratios are already near historically low levels for rice and corn. The global stock-to-use ratio for wheat rose in the last two years, but could fall again, given China, Russia and Pakistan – three of the world's top 10 wheat producers – have all suffered major natural disasters this year (Figure 16).

Figure 16. World stock-to-use ratios for selected agricultural commodities
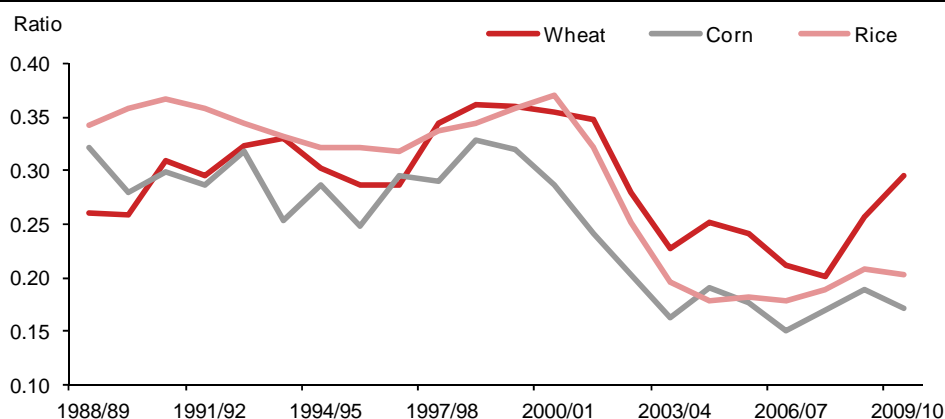
Note: Stocks are end of period. Totals for world consumption reflect total utilization, including food, seed, industrial, feed and waste, as well as differences in local marketing year imports and local marketing year exports. Source: United States Department of Agriculture and Nomura Global Economics.

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[18] http://esa.un.org/unpd/wup/index.htm

[19] It is estimated that about 2bn hectares of the world's agricultural land has been degraded because of deforestation and inappropriate agricultural practices (United Nations Environment Programme 2009, p40).

Uncertainties and feedback loops

"If more of us valued food and cheer and song above hoarded gold, it would be a merrier world." ~ J. R. R. Tolkien.

With strong secular global demand for food it may not take much of a shock to trigger a surge in food prices, and uncertainties abound on the supply side, including a major El Niño event. A lesson from the food price surge in 2007-08 is that a rise in food prices can quickly spread globally and feed on itself due to rising protectionism in agriculture, increasing speculation in food commodities and the tightening link between food and oil prices.

An El Niño event

The world is overdue for a severe El Niño event

Weather-related shocks are the single most important factor impacting agricultural output, and meteorologists are warning that, if history is any guide, the development of a severe El Niño event is overdue. El Niño is a climate phenomenon, occuring on average every two to seven years and typically lasts about 12 months, which can lead to droughts in Australia, Southeast Asia, South Africa and India; severe flooding in Central and South America; and winter storms in the southern United States.[20] To predict El Niño, meteorologists monitor the Southern Oscillation Index (SOI), which measures the monthly mean air pressure difference between Tahiti and Darwin, Australia: a large negative persistent reading is a strong warning of El Niño developing. The most recent severe El Niño was in 1997, when the SOI averaged -11.7. Other severe El Niño events, involving an SOI of at least -10, occurred in 1994, 1992, 1987, 1982 and 1977. The SOI over January-August 2010 has averaged 3.9 (Figure 17).

Figure 17. The Southern Oscillation Index
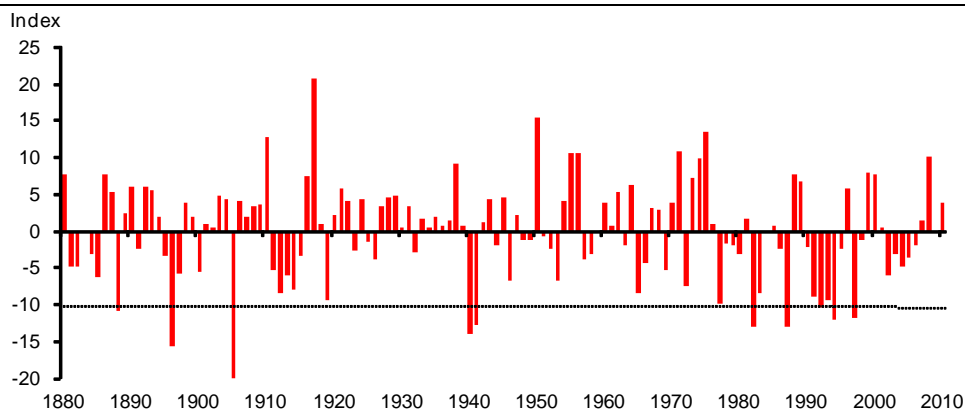
Note: For details on how the Southern Oscillation Index is calculated please see:
http://www.bom.gov.au/climate/glossary/soi.shtml

Source: Australian Bureau of Meteorology and Nomura Global Economics.

Climate change

Climate change can retard agricultural productivity

According to the 2007 fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC), over the period 1906-2005, the global temperature rose by 0.74 degrees Celsius. This century the increase in carbon emissions means the earth's temperature is likely to increase substantially more, by 2-5 degrees Celsius, according to various scientific studies. While there is high uncertainty about the magnitude and timing, climatologists broadly agree that global warming is unavoidable, with potentially serious consequences for the environment, including the melting of glaciers and ice caps, higher sea levels, more frequent floods, droughts and storms, and an increase in infestations, such as pathogens, weeds and insects. All this is clearly negative for agricultural productivity. The IPCC estimates that with a 3-5 degree Celsius rise in the global temperature, developing countries – particularly India, sub-Saharan Africa and parts of Latin America – may need to increase cereal imports by 10-40% while real agricultural prices

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[20] El Niño translates from Spanish as "the boy-child". Peruvian fisherman originally used the term to describe the appearance, around Christmas, of a warm ocean current off the South American coast. Nowadays, the term refers to the extensive warming of the central and eastern Pacific that can lead to a major shift in global weather patterns. El Niño occurs on average every two to seven years and typically lasts about 12 months. The most recent severe El Niño was in 1997-98.

could be 10-40% higher, OECD-FAO (2009, p.74).[21] Global warming could reduce crop yields by 5-30% in parts of Asia.[22]
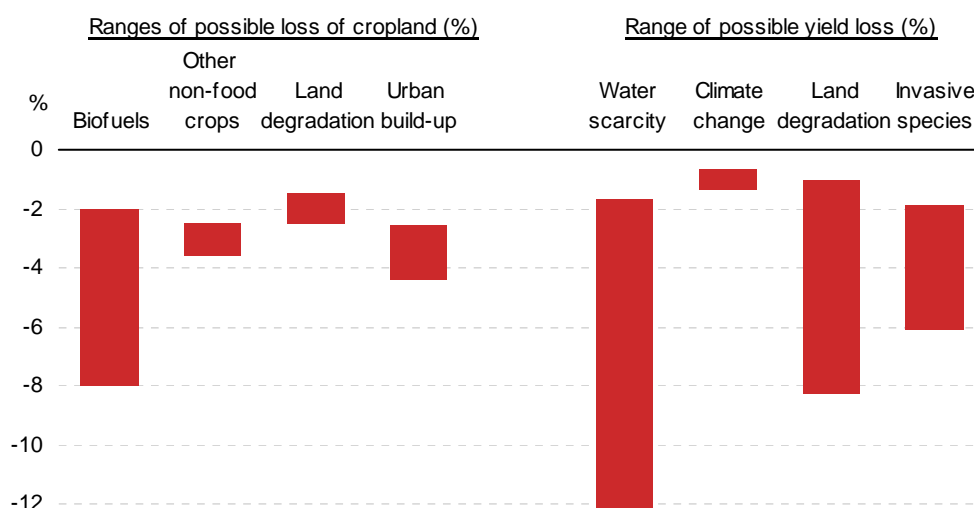
Water scarcity

Water scarcity is one of the top threats to long-run food supply

Water scarcity is another uncertainty and challenge facing food supply, given that agriculture accounts for 70% of global water consumption, with some estimates as high as 85% for developing countries. Industrialized agriculture with its high yield varieties are extremely water intensive which, together with current projections of global food demand, suggests that water demand will likely double by 2050 (United Nations Environment Programme 2009, p48).[23] Yields on irrigated croplands are on average two to three times higher than those on rain-fed lands, and irrigated land currently produces about 40% of the world's food.

Farmers depend on depleting water supplies for irrigation

Already 15-35% of water withdrawals are not sustainable, i.e. the amount being withdrawn from aquifers or rivers exceeds the rate at which the source is naturally resupplied (World Bank 2009, p. 85). Another concern is global warming depleting water supplies, particularly in the Himalayas, a region from which farmers in central Asia are heavily dependent upon snow and glacial melt for irrigating their crop. Interestingly, of all the negative influences on food supply – urbanization, conversion of cropland for biofuels, land degradation, invasive species and water scarcity – simulations by the United Nations out to 2050 suggest that increased use of biofuels could potentially cause the greatest loss of cropland, while increased water scarcity could have the most negative impact on yields (Figure 18).

Figure 18. Estimated impact of negative supply-side factors on cropland and yields

Note: Possible individual ranges of yield and cropland area losses by 2050 with climate change, increased non-food crops including biofuels, land degradation (on yield and area, respectively), water scarcity (including the gradual melting of Himalayan glaciers) and pests (invasive species of weeds, pathogens and invertebrates, such as insects). Although these effects may be considerable, cumulative and indirect effects or interactions are not considered here, nor are the cumulative loss of ecosystems services endangering the entire functioning of food production systems. Notice that the climate impact bar only relates to changes in general growing conditions including temperature, evapo-transpiration and rainfall, not the indirect impacts of climate change such as on glacial melt (water scarcity) and increases in invasive species. The other bars in part incorporate some of these important climate change impacts.
Source: United Nations Environmental Programme (2009, p.61).

[21] One potential advantage of global warming is higher concentrations of atmospheric carbon dioxide increasing photosynthesis in crops, thereby boosting yields. However, it is generally agreed that this advantage would be more than offset by a number of disadvantages, UNESCAP (2009, pp55-56).
[22] Chapter 10.4.1 Agriculture and food security, Climate Change 2007: Intergovernmental Panel on Climate Change Fourth Assessment Report.
[23] Water is critical for rice, Asia's main staple, which requires two to three times more water than other cereals.

Sharp depreciation of USD

A sharply weaker USD can add to food price pressure

In the event of a sharp depreciation of the US dollar (USD), there is a direct valuation effect to prices denominated in other currencies, as commodity prices are mostly quoted in USD. There can also be an indirect effect: for many large food exporting countries, a sharp weakening of the USD can lower revenue per unit of output once converted into local-currency terms, providing an incentive to stockpile and reduce supply. For many food importing countries, a sharply weaker USD lowers the cost of imported food in local-currency terms, providing an incentive to increase demand. The combination of smaller global export supply and larger import demand can put upward pressure on world food prices, in the event of a major depreciation of the USD.
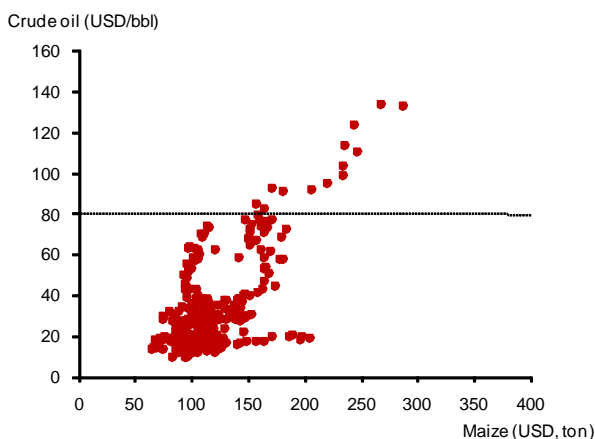
Rising oil prices

Food prices increasingly sensitive to oil prices...

Rapidly rising incomes in developing economies can drive both food and oil prices higher, and the feedback loops between the two seem to be strengthening. As agricultural production becomes increasingly mechanised and the world becomes increasingly urbanized, food production will rely more on machinery, irrigation systems, transportation and cold storage, increasing the sensitivity of food prices to energy costs.

...due to use of fertilisers and policy-induced biofuel use

The link between food and oil prices stands to increase for two other reasons as well. One is the growing use of fertilizers, since the main fossil fuel input for many pesticides and herbicides is natural gas, the price of which is highly correlated with the price of oil because they are close substitutes.[24] The other is the policy-induced increased use of biofuels, as higher oil prices increases the incentive to substitute corn, soybean, sugarcane, palm oil and ethanol for biofuel production rather than food production.[25] The FAO (2009a, p.4) concluded that new biofuel demand and record-high oil prices were the major drivers of the 2007-08 rise in food prices. Indeed, when oil prices exceed the threshold of roughly USD80/bbl, a positive correlation can clearly be observed between oil and crop prices, whereas below USD80/bbl there is no evident correlation (Figures 19 and 20). Empirically, the World Bank (2010) has estimated that, over the period 1960 to 2008, a 10% increase in energy prices is, on average, associated with a 2.5% rise in metal prices, a 2.7% rise in food prices and a 5.5% rise in fertilizer prices. However, as indicated in Figures 19 and 20, these price elasticities become more significant when the price of oil rises above USD80/bbl.

Figure 19. Oil prices versus maize prices, 1980-2010	Figure 20. Oil prices versus soybean prices, 1983-2010
Source: IMF and Nomura Global Economics.	Source: IMF and Nomura Global Economics.
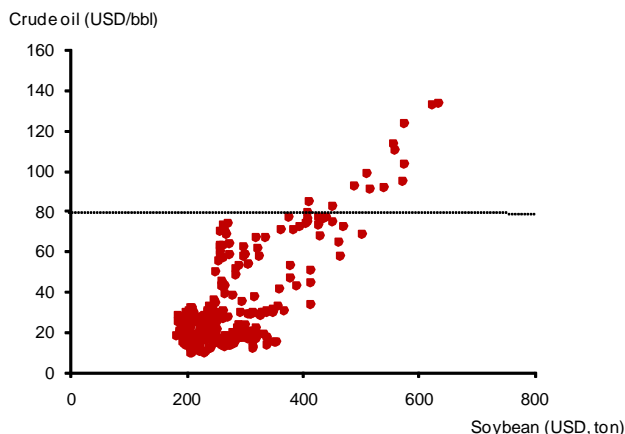
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[24] In the US, fertilizers and chemicals accounted for 34% of the total cost of producing maize and 27% of the cost of producing wheat in 2007, (World Bank, 2009, p.61).
[25] Because the world energy market is so much larger than the world grain market, grain prices could become more dependent on oil prices than grain supply. Much depends on the future level of oil prices and the extent of future biofuel use (FAO, 2009b, p.12).

Protectionism

Countries respond to high food prices with trade policies...

Government intervention and trade protectionism in agriculture markets can distort price signals, which at the global level can have severe unintended consequences. These have likely become more serious over time as international trade in agriculture has increased significantly, spurred by trade liberalization policies and the expansion and improvement of the global transportation system (Figure 21). In response to the food price surge of 2007-08, governments in many poorer countries – including Argentina, Egypt, India, Indonesia, Kazakhstan, Pakistan, Ukraine, Russia and Vietnam – imposed price controls, import tariffs cuts, or complete bans on exports of some food items.

Figure 21. Total world value of agricultural imports and exports
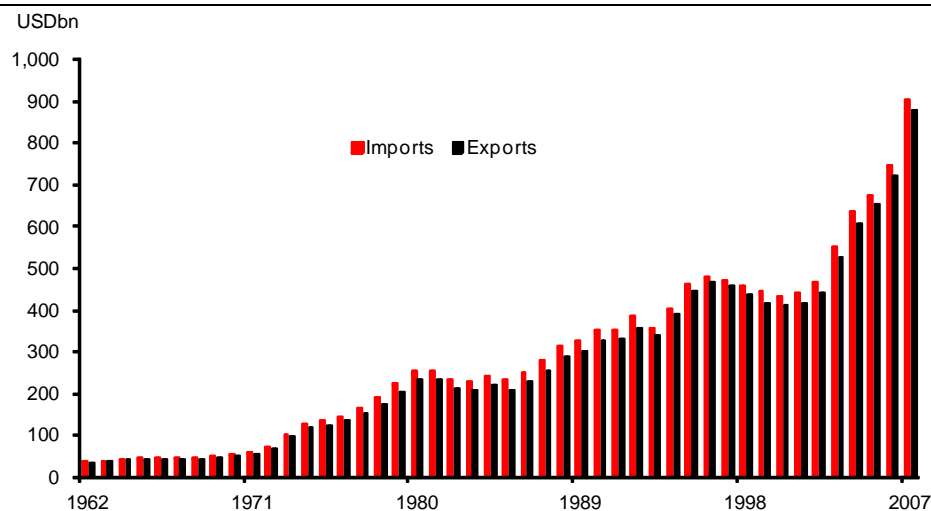
Source: FAO and Nomura Global Economics.

...but it exacerbates the extent and duration of price rise

Trade interventionist policies can provide some short-term relief to domestic consumers, but they can exacerbate the extent and duration of a food price rise by reducing both the incentives of producers to increase output and the incentives of consumers to ration demand. In the jargon of economists, the supply and demand for food becomes more price inelastic. For example, following India's ban on exports of premium rice on 9 October 2007, the international price of rice spiked almost immediately (World Bank, 2009, p.124). On 5 August 2010, in response to a severe drought the Russian government banned the export of wheat to protect home consumers, causing grain prices to jump 8% on the day, on what was already a two-year high.

Speculation and hoarding

Financial speculation could be a reason for higher prices...

Commodity exchange markets provide risk-management tools, such as futures and options, to enable commercial participants like farmers and agricultural traders to hedge against the risk of price fluctuations. There are also non-commercial participants like speculators and institutional investors, which are also important for the efficient functioning of markets, as they bring liquidity and can take the other side of a risk-shifting trade. However, over 2005-08 non-commercial traders more than doubled their share of open interest in corn and soybean futures markets, raising concern that excessive financial speculation was contributing to higher food prices, although the increased long positions may also have been motivated as hedges against rising CPI inflation (Figure 22).[26] In India, the government was sufficiently convinced that it was the former that it banned futures trading in rubber, soya oil, potato and chickpeas in 2008.

...although the empirical evidence is not clear cut

Evidence, however, as to the extent to which financial speculation contributed to the rise in food prices, is mixed. In a survey of the evidence, Masters (2009) and the World Bank (2010) conclude that speculation played a non-trivial role, while Gilbert (2008, 2010) found that the impact of futures positions of index-based investors on commodity prices was statistically significant. However, empirical analysis by Irwin and Sanders (2010) and the IMF (2008) failed to find firm evidence that speculators had a systematic influence on commodity prices. While

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[26] Low stockpiles of food can invite speculative attacks because the time taken to replenish stocks encourages investors to speculate that prices will continue going up, UNESCO (2009, p.56).

evidence of financial speculation is inconclusive, there are at least many anecdotes that physical speculation in developing economies – such as panicked hoarding or ordering more food now in anticipation of further prices rises – contributed to the 2007-08 food price surge.[27]

Figure 22. Open interest contract volume of futures markets, % share of non-commercial traders
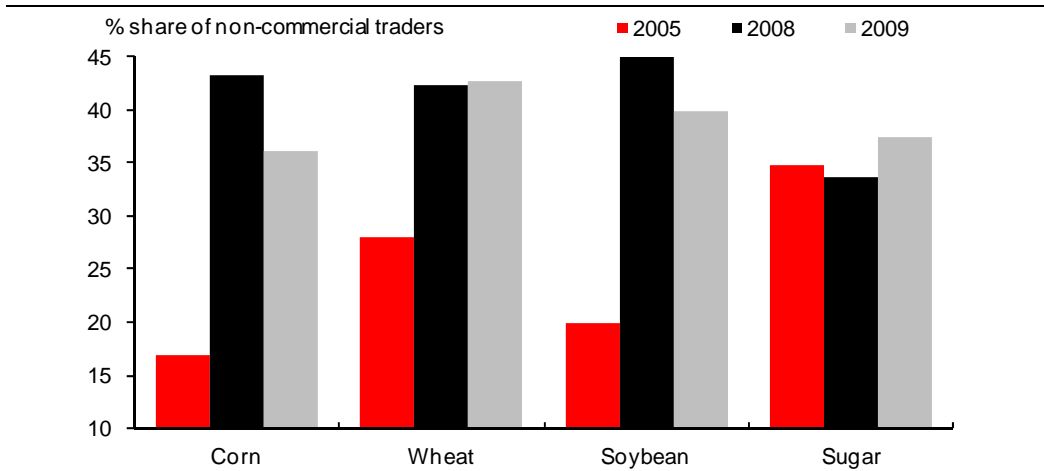
Source: OECD-FAO (2009) and Nomura Global Economics.

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[27] In India and the Philippines, for example, in early 2008 large warehouses were reported to be hoarding rice, UNESCO (2009, p.56).

Macro impact and policy responses

"Tell me what you eat, and I will tell you what you are." ~ Anthelme Brillat-Savarin,
The Physiology of Taste, 1825.

Impact of high food prices varies significantly

The impact of a sustained surge in food prices on the macro economy can vary significantly, depending on whether or not the country is 1) a large agricultural producer; 2) a large net food importer or exporter; and 3) rich or poor in terms of GDP per capita. For poor countries that import most of their food, the impact of such a deterioration in the terms of trade can be devastating: a sharp decline in GDP growth, a surge in CPI inflation, worsening fiscal finances, higher interest rates and a depreciating currency. For rich countries that are large net importers of food the macroeconomic impact is less negative, whereas rich countries that are large net exporters of food can benefit. While at the global level, a sustained surge in food prices is simply a relative price change, the income redistribution is unambiguously negative from a social perspective because it hurts poor countries the most, thereby increasing global poverty and income inequality.[28] In the medium run, rising food prices should elicit a global supply response by incentivising increased investment in agriculture, but just how high food prices would need to rise to restore equilibrium is unclear.[29]

Inflation

It can add to inflation in countries with high food weight in CPI

The most obvious macroeconomic impact of a surge in food prices is higher Consumer Price Index (CPI) inflation. The effects can be acute in developing economies where households spend a greater share of their income on food, and so the weight of food in the CPI basket is much larger than in advanced countries. For most advanced countries, the food weighting in the CPI basket is 10-20%, whereas it is about one-third in China, 46% in India and over 50% in many low-income countries such as Nigeria, Vietnam and Bangladesh (Figure 23).[30] A sustained surge in food prices can have more pernicious effects if it unmoors inflationary expectations, impelling workers to demand higher wages to compensate for rising food costs, thus setting off a wage-price inflation spiral, leading to a rise in underlying CPI inflation. This food price-driven un-anchoring of inflation expectations tends to be more common in developing economies, because 1) food is often the principal component of the household budget in lower-income economies; and 2) central banks in developing economies are generally less independent in setting monetary policy, and thus are less credible as inflation fighters.

Figure 23. The food share in household consumption versus GDP per capita in 2008
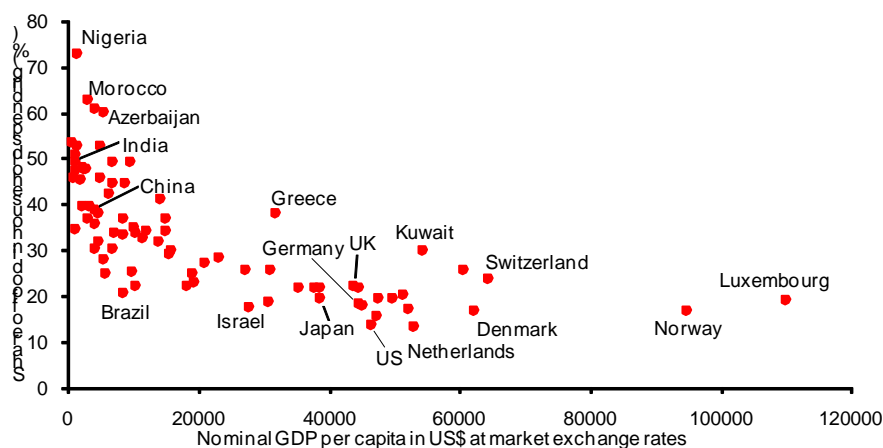
Source: FAO, Seale, USDC, World Bank and Nomura Global Economics.

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[28] The 2007-08 food price surge has increased the number of people living in extreme poverty, by 130-150m (World Bank 2009, p.96).
[29] The FAO (2009a, p.29) notes that in spite of enormous increases in prices, developing countries increased their cereal production by less than 1% in 2008 and production actually decreased in the vast majority of them, leading the FAO to conclude that "the hoped-for supply response simply failed to materialize".
[30] A related but more technical reason is that households in advanced economies tend to consume a greater share of processed and manufactured food than their counterparts in developing economies. A surge in raw agricultural prices tends to have a smaller and less direct transmission through to retail prices of manufactured food than non-processed food since the service costs of wages, energy, transport and storage can often be greater than that of the raw commodity.

Monetary policy

Central banks tend to respond to core, not food inflation...

Historically, central banks have been slow to respond to surges in food and other commodity prices, preferring to take a "wait and see" approach, especially given that, historically, commodity price rises have been more transitory than secular. For a central bank, the question of whether or not to respond by raising interest rates really depends on whether the initial rise in headline CPI inflation starts feeding into non-food core CPI inflation, fuelled by rising inflation expectations and higher wage demands.

For advanced economies, given that food has a relatively low weighting in the CPI basket, the rise in headline CPI inflation should be relatively mild. This limits the risk of second-round inflationary effects, and so central banks are typically not in a hurry to raise rates on the basis of a rise in food prices.[31] For instance, during the 2007-08 period the US Federal Reserve was cutting rates because of a deteriorating growth outlook. The European Central Bank hesitated for months to react to the rise in headline inflation, finally hiking rates by only 25bp in July 2008, before cutting them aggressively after the collapse of Lehman Brothers.

... and so are slow to respond

For developing economies, a food price surge should have a much larger impact on headline CPI inflation and consequently carries with it a greater risk of feeding through to core inflation; it also hurts GDP growth more than in advanced countries. Given this inflation/growth trade-off and given that central banks in developing economies generally having less monetary policy independence than their counterparts in advanced economies, they too are more likely to err on the side of tightening too little rather than too much. That was the experience in emerging Asia in 2007-08: central banks hiked rates only at the tail end of the food price surge and by much less than the rise in CPI inflation (Figure 24).

Figure 24. Asian policy interest rates, headline CPI inflation and the food price index

	1Q07	2Q07	3Q07	4Q07	1Q08	2Q08	3Q08
Policy rates (% p.a.)							
China	3.33	3.33	3.33	3.33	**4.14**	4.14	4.14
India	7.50	**7.75**	7.75	7.75	7.75	**8.50**	**9.00**
Indonesia	9.00	8.50	8.25	8.00	8.00	**8.50**	**9.25**
Korea	4.50	4.50	**5.00**	5.00	5.00	5.00	**5.25**
Malaysia	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Philippines	7.50	7.50	6.00	5.25	5.00	**5.25**	**6.00**
Taiwan	**2.88**	**3.13**	**3.25**	**3.38**	**3.50**	3.50	3.50
Thailand	4.50	3.50	3.25	3.25	3.25	3.25	**3.75**
CPI inflation (% y-o-y)							
China	2.7	3.6	6.1	6.6	8.0	7.8	5.3
India	6.5	5.4	4.1	3.4	5.7	9.6	12.5
Indonesia	6.4	6.0	6.5	6.7	6.5	9.0	12.0
Korea	2.0	2.5	2.3	3.4	3.8	4.9	5.5
Malaysia	2.6	1.5	1.8	2.2	2.6	4.9	8.4
Philippines	2.9	2.4	2.5	3.3	5.5	9.8	12.2
Taiwan	1.0	0.3	1.5	4.5	3.6	4.2	4.5
Thailand	2.5	1.9	1.7	2.9	5.0	7.5	7.3
Food price index	135	149	170	185	211	214	185

Note: Figures in bold highlight interest rate hikes. Sources: CEIC, FAO and Nomura Global Economics.

The differential impact on long-term government bond yields between advanced economies and developing ones is also likely to be significant. This is because developing economies, particularly those that are large net importers of food, should see the sharpest rise in CPI inflation and a worsening fiscal position – two powerful influences that should drive bond yields higher, particularly in developing countries where central banks and governments have less policy credibility. The upshot is that the yield curves in developing economies are likely to steepen by more than in advanced economies during a sustained food price surge.

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[31] For those advanced countries that are large agricultural producers and net food exporters – for example New Zealand, Norway, Denmark and Australia – the central banks may be more impelled to raise rates because the positive income shock from a rising terms of trade should eventually feed through into stronger aggregate demand, although currency appreciation could be a mitigating factor.

Growth

Higher food prices mean a relative price change that can have significant income redistribution effects within an economy. Most notably they can lift incomes of rural households that produce surplus agricultural output, but for urban households and rural households that do not produce food, higher food costs reduces the wallet size for spending on other goods and services, particularly in poor households.[32] However, the overall impact on GDP growth will vary across countries, which we classify into four broad categories.

1. **High negative impact: Low income countries that are large net importers of food.** For countries such as Nigeria, Egypt and Pakistan a surge in food prices is a double whammy, affecting GDP growth by worsening the trade balance and hurting household consumption. Food price inflation is highly negative on the purchasing power of incomes of low-income households, as an even higher share of their limited income is required for food consumption. The World Bank (2009, p.11) estimates that nearly two-thirds of total income is spent on food in the poor urban population of the developing world. High food prices reduce the ability to meet even basic needs and can lead to increased poverty and become a potential source of protests, riots and political tension, as witnessed in Mexico, India, Burkina Faso and Pakistan in 2008.[33] More recently, food riots have erupted in Mozambique over higher bread prices.

2. **Medium negative impact: Low income countries that are net exporters of food.** Countries such as Ukraine, Vietnam and Indonesia are low-income but are relatively large agricultural producers and net exporters of food. The positive terms of trade effect from a surge in food prices should boost wages, jobs and, over time, investment in the agricultural sector, leading to positive second-round effects on the broader economy, helping to cushion the negative impact on urban household consumption.

3. **Low negative impact: High income countries that are net importers of food.** Countries such as Luxembourg and Singapore have high GDP per capita of over USD30,000 but import virtually all of their food. A surge in food prices leads to a worsening trade balance, but the negative impact on household consumption is mild, given that food accounts for only a small share of the consumption basket.

4. **Positive impact: High income countries that are net exporters of food** (Figure 23). Countries such as New Zealand, Uruguay, Argentina and Denmark can actually benefit from a surge in food prices as the positive terms of trade effect more than offsets the mild negative impact on household consumption.

Fiscal finances

Given that a surge in food prices hurts low-income households the most, it is common for governments to intervene, particularly in developing economies. During the 2007-08 rise in food prices virtually all governments in Asia resorted to some form of intervention in an attempt to safeguard low-income households' ability to afford food (Figure 25). The FAO (2009a, p.41) conducted a more exhaustive global survey in May 2008 of policy responses in 77 countries which revealed the following: price controls or consumer subsidies in 55% of the 77 countries; a reduction in, or the elimination of, cereal import duties in about half of the countries; some form of export restrictions in 25% of the countries; and roughly the same proportion took measures to increase supply by drawing from official stockpiles.[34] On the other hand, only 16% of the countries surveyed implemented no policy responses whatsoever. While these measures can help ease the burden on the private sector, the quid pro quo is a deteriorating fiscal balance. The World Bank (2009, p. 97) estimates that the 2007-08 food price surge increased fiscal outlays by more than 2% of GDP in many countries.[35]

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[32] For example, in India the poorest 20% of the population spends 62% of total income on food, compared with 36.4% for the richest 20% of the population, ADB (2008b, p.13).

[33] Model simulations by the Asian Development Bank (2008b, pp14-15) estimate that in Pakistan a 30% increase in local food prices could push an additional 22m people into poverty.

[34] Food price controls, consumer subsides and beggar-thy-neighbour trade protectionist policies such as cutting import tariffs and banning exports may seem a rational short-term policy response at the individual country level – particularly if there are riots in the streets – but by reducing the incentives for consumers to curtail demand and producers to increase supply these measures can actually worsen the supply-demand imbalance at the global level, thereby exacerbating the rise in food prices.

[35] In Indonesia, the government almost tripled the size of its food subsidies in 2008 to IDR19.8trn, or 3% of total government spending, not to mention various other forms of support.

Figure 25. Policy responses to the 2007-08 food price surge in developing Asian economies

	Reduce import duties	Increase supply using reserves	Build reserves/ stockpiles	Increase imports/ relax restrictions	Raise export duties	Export restrictions	Price controls/ consumer subsidies	Min. support prices	Min. export prices	Assistance/ subsidy to farmers	Promote self- sufficiency	Action against/ appeals to profiteers	Cash transfers	Food rations/ stamps
Afghanistan	√						√	√						
Bangladesh		√	√	√			√	√		√	√		√	
Cambodia		√	√			√	√					√		
China	√	√			√	√	√	√		√	√	√		
India	√		√	√	√	√	√		√			√	√	
Indonesia	√	√		√		√	√							√
Kazakhstan						√	√							
Korea	√	√					√				√			
Kyrgyz Rep							√							
Malaysia			√				√				√			
Mongolia	√			√										
Myanmar											√			
Nepal				√										
Pakistan			√		√	√		√						
Philippines			√	√		√	√			√	√	√		√
Singapore			√										√	
Sri Lanka	√		√	√								√		
Taiwan	√													
Tajikistan	√													
Thailand		√	√	√			√					√		
Vietnam			√	√		√			√					

Source: Asian Development Bank and Nomura Global Economics.

Exchange rates

Currencies of low-income, net food importing countries should depreciate

In theory, holding everything else constant, a surge in food prices should cause currencies of countries that are large net importers of food to depreciate and currencies of large net exporters to appreciate (Figure 26) – but as is often the case with exchange rates, the relationship is less clear in practice. The case for currency depreciation is strengthened if, in addition to being a net food importer, the country has a low GDP per capita, for two reasons. First, the poorer the country, the more likely the government will intervene by lowering tariffs on food imports and restricting or banning food exports. This helps to increase the domestic supply of food, but also exacerbates the deterioration in the merchandise trade balance. Second, the poorer the country the more likely a food price surge could worsen its economic fundamentals through weaker growth, higher inflation and worsening fiscal finances which, in turn, could dampen investor confidence and discourage capital inflows. On the other hand, the case for currency appreciation is strongest for high-income countries that are net food exporters, but given that this can weaken the export competitiveness of non-food sectors of the economy – the so-called Dutch disease – policymakers may have an incentive to intervene in the FX market to limit the currency appreciation.

Figure 26. The World's top 10 food net exporting and importing countries in 2008

Top 10 net food exporters			Top 10 net food importers		
Rank	Country	Net food exports (% of GDP)	Rank	Country	Net food imports (% of GDP)
1	New Zealand	7.5	1	Hong Kong	-4.4
2	Uruguay	5.6	2	Lebanon	-3.9
3	Argentina	5.6	3	Bangladesh	-3.3
4	Costa Rica	4.7	4	Algeria	-2.8
5	Chile	3.1	5	Sri Lanka	-2.7
6	Malaysia	2.9	6	Egypt	-2.1
7	Thailand	2.7	7	Morocco	-2.1
8	Ecuador	2.5	8	Saudi Arabia	-1.8
9	Denmark	1.8	9	Portugal	-1.8
10	Brazil	1.8	10	Libya	-1.7

Source: FAO, CEIC and Nomura Global Economics.

Supply response

Fiscal stimulus can help ease the burden on low-income households from high food prices, but the more permanent solution is to increase investment in agriculture to lift productivity and output – indeed, rising food prices should increase the incentive to do so. The requisite measures include increasing spending on agricultural R&D, transport, telecommunications, storage; investing more in rural education and health; revamping land policies; removing trade barriers and making financial services (banking, microfinance, insurance) more accessible to farmers. The modernisation of agriculture is critical in the developing world, which according to many agricultural experts is long overdue. Yet bureaucracy, corruption, political uncertainty and, until recently, a multi-decade decline in real food prices have been obstacles to a new wave of investment in developing countries. The beauty of market forces is that there will always be a price that will encourage agricultural investment; the question is, how high that might be.

Nomura Food Vulnerability Index

"The rich would have to eat money if the poor did not provide food." ~ Russian Proverb

We create Nomura's food vulnerability index for 80 countries

The impact of a sustained surge in food prices on the macro economy can vary significantly, depending, among other things, on whether or not the country is rich or poor, or a large net food importer or exporter. In an attempt to gauge the overall impact on an economy we have constructed the Nomura Food Vulnerability Index (NFVI). NFVI has three components:

1. Nominal GDP per capita in USD at market exchange rates.

2. The share of food in total household consumption.

3. Net food exports as a percentage of GDP.

For a sample of 80 of the world's largest economies, we normalised each of the above three data series by subtracting the mean and dividing the resulting value by the standard deviation. From the normalised series, NVFI is calculated for each country as a weighted composite index:

NFVI = 100 − {0.25*(GDP per capita) − 0.25*(food/household consumption) + 0.5*(net food exports/GDP)}

The NFVI scores are highlighted in Figure 27, ranking the 80 countries from the most vulnerable (highest NFVI score) to the least vulnerable (lowest NFVI score) to a food price surge. It turns out that Bangladesh is the most vulnerable, while at the other extreme is New Zealand.

We use the 2007-08 episode to assess the impact...

The 2007-08 rise in food prices provides a rich data set to estimate the impact of food prices on key economic and financial variables. Unfortunately, the global financial crisis also erupted during this time and oil and metal prices swung wildly, making it difficult to isolate the impact of only food prices. Rather than running regressions to try and control for all these other factors, we make use of NFVI, selecting from our sample of 80 countries, two groups: the 25 most vulnerable and the 25 least vulnerable. Figure 28 details the impact on growth, inflation, fiscal balances, interest rates and exchange rates between the years 2007 and 2008 for these two distinct groups.

... on the most vs least vulnerable economies

Of course, the results for any particular country can be influenced by a multitude of other factors during this volatile period, but the average results for the two groups should be more meaningful. Encouragingly, most of the results in the 2007-08 episode are consistent with text book theory:

Most vulnerable economies witnessed higher CPI inflation...

CPI inflation. Between 2007 and 2008, the average rise in inflation is 6.7 percentage points (pp) in the most vulnerable group versus 1.6pp in the least vulnerable group. Significantly higher inflation in the most vulnerable group makes intuitive sense; after all, a component of NFVI is the share of food in household consumption, which tends to correspond closely with the weighting of food in the CPI basket. In the most vulnerable group, CPI inflation surged by over 10pp in Azerbaijan, Kenya, Pakistan, Ukraine, Vietnam and Venezuela.

... lower growth, worsening fiscal and higher policy rates

GDP growth. Due to the global financial crisis, GDP growth weakened in both groups, but weakened, on average, more in the most vulnerable group (-3.0pp) than the least vulnerable group (-2.0pp). Given that the least vulnerable group has a greater number of advanced economies that were hurt disproportionately more by the global financial crisis (e.g. US, Spain and Ireland) also resulting in major fiscal stimulus, we think the average growth difference between the two groups would have been even greater had the financial crisis not occurred.

Fiscal balances. The fiscal balance as a share of GDP worsened more in the most vulnerable group (-1.6pp) than the least vulnerable group (-1.3pp). This is in line with governments in those countries experiencing larger inflation and growth shocks responding with more fiscal stimulus.

Policy interest rates. In line with our priors, policy interest rates, on average, were raised by more over 2007-08 in the most vulnerable group (2.3pp) than the least vulnerable group (1.4pp). Policy rates in the most vulnerable group were raised by 4.0pp or more in Ukraine, Azerbaijan, Angola, Vietnam and Venezuela.

Yield spreads widen by more due to higher inflation

Yield spread over US Treasuries. In line with higher inflation and a more marked deterioration in fiscal finances in the more vulnerable group, it is not surprising that the 10-year government bond yield spread over US Treasuries widened by more in this group (2.2pp) than the least

vulnerable group (2.0pp). Moreover, given the average of the least vulnerable group is influenced heavily by major spread widening in two countries – Argentina and Costa Rica – a more reliable gauge is the median, which shows a larger difference between the two groups (1.4pp versus 0.7pp). Within the most vulnerable group, the greatest spread widening was in Ukraine, Dominican Republic, Vietnam and Venezuela.

Most vulnerable economies see depreciating currencies...

Exchange rate. In line with higher inflation and a rising net food import bill, currencies of countries in the most vulnerable group depreciated, on average, by more against the USD (6.7pp) than in the less vulnerable group (3.7pp). However, the median of the two groups shows no major difference. Given that 15 of the 25 countries in the vulnerable group have some form of a pegged or managed exchange rate, the average and median results are likely distorted.

... and wider CDS spreads

Credit default swap (CDS) spreads. Average sovereign CDS spreads of the most vulnerable group widened by 1067bp over 2007-08, much more than the less vulnerable group (708bp). A sharper weakening in growth, higher inflation and wider fiscal deficits likely increased the probability of a default by a greater extent in the more vulnerable group.

Figure 27. Nomura's Food Vulnerability Index (NFVI) and its sub-components

Rank	Country	NFVI Index	GDP per capita Current prices US$	Household spending on food % of total consumption	Net food exports (% of GDP)	Rank	Country	NFVI Index	GDP per capita Current prices US$	Household spending on food % of total consumption	Net food exports (% of GDP)
1	Bangladesh	101.5	497	53.8	-3.3	41	Colombia	100.1	5416	28.0	0.0
2	Morocco	101.3	2769	63.0	-2.1	42	South Africa	100.0	5678	25.0	-0.1
3	Algeria	101.3	4845	53.0	-2.8	43	Serbia	100.0	6811	44.8	1.4
4	Nigeria	101.2	1370	73.0	-0.9	44	Czech Republic	100.0	20673	27.4	-0.4
5	Lebanon	101.2	6978	34.0	-3.9	45	Lithuania	100.0	14098	41.1	1.1
6	Egypt	101.0	1991	48.1	-2.1	46	Guatemala	99.9	2848	37.1	1.3
7	Sri Lanka	101.0	2013	39.6	-2.7	47	Slovakia	99.9	18212	22.3	-0.4
8	Sudan	100.9	1353	52.9	-1.3	48	Poland	99.9	13845	32.1	0.7
9	Hong Kong	100.9	30863	25.8	-4.4	49	Singapore	99.9	37597	21.9	-1.0
10	Azerbaijan	100.8	5315	60.2	-0.6	50	Kuwait	99.9	54260	30.0	-1.1
11	Angola	100.8	4714	46.1	-1.4	51	UK	99.8	43541	22.5	-1.0
12	Romania	100.7	9300	49.4	-1.1	52	Israel	99.8	27652	17.7	-0.5
13	Philippines	100.7	1847	45.6	-1.0	53	Japan	99.7	38455	19.8	-0.6
14	Kenya	100.7	783	45.8	-0.8	54	Italy	99.7	38492	22.1	-0.3
15	Pakistan	100.6	991	47.6	-0.4	55	Thailand	99.6	4043	39.0	2.7
16	Libya	100.6	14802	37.2	-1.7	56	Hungary	99.6	15408	29.4	1.6
17	Dominican Rep	100.6	4576	38.3	-1.1	57	Sweden	99.5	51950	17.4	-0.7
18	Tunisia	100.5	3903	36.0	-1.1	58	Finland	99.5	51323	20.5	-0.5
19	Bulgaria	100.5	6546	49.5	-0.1	59	Germany	99.5	44446	18.5	-0.3
20	Ukraine	100.5	3899	61.0	0.9	60	Spain	99.5	35215	21.8	0.4
21	India	100.4	1017	49.5	0.3	61	Austria	99.5	49599	19.5	-0.3
22	China	100.4	3267	39.8	-0.3	62	Ecuador	99.5	4056	30.6	2.5
23	Latvia	100.4	14908	34.3	-1.1	63	Switzerland	99.5	64327	24.0	-0.5
24	Vietnam	100.4	1051	50.7	0.8	64	Malaysia	99.5	8209	37.1	2.9
25	Venezuela	100.4	11246	32.6	-1.0	65	France	99.5	44508	22.0	0.2
26	Portugal	100.4	22923	28.6	-1.8	66	Brazil	99.5	8205	20.8	1.8
27	Saudi Arabia	100.3	19022	25.1	-1.8	67	United States	99.3	46350	13.7	0.2
28	Kazakhstan	100.3	8513	44.7	0.1	68	Canada	99.3	45070	18.0	0.6
29	Uzbekistan	100.3	1023	34.7	-0.3	69	Australia	99.2	47370	19.7	1.1
30	Russian	100.3	11832	34.4	-0.7	70	Belgium	99.2	47085	15.9	0.9
31	Mexico	100.3	10232	34.0	-0.5	71	Chile	99.1	10084	22.5	3.1
32	Indonesia	100.2	2246	47.9	1.0	72	Ireland	99.1	60460	25.8	1.5
33	Croatia	100.2	15637	30.1	-0.9	73	Norway	99.0	94759	16.9	-0.6
34	Peru	100.2	4477	31.8	-0.3	74	Luxembourg	99.0	109903	19.1	-1.0
35	Greece	100.2	31670	38.3	-0.7	75	Costa Rica	98.9	6564	30.6	4.7
36	Belarus	100.1	6230	42.3	0.8	76	Netherlands	98.9	52963	13.3	1.6
37	Slovenia	100.1	27019	25.8	-1.3	77	Denmark	98.8	62118	16.8	1.8
38	Syria	100.1	2682	47.9	1.5	78	Argentina	98.7	8236	33.4	5.6
39	Turkey	100.1	9942	35.2	0.2	79	Uruguay	98.5	9654	25.3	5.6
40	South Korea	100.1	19115	23.1	-0.9	80	New Zealand	97.7	30439	18.8	7.5

Note on methodology: NFVI is calculated as 100-(0.25*GDP per capita + 0.5*net food exports – 0.25*share of food in expenditure). To make the countries comparable, all the values have been normalized by subtracting them from the mean and dividing by standard deviation. By construction, the higher the value of the NFVI for a country, the higher is its vulnerability to rising food prices.

Source: World Bank, FAO, USDA, CEIC and Nomura Global Economics estimates.

Figure 28. Using NFVI to quantify the impact of the 2007-08 food price surge

Rank		CPI inflation	Real GDP growth	Fiscal balance (% of GDP)	Policy rate	Yield spread	Local currency/ USD	Sovereign CDS spreads, bps
		Average in 2008 to average in 2007, percentage point change			High in 2008 (Jan-Sep) to low in 2007, percentage point change			
Rank	**Top 25 most vulnerable economies**							
1	Bangladesh	-0.2	-0.2	0.4	0.0	-0.5	0.0	n.a.
2	Morocco	1.7	2.9	0.4	0.3	1.5	1.9	300
3	Algeria	0.9	0.0	3.4	0.0	-0.1	0.0	108
4	Nigeria	6.2	-0.4	-3.8	2.3	-0.3	-0.1	n.a.
5	Lebanon	-3.8	1.0	1.1	1.0	-0.1	0.0	686
6	Egypt	9.0	0.1	-1.8	2.8	0.3	0.0	731
7	Sri Lanka	6.7	-0.8	-0.5	0.5	6.5	-0.2	352
8	Sudan	6.3	-1.8	3.9	n.a.	-0.1	61.3	n.a.
9	Hong Kong	2.3	-4.0	-7.6	-1.3	0.2	0.7	107
10	Azerbaijan	36.7	-14.2	-7.2	5.5	2.2	-0.1	n.a.
11	Angola	0.2	-7.1	-2.6	5.6	0.3	0.1	n.a.
12	Romania	3.0	3.4	-2.3	3.3	1.4	10.5	694
13	Philippines	6.5	-3.2	0.2	0.8	3.0	12.2	779
14	Kenya	16.5	-5.4	-1.1	0.4	1.8	12.5	n.a.
15	Pakistan	12.7	-3.7	-3.2	3.5	4.0	27.7	4960
16	Libya	4.1	-2.2	-1.2	1.0	-0.1	7.9	n.a.
17	Dominican Rep	4.5	-3.2	-3.7	0.0	9.0	8.2	378
18	Tunisia	1.8	-1.8	1.5	n.a.	-0.1	3.5	128
19	Bulgaria	3.9	-0.2	-0.3	1.8	0.9	2.3	585
20	Ukraine	12.4	-5.8	-0.6	4.0	5.8	1.4	3169
21	India	2.0	-3.0	-3.8	1.5	1.2	15.5	n.a.
22	China	1.1	-4.0	-1.0	1.4	1.4	-1.7	90
23	Latvia	5.3	-14.6	-3.4	1.0	1.6	1.9	995
24	Vietnam	14.8	-2.3	-2.0	8.5	8.4	2.7	931
25	Venezuela	12.7	-3.6	-4.3	8.7	7.8	0.0	3152
	Average	**6.7**	**-3.0**	**-1.6**	**2.3**	**2.2**	**6.7**	**1067**
	Median	**4.5**	**-2.3**	**-1.2**	**1.4**	**1.4**	**1.9**	**686**
Rank	**Top 25 least vulnerable economies**							
1	New Zealand	2.6	-4.2	-3.7	1.0	0.5	16.7	n.a.
2	Uruguay	-0.3	1.3	0.6	2.3	4.2	-2.3	207
3	Argentina	-0.2	-1.9	0.3	3.2	15.2	2.9	4394
4	Denmark	1.7	-2.8	-1.4	0.8	0.7	2.3	18
5	Netherlands	0.9	-1.3	0.4	0.8	0.6	2.2	101
6	Costa Rica	4.1	-5.2	-0.4	5.8	6.5	11.0	n.a.
7	Luxembourg	1.1	-6.1	-1.2	0.8	0.7	2.2	n.a.
8	Norway	3.0	-1.0	1.7	2.0	0.4	5.0	43
9	Ireland	-0.8	-9.0	-7.4	0.8	0.7	2.2	n.a.
10	Chile	4.3	-1.5	-4.0	3.3	2.6	2.7	303
11	Belgium	2.7	-1.7	-0.5	0.8	0.7	0.5	104
12	Australia	2.0	0.4	-1.5	1.0	0.7	15.3	n.a.
13	Canada	0.2	-2.3	-0.4	2.0	-0.3	9.2	n.a.
14	United States	1.0	-1.6	-3.3	-1.3	0.0	0.0	61
15	Brazil	2.0	-0.6	0.6	2.5	4.7	1.7	540
16	France	1.3	-1.9	-1.0	0.8	0.6	2.2	64
17	Malaysia	3.4	-1.7	-1.6	0.0	1.5	3.2	508
18	Switzerland	1.7	-1.5	-1.3	0.8	0.6	-1.2	n.a.
19	Ecuador	6.1	4.0	-3.0	1.5	3.8	0.0	5628
20	Austria	1.0	-1.3	0.2	0.8	0.6	2.2	178
21	Spain	1.3	-2.5	-4.4	0.8	0.7	2.2	128
22	Germany	0.3	-1.2	-0.2	0.8	0.5	2.2	51
23	Finland	1.5	-3.3	-1.0	0.8	0.7	2.2	69
24	Sweden	1.2	-2.7	-0.3	1.8	0.5	5.1	155
25	Hungary	-1.9	-0.6	1.0	1.0	1.8	2.6	187
	Average	**1.6**	**-2.0**	**-1.3**	**1.4**	**2.0**	**3.7**	**708**
	Median	**1.3**	**-1.7**	**-1.0**	**0.8**	**0.7**	**2.2**	**142**

Note: The numbers for CPI inflation, real GDP growth and the fiscal balance (% of GDP) are the average of 2008 minus the average of 2007 values. The numbers for policy rate, yield spread and currency are the difference between the high point of 2008 (January to September) and low point of 2007. We exclude October-December 2008 data in determining the high point for the financial market prices, given the eruption of the global financial market crisis. Yield spread is the difference between local and US 10-year government bond yield. Where data on the local 10-year government bond yield were unavailable, we use lending rates from the IMF's International Financial Statistics database as a proxy for Algeria, Angola, Argentina, Azerbaijan, Costa Rica, Dominican Republic, Ecuador, Kenya, Nigeria, Uruguay and Venezuela. Where data on policy rates are unavailable, we use the discount rate from the IMF's International Financial Statistics database as a proxy for Libya and Nigeria. Higher value of the currency implies depreciation of local currency against USD. Sources: Bloomberg; EIU; CEIC; IMF IFS; Markit; central bank websites; World Bank; FAO; USDA and Nomura Global Economics estimates.

Fixed income trading implications

"The four food groups: Fast, Frozen, Instant and Chocolate." ~ Ahajokes.com

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Any trade based on the food-price inflation themes discussed in this report will need to be a long-term strategy and one able to ride out short-term volatility. The shifts in global food prices are likely to be slow and structural, rather than rapid and cyclical. In the short term, seasonal factors owing to failed harvests or natural disasters – drought or flood – would have significant pricing distortions to a global food basket. The conclusion of this investigation is that the underlying trend in prices will be higher, although we believe that the short-term volatility will likely swamp this upward trend in any given month, or season.

There are several approaches to trade this uptrend rather than the short-term volatility. The first is to trade an asset that only reacts to the trend and not the short-term volatility of food prices. Central bankers illustrate the strategy extremely well. Central bankers aim to look through temporary price rises as they are not something that can be controlled with monetary policy; responding to such temporary distortions would be detrimental to their credibility and policy impact. Trading short-term interest rates would be an example of this trading methodology. Alternatively a structured product could be used to trade a more direct exposure to food prices, such as buying agricultural rather than industrial commodities. Such a structured product could be designed to absorb the short-term volatility and return a yearly coupon that is tied to the performance of agricultural commodities.

It is important to structure any trade as a relative trade to remove exposure to the global business cycle. Whether it is a basket of rates, commodities, CDS protection or currencies, almost all variables will be affected by the global business cycle. Hence, to profit from the expected uptrend in food prices without having one's trade success clouded by the business cycle, one needs to extract the relative performance of those assets most vulnerable to food price inflation against those that are least exposed. For this reason we suggest that all trades deigned to benefit from the structural shift in food prices are structured to hold one basket of the most vulnerable assets and another of the least. Provided the baskets are sufficiently diverse, this should remove the business cycle impact, at least in the first order.

Agricultural commodities

Probably the most direct way of trading this theme is to buy a basket of agricultural commodities. However, this has complications because of the lack of an antithesis basket to be able to neutralise the business cycle impact. It is not clear that another basket of non-agricultural commodities would necessarily underperform agricultural commodities. Because of the varying elasticities of commodity demand to an increase in global wealth and population, it is not a simple conclusion to draw that food prices will outperform other commodities with an increase in world population and wealth. However, there are agricultural-specific factors such as supply-side challenges (recent under investment in agriculture, water scarcity and the possibility of an overdue El Niño event) and detrimental feedback loops (from oil prices, financial speculation and trade protection) that increase our strength of conviction for a structural increase in food prices against other commodities. We are confident that over the course of a business cycle the structural increase in food prices will be marked. It is also worth noting that the impact of the business cycle on agricultural commodity prices has, at least in the recent history, been markedly less than on other commodities (Figure 29).

Figure 29. The business cycle's impact on agricultural commodities has been less than it has on other commodities
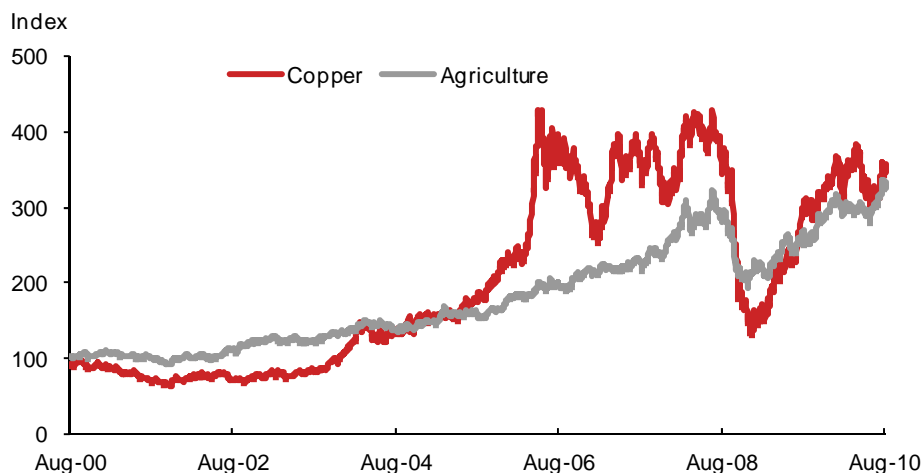
Source: Bloomberg, Nomura

Because of the difficulty of neutralising even a small business cycle impact and the likely high volatility on an outright commodities trade, we would recommend adding an outright long position in a basket of agricultural commodities via a structured note. This could be designed to absorb intra-month volatility, paying a coupon related to the performance of the agricultural commodities. An example would be a capital-protected 5yr note which at maturity pays the average return of corn, soybean and wheat prices (capped at 60% returns for each commodity). Because the note is capital-protected, if agricultural commodity prices fall over the five-year period the note would still return the original capital after five years. The cumulative single-payout nature of the structure also provides the desired absorption of intra-period volatility, while still providing exposure to the five-year trend. Similar structures could be designed using different baskets, or to pay more regular coupons, or with different caps on returns, or levels of capital protection.

Interest rates

Interest rates – as representations of monetary policy rate expectations – would likely be affected by the structural richening of food prices, particularly short-term rates. A consistent trend higher in food prices would persistently add to inflation and lead monetary policymakers across the globe to take action to address the permanent rise in inflation. On the whole, we would expect the impact on inflation to be a more significant factor for policymakers, and hence interest rates, than the impact on growth from improvements (or deterioration) in a country's terms of trade. In simple terms, we would expect the policy rates in those countries with a large exposure to food in their CPI basket to be most affected by food price rises and those with small exposure to food in their CPI basket to have the least impact on policy rates. We would therefore be inclined to pay the short-term interest rates in counties with large exposure to food in their CPI basket and receive short-term rates in countries with the least food exposure in the CPI basket. As previously discussed, adding this as a relative trade – paying the high-exposure basket and receiving the low-exposure basket – helps reduce the exposure of the position to the business cycle, which would be very high for short rates if added as an outright position.

Considering a sub-set of countries that have tradable and accessible interest swap markets (the simplest and cleanest way to gain exposure to short-term interest rates), we would recommend paying the top 10 high-exposure countries' 2y interest rate swaps and receiving the top 10 low-exposure countries' 2y interest rate swaps (Figure 30).

Figure 30. 10 most and least exposed countries to food in their CPI baskets

	Low-exposure basket					High-exposure basket				
		NFVI	GDP per capita	Household spending on food	Net food exports			NFVI	GDP per capita	Household spending on food	Net food exports
Rank	Country	Index	Current prices US$	% of total consumption	(% of GDP)	Rank	Country	Index	Current prices US$	% of total consumption	(% of GDP)
1	United States	99.3	46350	13.7	0.2	1	India	100.4	1017	49.5	0.3
2	Denmark	98.8	62118	16.8	1.8	2	Indonesia	100.2	2246	47.9	1
3	Norway	99	94759	16.9	-0.6	3	Philippines	100.7	1847	45.6	-1
4	Sweden	99.5	51950	17.4	-0.7	4	Thailand	99.6	4043	39	2.7
5	Israel	99.8	27652	17.7	-0.5	5	Malaysia	99.5	8209	37.1	2.9
6	Canada	99.3	45070	18	0.6	6	Turkey	100.1	9942	35.2	0.2
7	New Zealand	97.7	30439	18.8	7.5	7	Russian	100.3	11832	34.4	-0.7
8	Australia	99.2	47370	19.7	1.1	8	Mexico	100.3	10232	34	-0.5
9	Japan	99.7	38455	19.8	-0.6	9	Poland	99.9	13845	32.1	0.7
10	Brazil	99.5	8205	20.8	1.8	10	Hungary	99.6	15408	29.4	1.6

Note: NFVI is the Nomura Food Volatility Index. Source: Nomura Global Economics.

As a test of the sensibility of this strategy, we modelled the trade – receiving an equally weighted basket of the low-exposure countries and paying an equally weighted basket of the high-exposure countries – during the July 2007 to July 2008 commodity price spike (Figure 31). The results support our thesis: between July 2007 and July 2008 the 2y swap rates in the high exposure basket rose on average 176bp, whereas 2y swap rates in the low-exposure basket rose on average only 44bp; a 132bp outperformance of the low-exposure 2y rates.

Figure 31. Relative interest rate spread between high exposure and low exposure baskets
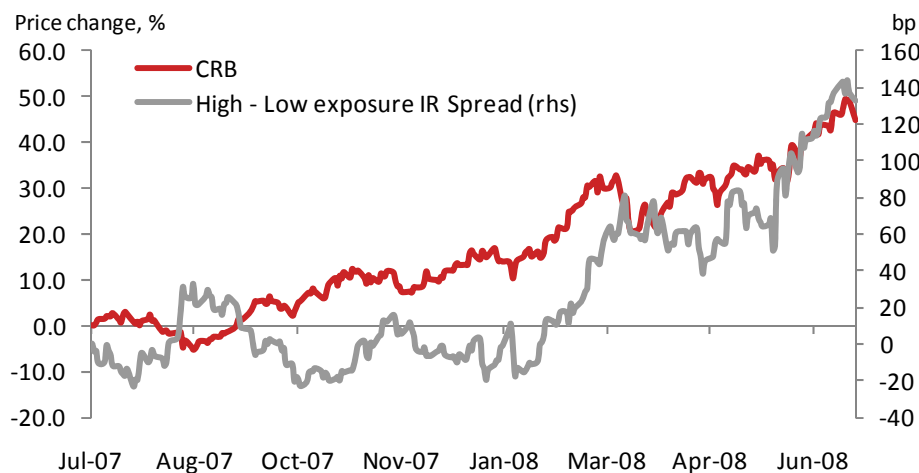
Note: Represented is the spread between the equally weighted average of 2y swap rates of the high food-price exposure country basket and low food-price exposure country basket.
Source: Bloomberg, Nomura

Sovereign CDS protection

Rises in food price inflation can affect investor perceptions of sovereign risk. As mentioned earlier, countries with higher Nomura Food Volatility Index (NFVI) scores are more likely to see upward pressure on broad inflation measures, wider fiscal deficits and worsening current accounts. All of these can result in debt-servicing concerns and consequent pressure on both external debt and CDS spreads.

It is these changes in creditworthiness that could offer potential value via a relative basket trade of sovereign CDSs – buying protection on those sovereigns most likely to experience a relative decline in credit quality as debt-servicing pressures grow, and selling protection on those countries most able to absorb the fiscal and inflationary pressures (or in some cases, even benefit from them).

As the European sovereign debt crisis of 2009-10 illustrated, there is a degree of non-linearity to any widening in sovereign CDS spreads as a result of deteriorating public finances and perceptions of debt-servicing ability. For this reason it is important in this trade not simply to buy protection on those countries with the highest NFVI scores and sell protection on those with the lowest. The initial condition of sovereign finances needs to be considered.

As such, we would recommend setting initial-condition thresholds, first for public debt/GDP and then for total external debt/GDP, to create a sub-set of countries most likely to experience some change in perception of their sovereign risk as a result of a structural shift in the food price environment. We recommend using these thresholds for both the basket of countries on which we suggest buying protection, and the basket on which we suggest selling protection. In order for countries to benefit from the relative shift in perception of sovereign risk resulting from higher food prices, we assume that debt levels must be high enough to make a difference in either direction.

The following table (Figure 32) highlights two suggested baskets – one on which to buy protection and the other on which to sell it. We have used thresholds of 60% for both public debt/GDP as well as total external debt/GDP for both sets (countries must meet one or the other, Figures 33 and 34). We have also filtered out countries where there is not a liquid CDS market.

Figure 32. Suggested sovereign CDS baskets

|	Buy protection basket		Sell protection basket	
Rank	Country	NFVI Index	Country	NFVI index
1	Lebanon	101.2	Netherlands	98.9
2	Egypt	101.0	Ireland	99.1
3	Romania	100.7	Belgium	99.2
4	Philippines	100.7	Australia	99.2
5	Bulgaria	100.5	Canada	99.3
6	Ukraine	100.5	Brazil	99.5
7	Latvia	100.4	France	99.5
8	Portugal	100.4	Austria	99.5
9	Kazakhstan	100.3	Spain	99.5
10	Greece	100.2	Germany	99.5

Source: Nomura Global Economics.

Figure 33. Buying protection: How they meet the threshold
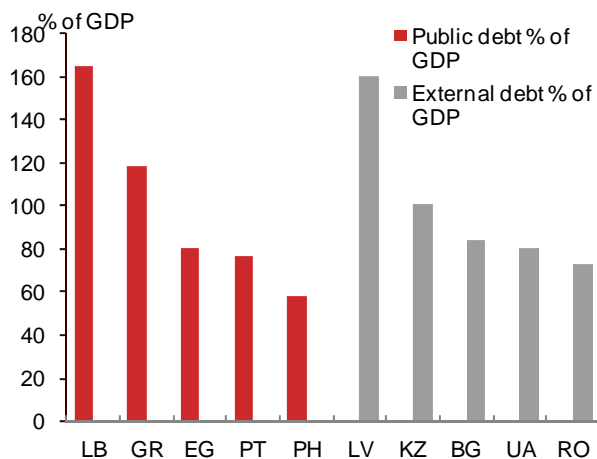
Source: IMF and Nomura Global Economics.

Figure 34. Selling protection: How they meet the threshold
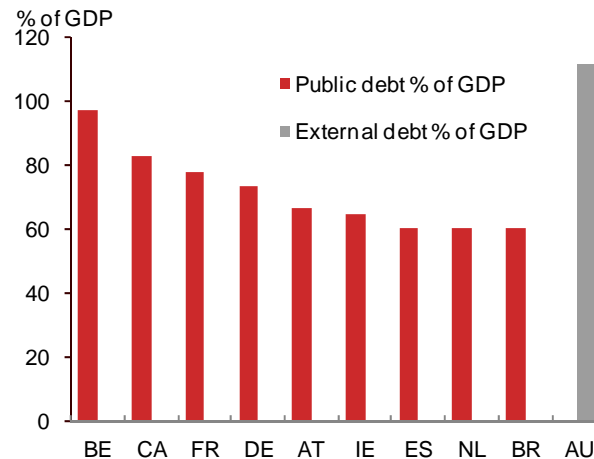
Source: IMF and Nomura Global Economics.

Currencies

Currency implications of food price inflation are among the most difficult to forecast as there are competing forces at work. Higher inflation risks, especially for those countries where food represents a large portion of the CPI basket, should lead to higher policy rates and upward pressure on the currency. However, the decline in a country's terms of trade from higher food import prices should, all else being equal, add downward pressure on the currency. At the same time, a persistent rise in food prices would represent a challenge to many semi-managed exchange-rate regimes, especially those in Asia, as low inflation across much of the region has made it easier for policymakers to keep interest rate policy consistent with generally undervalued

exchange rates. Therefore, the effect of higher food prices on managed currency regimes would at least partially depend on how policymakers react to the higher food prices – through higher currencies, higher rates, both, or neither.

While studying the food price rise of 2008 is by no means sufficient for gauging currency performance in an environment of persistent food price increases, the exercise could be instructive. The table below provides a host of data for those currencies for which we have sufficient data, including a Nomura Food Vulnerability Index score and various market data during the 2008 episode. A few points are worth highlighting. For one, the period between April and June 2008, when markets were recovering from the Bear Sterns event and the food price spike began to generate headlines, did see a significant spike in the importance of interest rate swings and terms of trade. While our Regime Tracker model only follows G10 markets, this dynamic is clear to see (Figure 35). In terms of actual performance, many Asian currencies did see significant underperformance during the 2008 food price episode, especially the Philippine peso, Indian rupee, South Korean won and Japanese yen. Admittedly, the yen's weakness was helped along by the improving risk environment, but the same cannot be said for the others. While Asian currencies (ex yen) normally rally during positive risk environments, they are also amongst the most vulnerable too rising food prices – the Philippines ranks 1st in our vulnerability score, India and China 4th, Indonesia 9th and South Korea 12th. Interestingly, while CEMEA currencies are not as vulnerable as Asian currencies to food price increases, most are in the top 20 countries by ranking, including Turkey (12th), Poland (16th), Russia (6th), South Africa (14th), Czech Republic (14th) and Romania (1st). That said most CEMEA currencies outperformed during Q2 2008. The question of course is why the difference? For a start, CEMEA currencies do tend to outperform Asian currencies during risk rallies, but there is also a sense that many CEMEA central banks acted aggressively when food prices spiked. On the flip side, most Asian central banks were seen as falling behind the curve during the 2008 food price rise.

Figure 35. The link between FX returns and 1) short-end yield changes and 2) terms of trade

Correlation coefficient; correlation of rank in 100-day changes; 20-day ma
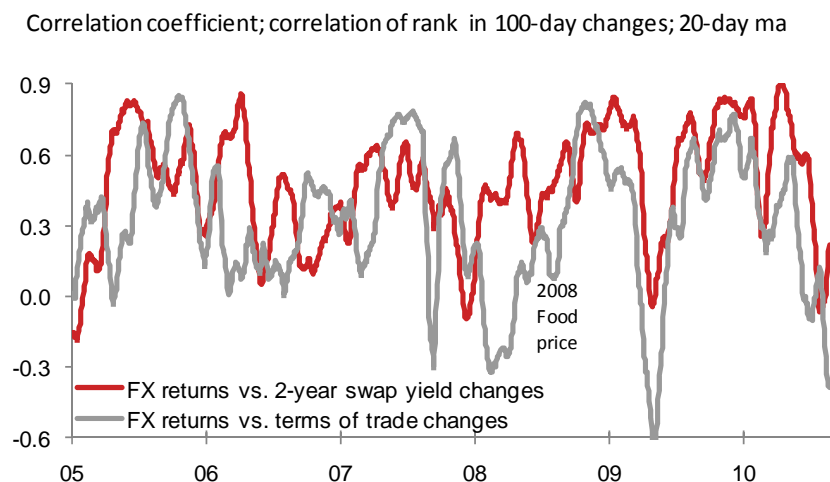
Source: Bloomberg, Nomura.

While our study of 2008 is hardly conclusive, it does offer some guidance as to how we might trade a persistent rise in world food prices via the exchange rate markets. Generally speaking, we would want to be short emerging markets, especially some in Asia, although part of Latin America (Mexico and Peru) and CEMEA (Romania and Bulgaria) are also vulnerable. The Middle East would also, on net, be hurt by rising food prices, although it is difficult to express this via currencies. That said, G10 countries are not immune to higher food prices either – Japan, the UK and Scandinavia are net importers of food. At the same time, there are emerging markets that benefit from rising food prices. Brazil and Argentina, for instance, are net exporters of food, with food consumption in the CPI basket at or below emerging market norms. Moreover, while rising food prices may well be bad for a given country's overall well-being and are likely to lead to higher inflation and/or higher interest rates, this may not be negative for the currency. Indonesia, Malaysia and Thailand are interesting examples of countries that have a high concentration of food consumption in their CPI basket, but are also net exporters of food – both Malaysia and Thailand export food to the tune of nearly 3% of GDP.

Figure 36. FX-specific Food Vulnerability score; 10 currencies most and least favourabll affected by structural food price inflation

*Sorted by FX food vulnerability score (least vulnerable to most)*

	Best										Worst								
	NZD	ARS	CLP	BRL	DXY	AUD	CAD	MYR	HUF	EUR	SRS	MXN	RUB	CNY	IDR	INR	BLS	PHP	RON
1) *FX score (avg of 8 & 9)*	2.55	1.31	1.11	0.81	0.69	0.66	0.60	0.36	0.35	0.32	-0.42	-0.47	-0.55	-0.69	-0.69	-0.97	-1.09	-1.16	-1.37
2) Nomura Food Vulnerability Index	97.7	98.7	99.1	99.5	99.3	99.2	99.3	99.5	99.6	99.5	100.3	100.3	100.3	100.4	100.2	100.4	100.5	100.7	100.7
3) Income per capita ($; 000s)	$ 30.4	$ 8.2	$ 10.1	$ 8.2	$ 46.4	$ 47.4	$ 45.1	$ 8.2	$ 15.4	$ 41.9	$ 19.0	$ 10.2	$ 11.8	$ 3.3	$ 2.2	$ 1.0	$ 6.5	$ 1.8	$ 9.3
4) Food consumption (% of CPI basket)	18.8	33.4	22.5	20.8	13.7	19.7	18.0	37.1	29.4	20.7	25.1	34.0	34.4	39.8	47.9	49.5	49.5	45.6	49.4
5) Next exports of food (% of GDP)	7.5	5.6	3.1	1.8	0.2	1.1	0.6	2.9	1.6	0.1	-1.8	-0.5	-0.7	-0.3	1.0	0.3	-0.1	-1.0	-1.1
6) FX over/under valuation (%)	7.7	-43.2	2.8	31.0	-8.0	21.7	17.4	0.0	16.5	-1.6	-3.4	-5.7	37.6	11.4	18.2	10.4	34.4	8.8	19.7
7) Average FX carry	-1.5	11.4	0.0	8.3	-0.1	-3.3	0.7	1.6	0.0	0.0	-0.2	4.0	3.8	0.0	0.0	0.0	5.2	0.0	5.6
8) *standardized food consumption (- sign)*	0.98	-0.40	0.63	0.79	1.46	0.90	1.06	-0.74	-0.02	0.80	0.39	-0.45	-0.49	-1.00	-1.76	-1.91	-1.91	-1.55	-1.91
9) *standardized food exports (+ sign)*	4.11	3.02	1.58	0.83	-0.09	0.43	0.14	1.47	0.72	-0.15	-1.23	-0.49	-0.60	-0.37	0.37	-0.03	-0.26	-0.77	-0.83

Source: Nomura

To add these conflicting forces together, we build a simple scorecard to find the best way to construct of basket of currency trades that would be sensitive to a rise in food prices. First, we combine the two components of our Food Vulnerability Index score that are most important for currencies – net exports of food as a percentage of GDP and the weight of food in the CPI basket. Next, we compare these to each currency's valuation using a simple metric of the real effective exchange rate (REER) relative to the 20-year trend. Then, as a final step we look at carry and take into account potential diversification opportunities.

Figure 37 looks at a scatter-gram of the normalized FX score for food vulnerability (the higher the concentration of food in the CPI the more negative; the higher net exports as a percent of GDP the more positive) against the FX valuation score. Our preferred basket would be long the US and New Zealand dollars and in EM the Thai baht, Malaysian ringgit, Israeli shekel and the Argentine and Chilean peso. We would be short the Philippine peso, Russian rouble, Czech koruna, Swiss franc (a low-yielding G10 currency that on net is hurt by rising food prices), Romanian leu and Bulgarian lev. In practice, this basket tries to buy cheap currencies with a positive link to rising food prices and sell expensive currencies that are vulnerable to rising food prices. This basket is by no means definitive, but at least captures the basics of running a trade based on a long-term structural theme – neutral on carry and highly diversified. Other possibilities would be to replace the Argentine peso with the Brazilian real. While the latter looks expensive in pure real effective terms, it is not that out of line according to our own FEER exchange rate model. India is also a currency many think is a natural sell in a rising food price environment, but in our view, carry is high, valuation is not stretched (according to our own models) and India is a net exporter of food, which means a rise in food prices may be better expressed in interest rates.

Figure 37. FX food price vulnerability score vs. current FX over / undervaluation
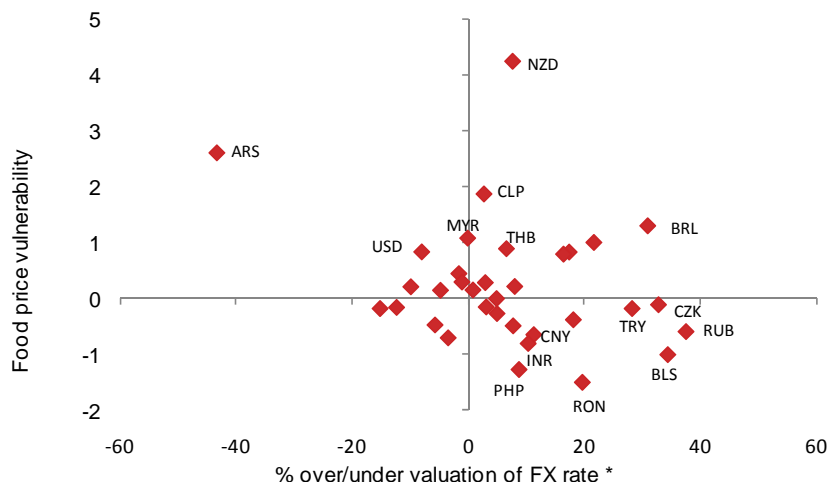
Notes: * Food price vulnerability score for FX looks at two of the three dimensions of Nomura's Food Vulnerability Index: food consumption as a % of the CPI basket and net food exports as a % of GDP. The scores are normalized across the sample and the final score is an average of the two. FX valuation looks at the effective FX rate relative the trend since 1994.

Source: Bloomberg, Nomura

Inflation-linked products

In developed economies, the prospect for a durable shock to imported food price inflation takes place in an environment of relatively weak economic activity: various degrees of household deleveraging across the developed world makes it very likely that trend growth has decreased. As an asset class, inflation linkers offer a natural protection against such a stagflationary environment (low economic activity growth, high inflation).

The weight of foodstuff in the inflation index which serves as a reference for linkers varies from one country to another, reflecting mainly the structure of the indexes. Within the small sub-universe of liquid inflation-linked markets, the US CPI exhibits the lowest weight of food prices (which we restrict here to food at home, including non-alcoholic beverages), while the euro area indexes have the highest weight of food prices (Figure 38). In the 2007-08 food price shock, food price inflation added about 0.5pp to US inflation at the peak and 1pp to euro-area inflation (Figure 39). As result, as far as the short end is concerned, we would be tempted to expect euro-area breakevens to be affected the most: sticking to our balanced portfolio approach, below a five-year maturity, we would buy European breakevens against US ones.

In the longer end of the inflation-linked curve, things may be a bit different. The food price shock has the potential to be of a particularly unusual form, possibly impacting inflation over several years. In this case, central bank determination to keep inflation on target is key to avoiding long-term inflation expectations moving. But a structural change in food price inflation would inherently be difficult to identify in real-time. Given the historical volatility of food prices, the temptation would be great to interpret a commodity price shock as a reversible one in the first place. The doubt may also persist for a while as to whether an increase in supply capacity could catch up with stronger demand. So, the chances are that central banks would wait for tangible evidence that they face a structural shock to food price inflation (i.e. a persistent upsurge in the inflation rate) before taking the difficult decision to tighten their stance – inadvertently allowing higher food price inflation to feed through to headline inflation expectations and thus affect wage growth and core inflation.

 No central bank can really avoid these pitfalls and long-term inflation expectations should increase across the board if food price inflation is durably higher. But there may be some slight nuances between the different central banks worth highlighting. It seems to us that the ECB is probably among those which would react the most rapidly, as it meant to demonstrate in July 2008 with a 25bp rate hike to counter the oil price shock while the economy was entering recession. The Fed seems to pay more attention to core inflation (more precisely, the core personal consumption deflator) than headline inflation and is therefore more likely to take its time and not react immediately to a durable food price inflation shock. However, positioning recommendations on this basis is less straightforward than in the short end of inflation curves, as the link between economic fundamentals and breakeven inflation rates tends to diminish as maturity increases. Hence, as far as the long end is concerned, we would make an exception to our theme of recommending relative trades. We recommend an outright long position (looking for breakeven rates to move higher) on the long end, spread across the liquid inflation-linked markets.

Figure 38. Food price weight in main traded indices
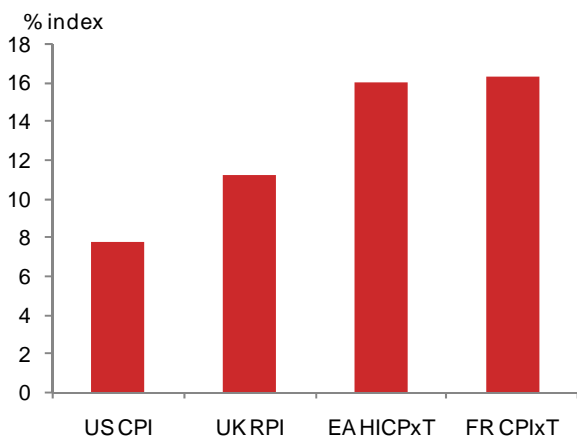
Note: Food items away from home, including non-alcoholic beverages (COICOP 01). Source: BLS, ONS, Eurostat, INSEE, Nomura

Figure 39. Food price contribution to headline inflation % y-o-y
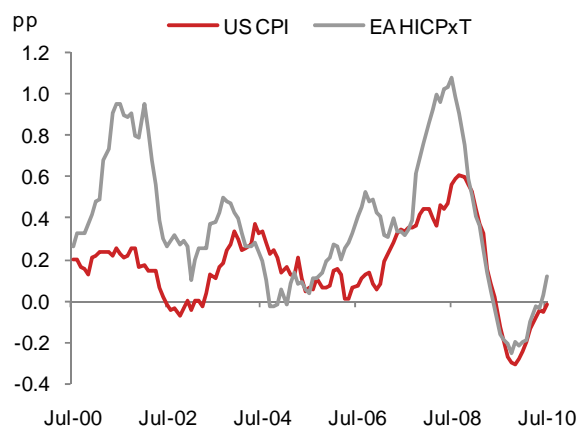
Note: Food items away from home, including non-alcoholic beverages (COICOP 01).Source: BLS, Eurostat and Nomura

Equity strategy implications

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"Since the beginning of the year, food prices have rallied more than 10% with the "breakfast commodities" of tea, cocoa and sugar at their highest levels in 30 years. While speculative inflows were blamed on the price rises seen during 2007-08, the structural imbalances behind food production were just as much the cause. These imbalances have not disappeared as bio-fuels compete for land alongside grains, and increasing incomes in emerging-market economies demand much more protein. With the oil price flirting with US$80 per barrel, there remain strong incentives for farmers to switch crops to those subsidised as bio-fuels.

The influence of climatic change and also the critically low levels of food stocks relative to consumption have caused prices to rise once again. With the global recession over, we believe there is likely to be increasing pressure on food prices to rise. As corn and rice prices are just starting to rise, it should have a significant impact on inflation. Since corn is used as feed for cattle and poultry, it directly impacts the price of meat. Rice is a major component of Asian CPI. Hence, with oil prices increasing, we think investors should be prepared for an inflation echo.

We closed out our soft commodity basket on 20 August 2009, for the second time in six years, after a period of outperformance since the beginning of the year. We are reinitiating our investment recommendation given the implications of the recent USDA data, ongoing drought in Southern China, as well as recent food price rises in India."

> ~ *Asia's soft commodity crunch (XVI)*, Nomura Strategy Research, 23 November, 2009.

"Russia is currently experiencing a severe heat-wave and drought that is greatly affecting its crops, especially wheat production. The drought is part of a long-term pattern that could possibly last well into next year. Changing climate – specifically the current negative PDO – increase the probability of this type of serious drought repeating."

> ~ Browning newsletter, August, 2010

"Throughout modern history there has been an unseen conflict in land-use between short and long-term, a clash made the more acute because population was (usually) expanding, more or less quickly. In the short term, land-for-food was obviously more important than land-for-timber, which equated to land-for-fuel or land-for-buildings or land-for-ships. But what happened to a country that could not grow its own food as well as its own timber?"

"So natural rubber is now probably more secure than it was just after WWII, before radial tyres and several oil crises, after a war that was largely won on synthetic. Without natural rubber, Malaya and Singapore would be much poorer than they are today, and, probably less happy. Indonesia might have found it impossible to survive as a sovereign state and would have broken into component islands"

> *Seeds of Wealth*, Henry Hobhouse

In our report *Asia's soft commodity crunch (XVI)* we reinitiated our soft commodity basket on 23 November 2009. Soft commodities have surprised investors with their resilience and also their low correlation to other financial assets at a time when governments are worried about potential asset bubbles in Asia and the deflationary shocks emanating from the European credit markets. Companies that benefit from higher farm prices or spending on fertilizers tend to offer operating and financial leverage far superior to that which investors can achieve in the futures market. Although soft commodity prices tend to vary on weather cycles and the success of planting or harvesting during the year, the fact that rising income per capita in developing economies is being matched by receding available land for planting, as well as water shortages, is causing the global soft commodity trade to blossom. Unlike technology or financials, market capitalisation of the agriculture sector is low and relative to its weighting in emerging market GDP, it is astonishingly small. Most investors consider the soft commodity space to be too volatile to invest in, yet there is a huge selection of investment alternatives available, such as grain transportation, fertilizers or seed manufacturers that can be acquired as part of an overall allocation to commodities. Moreover, since there are relatively few soft commodity futures markets, the sector does not lend itself directly to large-scale speculation such as that seen in oil and base metals.

We would also broaden the definition of soft commodities to include those that are consumed by industry. For example, cotton, timber and rubber have unique characteristics that allow them to be used, respectively, for apparel and textiles, housing and paper and tyres.

Aside from the recent bid by BHP for Potash and the secular demand for commodities in emerging markets, 2010 is set to see the return of La Niña in the Pacific, disrupting harvest and planting seasons. The recent heat wave in Russia and the effect on wheat production is a suitable example of the side effects of this weather pattern. Ultimately, successful agriculture production depends on a blend of productivity gains, environmental measures to conserve water and the preservation of surface soil, alongside transport infrastructure to benefit from higher prices elsewhere in the world.

A choice of investment vehicles

Much like other commodities, there is a wide range of investment vehicles through which investors can access changes in the underlying supply and demand for agriculture products. The first that springs to mind is the futures market. The biggest advantage of using cash and futures of farm products is that they offer the ability to leverage and to access margin financing. For the most part, investors can earn a spread through owning the physical commodity and forward-selling soft commodities, provided that warehouse, insurance and interest costs are kept sufficiently low. The periods when forward prices are higher than spot prices are described as contango. The problem for investors using futures lies in the fact that they require active management since the investor is essentially acting as a counterparty for hedging by commercial users. In a sense, the investor and commercial producer's objectives may not be aligned. Of course, the futures markets allow investors to take short positions as well. The second most popular vehicle is equity. Shares offer operational and financial leverage on the underlying agriculture product, benefiting investors through a distribution of profits through dividends. The main advantage of equity investment is the ability of shareholders to benefit from both price and volume moves. This double gearing alongside any balance sheet leverage provides an extra attraction for investors. Lastly, investors can own physical land, plant and harvest crops and benefit directly from fluctuations in farm prices, as well as farm land.

Lateral ways to benefit from rising food prices

Soft commodities are uncorrelated to industrial cycles but have seen a secular upswing on the back of rising income per capita in emerging markets. Moreover, climate change, government policy and farm financing affect planting and cultivation far more than in the production of other commodities. The total market capitalisation of the food sector is tiny compared to the market capitalisation of, for example, global financials or property. However, while the investment universe appears limited on first appraisal, investors ought also to consider companies involved in the shipping and storage of soft commodities, seed and fertilizer producers, and those that produce farm machinery, tractors and irrigation systems. Equally, we would suggest investors also consider timber and other 'industrial' soft commodities.

While the supply side for natural resources tends to be of long duration, reflecting the time needed to develop mines and oil reserves, soft commodities have shorter life cycles. However, one of the major differences within the soft commodity class is the re-harvesting period between grains and rice and the longer planting periods for timber and rubber. Indeed, the temperate zones in which rubber can be successfully grown naturally limit cross-fertilisation to the countries in other region. Interestingly, the difficulties of producing rubber and timber have meant that substitutes have readily appeared, both natural and man-made. Rubber faces substitution from synthetic or organic products, while timber faces its own alternatives — formica, various plastics and recycled paper. Moreover, rubber and timber tend to respond to different long- and short-run demand issues compared to grains or other soft commodities. The long-run demand for timber and rubber reflects GDP trend growth. Both products have recently seen some alternative uses; timber has been seen as an investment class for pensions wishing to hedge against inflation. The encroachment by housing on forestry land has reduced available acreage for harvesting. Cotton also benefits from consumption in the textile and apparel industry, but the substantial demands for irrigated land ensure that the cotton price tends to be relatively easily substitutable to other synthetic products.

Our China food and beverage analyst, Emma Liu, highlights that the domestic hog price has seen a strong rebound recently, up 8% to August from July and up 25% from June. In our view, the price hike is mainly attributable to decreasing inventory and increasing input costs for breeding. However, despite the recent price rebound, the current hog-to-corn price ratio is 5.7x, which is still below the government's target profit breakeven point for farmers, of 6x. While we do not expect a sharp price hike in the short term – as we do not see a significant shortage in supply – we think the general trend of hog prices should be upward in H2 2010, with a slight correction in October as there is a short low season ahead of the high season around Chinese New Year. A higher hog price should benefit China Yurun Food – a major pork producer and one of our basket components – in our view.

One of the biggest commodity stories of the moment is wheat. International wheat prices have risen by approximately 40% in the last month, sparked by Russia's temporary ban on its export. Although we do not expect a repeat of the 2007-08 food price surge, we do think this could lead to a price spiral, spilling over to other crops, including corn, soybeans and rice, due to increasing speculative inflows of funds to this sector. China has a high self-sufficiency in wheat, rice and corn, and thus prices of these products in the domestic market should not be significantly affected by the international market. However, the domestic soybean price has a strong link with the international market since China has a 60%-plus reliance on soybean imports to meet its increasing domestic demand. Increasing international soft commodities prices should be positive for basket component China Agri-Industries, but negative for Tsingtao, Tingyi and Uni-President, in our view.

Our Southeast Asian soft commodities analysts have pointed out that the US Department of Agriculture (USDA) has upped its soybean production outlook contrary to the perception of the bad weather's impact on the harvest. With farmers selling more to prepare for new crops, we believe soy supply and crushing is likely to rise, leading to downside risk to prices.

We remain negative in the near term on palm oil, which is still trading at parity to soy oil and which we think is due for a correction led by the substitute effect of soy oil and expected strong CPO production in H2 2010. Separately, crushing margins continue to rebound from their lows in Q2 on a sharper correction in bean prices against meal/oil prices. We believe crushing margins should recover this quarter as the drop in soybean prices should be much sharper than the correction in meal and oil prices. Crushing margins for the companies under our coverage were weak in Q2 2010 and Q3 may see a recovery based on industry data until August. Weaker-than-expected production and CPO prices trending sideways (within expectations), coupled with lower yields and stronger Asean currencies (both negative), will likely translate into unimpressive earnings for upstream players (with more risk of negative surprises than positive surprises). We reiterate our REDUCE call for Malaysian upstream planters

We re-initiated our soft commodity basket on 23 November, 2009. We continue to believe that soft commodities will outperform base and precious metals in the future. We have added China Yurun Food and China Agri-Industries to our basket, along with two Thai small caps, Sri Trang Agro-Industry and Khon Kaen Sugar. We are also replacing Olam with Wilmar. We recently added JSR to the basket (see *Asia's soft commodity crunch (XX)*, 16 June, 2010) as a beneficiary of rising rubber prices.

Our China strategy team notes that agriculture's contribution to the economy is declining in terms of output...
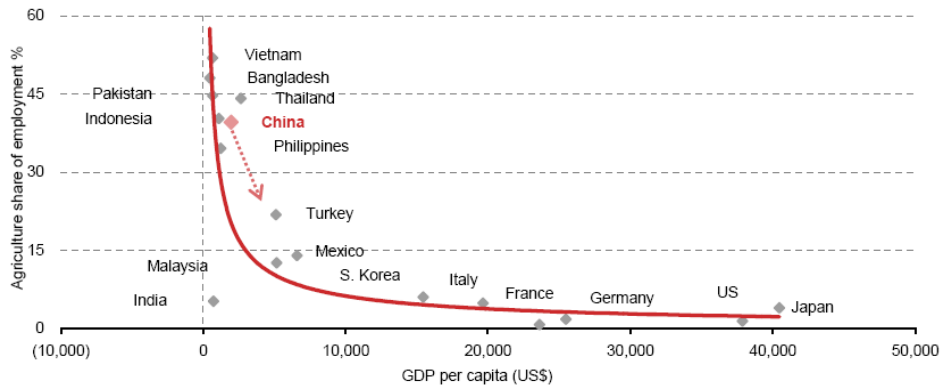
Figure 40. Relationship between agriculture contribution to total economy and GDP per capita (2008)
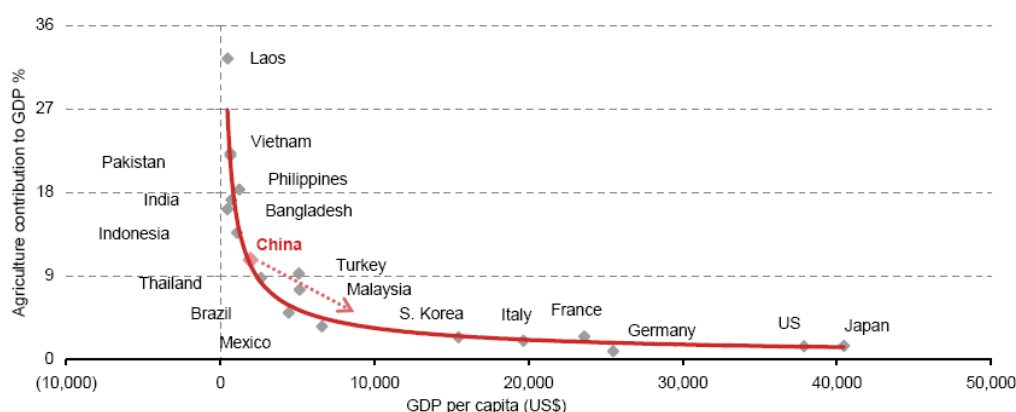
Source: CEIC, Bloomberg, Nomura Research
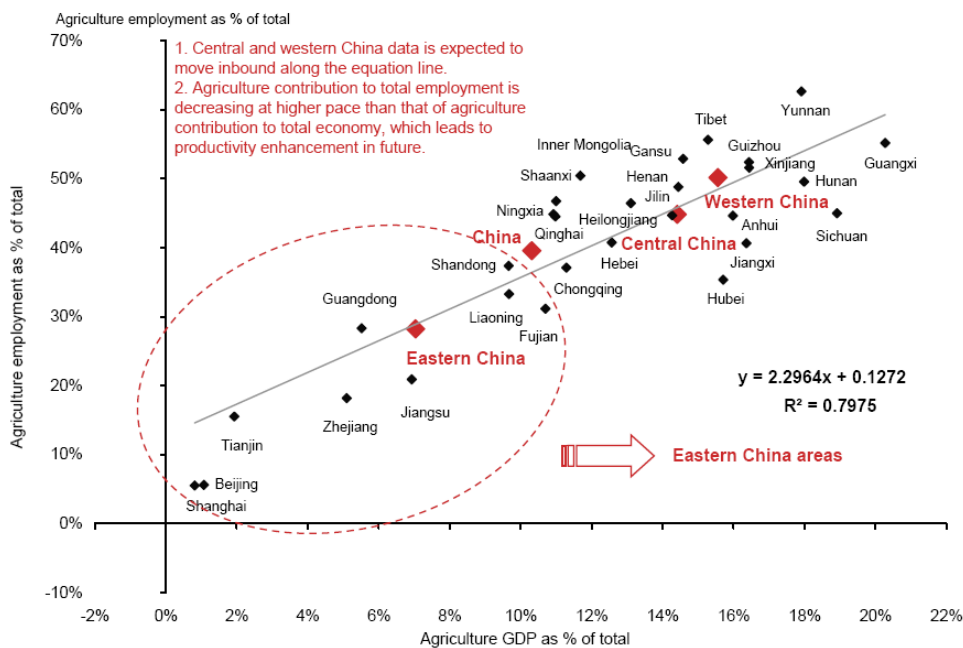
... as well as employment...

Figure 41. Relationship between agriculture weight % to total employment and GDP per capita (2008)

Source: CEIC, Bloomberg, Nomura Research

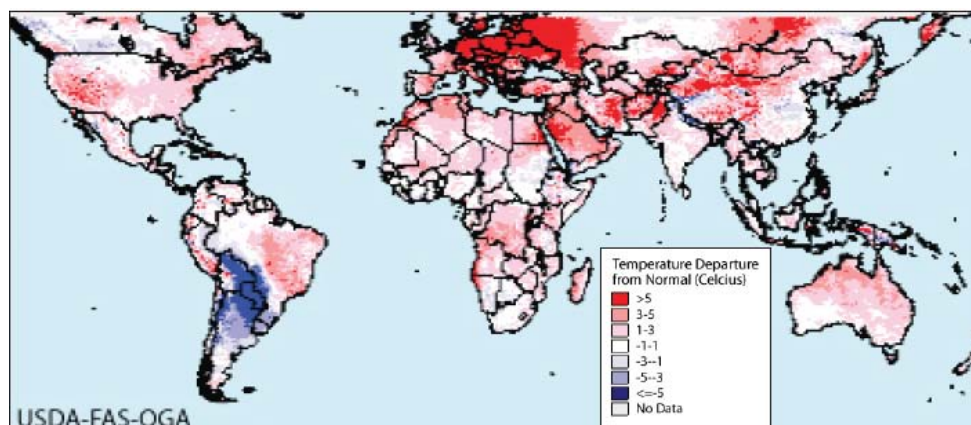**… leading to productivity enhancement in future**

Figure 42. Productivity comparison between Eastern, Central and Western China (2008)

$$y = 2.2964x + 0.1272$$
$$R^2 = 0.7975$$

Source: CEIC, Bloomberg, Nomura Research

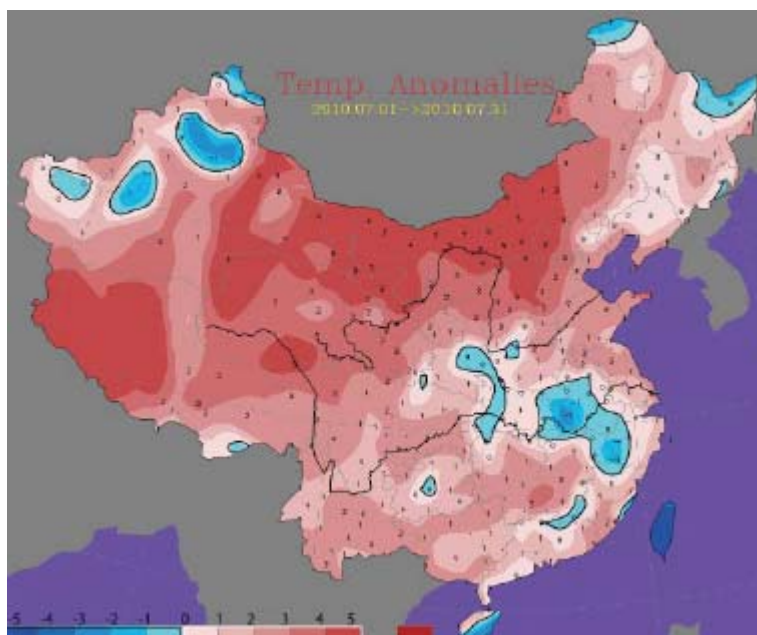**At the moment, most of the world is suffering from excessive heat…**

Figure 43. World: Temperature departure from normal (Celcius)

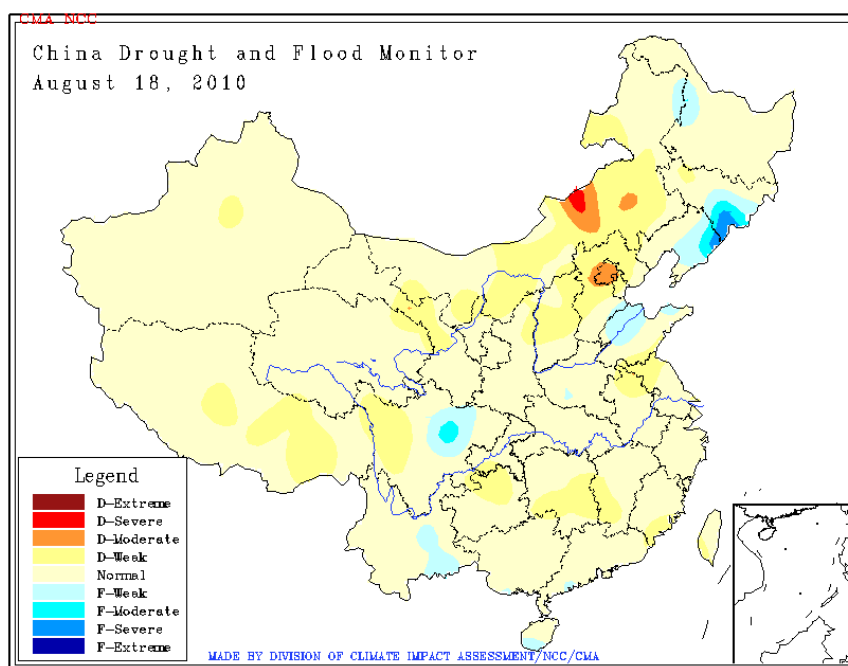Source: USDA; Nomura International (Hong Kong) Limited – Investment Strategy

Figure 44. China: Temperature anomalies

Source: USDA; Nomura International (Hong Kong) Limited – Investment Strategy

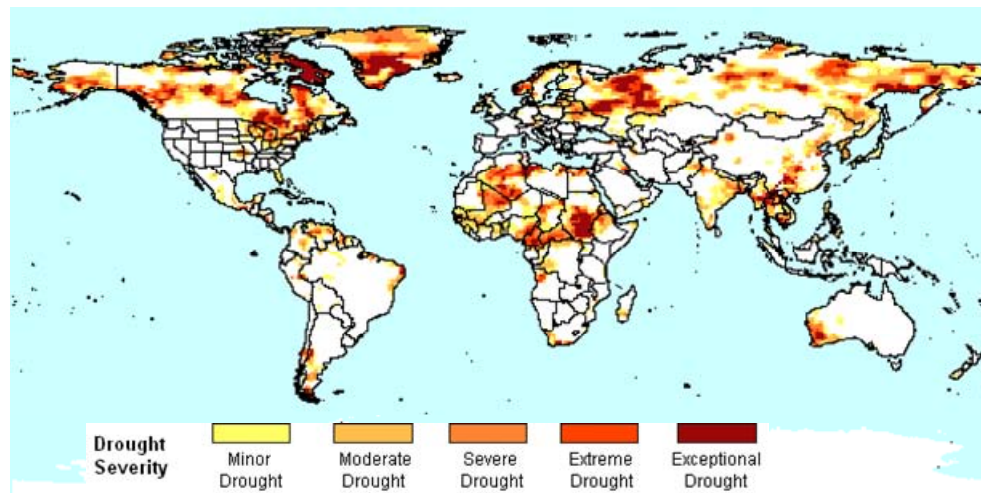**While temperatures are well above normal and precipitation is 50-90% below normal, in China…**

Figure 45. China: Drought and flood monitor

Source: China National Climate Center; Nomura International (Hong Kong) Limited – Investment Strategy

… drought conditions have worsened globally...

Figure 46. Global drought monitor

Source: UCL Nomura International (Hong Kong) Limited – Investment Strategy

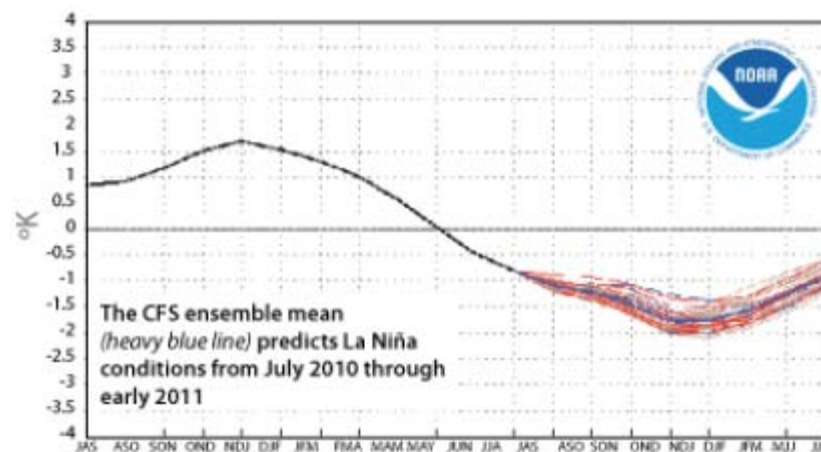**… particularly in Russia, which is experiencing its worst drought in 130 years**

Figure 47. Russia: precipitation

Source: USDA; Nomura International (Hong Kong) Limited – Investment Strategy

Meanwhile, La Niña is expected to last into spring 2011…
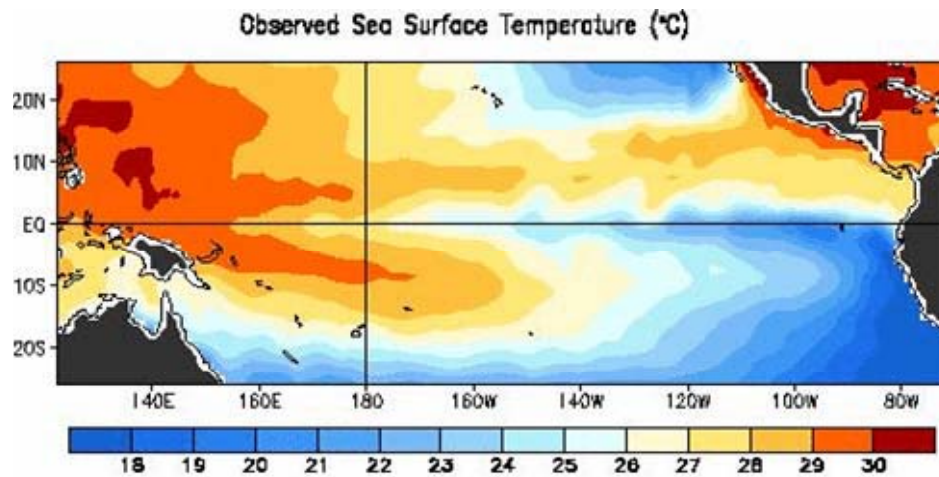
Figure 48. NOAA climate forecasting system

The CFS ensemble mean (heavy blue line) predicts La Niña conditions from July 2010 through early 2011

Source: NOAA; Nomura International (Hong Kong) Limited – Investment Strategy

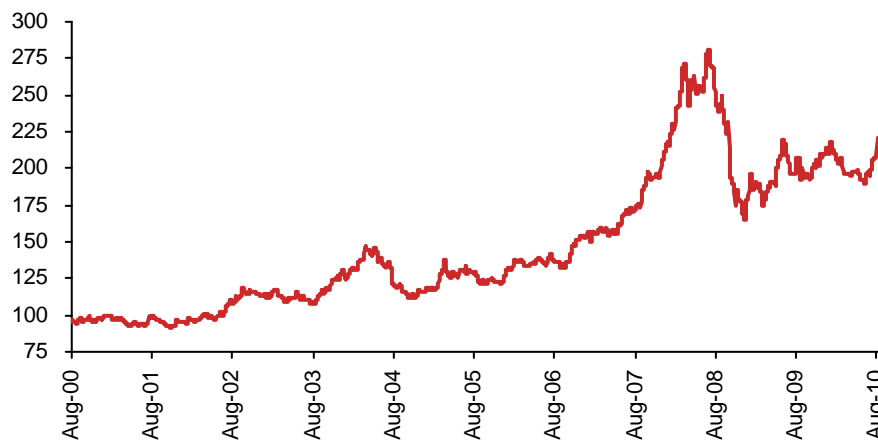**… suggesting disruptive weather conditions will continue**

Figure 49. Sea surface temperature

Source: NOAA; Nomura International (Hong Kong) Limited – Investment Strategy
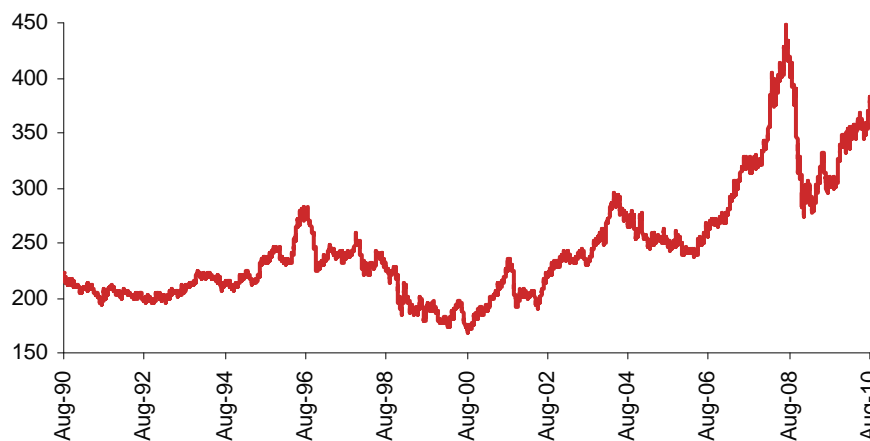
Food prices are soaring…

Figure 50. Economist food index

Source: Thomson Reuters Datastream; Nomura International (Hong Kong) Limited – Investment Strategy
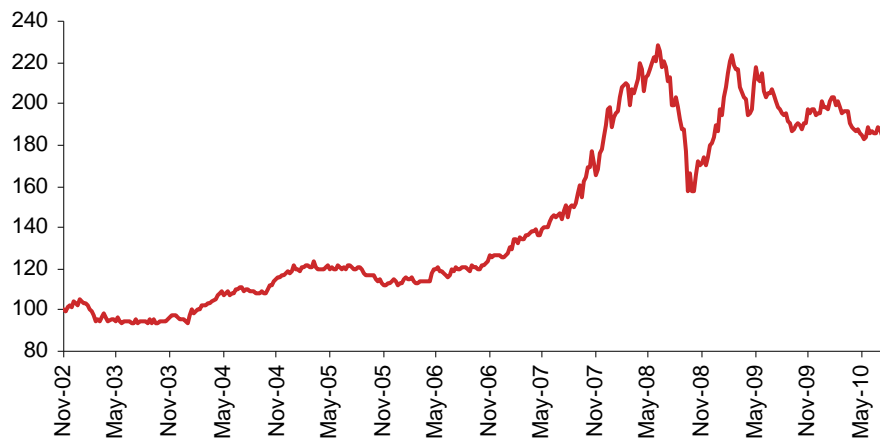
… approaching the previous peak on some measures

Figure 51. CRB food index

Source: Thomson Reuters Datastream; Nomura International (Hong Kong) Limited – Investment Strategy

In 2007, agriculture prices re-rated relative to global equities

Figure 52. S&P global agri index vs MSCI World

Source: Thomson Reuters Datastream; Nomura International (Hong Kong) Limited – Investment Strategy

Asian equity food-related stocks are close to their all-time highs

Figure 53. FTSE Asia food producers index (US$)
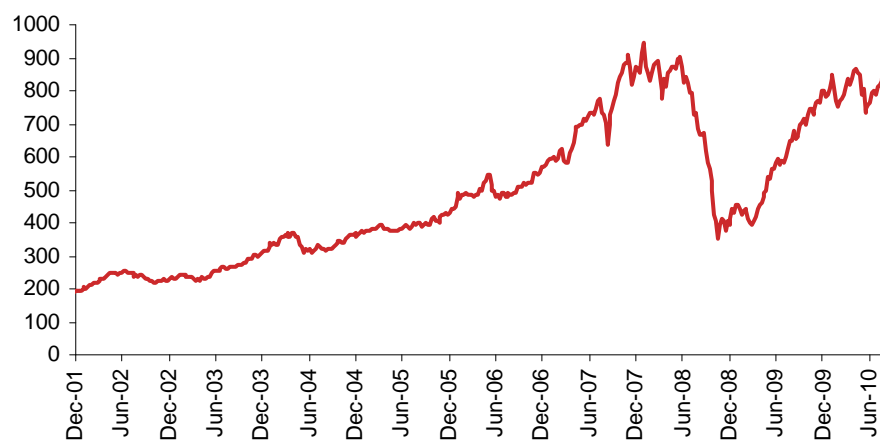
Source: Factset; Nomura International (Hong Kong) Limited – Investment Strategy

Asian agriculture stocks are performing in line with The Economist food index…

Figure 54. FTSE Asia food producers vs The Economist food price index
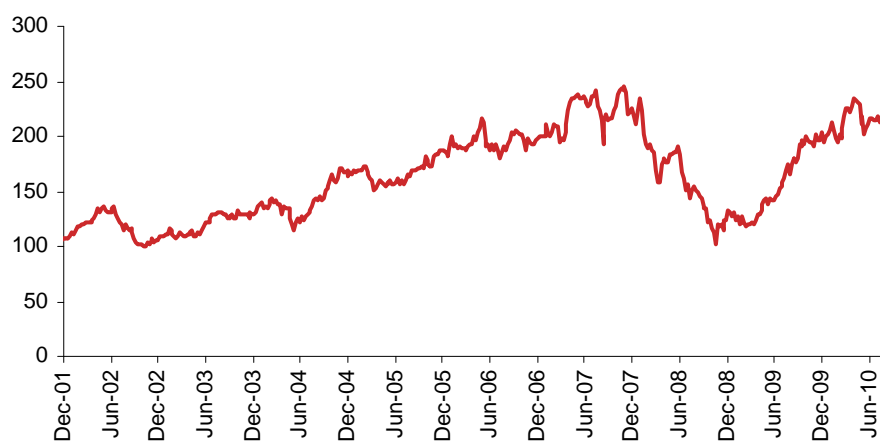
Source: Factset; Thomson Reuters Datastream; Nomura International (Hong Kong) Limited – Investment Strategy

… and also global food inflation trends

Figure 55. FTSE Asia food producers / food price inflation
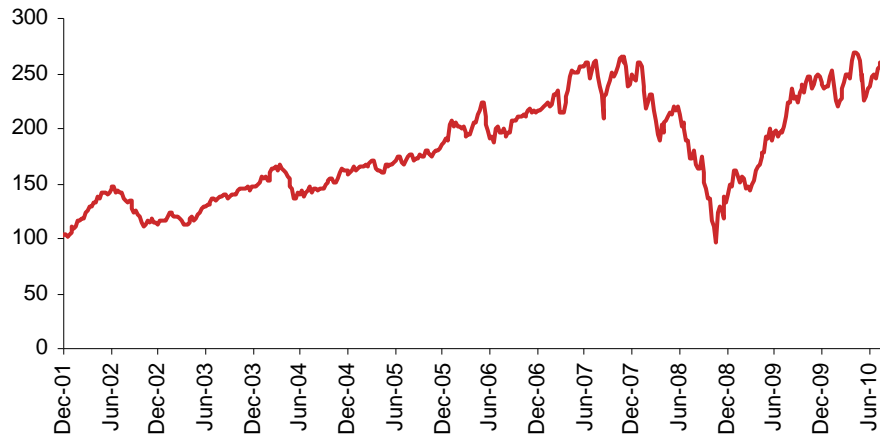
Source: UN; Bloomberg; Factset; Nomura International (Hong Kong) Limited – Investment Strategy

Despite their stability, the stocks were not a safe haven in 2008

Figure 56. FTSE Asia food producers 30-day volatility
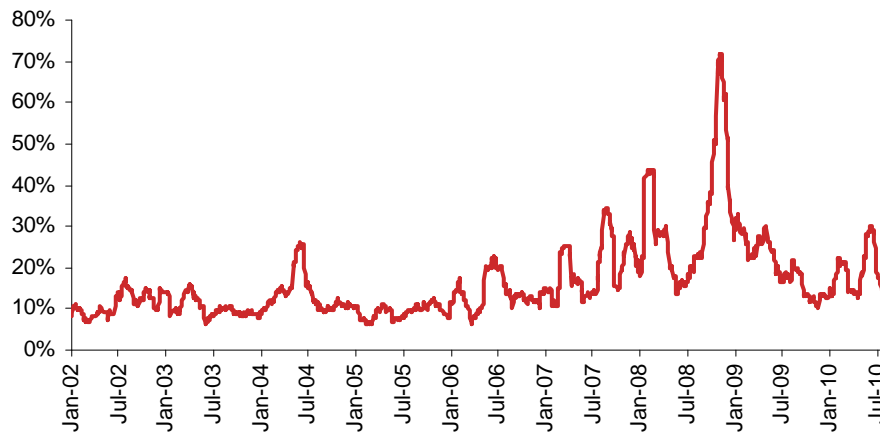
Source: Factset; Nomura International (Hong Kong) Limited – Investment Strategy

Returns from Asian food companies have matched those in the IG bond sector

Figure 57. FTSE Asia food producers vs US HY corporate bond total returns
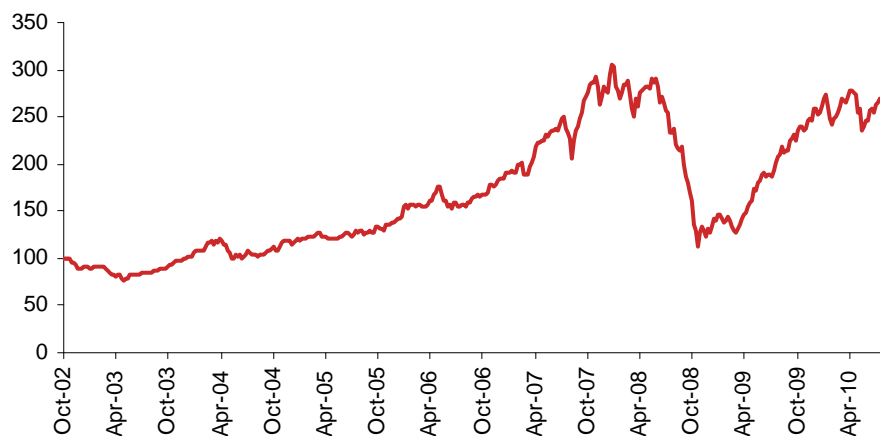
Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

The bid by BHP for Canadian, Potash…

Figure 58. Archer Daniels vs MSCI World

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

… is likely to put a floor under share valuations

Figure 59. Bunge vs MSCI World
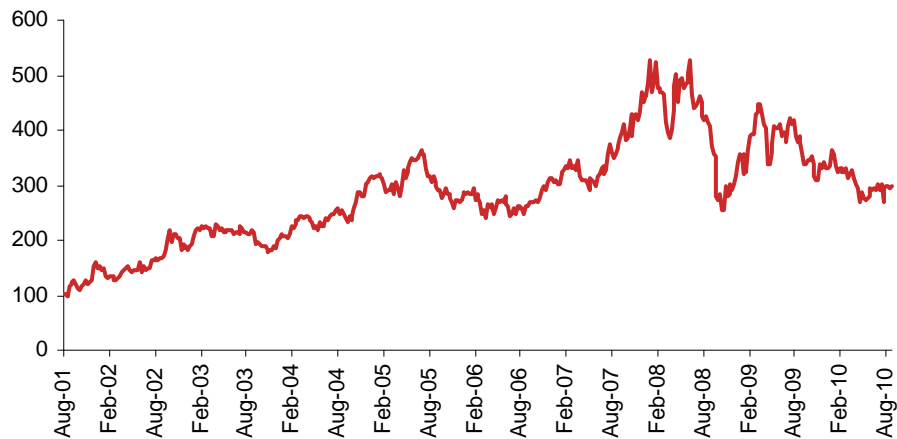
Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Asian food companies are picking up, but market cap of the agriculture sector is small…

Figure 60. Asia Pacific Food Index market cap ($mn)

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

… relative to global equity markets

Figure 61. World Food Index market cap ($mn)
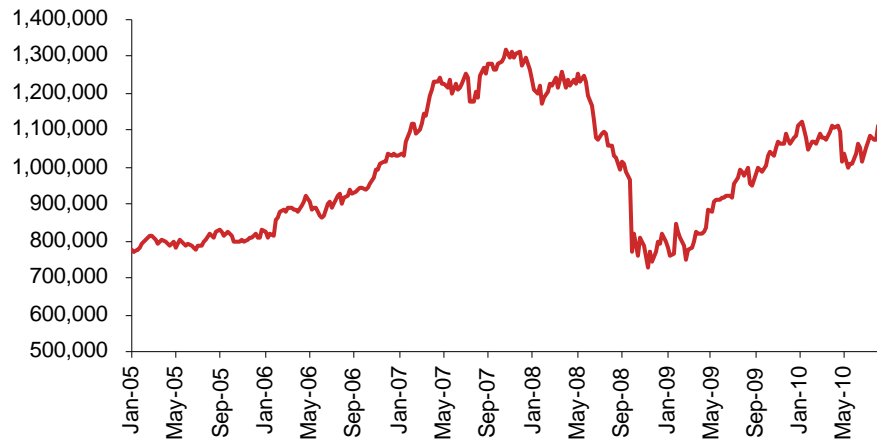
Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

On a relative basis, food is not expensive compared to other commodities

Figure 62. Economist Food price index vs oil price

Source: Thomson Reuters Datastream; Nomura International (Hong Kong) Limited – Investment Strategy

Set against these two series it would seem that inflation expectations may not necessarily be so dour

Figure 63. Food price inflation vs interest rates
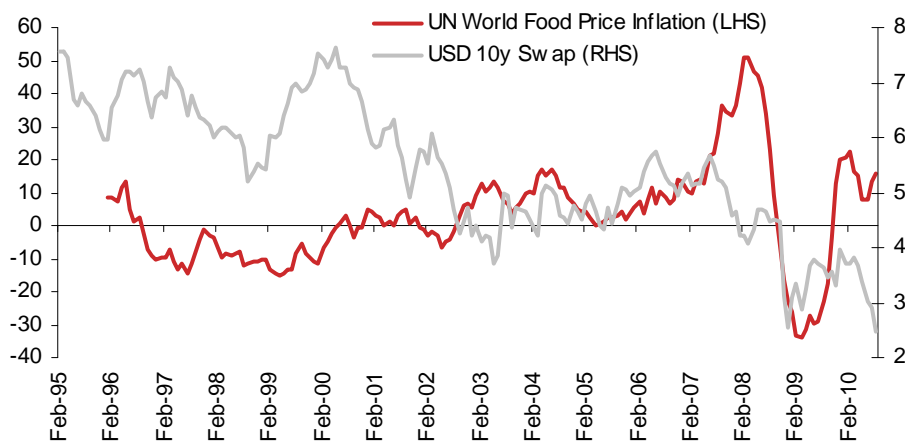
Source: CEIC; Bloomberg; Thomson Reuters Datastream; Nomura International (Hong Kong) Limited – Investment Strategy

Even though China is the world's largest cotton producer, it is also an importer…

Figure 64. China: Cotton imports

(US$mn)
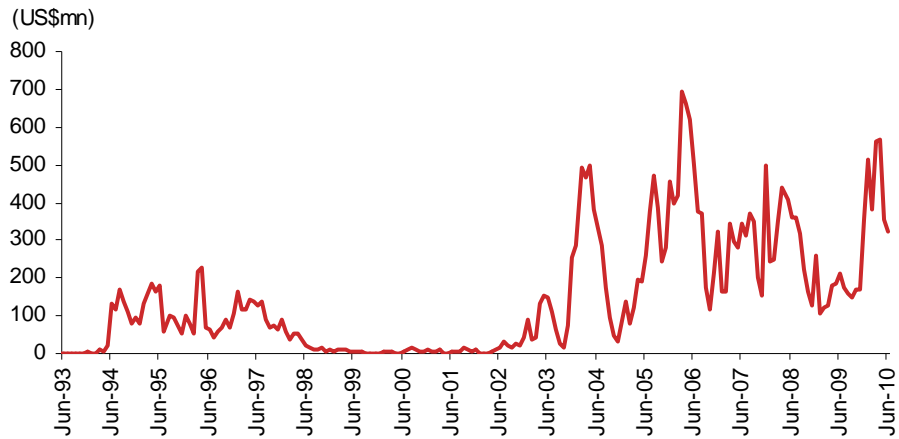
Source: CEIC; Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

… and has also become an importer of corn

Figure 65. China: Corn imports from the US

(USD mn)
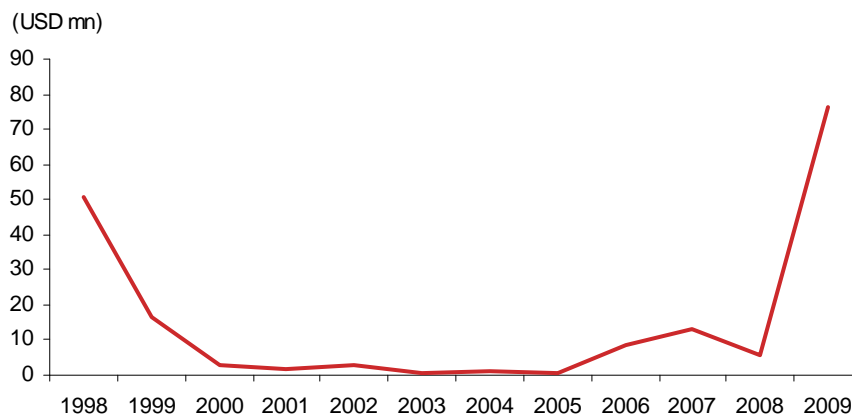
Source: CEIC; Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

More pertinently, the import trends for other soft commodities have grown

Figure 66. China: Rubber imports

(US$mn)
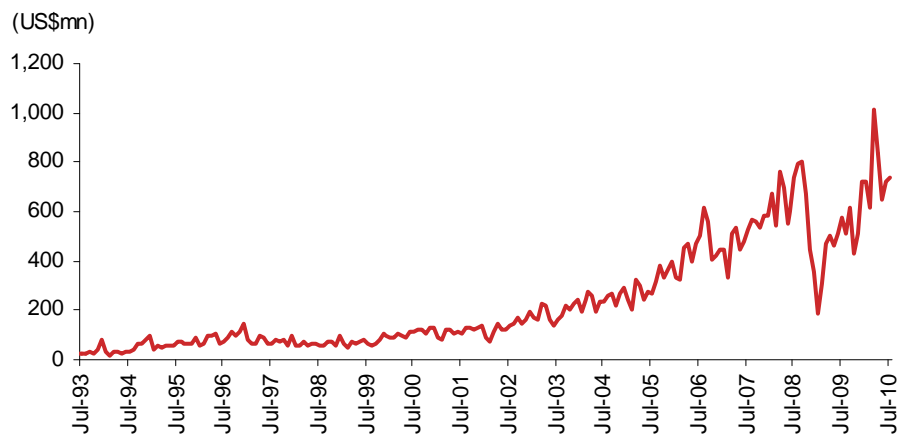
Source: CEIC; Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Hog prices in China have rebounded strongly

Figure 67. China: Agricultural product price: Hog

(RMB/Kg)
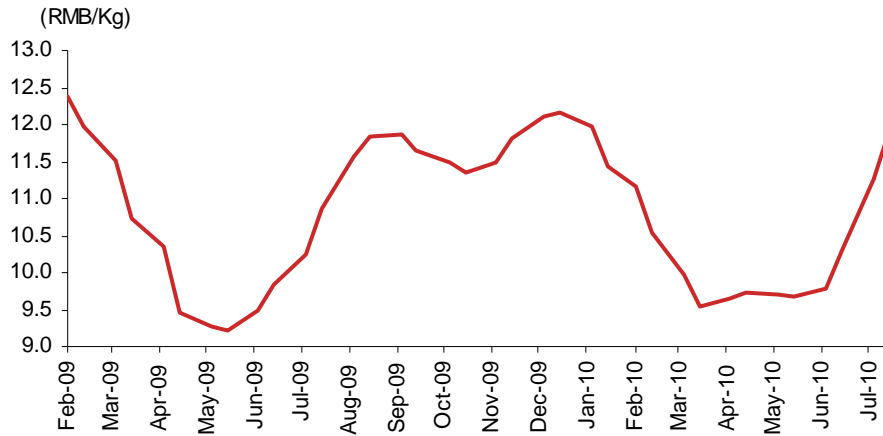
Source: CEIC; Nomura International (Hong Kong) Limited – Investment Strategy

While strong growth rates of soybean imports continue…

Figure 68. China: Soybean imports ($mn)
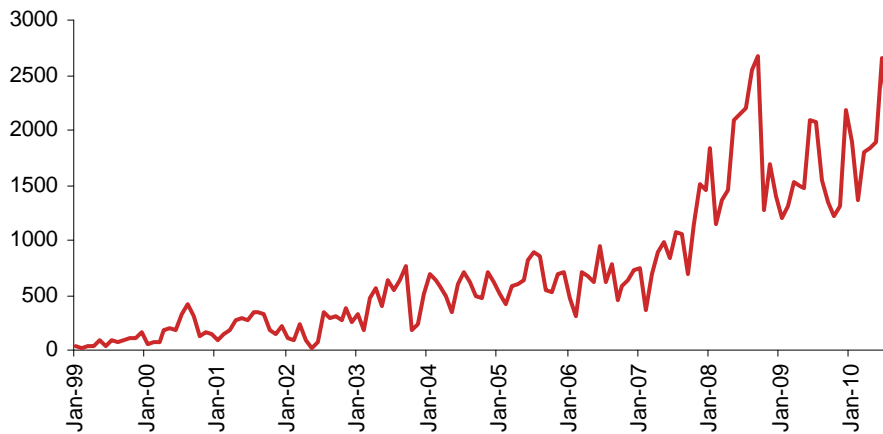
Source: CEIC; Nomura International (Hong Kong) Limited – Investment Strategy

… vegetable oil imports have also picked up

Figure 69. China: Imports of edible vegetable oils (including palm oil)

(US$mn)
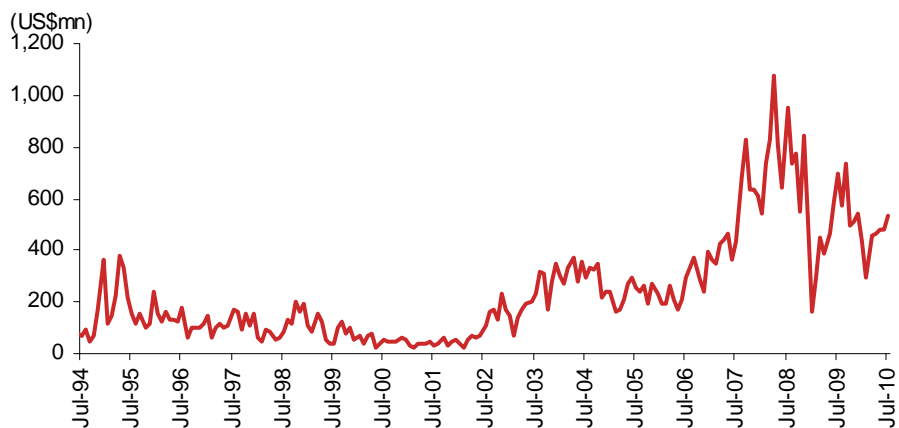
Source: CEIC; Nomura International (Hong Kong) Limited – Investment Strategy

The USDA has upped its soybean production outlook despite perception of the weather's impact on the harvest

Figure 70. USDA estimate revision history
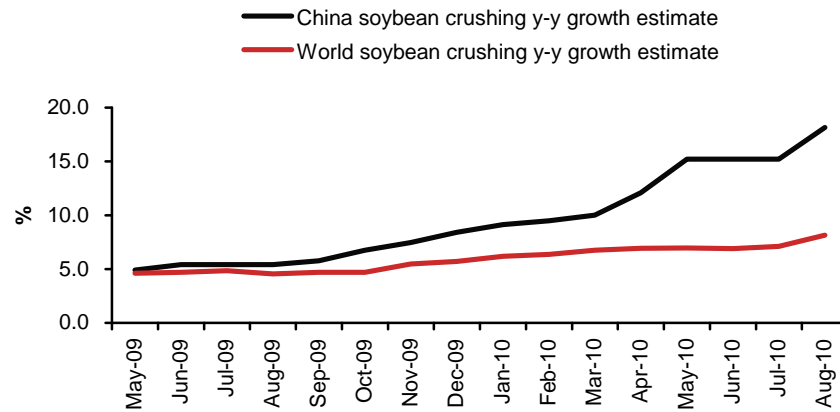
Source: USDA FAS; Nomura International (Hong Kong) Limited – Investment Strategy

Soy supply and crushing are likely to rise…

Figure 71. Soybean crushing margins
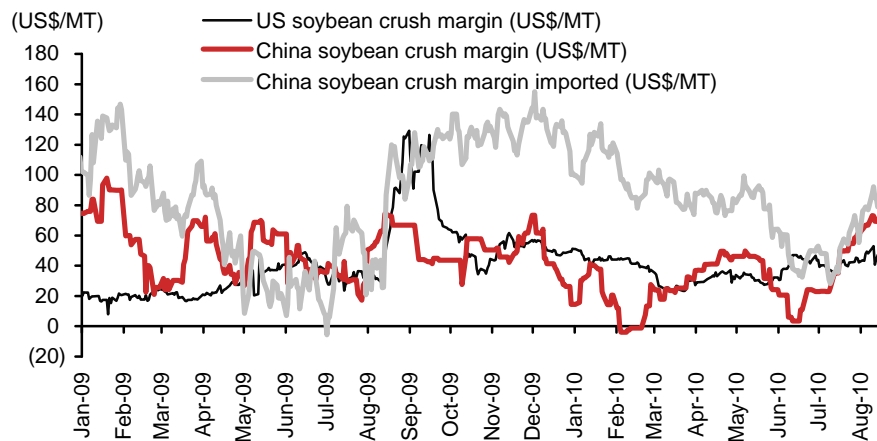
Source: Nomura estimates; Bloomberg

… while palm oil is expected to remain weak due to substitute effects in H2 2010

Figure 72. CPO discount to soybean oil
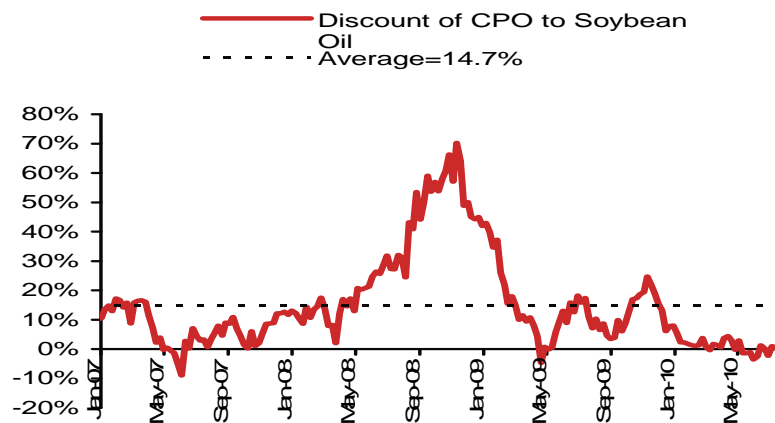
Source: Nomura estimates; Bloomberg

In the first half of this year China saw strong growth of soybean imports…

Figure 73. China soybean imports
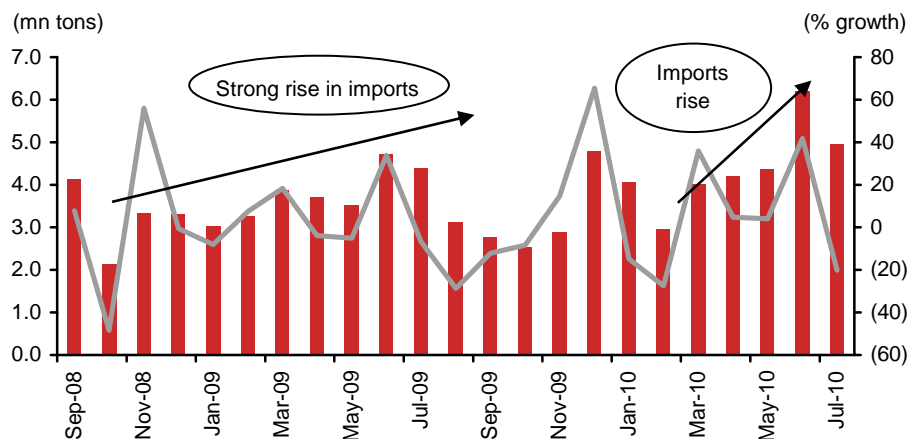
Source: Nomura estimates; Bloomberg

… India has also started to import more soybeans

Figure 74. India CPO and soybean oil imports
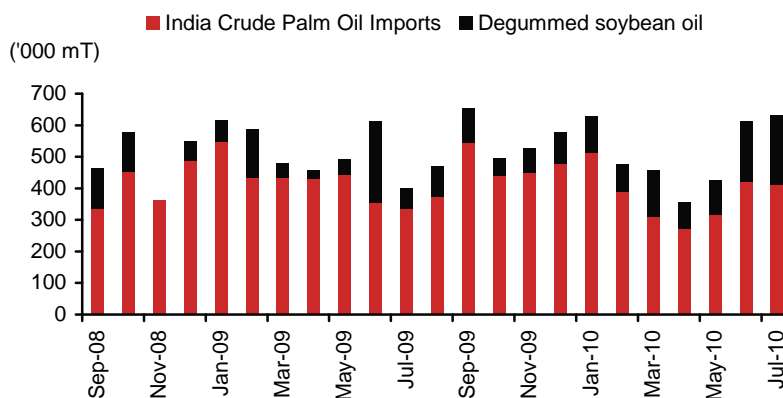
Source: www.seaofindia.com; Bloomberg; Nomura International (Hong Kong) Limited

Figure 75. China A-share agri companies

Company	Bloomberg code	Market Cap (US$mn)	Price	Consensus forecast FY1F		
				P/E (x)	P/B (x)	ROE (%)
Heilongjiang Agriculture-A	600598 CH	3696	14.12	44.1	4.0	n/a
Dalian Zhangzidao Fishery -A	002069 CH	2571	38.60	50.2	9.5	19.5
Shenzhen Agricultural Prod-A	000061 CH	2068	18.28	36.7	n/a	n/a
Beijing Shunxin Agricult-A	000860 CH	1357	21.01	30.7	3.5	11.7
Haikou Agriculture & Indus-A	000735 CH	1030	7.95	n/a	n/a	n/a
Shandong Homey Aquatic Dev-A	600467 CH	986	10.57	50.3	5.1	8.2
Yuan Longping High-Tech Ag-A	000998 CH	919	22.53	95.3	6.5	8.9
Tongwei Co Ltd-A	600438 CH	878	8.67	29.3	4.5	13.8
Nanning Sugar Industry Co -A	000911 CH	840	19.91	22.5	3.2	13.7
Xinjiang Talimu Agricul-A	600359 CH	770	16.30	75.6	n/a	n/a
Hefei Fengle Seed Co Ltd-A	000713 CH	610	15.35	40.2	3.9	13.1

Note: As of 3 September 2010

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Soft commodity prices have risen across many categories, which has induced substitution

Figure 76. The Cotton No.2 contract
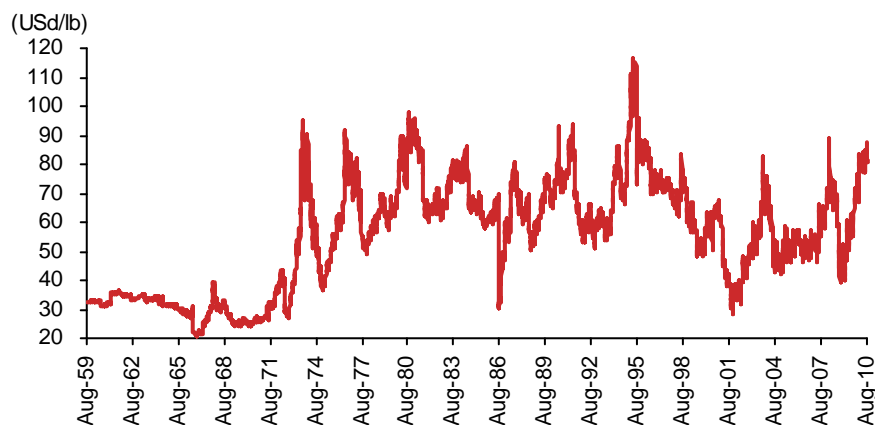
Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Figure 77. Synthetic fabric-related companies in Asia Pacific

Company	Bloomberg code	Market Cap US$mn	Price	Consensus forecast FY1F			Company description
				P/E (x)	P/B (x)	ROE (%)	
FAR EASTERN NEW	1402 TT	5,607	37.65	15.7	1.8	12.7	Far Eastern New Century Corp manufactures, processes and markets textile products. Its products include polyester materials, natural and synthetic yarns, fabrics, towels, bed sheets and woven and knitted garments.
KURARAY CO LTD	3405 JP	4,548	1002	13.2	1.0	7.7	Kuraray manufactures synthetic and chemical fibres. It provides special resin, man-made leather, fine chemicals and non-woven fabrics used as apparel and industrial materials.
DAEWOO INTL CORP	047050 KS	3,246	37850	23.2	2.5	11.7	Daewoo International Corp is a general trading company. It exports and imports steel, cement, crude oil, heavy machinery, automobile parts and textiles. Daewoo also manufactures synthetic fabrics for footwear, garments and car seats.
NISSHINBO HOLDIN	3105 JP	1,803	826	13.2	0.8	5.9	Nisshinbo Holdings manufactures cotton fabrics, synthetic textiles and chemical products used in apparel and industrial materials. It also makes a variety of paper products and machine tools for household and industrial use.
BIRLA CORP LTD	BCORP IN	607	367.15	n/a	n/a	n/a	Birla Corp is a manufacturing company that produces and sells cement, automobile trim parts, jute goods, synthetic and cotton yarns and PVC floor coverings and coated fabrics.
SHINKONG SYN FIB	1409 TT	636	12.75	14.1	n/a	n/a	Shinkong Synthetic Fibers Corp manufactures and markets synthetic fibres, twisted filament yarns, fabrics and clothing. It also produces engineering plastics, synthetic films, plastic pellets and chips, and related processed goods.
WOONGJIN CHEMICA	008000 KS	533	1320	n/a	n/a	n/a	Woongjin Chemical manufactures raw cotton and yarn, polyester synthetic fibres and processed fabrics, such as spun fabrics, filament fibre and filament fabrics. It also produces environmental products, such as reverse osmosis membranes.
JIANGSU XINMIN-A	002127 CH	486	8.88	n/a	n/a	n/a	Jiangsu Xinmin Textile Science & Technology produces and markets silk products and textile raw materials. The main products and business include rayon and synthetic fabrics and various types of silk.
KURABO INDS	3106 JP	386	132	19.9	n/a	n/a	Kurabo Industries mainly manufactures and sells yarns and woven fabrics made from cotton and synthetic textiles. It also produces polyurethane foams, synthetic woods, inorganic building materials, adhesives and specialty plastics.
DAIWABO HOLDINGS	3107 JP	389	179	30.8	n/a	n/a	Daiwabo Holdings manufactures and sells fabrics and garments. It specializes in cotton wool, synthetic fibres, dryer fabrics and non-woven textiles. It also assembles electric parts, information systems and industrial machines.
LI PENG ENT CO	1447 TT	297	14.5	n/a	n/a	n/a	Li Peng Enterprise manufactures, processes and markets various kinds of synthetic and natural fabrics and yarns.
FUJIAN NANFANG-A	600483 CH	275	6.48	n/a	n/a	n/a	Fujian Nanfang Textile manufactures a variety of textiles including flannelette, cotton yarn, polyurethane synthetic leather, needling fabric and water-jet bonding fabric.

Note: As of 3 September 2010

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Rubber prices have also climbed on demand for heavy vehicle tyres

Figure 78. Rubber Research Institute Thailand RSS3 rubber auction price/Songkhla

Note: Ribbed Smoked Sheet 3 (RSS3) auctioned price at the Central Rubber Market, Songkhla Province.
Source: Rubber research Institute; Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy.

Figure 79. Synthetic rubber-related companies in Asia

	Company	Bloomberg code	Market Cap US$mn	Price	Consensus forecast FY1F			Company description
					P/E (x)	P/B (x)	ROE (%)	
Japan	JSR CORP	4185 JP	3905	1305	12.5	1.2	10.2	JSR Corp manufactures synthetic rubber and synthetic resins. Its rubber products are used mainly for auto tires. It also manufactures LCD-related materials and photoresists.
Japan	ZEON CORP	4205 JP	1665	588	9.8	1.3	12.7	Zeon Corp produces synthetic rubbers, latex and resins. Its products are used as tires, other auto parts and materials for electronic components.
Taiwan	TSRC CORP	2103 TT	918	45.05	11.3	n/a	19.6	TSRC Corp manufactures and markets synthetic rubber. Its main products are styrene-butadiene rubber (SBR), butadiene rubber (BR), thermoplastic Elastomer (TPE) and thermoplastic rubber (TPR). Its products are used in making tires, shoes, sport equipment, toys and electric wires.
Thailand	SRI TRANG AGRO	STA TB	649	20.60	9.3	2.0	21.8	Sri Trang Agro-Industry produces and markets smoked sheet rubber. It sells its products to tire manufacturers as a primary market and exports to Japan, China, Korea and Taiwan.
China	JIANGSU HONGDA-A	002211 CH	490	13.75	34.7	3.3	8.0	Jiangsu Hongda New Material manufactures silicon rubber. Its silicon can be used for moulding and extrusion and is most often used for insulated wires, rollers, flame-retardant wires, sealants, cables, swimming caps, gaskets and baby feeding nipples.

Note: As of 3 September 2010

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Figure 80. Agriculture chemical companies in China/HK, Korea and Taiwan

Country	Bloomberg Code	Name	Market Cap US$mn	Price	Consensus forecast FY1F P/E (x)	P/B (x)	ROE (%)	Total return (%, YTD)	Revenue (US$m, T12M)	Company description
China/HK										
China	000792 CH	QINGHAI SALT-A	6784	59.9	28.2	10.9	38.4	5	719	Qinghai Salt Lake Potash develops, manufactures, and markets potassium chloride products. Main products are potassic fertilizers.
Hong Kong	297 HK	SINOFERT HOLDING	3948	4.4	23.9	2.0	9.6	1	3572	Sinofert Holdings manufactures and distributes fertilizers. It produces and imports potash fertilizers, phosphate- and nitrogen-based fertilizers and compound fertilizers. It operates in China.
China	3983 HK	CHINA BLUECHEM-H	3287	5.5	17.9	2.0	12.4	17	762	China Bluechemical manufactures nitrogen fertilizers. Produces ammonia and urea.
China	000059 CH	LIAONING HUAJI-A	1811	10.2	19.1	1.8	9.6	-12	1594	Liaoning Huajin Tongda Chemicals manufactures and markets fertilizers, including urea, liquid ammonia and compound fertilizers. Through its subsidiaries, it also manufactures petrochemical products and operates restaurants.
China	600096 CH	YUNNAN YUNTIAN-A	1786	20.5	31.6	2.6	6.8	-15	941	Yunnan Yuntianhua manufactures and markets fertilizers and other chemical products. Products include synthetic ammonia, urea, nitramine, pentaerythritol, sodium formate and polyformaldehyde.
China	000422 CH	HUBEI YIHUA CH-A	1486	18.6	17.3	3.8	21.9	-13	1416	Hubei Yihua Chemical Industry manufactures and sells fertilizers and other chemical products. Products include urea and pentaerythritol, used for the manufacturing of synthetic resin, pesticides and industrial dynamite.
China	600596 CH	ZHEJIANG XINAN	1360	13.6	24.9	2.2	8.2	-34	597	Zhejiang Xinan Chemical Industrial Group produces and sells pesticides and other chemical materials, including herbicides, organo-phosphorus insecticides, organo-silicon materials.
China	600426 CH	SHANDONG HUALU-A	1074	14.7	18.0	2.4	12.5	-37	646	Shandong Hualu Hengsheng Chemical manufactures urea, methanol, dimethylformamide, formaldehyde, trimethylamine and other chemical products.
China	002215 CH	SHENZHEN NOPO -A	1102	33.8	42.4	6.0	12.2	9	209	Shenzhen Noposion Agrochemicals manufactures herbicides, insecticides, fungicides, aricides and plant-growth regulators.
China	600227 CH	GUIZHOU CHITIA-A	871	6.2	33.1	n/a	5.8	4	158	Guizhou Chitianhua manufactures and markets fertilizers. Products include urea, liquid ammonia, and compound and special fertilizers.
China	002391 CH	JIANGSU CHANGQ-A	777	33.3	38.5	6.3	23.6	n/a	99	Jiangsu Changqing Agricultural and Chemical produces and sells pesticide. Products include herbicides, insecticides and bactericides.
China	000830 CH	LUXI CHEMICAL-A	822	5.3	17.0	n/a	n/a	-13	966	Luxi Chemical Group manufactures and markets a variety of fertilizers and other chemical products. Products include urea, synthetic ammonia and ammonium acid carbonate.
China	000525 CH	NANJING REDSUN-A	635	15.4	33.1	2.6	5.8	-9	528	Nanjing Redsun manufactures and sells agricultural pesticides, coatings and fine chemicals.
China	000912 CH	SICHUAN LUT-A	652	7.6	n/a	n/a	-2.5	-28	532	Sichuan Lutianhua manufactures and markets a variety of fertilizers and industrial chemical products. Products include urea, liquefied ammonium and methyl alcohol.
China	600423 CH	LIUZHOU CHEMICAL	592	10.1	29.6	2.6	9.9	6	270	Liuzhou Chemical Industry manufactures and markets chemical products and fertilizers. Products include synthetic ammonia, urea, ammonium nitrate, soda ash, salmiac and other chemicals.
China	200553 CH	HUBEI SANONDA-B	589	3.7	n/a	n/a	n/a	-6	212	Hubei Sanonda manufactures and sells pesticides, fertilizers and other agricultural chemical products. It also produces caustic soda, invests in chemical manufacturing companies and sells property.
China	600230 CH	HEBEI CANGZHOU-A	592	15.5	23.3	3.6	15.0	-22	305	Hebei Cangzhou Dahua manufactures and markets fertilizers. Products include urea, synthetic ammonia, nitrimine and nitric acid.
China	600226 CH	ZHEJIANG SHEN-A	596	10.0	31.2	3.2	n/a	23	246	Zhejiang Shenghua Biok Biology manufactures and markets pesticides, animal medicines and zirconium products. It also manufactures feed additives.
China	000731 CH	SICHUAN MEIFEN-A	545	7.4	n/a	n/a	n/a	-20	508	Sichuan Meifeng Chemical Industry manufactures and markets a variety of agricultural chemical products. Products include urea, ammonium acid carbonate, melamine and liquefied ammonia.

Note: As of 3 September 2010

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Figure 80. Agriculture chemical companies in China/HK, Korea and Taiwan (Cont'd)

Country	Bloomberg Code	Name	Market Cap US$mn	Price	Consensus forecast FY1F P/E (x)	P/B (x)	ROE (%)	Total return (%, YTD)	Revenue (US$m, T12M)	Company description
Korea										
Korea	025860 KS	NAMHAE CHEMICAL	722	17000.0	n/a	n/a	n/a	-9	689	Namhae Chemical Corporation produces a variety of chemical products. The Company specializes in producing agricultural chemicals, such as urea, phosphatic and compound fertilizers.
Korea	000990 KS	DONGBU HITEK CO	348	9660.0	n/a	n/a	n/a	37	1607	Dongbu HiTek Co., Ltd. manufactures chemical products, such as agricultural chemicals and petrochemicals. The Company's products include fertilizers, fungicides, insecticides, herbicides, styrene monomer, and polystyrene.
Korea	001390 KS	KG CHEMICAL CORP	100	10900.0	n/a	n/a	n/a	8	319	KG Chemical Corporation manufactures and markets composite fertilizers. The Company also produces concrete for construction, chemicals like hydrochloric acid and potassium sulfate.
Korea	012030 KS	DONGBU FINE CHEM	80	23400.0	n/a	n/a	n/a	49	167	Dongbu Fine Chemical Co., Ltd. manufactures various agrochemicals for rice farming and floriculture uses. The Company also operates trading business and produces adhesives and magnetic powder cores used in electronics, automobiles, furniture, and telecom
Korea	007590 KS	DONGBANG AGRO	74	6340.0	n/a	n/a	n/a	-1	95	Dongbang Agro Corporation manufactures and sells finished agricultural chemicals such as weed killers, germicides, and insecticides.
Taiwan										
Taiwan	1722 TT	TAIWAN FERTILIZE	3,043	99.0	31.4	1.9	6.1	-13	537	Taiwan Fertilizer Co., Ltd. manufactures and markets chemical fertilizers. The Company predominately sells its products in Taiwan.
Taiwan	1712 TT	SINON CORP	157	14.2	n/a	n/a	n/a	-2	402	Sinon Corp. manufactures and markets pesticides. The Company also operates in the supermarket business as well as provides catering services to schools and businesses.

Note: As of 3 September 2010

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Figure 81. Global upstream food companies under Nomura equity coverage

Company Name	Industry	Ticker	Country	Market Cap ($mn)	Nomura Rating	ROE	Tax Burden	Interest Burden	Margin	Turnover	Leverage
Kubota Corp.	Farm Machinery and Equipment	6326 JP	JAPAN	10916	Buy	7.0	57	106	7	0.7	2.3
Taiwan Fertilizer Co. Ltd.	Fertilizers	1722 TT	TAIWAN	3024	Buy	2.5	56	119	11	0.3	1.3
China BlueChemical Ltd.	Nitrogenous Fertilizers	3983 HK	HONG KONG	3185	Buy	9.9	75	104	22	0.4	1.3
United Phosphorus Ltd.	Pesticides and Agricultural Chemicals	UNTP IN	INDIA	1763	Buy	18.6	86	88	13	0.8	2.4
Makhteshim-Agan Industries Ltd.	Pesticides and Agricultural Chemicals	MAIN IT	ISRAEL	1637	Buy	2.6	126	21	6	0.6	2.8
Jain Irrigation Systems Ltd.	Irrigation Systems	JI IN	INDIA	1972	Buy	15.4	67	74	15	0.8	4.1
China Green (Holdings) Ltd.	Vegetables and Melons	904 HK	HONG KONG	861	Buy	20.4	83	97	38	0.4	1.6
Charoen Pokphand Foods PCL	General Livestock	CPF TB	THAILAND	5980	Neutral	21.0	79	112	7	1.5	2.3
Changsha Zoomlion Heavy Industry	Construction Machinery and Equipment	000157 CH	CHINA	8314	Neutral	38.0	84	92	15	0.7	4.6
Sinofert Holdings Ltd.	Fertilizers	297 HK	HONG KONG	3793	Neutral	-11.1	67	86	-9	1.0	2.1
Nihon Nohyaku Co. Ltd.	Pesticides and Agricultural Chemicals	4997 JP	JAPAN	413	Neutral	5.4	59	83	9	0.8	1.5
Indofood Agri Resources Ltd.	Table Oils, Margarine and other oils	IFAR SP	SINGAPORE	2551	Neutral	17.6	53	127	25	0.4	2.6
Gunns Ltd.	Forest Nurseries and Gathering of Forest	GNS AU	AUSTRALIA	498	Neutral	2.0	-28	85	-17	0.3	1.8
Saudi Arabian Fertilizers Co.	Nitrogenous Fertilizers	SAFCO AB	SAUDI ARAB	9333	Reduce	24.0	n/a	n/a	63	0.3	1.2
Kuala Lumpur Kepong Bhd	Crop Planting, Cultivating, and Protecting	KLK MK	MALAYSIA	5807	Reduce	11.0	69	87	15	0.8	1.5
Chaoda Modern Agriculture	Crop Planting, Cultivating, and Protecting	682 HK	HONG KONG	2720	Reduce	28.6	100	133	49	0.4	1.2
Yara International ASA	Nitrogenous Fertilizers	YAR NO	NORWAY	12377	Reduce	13.0	109	273	2	0.9	2.4
Sime Darby Bhd	Vegetable Oil Mills	SIME MK	MALAYSIA	15941	Reduce	10.6	74	98	0	0.9	1.7

Note: As of 3 September 2010. Charoen Pokphand Foods PCL is covered by Capital Nomura Securities.

Source: Bloomberg, Factset, Nomura International (Hong Kong) Limited – Investment Strategy

Figure 82. Soft commodity related CBs

Country	CB Full Name	Eqy	Bond Ccy	Offer	Parity	Offer Prem	Imp Delta	Offer Yld to Put or Mat	Floor	Credit Spread	Next Put	Next Put Price	Maturity Price	Notional Outstanding (USD mn)
Hong Kong	CHAODA MODERN AGRICULTURE 3.7% 01 Sep 15	682 HK	USD	105.6	85.08	24.11	64.27	1.77	84.98	850	1-Sep-13	100.00	100.00	200.00
Hong Kong	CHINA AGRI-INDUSTRIES HOLDINGS LTD 1% 29 Jul 15	606 HK	HKD	112.45	89.32	25.90	54.45	(2.02)	94.61	300	29-Jul-13	103.08	105.23	498.67
Hong Kong	CHINA GREEN HOLDINGS LTD 0% 29 Oct 10	904 HK	CNY	103.75	71.58	44.95	8.05	4.62	103.16	800		-	104.60	147.26
Hong Kong	CHINA GREEN HOLDINGS LTD 3% 12 Apr 13	904 HK	CNY	99.95	77.15	29.55	30.82	5.31	94.80	800		-	106.39	198.81
Hong Kong	SINOFERT 0% 07 Aug 11	297 HK	HKD	134.1	115.66	15.94	47.47	(5.37)	121.98	400		-	127.23	79.98
India	UTD PHOSPHOROUS 0.5% 07 Jan 11	UNTP IB	USD	143.25	145.98	(1.87)	-	(21.43)	128.77	425		-	130.87	67.40
Malaysia	IOI CORP 0% 18 Dec 11	IOI MK	USD	126.5	127.71	(0.95)	-	(6.34)	113.74	100		-	116.05	98.99
Malaysia	IOI CORP BHD 0% 15 Jan 13	IOI MK	USD	103.4	50.51	104.72	7.15	1.01	102.93	175	15-Jan-11	103.81	106.43	466.52
Singapore	FIRST RESOURCES LTD 5.625% 22 Sep 14	FR SP	USD	112.7	97.73	15.32	66.66	0.63	93.60	950	22-Sep-12	102.44	104.34	100.00
Singapore	NOBLE GROUP 0% 13 Jun 14	NOBL SP	USD	149.4	123.22	21.25	49.40	(18.97)	123.75	200	13-Jun-11	126.19	150.23	250.00
Singapore	OLAM 1.282% 03 Jul 13	OLAM SP	USD	171.65	174.62	(1.70)	-	(20.85)	138.59	250	3-Jul-11	141.03	151.50	92.22
Singapore	OLAM 6% 15 Oct 16	OLAM SP	USD	117.25	87.90	33.39	57.42	2.91	95.01	500		-	100.00	500.00
Singapore	PACIFIC ANDES 4% 18 Apr 12	PAH SP	USD	106	49.02	116.25	20.28	9.21	102.28	1100		-	116.04	70.50
Singapore	WILMAR 0% 18 Dec 12	WIL SP	USD	130.85	122.20	7.08	61.25	(41.87)	109.29	250	18-Dec-10	110.32	117.78	575.00

Note: prices as of 19 August 2010; Recommendations for outrights are highlighted.

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

Exhibit 83. Soft commodity basket: price performance

Company	Bloomberg code	Inception date	1W	1M	3M	6M	1Y	YTD	Since inception
China Green (Holdings) Ltd	904 HK	23-Nov-09	6	-17	1	-20	-8	0	-2
United Phosphorus Ltd	UNTP IN	23-Nov-09	3	2	0	15	13	8	35
Noble Group Ltd	NOBL SP	23-Nov-09	6	2	-7	-19	24	-19	-9
JSR corp	4185 JP	30-Apr-10	6	-11	-21	-23	-14	-28	-29
Sri Trang Agro-Industry Public	STA TB	15-Jun-10	0	-8	56	211	634	351	54
Khon Kaen Sugar Industry	KSL TB	15-Jun-10	-2	1	2	-15	-18	-23	5
China Yurun Food	1068 HK	8-Sep-10	3	7	28	23	111	24	n/a
China Agri-Industries	606 HK	8-Sep-10	3	-1	12	-7	77	-3	n/a
Wilmar	WIL SP	8-Sep-10	4	0	12	-2	0	1	n/a
Benchmark		*MSCI AC Asia Pacific US$*	*2*	*-1*	*8*	*5*	*14*	*2*	*3*

Note: As of 3 September 2010

Source: Bloomberg; IBES, Nomura International (Hong Kong) Limited – Investment Strategy

Exhibit 84. Soft commodity basket: valuations

Company	Bloomberg Code	Price Local currency	PER (x) FY1F	PER (x) FY2F	PBR (x) FY1F	PBR (x) FY2F	Dividend yield (%) FY1F	Dividend yield (%) FY2F
China Green (Holdings) Ltd	904 HK	7.4	9.5	7.4	1.7	1.4	2.9	3.6
United Phosphorus Ltd	UNTP IN	188.0	12.1	10.2	2.2	1.9	1.1	1.1
Noble Group Ltd	NOBL SP	1.7	15.5	12.0	2.2	1.9	1.8	2.4
JSR corp	4185 JP	1362	12.3	10.3	1.2	1.1	2.4	2.4
Sri Trang Agro-Industry Public	STA TB	20.4	7.1	8.0	2.1	1.7	3.2	2.7
Khon Kaen Sugar Industry	KSL TB	11.7	24.1	16.0	1.6	1.5	1.3	1.6
China Yurun Food	1068 HK	28.6	22.1	18.7	4.2	3.6	1.3	1.5
China Agri-Industries	606 HK	9.9	14.0	11.6	2.0	1.7	1.7	2.2
Wilmar	WIL SP	6.4	17.4	15.4	2.5	2.2	1.2	1.4

Note: As of 3 September 2010

Source: Bloomberg; Nomura International (Hong Kong) Limited – Investment Strategy

China Agri-Industries 606 HK

CONSUMER RELATED/AGRI-RELATED | CHINA

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Maintained

BUY

⊙ Action

We believe China Agri will continue to benefit from industry consolidation. Moreover, we believe that it is well placed to benefit from food inflation in terms of both EPS upgrades and P/E re-rating. We reiterate our BUY call, given an undemanding valuation of 10.4x FY11F P/E. Our PT remains HK$11.20.

⚡ Catalysts

Short term: food inflation and renminbi appreciation; long term: restructuring.

⚓ Anchor themes

We are positive on consumption growth for F&B in China in the long run, given increasing personal income and urbanisation. Yet, given short-term risks such as inflation, we prefer market leaders with strong pricing power.

Closing price on 3 Sep	HK$9.76
Price target	**HK$11.20**
	(set on 14 Jul 10)
Upside/downside	14.8%
Difference from consensus	**1.8%**
FY11F net profit (HK$mn)	3,531
Difference from consensus	**10.2%**
Source: Nomura	

Nomura vs consensus

Our earnings estimate for FY11F is higher than market consensus, likely because we are more upbeat on volume growth.

Positive outlook given consolidation and inflation

① Market share gains should accelerate

China Agri's soybean crushing plants are running at full utilisation rates (over 80%). With three new production plants in the pipeline, China Agri's total production capacity should increase to 6.8mn tonnes at end-2010F and 9.2mn tonnes at end-2011F (from 5.6mn tonnes at end-2009). We believe that with sufficient production capacity, China Agri will accelerate its market share gains amid industry consolidation.

② Beneficiary of food inflation

As a leading grain processor, China Agri can pass on inflated costs because most of its finished products are foodstuffs, for which demand is resilient. Meanwhile, rising soybean prices augur heightened price volatility, providing China Agri with the opportunity to lock in a better-than-expected crushing margin through hedging. Moreover, we believe food inflation will likely drive a re-rating of China Agri, owing to increasing fund flows into soft commodity names.

③ Restructuring should be seen as a "free" option

According to management, it will take time for the group to consider a restructuring plan with China Foods (506 HK, HK$5.65, REDUCE). As we understand it, management believes it is unlikely that the restructuring will take place in the short term, although China Agri is considering it. However, we see any potential restructuring as a "free" option, given China Agri's current valuation at 10.4x FY11F P/E.

④ Attractive valuation

We are more confident of China Agri's ability to improve earnings, given its steady crushing margin and increasing volume growth. China Agri is trading at 10.4x FY11F P/E, compared with the circa 12x average of its global mid-stream agriculture peers and 22x for China F&B.

Key financials & valuations

31 Dec (HK$mn)	FY09	FY10F	FY11F	FY12F
Revenue	43,828	51,007	65,928	75,246
Reported net profit	1,952	2,622	3,531	4,264
Normalised net profit	1,952	2,622	3,531	4,264
Normalised EPS (HK$)	0.52	0.69	0.94	1.13
Norm. EPS growth (%)	(29.2)	34.2	34.7	20.7
Norm. P/E (x)	18.9	14.1	10.4	8.6
EV/EBITDA (x)	23.5	12.5	10.1	7.3
Price/book (x)	2.3	2.0	1.7	1.4
Dividend yield (%)	0.6	1.8	2.4	2.9
ROE (%)	13.3	15.3	17.5	17.7
Net debt/equity (%)	46.2	40.4	51.0	22.7
Earnings revisions				
Previous norm. net profit		2,622	3,531	4,264
Change from previous (%)		-	-	-
Previous norm. EPS (HK$)		0.69	0.94	1.13

Source: Company, Nomura estimates

Share price relative to MSCI China

	1m	3m	6m
Absolute (HK$)	8.3	12.7	(10.6)
Absolute (US$)	8.2	13.0	(10.7)
Relative to Index	10.1	6.7	(11.0)
Market cap (US$mn)			4,738
Estimated free float (%)			39.4
52-week range (HK$)			12.76/5.59
3-mth avg daily turnover (US$mn)			18.31
Stock borrowability			Hard
Major shareholders (%)			
COFCO Limited			60.6

Source: Company, Nomura estimates

Valuation methodology: Our price target of HK$11.20 is based on 14x our 12-month forward EPS (HK$0.80), representing a 40% discount to the China F&B historical four-year sector average due to China Agri's exposure to mid-stream and low earnings visibility. We reiterate our BUY rating.
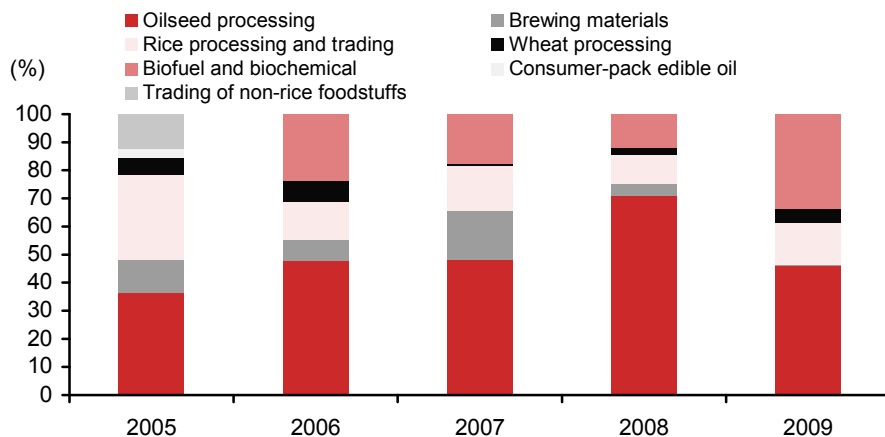
Downside risk includes a significant loss in its hedging position and a significant drop in soybean prices.

Exhibit 85. Revenue breakdown by product
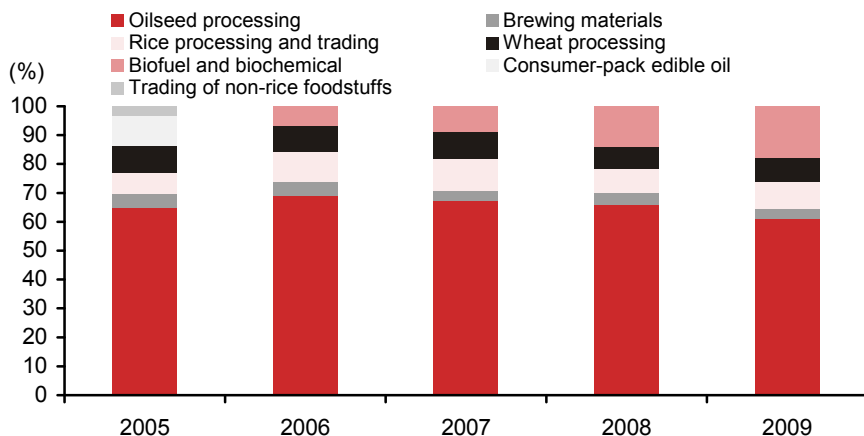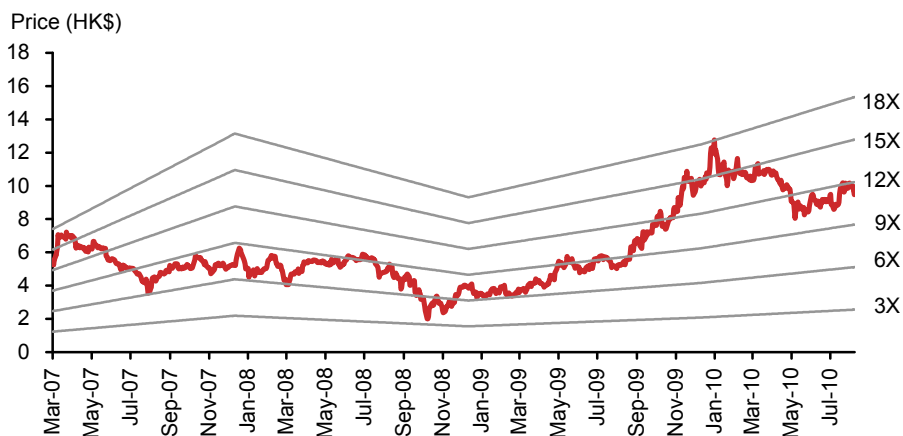

Source: Company data, Nomura research

Exhibit 86. Operating profit breakdown by product

Source: Company data, Nomura research

Exhibit 87. Rolling 12-month forward P/E bands

Source: Bloomberg, IBES, Nomura research

Financial statements

Income statement (HK$mn)					
Year-end 31 Dec	FY08	FY09	FY10F	FY11F	FY12F
Revenue	41,802	43,828	51,007	65,928	75,246
Cost of goods sold	(36,643)	(40,568)	(46,227)	(59,511)	(67,467)
Gross profit	**5,159**	**3,259**	**4,780**	**6,417**	**7,779**
SG&A	(2,431)	(2,418)	(2,729)	(3,458)	(4,075)
Employee share expense					
Operating profit	**2,728**	**842**	**2,052**	**2,959**	**3,704**
EBITDA	**3,252**	**1,520**	**2,921**	**4,097**	**4,997**
Depreciation	(524)	(678)	(869)	(1,138)	(1,293)
Amortisation					
EBIT	**2,728**	**842**	**2,052**	**2,959**	**3,704**
Net interest expense	(313)	(196)	(305)	(345)	(326)
Associates & JCEs	133	355	621	680	852
Other income	1,800	1,334	1,078	1,388	1,422
Earnings before tax	**4,349**	**2,336**	**3,445**	**4,682**	**5,651**
Income tax	(884)	(292)	(689)	(983)	(1,187)
Net profit after tax	**3,465**	**2,044**	**2,756**	**3,699**	**4,465**
Minority interests	(840)	(92)	(135)	(168)	(201)
Other items					
Preferred dividends					
Normalised NPAT	**2,625**	**1,952**	**2,622**	**3,531**	**4,264**
Extraordinary items					
Reported NPAT	**2,625**	**1,952**	**2,622**	**3,531**	**4,264**
Dividends	(525)	(228)	(655)	(883)	(1,066)
Transfer to reserves	**2,100**	**1,724**	**1,966**	**2,648**	**3,198**

Other income mainly includes government grants in the bio-fuel business

Valuation and ratio analysis					
FD normalised P/E (x)	13.4	18.9	14.1	10.4	8.6
FD normalised P/E at price target (x)	15.3	21.7	16.1	12.0	9.9
Reported P/E (x)	13.4	18.9	14.1	10.4	8.6
Dividend yield (%)	1.5	0.6	1.8	2.4	2.9
Price/cashflow (x)	40.1	na	13.6	na	7.2
Price/book (x)	2.6	2.3	2.0	1.7	1.4
EV/EBITDA (x)	11.3	23.5	12.5	10.1	7.3
EV/EBIT (x)	13.4	36.9	16.6	13.2	9.4
Gross margin (%)	12.3	7.4	9.4	9.7	10.3
EBITDA margin (%)	7.8	3.5	5.7	6.2	6.6
EBIT margin (%)	6.5	1.9	4.0	4.5	4.9
Net margin (%)	6.3	4.5	5.1	5.4	5.7
Effective tax rate (%)	20.3	12.5	20.0	21.0	21.0
Dividend payout (%)	20.0	11.7	25.0	25.0	25.0
Capex to sales (%)	2.8	3.5	7.8	6.1	2.0
Capex to depreciation (x)	2.2	2.3	4.6	3.5	1.2
ROE (%)	21.9	13.3	15.3	17.5	17.7
ROA (pretax %)	13.5	4.4	8.2	9.3	10.5

Growth (%)					
Revenue	44.8	4.8	16.4	29.3	14.1
EBITDA	258.3	(53.3)	92.2	40.3	22.0
EBIT	402.9	(69.1)	143.8	44.2	25.2
Normalised EPS	126.9	(29.2)	34.2	34.7	20.7
Normalised FDEPS	126.9	(29.2)	34.3	34.7	20.7

Per share					
Reported EPS (HK$)	0.73	0.52	0.69	0.94	1.13
Norm EPS (HK$)	0.73	0.52	0.69	0.94	1.13
Fully diluted norm EPS (HK$)	0.73	0.52	0.69	0.94	1.13
Book value per share (HK$)	3.78	4.20	4.89	5.82	6.95
DPS (HK$)	0.15	0.06	0.17	0.23	0.28

Source: Nomura estimates

Cashflow (HK$mn)

Year-end 31 Dec	FY08	FY09	FY10F	FY11F	FY12F
EBITDA	3,252	1,520	2,921	4,097	4,997
Change in working capital	(1,182)	(5,699)	786	(4,032)	1,606
Other operating cashflow	(1,196)	(487)	(994)	(1,328)	(1,513)
Cashflow from operations	**874**	**(4,667)**	**2,713**	**(1,263)**	**5,089**
Capital expenditure	(1,156)	(1,532)	(4,000)	(4,000)	(1,500)
Free cashflow	**(282)**	**(6,199)**	**(1,287)**	**(5,263)**	**3,589**
Reduction in investments	(195)	(42)	(247)	(284)	(327)
Net acquisitions	6	(51)	-	-	-
Reduction in other LT assets	(101)	(909)	-	-	-
Addition in other LT liabilities	131	57	-	-	-
Adjustments	-	-	-	-	-
Cashflow after investing acts	**(442)**	**(7,143)**	**(1,535)**	**(5,547)**	**3,263**
Cash dividends	-	705	(228)	(655)	(883)
Equity issue	-	-	-	-	-
Debt issue	558	6,453	1,116	1,000	(2,233)
Convertible debt issue	-	-	-	-	-
Others	2,349	606	1,623	2,434	2,889
Cashflow from financial acts	**2,907**	**7,764**	**2,511**	**2,779**	**(227)**
Net cashflow	**2,465**	**621**	**977**	**(2,769)**	**3,036**
Beginning cash	2,429	4,894	5,515	6,492	3,723
Ending cash	4,894	5,515	6,492	3,723	6,759
Ending net debt	1,482	7,314	7,454	11,222	5,954

Source: Nomura estimates

> Capex is mainly for capacity expansion in the oilseed business

Balance sheet (HK$mn)

As at 31 Dec	FY08	FY09	FY10F	FY11F	FY12F
Cash & equivalents	4,894	5,515	6,492	3,723	6,759
Marketable securities	-	-	-	-	-
Accounts receivable	1,854	1,921	2,472	3,207	3,275
Inventories	5,249	7,031	6,961	11,052	9,370
Other current assets	5,072	7,785	7,785	7,785	7,785
Total current assets	**17,069**	**22,253**	**23,711**	**25,768**	**27,189**
LT investments	1,605	1,647	1,895	2,179	2,506
Fixed assets	8,266	9,572	13,155	16,469	17,129
Goodwill	645	1,021	1,123	1,235	1,358
Other intangible assets	28	36	36	36	36
Other LT assets	653	1,562	1,562	1,562	1,562
Total assets	**28,267**	**36,092**	**41,481**	**47,249**	**49,780**
Short-term debt	5,220	11,713	11,713	11,713	11,713
Accounts payable	2,072	1,271	2,538	3,332	3,323
Other current liabilities	3,487	3,152	3,152	3,152	3,152
Total current liabilities	**10,779**	**16,136**	**17,403**	**18,197**	**18,188**
Long-term debt	1,156	1,116	2,233	3,233	1,000
Convertible debt	-	-	-	-	-
Other LT liabilities	386	443	443	443	443
Total liabilities	**12,321**	**17,696**	**20,079**	**21,873**	**19,631**
Minority interest	2,343	2,565	2,950	3,393	3,902
Preferred stock	-	-	-	-	-
Common stock	359	386	386	386	386
Retained earnings	13,243	15,444	18,066	21,597	25,861
Proposed dividends	-	-	-	-	-
Other equity and reserves	-	-	-	-	-
Total shareholders' equity	**13,602**	**15,830**	**18,452**	**21,983**	**26,246**
Total equity & liabilities	**28,267**	**36,092**	**41,481**	**47,249**	**49,780**

Liquidity (x)

Current ratio	1.58	1.38	1.36	1.42	1.49
Interest cover	8.7	4.3	6.7	8.6	11.4

Leverage

Net debt/EBITDA (x)	0.46	4.81	2.55	2.74	1.19
Net debt/equity (%)	10.9	46.2	40.4	51.0	22.7

Activity (days)

Days receivable	14.9	15.7	15.7	15.7	15.8
Days inventory	44.0	55.2	55.2	55.2	55.4
Days payable	17.6	15.0	15.0	18.0	18.0
Cash cycle	41.3	55.9	55.9	53.0	53.1

Source: Nomura estimates

China Yurun Food 1068 HK

CONSUMER RELATED/FOOD & BEVERAGE | CHINA

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⊙ Action

We expect hog prices to trend up in 2H10F and 2011F. We are upbeat on Yurun's earnings growth on both volume and price growth in the mid-term. In our view, increasing hog prices (as long as the price hike is not too sharp over a short period) should be positive for Yurun's earnings, given its exposure to upstream and its strong pricing power in downstream. Reiterate BUY and PT of HK$34.

⚡ Catalysts

Monthly or quarterly updates of strong slaughtering volume growth in 2H10F; the government's favourable policies towards the slaughtering industry.

⚓ Anchor themes

We are positive on consumption growth for F&B in China in the long run, given increasing personal income and urbanisation. Yet, given short-term risks such as inflation, we prefer market leaders with strong pricing power.

Closing price on 3 Sep	HK$28.75
Price target	**HK$34.00**
	(set on 14 Jul 10)
Upside/downside	18.3%
Difference from consensus	**21.4%**
FY11F net profit (HK$mn)	3,116
Difference from consensus	**15.0%**

Source: Nomura

Nomura vs consensus

We are upbeat on Yurun's market share gains. Our above-consensus price target is mainly due to our aggressive earnings forecasts compared with the market.

Both volume and price growth

① 2H10F likely to surprise market on the upside

According to management, in July and August 2010, Yurun's slaughtering volume growth remained strong at over 40% y-y. In addition, gross margin was stable h-h, despite the hike in hog prices, given Yurun's raw material inventory for its downstream business. Given the stronger-than-expected volume growth, we look for the market to further revise up its earnings forecasts for Yurun.

② Beijing's move to spur consolidation

The government announced it will hold a nationwide inspection of hog slaughterhouses and grant production licenses only to players that are up to standard. The inspection is underway and will end by 31 October. Yurun management expects only 1,000 of the more than 20,000 players will remain after industry consolidation in the long run.

③ Positive FCF from FY11F onward

Yurun reaffirmed its target of positive free cashflow from FY11F. Given its HK$4.9bn in cash at 30 June 2010 and its strong operating cashflow, the likelihood of mid-term equity financing is low, in our view.

④ Reiterate BUY with PT of HK$34

We see room for the Street to revise up earnings forecasts for Yurun and expect EPS upgrades will likely become a major share price driver for the shares. The stock is trading at a 17x FY11F P/E, compared with the circa 22x average for the China F&B segment. We stick to our valuation at 23x 12-month forward EPS (HK$1.48/share) and maintain our price target at HK$34. The 23x P/E is on par with the mid-end of the four-year P/E band for the China F&B sector. Downside risks include an unexpected outbreak of pig disease across the country and food safety scandals within the food processing sector or at Yurun.

Key financials & valuations

31 Dec (HK$mn)	FY09	FY10F	FY11F	FY12F
Revenue	13,870	19,833	28,182	37,904
Reported net profit	1,745	2,337	3,116	3,885
Normalised net profit	1,626	2,234	3,008	3,777
Normalised EPS (HK$)	1.01	1.29	1.71	2.14
Norm. EPS growth (%)	82.5	27.6	31.8	25.6
Norm. P/E (x)	28.7	22.2	16.9	13.4
EV/EBITDA (x)	32.5	21.2	15.3	11.7
Price/book (x)	5.7	4.1	3.5	2.9
Dividend yield (%)	1.0	1.2	1.5	1.9
ROE (%)	25.7	22.7	23.2	24.2
Net debt/equity (%)	0.9	net cash	net cash	net cash
Earnings revisions				
Previous norm. net profit		2,234	3,008	3,777
Change from previous (%)		-	-	-
Previous norm. EPS (HK$)		1.29	1.71	2.14

Source: Company, Nomura estimates

Share price relative to MSCI China
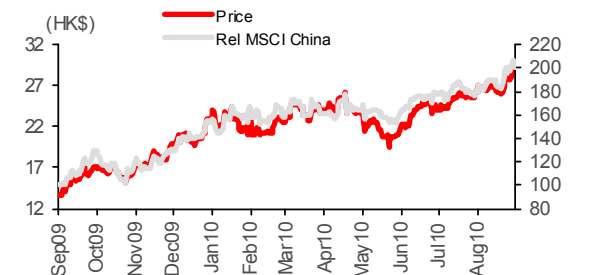
|	1m	3m	6m
Absolute (HK$)	8.7	32.2	26.9
Absolute (US$)	8.6	32.5	26.8
Relative to Index	10.5	26.3	26.5
Market cap (US$mn)			6,189
Estimated free float (%)			70.0
52-week range (HK$)			29.05/13.56
3-mth avg daily turnover (US$mn)			19.25
Stock borrowability			Hard
Major shareholders (%)			
ZHU Yicai			30.0

Source: Company, Nomura estimates

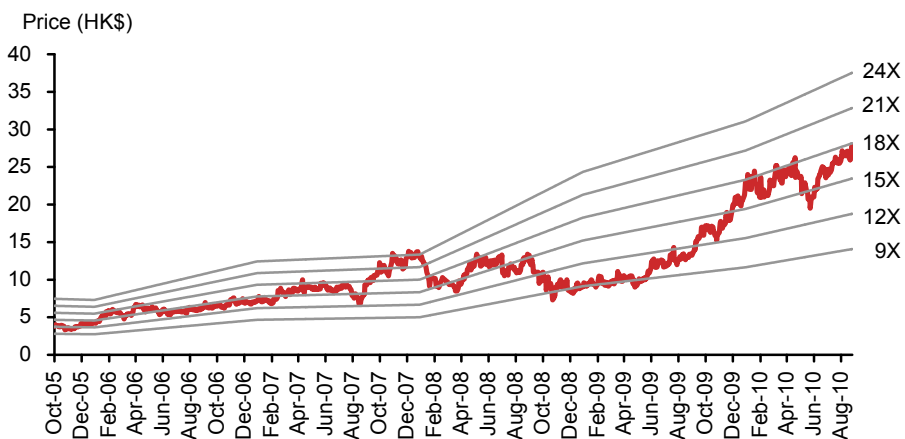## Exhibit 88. Yurun: free cashflow
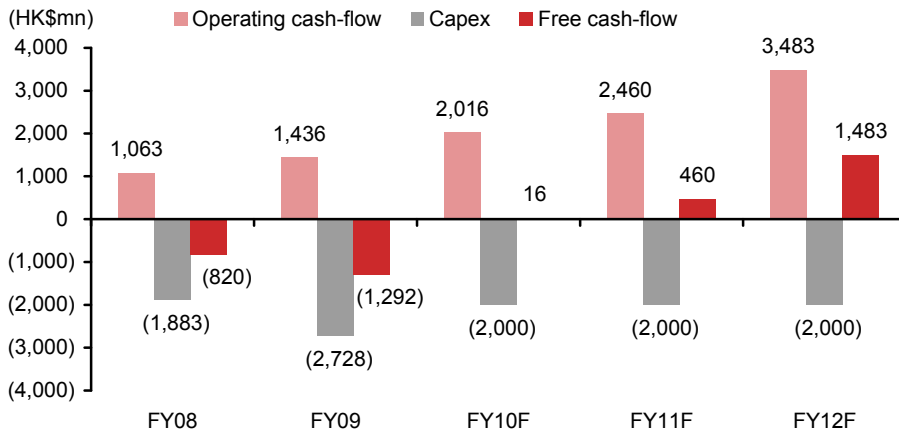
Source: Company data, Nomura estimates

Exhibit 89. Yurun's gross margin vs hog price
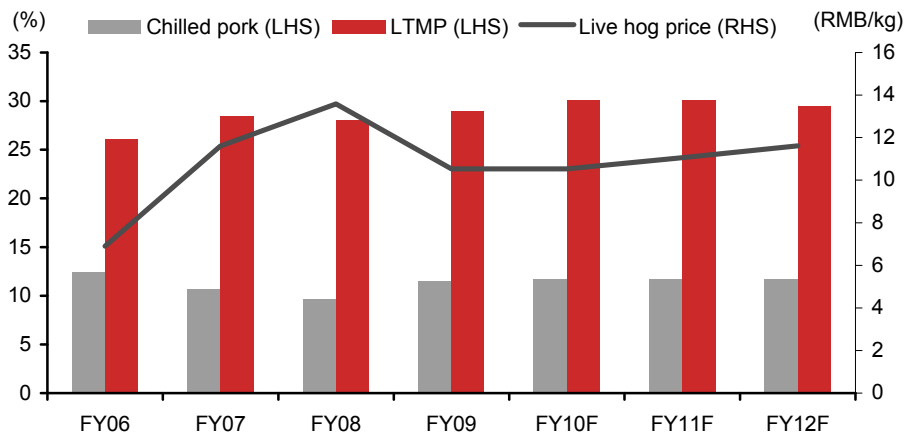
Source: Company data, Nomura estimates

Exhibit 90. Rolling 12-month forward P/E bands

Source: Bloomberg, IBES, Nomura research

Financial statements

Income statement (HK$mn)					
Year-end 31 Dec	FY08	FY09	FY10F	FY11F	FY12F
Revenue	13,024	13,870	19,833	28,182	37,904
Cost of goods sold	(11,334)	(11,710)	(16,697)	(23,811)	(32,165)
Gross profit	**1,690**	**2,161**	**3,136**	**4,371**	**5,738**
SG&A	(859)	(830)	(1,166)	(1,602)	(2,158)
Employee share expense					
Operating profit	**831**	**1,331**	**1,970**	**2,769**	**3,580**
EBITDA	**940**	**1,484**	**2,189**	**3,044**	**3,914**
Depreciation	(109)	(153)	(219)	(275)	(334)
Amortisation					
EBIT	**831**	**1,331**	**1,970**	**2,769**	**3,580**
Net interest expense	(31)	(64)	(29)	(3)	3
Associates & JCEs	(1)	(0)	-	-	-
Other income	151	505	595	675	733
Earnings before tax	**951**	**1,772**	**2,536**	**3,441**	**4,316**
Income tax	(101)	(143)	(302)	(433)	(540)
Net profit after tax	**850**	**1,629**	**2,234**	**3,008**	**3,777**
Minority interests	1	(3)	-	-	-
Other items					
Preferred dividends					
Normalised NPAT	**850**	**1,626**	**2,234**	**3,008**	**3,777**
Extraordinary items	288	119	103	109	109
Reported NPAT	**1,138**	**1,745**	**2,337**	**3,116**	**3,885**
Dividends	(291)	(502)	(584)	(779)	(971)
Transfer to reserves	**847**	**1,243**	**1,752**	**2,337**	**2,914**
Valuation and ratio analysis					
FD normalised P/E (x)	52.2	28.7	22.2	16.9	13.4
FD normalised P/E at price target (x)	61.8	34.0	26.3	19.9	15.9
Reported P/E (x)	38.7	26.4	21.2	16.3	13.0
Dividend yield (%)	0.7	1.0	1.2	1.5	1.9
Price/cashflow (x)	41.4	32.1	24.6	20.6	14.6
Price/book (x)	8.4	5.7	4.1	3.5	2.9
EV/EBITDA (x)	51.5	32.5	21.2	15.3	11.7
EV/EBIT (x)	58.3	36.2	23.6	16.8	12.8
Gross margin (%)	13.0	15.6	15.8	15.5	15.1
EBITDA margin (%)	7.2	10.7	11.0	10.8	10.3
EBIT margin (%)	6.4	9.6	9.9	9.8	9.4
Net margin (%)	8.7	12.6	11.8	11.1	10.3
Effective tax rate (%)	10.7	8.0	11.9	12.6	12.5
Dividend payout (%)	25.6	28.8	25.0	25.0	25.0
Capex to sales (%)	14.5	19.7	10.1	7.1	5.3
Capex to depreciation (x)	17.2	17.8	9.1	7.3	6.0
ROE (%)	24.3	25.7	22.7	23.2	24.2
ROA (pretax %)	15.2	16.4	17.9	20.3	22.0
Growth (%)					
Revenue	50.8	6.5	43.0	42.1	34.5
EBITDA	24.4	57.8	47.5	39.1	28.6
EBIT	22.1	60.2	48.0	40.6	29.3
Normalised EPS	7.3	82.5	27.6	31.8	25.6
Normalised FDEPS	6.7	81.8	29.4	31.8	25.6
Per share					
Reported EPS (HK$)	0.74	1.09	1.35	1.77	2.20
Norm EPS (HK$)	0.56	1.01	1.29	1.71	2.14
Fully diluted norm EPS (HK$)	0.55	1.00	1.29	1.71	2.14
Book value per share (HK$)	3.41	5.00	6.94	8.27	9.92
DPS (HK$)	0.19	0.30	0.33	0.44	0.55

Most of the other income is government subsidies

Source: Nomura estimates

Cashflow (HK$mn)

Year-end 31 Dec	FY08	FY09	FY10F	FY11F	FY12F
EBITDA	940	1,484	2,189	3,044	3,914
Change in working capital	110	(348)	(335)	(714)	(511)
Other operating cashflow	12	300	162	130	80
Cashflow from operations	**1,063**	**1,436**	**2,016**	**2,460**	**3,483**
Capital expenditure	(1,883)	(2,728)	(2,000)	(2,000)	(2,000)
Free cashflow	**(820)**	**(1,292)**	**16**	**460**	**1,483**
Reduction in investments	-	-	-	-	-
Net acquisitions	-	-	-	-	-
Reduction in other LT assets	(85)	(3)	-	-	-
Addition in other LT liabilities	57	76	-	-	-
Adjustments					
Cashflow after investing acts	**(848)**	**(1,219)**	**16**	**460**	**1,483**
Cash dividends	(291)	(374)	(502)	(584)	(779)
Equity issue	31	1,765	2,115	-	-
Debt issue	835	1,191	(1,000)	-	-
Convertible debt issue	-	-	-	-	-
Others	85	52	122	23	33
Cashflow from financial acts	**660**	**2,635**	**736**	**(561)**	**(746)**
Net cashflow	**(188)**	**1,416**	**751**	**(101)**	**737**
Beginning cash	1,996	1,808	3,224	3,975	3,874
Ending cash	1,808	3,224	3,975	3,874	4,611
Ending net debt	299	73	(1,678)	(1,577)	(2,313)

Source: Nomura estimates

> We expect positive FCF from FY11F onwards

Balance sheet (HK$mn)

As at 31 Dec	FY08	FY09	FY10F	FY11F	FY12F
Cash & equivalents	1,808	3,224	3,975	3,874	4,611
Marketable securities	-	-	-	-	-
Accounts receivable	445	576	884	1,190	1,600
Inventories	703	936	1,402	1,932	2,571
Other current assets	300	466	516	566	616
Total current assets	**3,256**	**5,201**	**6,777**	**7,562**	**9,397**
LT investments	-	-	-	-	-
Fixed assets	4,745	7,409	9,190	10,915	12,581
Goodwill	-	-	-	-	-
Other intangible assets	-	-	-	-	-
Other LT assets	321	324	324	324	324
Total assets	**8,321**	**12,935**	**16,292**	**18,802**	**22,303**
Short-term debt	1,096	3,109	2,109	2,109	2,109
Accounts payable	485	440	879	1,002	1,539
Other current liabilities	438	664	714	764	814
Total current liabilities	**2,018**	**4,213**	**3,702**	**3,875**	**4,462**
Long-term debt	1,011	189	189	189	189
Convertible debt	-	-	-	-	-
Other LT liabilities	57	133	133	133	133
Total liabilities	**3,086**	**4,535**	**4,024**	**4,197**	**4,784**
Minority interest	20	30	30	30	30
Preferred stock	-	-	-	-	-
Common stock	5,215	8,370	10,485	10,485	10,485
Retained earnings	-	-	1,752	4,090	7,004
Proposed dividends	-	-	-	-	-
Other equity and reserves	-	-	-	-	-
Total shareholders' equity	**5,215**	**8,370**	**12,237**	**14,574**	**17,488**
Total equity & liabilities	**8,321**	**12,935**	**16,292**	**18,802**	**22,303**

Liquidity (x)

	FY08	FY09	FY10F	FY11F	FY12F
Current ratio	1.61	1.23	1.83	1.95	2.11
Interest cover	27.2	20.7	67.2	902.8	na

Leverage

	FY08	FY09	FY10F	FY11F	FY12F
Net debt/EBITDA (x)	0.32	0.05	net cash	net cash	net cash
Net debt/equity (%)	5.7	0.9	net cash	net cash	net cash

Activity (days)

	FY08	FY09	FY10F	FY11F	FY12F
Days receivable	13.3	13.4	13.4	13.4	13.5
Days inventory	22.4	25.6	25.6	25.6	25.6
Days payable	13.2	14.4	14.4	14.4	14.5
Cash cycle	22.5	24.6	24.6	24.6	24.6

Source: Nomura estimates

United Phosphorus UNTP IN

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BUY

◉ Action

Rising food prices should lead to higher incomes for farmers. In this situation, we expect farmers would likely spend more on crop protection products to ensure greater productivity, thus benefiting UNTP. Valuation, at 10.1x FY12F EPS of INR18.5, looks inexpensive in an historical context. We value the stock at 12.25x FY12F EPS for a price target of INR227 and reaffirm our BUY call.

⇗ Catalysts

We believe acquisitions could be a strong trigger for the stock, as industry organic growth is limited and past acquisitions have proven successful for UNTP.

⚓ Anchor themes

We believe the crop protection industry is clearly moving towards genericisation and UNTP, being one of the leading generic players, is poised to gain market share in a mature industry, both organically and inorganically.

Closing price on 3 Sep	Rs186.3
Price target	**Rs227.0**
(set on 27 Jul 10)	
Upside/downside	21.8%
Difference from consensus	**0.9%**
FY11F net profit (Rsmn)	6,777
Difference from consensus	**-5.6%**

Source: Nomura

Nomura vs consensus

We believe the prospect of robust growth returning in FY11F, along with potential acquisitions, could result in the stock being re-rated earlier than consensus expects.

Harvesting growth, protecting profit

① Rising crop prices should benefit UNTP

We believe the anticipated food price surge is likely to increase incomes for farmers, while also encouraging them to plant more in order to take advantage of higher prices. Targeting the highest possible productivity, farmers likely will look to use larger amounts of crop protection products like agro-chemicals and hybrid seeds. While doing so, they will also want to ensure that costs remain in check and, hence, look to relatively low-priced, generic agro-chemicals made by companies like UNTP. Thus, we expect higher food prices to not only lead to growth in the crop protection product industry, but also enable generic players like UNTP to increase market share.

② Acquisitions to continue to act as trigger

UNTP has acquired 10 companies and 12 products in the past seven years, enabling it to maintain a healthy 37% CAGR in revenue over the past six years. We believe its track record of successfully integrating acquired businesses should help it in future acquisitions that it may be targeting in FY11F. Already, it has acquired a fungicide, Mancozeb, from DuPont for an estimated US$90-100mn; we estimate this product will boost UNTP's sales by 2.7% in FY11F. It has a cash war chest of some INR19bn and, with its net leverage at 0.16x, we think it could make an acquisition as large as US$650mn without its net debt/equity ratio exceeding 1:1. Our view is that an acquisition at reasonable valuations would be positive for the stock, since organic growth is limited in the industry.

③ Stabilising product prices to help value growth

According to management, on a q-q basis, prices and costs have stabilised. We believe that from 3Q FY11F onward, UNTP could experience growth in product pricing, which could help revenue growth meet the company's targeted 8-10% organic growth.

Key financials & valuations

31 Mar (Rsmn)	FY09	FY10	FY11F	FY12F
Revenue	49,317	54,603	62,811	72,233
Reported net profit	4,559	5,297	6,777	8,559
Normalised net profit	4,927	5,564	6,777	8,559
Normalised EPS (Rs)	11.21	12.66	14.65	18.50
Norm. EPS growth (%)	(37.7)	12.9	15.7	26.3
Norm. P/E (x)	16.6	14.7	12.7	10.1
EV/EBITDA (x)	10.3	8.8	7.3	6.3
Price/book (x)	3.1	2.4	2.2	1.9
Dividend yield (%)	0.8	1.1	1.9	3.2
ROE (%)	19.2	17.9	18.8	20.6
Net debt/equity (%)	56.6	16.0	19.0	15.7
Earnings revisions				
Previous norm. net profit		5,564	6,777	8,559
Change from previous (%)		-	-	-
Previous norm. EPS (Rs)		12.66	14.65	18.50

Source: Company, Nomura estimates

Share price relative to MSCI India
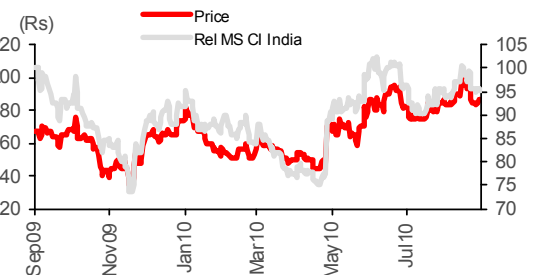
	1m	3m	6m
Absolute (Rs)	(0.1)	2.9	19.4
Absolute (US$)	(1.1)	3.0	17.4
Relative to Index	(0.3)	(3.0)	14.0
Market cap (US$mn)			1,758
Estimated free float (%)			74.0
52-week range (Rs)			199.0/135.0
3-mth avg daily turnover (US$mn)			7.79
Stock borrowability			Hard
Major shareholders (%)			
Shroff family			26.0

Source: Company, Nomura estimates

Valuation methodology. We value the company on FY12F earnings per share of INR18.5, based on a P/E of 12.25x, the stock's average two-year forward multiple for the past six years. This gives us a price target of INR227 per share.

Downside risks include: 1) a fall in crop prices and de-stocking of inventory, which may lead to lower demand for crop protection chemicals; 2) an increase in raw material prices, which could impact margins; 3) changes in approval regulations; 4) a fluctuation in forex rates; and 5) expensive future acquisitions.

Financial statements

Income statement (Rsmn)					
Year-end 31 Mar	FY08	FY09	FY10	FY11F	FY12F
Revenue	37,306	49,317	54,603	62,811	72,233
Cost of goods sold	(22,185)	(29,605)	(34,239)	(38,494)	(44,295)
Gross profit	15,121	19,712	20,364	24,317	27,938
SG&A	(5,571)	(7,396)	(7,502)	(8,464)	(9,693)
Employee share expense	(4,017)	(4,794)	(5,018)	(5,653)	(6,548)
Operating profit	5,534	7,522	7,844	10,200	11,697
EBITDA	7,056	9,449	9,991	12,319	14,093
Depreciation	(1,522)	(1,927)	(2,147)	(2,119)	(2,396)
Amortisation					
EBIT	5,534	7,522	7,844	10,200	11,697
Net interest expense	(1,688)	(2,919)	(1,938)	(3,356)	(2,546)
Associates & JCEs					
Other income	311	418	343	997	1,022
Earnings before tax	4,157	5,021	6,249	7,841	10,173
Income tax	(424)	(269)	(814)	(1,193)	(1,755)
Net profit after tax	3,733	4,752	5,436	6,649	8,418
Minority interests					
Other items	222	175	128	128	141
Preferred dividends					
Normalised NPAT	3,955	4,927	5,564	6,777	8,559
Extraordinary items	(1,144)	(368)	(267)	-	-
Reported NPAT	2,811	4,559	5,297	6,777	8,559
Dividends	(439)	(659)	(900)	(1,600)	(2,800)
Transfer to reserves	2,372	3,900	4,397	5,177	5,759
Valuation and ratio analysis					
FD normalised P/E (x)	10.3	16.6	14.7	12.7	10.1
FD normalised P/E at price target (x)	12.6	20.3	17.9	15.5	12.3
Reported P/E (x)	14.6	18.0	15.5	12.7	10.1
Dividend yield (%)	1.1	0.8	1.1	1.9	3.2
Price/cashflow (x)	5.7	na	6.3	12.8	11.0
Price/book (x)	1.8	3.1	2.4	2.2	1.9
EV/EBITDA (x)	13.1	10.3	8.8	7.3	6.3
EV/EBIT (x)	16.8	12.9	11.1	8.8	7.6
Gross margin (%)	40.5	40.0	37.3	38.7	38.7
EBITDA margin (%)	18.9	19.2	18.3	19.6	19.5
EBIT margin (%)	14.8	15.3	14.4	16.2	16.2
Net margin (%)	7.5	9.2	9.7	10.8	11.8
Effective tax rate (%)	10.2	5.4	13.0	15.2	17.3
Dividend payout (%)	15.6	14.5	17.0	23.6	32.7
Capex to sales (%)	7.1	6.9	3.4	5.8	4.9
Capex to depreciation (x)	1.7	1.8	0.9	1.7	1.5
ROE (%)	15.4	19.2	17.9	18.8	20.6
ROA (pretax %)	12.2	14.1	13.6	16.9	16.9
Growth (%)					
Revenue	52.3	32.2	10.7	15.0	15.0
EBITDA	24.4	33.9	5.7	23.3	14.4
EBIT	37.8	35.9	4.3	30.0	14.7
Normalised EPS	27.2	(37.7)	12.9	15.7	26.3
Normalised FDEPS	27.2	(37.7)	12.9	15.7	26.3
Per share					
Reported EPS (Rs)	12.8	10.4	12.1	14.6	18.5
Norm EPS (Rs)	18.0	11.2	12.7	14.6	18.5
Fully diluted norm EPS (Rs)	18.0	11.2	12.7	14.6	18.5
Book value per share (Rs)	101.9	60.8	77.9	85.3	97.7
DPS Rs) (	2.0	1.5	2.0	3.5	6.1

Source: Nomura estimates

> 15% net sales growth in FY11F and FY12F

Cashflow (Rsmn)

Year-end 31 Mar	FY08	FY09	FY10	FY11F	FY12F
EBITDA	7,056	9,449	9,991	12,319	14,093
Change in working capital	(2,101)	(9,213)	5,540	(1,809)	(2,899)
Other operating cashflow	2,278	(3,627)	(2,462)	(3,798)	(3,330)
Cashflow from operations	**7,233**	**(3,391)**	**13,069**	**6,712**	**7,864**
Capital expenditure	(2,636)	(3,396)	(1,862)	(3,625)	(3,539)
Free cashflow	**4,597**	**(6,787)**	**11,207**	**3,088**	**4,325**
Reduction in investments	(3,661)	3,238	(3,201)	(3,500)	(1,500)
Net acquisitions					
Reduction in other LT assets	(539)	(198)	138	-	-
Addition in other LT liabilities	372	(101)	(466)	86	383
Adjustments					
Cashflow after investing acts	**769**	**(3,848)**	**7,678**	**(326)**	**3,209**
Cash dividends	(439)	(659)	(900)	(1,600)	(2,800)
Equity issue	3,910	82	2,828	46	(0)
Debt issue	(3,910)	4,982	2,873	3,395	(2,293)
Convertible debt issue					
Others	11	36	59	(154)	-
Cashflow from financial acts	**(428)**	**4,441**	**4,861**	**1,687**	**(5,093)**
Net cashflow	**341**	**593**	**12,538**	**1,361**	**(1,884)**
Beginning cash	4,604	4,945	5,539	18,077	19,438
Ending cash	4,945	5,539	18,077	19,438	17,554
Ending net debt	10,737	15,126	5,461	7,495	7,086

Source: Nomura estimates

Balance sheet (Rsmn)

As at 31 Mar	FY08	FY09	FY10	FY11F	FY12F
Cash & equivalents	4,945	5,539	18,077	19,438	17,554
Marketable securities	4,639	592	1,742	3,742	4,742
Accounts receivable	8,541	11,406	12,147	14,539	16,720
Inventories	10,853	16,849	10,078	11,673	14,383
Other current assets	4,241	7,380	7,131	6,874	7,477
Total current assets	**33,219**	**41,765**	**49,175**	**56,267**	**60,875**
LT investments	2,931	3,741	5,791	7,291	7,791
Fixed assets	12,797	15,074	14,788	16,294	17,436
Goodwill					
Other intangible assets	3,196	3,420	3,602	3,977	4,169
Other LT assets	568	765	628	628	628
Total assets	**52,711**	**64,765**	**73,984**	**84,456**	**90,899**
Short-term debt					
Accounts payable	12,514	15,402	14,565	16,390	18,848
Other current liabilities	959	858	957	1,053	1,189
Total current liabilities	**13,473**	**16,260**	**15,521**	**17,443**	**20,037**
Long-term debt	15,683	20,665	23,538	26,933	24,640
Convertible debt					
Other LT liabilities	1,116	1,015	548	635	1,018
Total liabilities	**30,271**	**37,940**	**39,608**	**45,011**	**45,695**
Minority interest	60	95	154	-	-
Preferred stock	853	853	853	853	853
Common stock	439	879	879	925	925
Retained earnings	21,088	24,998	32,490	37,667	43,426
Proposed dividends					
Other equity and reserves					
Total shareholders' equity	**22,380**	**26,730**	**34,222**	**39,445**	**45,204**
Total equity & liabilities	**52,711**	**64,765**	**73,984**	**84,456**	**90,899**
Liquidity (x)					
Current ratio	2.47	2.57	3.17	3.23	3.04
Interest cover	3.3	2.6	4.0	3.0	4.6
Leverage					
Net debt/EBITDA (x)	1.52	1.60	0.55	0.61	0.50
Net debt/equity (%)	48.0	56.6	16.0	19.0	15.7
Activity (days)					
Days receivable	69.8	73.8	78.7	77.5	79.2
Days inventory	175.6	170.8	143.5	103.1	107.6
Days payable	206.4	172.1	159.7	146.8	145.6
Cash cycle	39.1	72.5	62.5	33.9	41.3

Source: Nomura estimates

Improvement in working capital in FY10 resulted in large free cashflow and reduction in leverage

Wilmar International WIL SP

CONSUMER RELATED/AGRI-RELATED | SINGAPORE

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Maintained

BUY

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◎ Action

Wilmar, although not growing fast in FY10F, remains a strong fundamental franchise, in our view, and a proxy play on the region's key fast-growing consumption economies. Given its upstream and mid-stream exposure, any surge in food demand that causes a spike in food inflation will likely benefit the company. New businesses, such as rice, flour, sugar and edible oils in India, should lead the next leg of earnings growth, which should support valuations, in our view. BUY.

∕ Catalysts

A surge in contributions from the rice/flour business and firm commodity prices/ volumes may prompt a positive surprise, sustaining a rolling re-rating, in our view.

⚓ Anchor themes

China will likely continue to drive Wilmar's growth, with it holding a significant share of China's oilseed and edible oil areas and, later on, the rice and flour industry. India, although a long-term story, should become an important market for Wilmar.

Closing price on 3 Sep	S$6.42
Price target	**S$8.24**
	(set on 2 Mar 10)
Upside/downside	28.3%
Difference from consensus	**7.5%**
FY10F net profit (US$mn)	1,866
Difference from consensus	**na**
Source: Nomura	

Nomura vs consensus

We are building in contributions from Wilmar's rice and flour business in China for the next two years; here we think we run ahead of consensus.

Demand boom and inflation help

① Near-term ex-growth story, on track for mid-long term

We believe Wilmar's near-term earnings growth is likely to be unexciting, as margins in both refining and crushing, when compared with those of FY09, are likely to be muted. Wilmar's new plantings have not been able to grow fast, and its market share in consumer pack volume will, at best, remain stable, in our view. However, we believe its medium- to long-term growth profile will remain solid, driven by investments in new businesses and new geographies.

② Proxy play on growing economies and food inflation

We believe Wilmar is one of the best ways to gain exposure to the fastest-growing economies in the region — China, India and Indonesia — levered to ride any inflection in consumption-driven growth in these countries. Moreover, it stands to benefit directly from any surge in food inflation owing to upstream palm exposure and the fact that contango markets normally help processing margins. Plus, it is further increasing upstream and midstream exposure in sugar and edible oils.

③ Proactively scouting for inorganic opportunities

In recent months, it has acquired interests in palm plantations, soy sauce manufacturing, tomato processing, sugar assets and oleochemicals. While risks remain on integration and management bandwidth, we think reasonable inorganic expansion seems to be the best possible use of its strong cash and healthy balance sheet.

④ Maintain BUY; capex should drive the earnings uptick

Wilmar continues its capex intensity (~US$3bn in FY10F) in plantation, rice, flour, sugar and edible oils in China, Indonesia and India. Along with potential returns from US$2bn capex spent over the past two years, we expect this to drive the next leg of earnings growth for Wilmar. Reaffirm BUY as valuation (13.8x FY11F P/E) looks attractive.

Key financials & valuations

31 Dec (US$mn)	FY08	FY09	FY10F	FY11F
Revenue	29,145	23,885	29,585	35,053
Reported net profit	1,531	1,882	1,866	2,195
Normalised net profit	1,315	1,714	1,866	2,195
Normalised EPS (US$)	0.21	0.27	0.29	0.34
Norm. EPS growth (%)	54.4	30.3	8.9	17.7
Norm. P/E (x)	22.8	17.7	16.3	13.8
EV/EBITDA (x)	14.2	13.1	11.1	10.0
Price/book (x)	3.1	2.7	2.4	2.1
Dividend yield (%)	1.1	1.1	1.3	1.5
ROE (%)	17.5	18.3	16.0	16.5
Net debt/equity (%)	24.9	40.7	36.4	39.3
Earnings revisions				
Previous norm. net profit		1,714	1,866	2,195
Change from previous (%)		-	-	-
Previous norm. EPS (US$)		0.27	0.29	0.34

Source: Company, Nomura estimates

Share price relative to MSCI Singapore
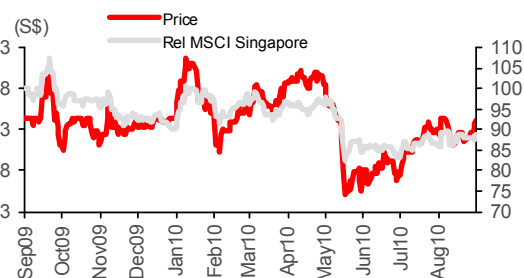
	1m	3m	6m
Absolute (S$)	2.1	13.0	(3.7)
Absolute (US$)	2.4	17.8	0.2
Relative to Index	2.8	5.8	(10.9)
Market cap (US$mn)			30,492
Estimated free float (%)			24.4
52-week range (S$)			7.17/5.50
3-mth avg daily turnover (US$mn)			40.05
Stock borrowability			Hard
Major shareholders (%)			
Kuok Group			31.0
Wilmar Holdings			29.3

Source: Company, Nomura estimates

Valuation methodology. We value Wilmar on a SOTP basis by ascribing the bracketed multiples to its FY11F earnings from plantation (15x), palm and laurics (16.5x), consumer pack (22x), oilseed processing (16.5x), and other business (15x). Our price target is S$8.24.

Downside risks. Shortages of raw materials (eg, palm oil, oilseed) could hurt trading volumes of Wilmar's merchandising and processing businesses. Reduced bargaining power attributable to falling demand could hurt profitability. Underlying growth in volumes and profitability could be constrained by the regulatory framework. Major fluctuations in raw material and product prices also represent a risk to profitability.

Financial statements

Income statement (US$mn)					
Year-end 31 Dec	**FY07**	**FY08**	**FY09**	**FY10F**	**FY11F**
Revenue	16,466	29,145	23,885	29,585	35,053
Cost of goods sold	(14,738)	(25,585)	(20,882)	(25,122)	(29,881)
Gross profit	**1,728**	**3,560**	**3,003**	**4,463**	**5,172**
SG&A	(794)	(1,628)	(711)	(1,767)	(2,072)
Employee share expense					
Operating profit	**933**	**1,932**	**2,292**	**2,696**	**3,100**
EBITDA	**1,067**	**2,140**	**2,544**	**3,013**	**3,455**
Depreciation	(134)	(208)	(252)	(318)	(355)
Amortisation					
EBIT	**933**	**1,932**	**2,292**	**2,696**	**3,100**
Net interest expense	(163)	(254)	(43)	(402)	(396)
Associates & JCEs	60	111	46	49	51
Other income					
Earnings before tax	**830**	**1,789**	**2,294**	**2,343**	**2,755**
Income tax	(155)	(232)	(324)	(398)	(468)
Net profit after tax	**675**	**1,557**	**1,970**	**1,945**	**2,286**
Minority interests	(95)	(26)	(88)	(79)	(91)
Other items		(216)	(168)		
Preferred dividends					
Normalised NPAT	**580**	**1,315**	**1,714**	**1,866**	**2,195**
Extraordinary items		216	168		
Reported NPAT	**580**	**1,531**	**1,882**	**1,866**	**2,195**
Dividends	(119)	(311)	(320)	(373)	(439)
Transfer to reserves	**462**	**1,220**	**1,563**	**1,493**	**1,756**

> Gains due to sale of shares in Wilmar China and gains on revaluation of biological assets

Valuation and ratio analysis					
FD normalised P/E (x)	34.7	22.8	17.7	16.3	13.8
FD normalised P/E at price target (x)	44.5	29.2	22.7	20.9	17.7
Reported P/E (x)	34.7	19.3	15.7	15.8	13.5
Dividend yield (%)	0.4	1.1	1.1	1.3	1.5
Price/cashflow (x)	na	9.1	na	15.9	42.5
Price/book (x)	3.8	3.1	2.7	2.4	2.1
EV/EBITDA (x)	29.9	14.2	13.1	11.1	10.0
EV/EBIT (x)	33.9	15.6	14.6	12.4	11.2
Gross margin (%)	10.5	12.2	12.6	15.1	14.8
EBITDA margin (%)	6.5	7.3	10.7	10.2	9.9
EBIT margin (%)	5.7	6.6	9.6	9.1	8.8
Net margin (%)	3.5	5.3	7.9	6.3	6.3
Effective tax rate (%)	18.6	13.0	14.1	17.0	17.0
Dividend payout (%)	20.4	20.3	17.0	20.0	20.0
Capex to sales (%)	3.3	3.5	3.9	4.1	2.7
Capex to depreciation (x)	4.1	4.9	3.7	3.8	2.7
ROE (%)	13.8	17.5	18.3	16.0	16.5
ROA (pretax %)	12.2	13.8	14.0	13.8	13.8

Growth (%)					
Revenue	210.6	77.0	(18.0)	23.9	18.5
EBITDA	526.0	100.6	18.9	18.5	14.7
EBIT	589.3	107.0	18.6	17.6	15.0
Normalised EPS	531.2	54.4	30.3	8.9	17.7
Normalised FDEPS	531.2	52.4	28.6	8.9	17.7

Per share					
Reported EPS (US$)	0.13	0.24	0.29	0.29	0.34
Norm EPS (US$)	0.13	0.21	0.27	0.29	0.34
Fully diluted norm EPS (US$)	0.13	0.20	0.26	0.28	0.33
Book value per share (US$)	1.23	1.50	1.71	1.95	2.22
DPS (US$)	0.02	0.05	0.05	0.06	0.07

Source: Nomura estimates

Cashflow (US$mn)

Year-end 31 Dec	FY07	FY08	FY09	FY10F	FY11F
EBITDA	1,067	2,140	2,544	3,013	3,455
Change in working capital	(3,558)	1,030	(2,586)	(755)	(2,292)
Other operating cashflow	1,466	62	(478)	(398)	(468)
Cashflow from operations	**(1,025)**	**3,231**	**(520)**	**1,860**	**695**
Capital expenditure	(544)	(1,012)	(932)	(1,220)	(958)
Free cashflow	**(1,570)**	**2,219**	**(1,452)**	**640**	**(263)**
Reduction in investments	(438)	(744)	18	-	-
Net acquisitions					
Reduction in other LT assets	(467)	349	(135)	-	-
Addition in other LT liabilities	255	26	98	-	-
Adjustments	664	84	(332)	(0)	-
Cashflow after investing acts	**(1,556)**	**1,935**	**(1,803)**	**640**	**(263)**
Cash dividends	(22)	(240)	(328)	(373)	(439)
Equity issue	-	-	8	-	-
Debt issue	2,103	(995)	4,296	500	-
Convertible debt issue					
Others	398	1,226	68	(343)	(345)
Cashflow from financial acts	**2,479**	**(9)**	**4,045**	**(216)**	**(785)**
Net cashflow	**924**	**1,926**	**2,242**	**424**	**(1,048)**
Beginning cash	44	968	2,893	5,135	5,559
Ending cash	968	2,893	5,135	5,559	4,511
Ending net debt	4,060	2,390	4,445	4,521	5,569

Source: Nomura estimates

Balance sheet (US$mn)

As at 31 Dec	FY07	FY08	FY09	FY10F	FY11F
Cash & equivalents	968	2,893	5,135	5,559	4,511
Marketable securities					
Accounts receivable	1,501	2,077	3,174	4,085	5,112
Inventories	3,614	2,468	3,940	5,196	6,424
Other current assets	1,029	855	622	622	622
Total current assets	**7,111**	**8,293**	**12,871**	**15,462**	**16,670**
LT investments	458	1,202	1,184	1,184	1,184
Fixed assets	3,497	4,273	5,073	5,966	6,569
Goodwill	3,933	3,942	4,028	4,028	4,028
Other intangible assets					
Other LT assets	508	158	293	293	293
Total assets	**15,507**	**17,869**	**23,449**	**26,933**	**28,744**
Short-term debt	4,209	3,677	8,374	8,874	8,874
Accounts payable	1,002	1,840	1,824	3,237	3,201
Other current liabilities	958	405	170	170	170
Total current liabilities	**6,169**	**5,923**	**10,369**	**12,282**	**12,245**
Long-term debt	276	1,056	1,206	1,206	1,206
Convertible debt	542	550	-	-	-
Other LT liabilities	338	364	463	463	463
Total liabilities	**7,326**	**7,894**	**12,037**	**13,950**	**13,914**
Minority interest	336	369	481	559	650
Preferred stock					
Common stock	8,403	8,403	8,414	8,414	8,414
Retained earnings	1,096	2,322	3,822	5,314	7,071
Proposed dividends					
Other equity and reserves	(1,653)	(1,118)	(1,305)	(1,305)	(1,305)
Total shareholders' equity	**7,845**	**9,606**	**10,931**	**12,424**	**14,180**
Total equity & liabilities	**15,507**	**17,869**	**23,449**	**26,933**	**28,744**
Liquidity (x)					
Current ratio	1.15	1.40	1.24	1.26	1.36
Interest cover	5.7	7.6	52.8	6.7	7.8
Leverage					
Net debt/EBITDA (x)	3.81	1.12	1.75	1.50	1.61
Net debt/equity (%)	51.8	24.9	40.7	36.4	39.3
Activity (days)					
Days receivable	22.8	22.5	40.1	44.8	47.9
Days inventory	49.3	43.5	56.0	66.4	71.0
Days payable	16.4	20.3	32.0	36.8	39.3
Cash cycle	55.8	45.6	64.1	74.4	79.5

Source: Nomura estimates

Gearing at healthy level

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Appendices

Appendix 1: World price of key products and projections by OECD-FAO

		Price					CAGR (% y-o-y)			
		2000	**2005**	**2010**	**2015**	**2019**	**2000-05**	**2005-10**	**2010-15**	**2015-19**
CEREALS	Wheat	126.6	168.2	218.5	227.4	225.4	5.8	5.4	0.8	-0.2
	Coarse grains	88.9	105.8	185.5	200.7	187.2	3.5	11.9	1.6	-1.7
	Rice	184.2	291.0	452.9	426.2	422.5	9.6	9.2	-1.2	-0.2
OILSEEDS	Oilseeds	202.9	269.0	409.9	416.6	418.8	5.8	8.8	0.3	0.1
	Protein meals	176.7	197.1	308.0	287.2	287.9	2.2	9.3	-1.4	0.1
	Vegetable oils	331.1	556.3	875.2	992.1	1042.7	10.9	9.5	2.5	1.3
MEATS	Beef and veal	2476.6	3103.5	3143.1	3674.6	3561.9	4.6	0.3	3.2	-0.8
	Pig meat	1368.7	1532.5	1364.0	1694.9	1681.0	2.3	-2.3	4.4	-0.2
	Poultry meat	941.8	1252.3	1548.7	1682.4	1638.4	5.9	4.3	1.7	-0.7
	Sheep meat	1476.0	2720.2	3467.5	3460.7	3673.7	13.0	5.0	0.0	1.5
DAIRY	Butter	1228.8	2129.8	3042.6	2741.6	2958.3	11.6	7.4	-2.1	1.9
	Cheese	1828.8	2838.5	3716.4	3337.8	3640.7	9.2	5.5	-2.1	2.2
	Skim milk powder	1873.3	2224.5	2530.4	2653.2	3000.1	3.5	2.6	1.0	3.1
	Whole milk powder	1818.2	2262.0	2808.0	2763.1	3042.4	4.5	4.4	-0.3	2.4
SUGAR	Raw sugar	216.1	348.0	397.8	296.3	371.7	10.0	2.7	-5.7	5.8
	White sugar	250.3	404.5	448.4	360.0	439.2	10.1	2.1	-4.3	5.1
BIOFUEL	Ethanol	24.1	34.9	47.4	51.1	54.4	7.7	6.3	1.5	1.5
	Biodiesel	82.2	86.7	117.7	140.2	144.3	1.1	6.3	3.6	0.7

Note: All prices are in USD/ton except Biofuel which is priced in USD/hectolitre.
Source: OECD-FAO Agriculture Statistics and Nomura Global Economics.

Appendix 2: World per capita consumption (kg) of key products and projections by OECD-FAO

		2000	**2005**	**2010**	**2015**	**2019**
CEREALS	Wheat	68.1	67.6	67.5	67.8	67.8
	Coarse grains	27.2	28.0	29.3	29.9	30.4
	Rice	58.5	57.1	58.1	58.8	59.2
OILSEEDS	Vegetable oils	13.2	16.0	17.0	18.0	19.1
MEATS	Beef and veal	9.7	9.4	9.3	9.4	9.7
	Pig meat	14.5	15.0	15.6	16.3	16.6
	Poultry meat	11.3	12.7	13.6	14.6	15.3
	Sheep meat	1.8	1.8	1.8	1.9	2.0
DAIRY	Butter	1.2	1.3	1.5	1.5	1.6
	Cheese	2.6	2.8	2.9	3.0	3.0
	Skim milk powder	0.5	0.5	0.4	0.4	0.4
	Whole milk powder	0.5	0.6	0.6	0.7	0.7
SUGAR	Sugar (in raw sugar equivalent)	21.5	22.5	24.2	25.1	26.1

Source: OECD-FAO Agriculture Statistics and Nomura Global Economics.

Appendix 3: Top 10 producers of key food products

	Wheat (2009)			Rice (2009)			Lentils (2009)	
Rank	Country	Production (mn metric tonnes)	Rank	Country	Production (mn metric tonnes)	Rank	Country	Production ('000 mt)
1	China	115.0	1	China	197.3	1	Canada	1510.2
2	India	80.7	2	India	131.3	2	US	265.8
3	Russia	61.7	3	Indonesia	64.4	3	Nepal	147.7
4	US	60.3	4	Bangladesh	45.1	4	Australia	143.0
5	France	38.3	5	Vietnam	38.9	5	China	130.0
6	Canada	26.5	6	Thailand	31.5	6	Syria	102.5
7	Germany	25.2	7	Philippines	16.3	7	Ethiopia	90.5
8	Pakistan	24.0	8	Brazil	12.6	8	Iran	84.0
9	Australia	21.7	9	Japan	10.6	9	Pakistan	14.4
10	Ukraine	20.9	10	Pakistan	10.3	10	Spain	12.6

	Oilseed (2009)			Maize (2009)			Sugar (2009)	
Rank	Country	Production ('000 mt)	Rank	Country	Production (mn metric tonnes)	Rank	Country	Production (mn metric tonnes)
1	China	1020.0	1	US	333.0	1	Brazil	689.9
2	Ethiopia	190.8	2	China	163.1	2	India	285.0
3	Nepal	135.5	3	Brazil	51.2	3	China	113.7
4	India	111.0	4	Mexico	20.2	4	Thailand	66.8
5	South Korea	28.3	5	Indonesia	17.6	5	Pakistan	50.0
6	Kazakhstan	18.3	6	India	17.3	6	Colombia	38.5
7	Central African Republic	15.0	7	France	15.3	7	Australia	31.5
7	Azerbaijan	15.0	8	Argentina	13.1	8	Argentina	30.0
7	France	15.0	9	South Africa	12.1	9	US	27.5
7	Poland	15.0	10	Ukraine	10.5	10	Indonesia	26.5

	Meat (2008)			Dairy (2008)			Edible Oils (2008)	
Rank	Country	Production (mn tonnes)	Rank	Country	Production ('000 tonnes)	Rank	Country	Production (mn tonnes)
1	China	74.5	1	US	7528	1	Indonesia	20.2
2	US	43.2	2	India	3975	2	Malaysia	18.0
3	Brazil	22.8	3	Germany	3140	3	China	15.9
4	Germany	7.7	4	France	2508	4	US	11.5
5	India	6.8	5	Italy	1355	5	Argentina	8.7
6	Russia	6.1	6	Netherlands	1183	6	India	7.4
7	Mexico	5.6	7	Russia	1116	7	Brazil	7.0
8	Spain	5.6	8	New Zealand	984	8	Germany	3.9
9	France	5.5	9	Poland	953	9	Nigeria	2.7
10	Canada	4.5	10	UK	747	10	Russia	2.5

Source: FAO and Nomura Global Economics.

Appendix 4: Net trade in food (2003-05)
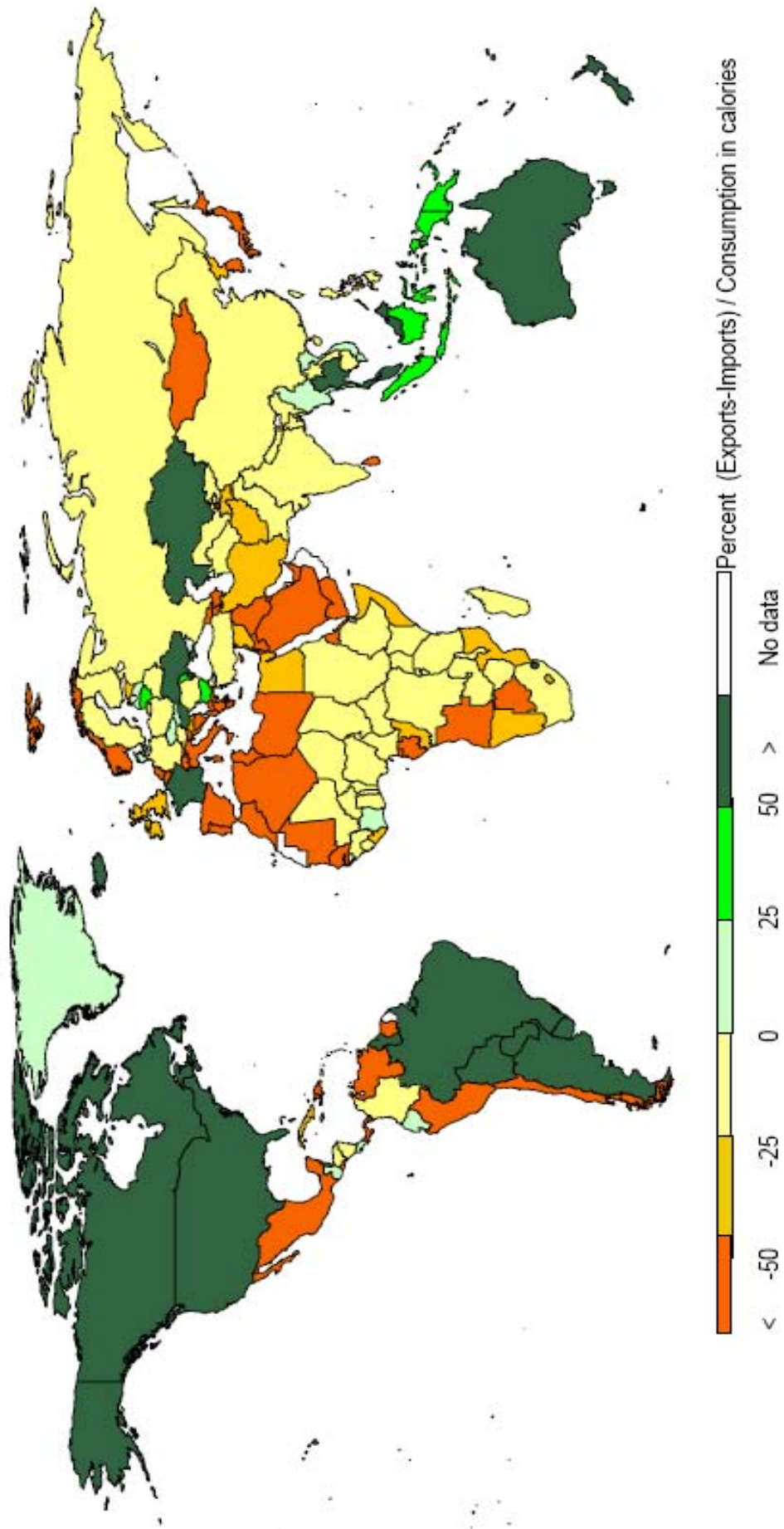
Source: FAO and Nomura Global Economics

Appendix 5: Highest value agricultural production by commodity group (2007)
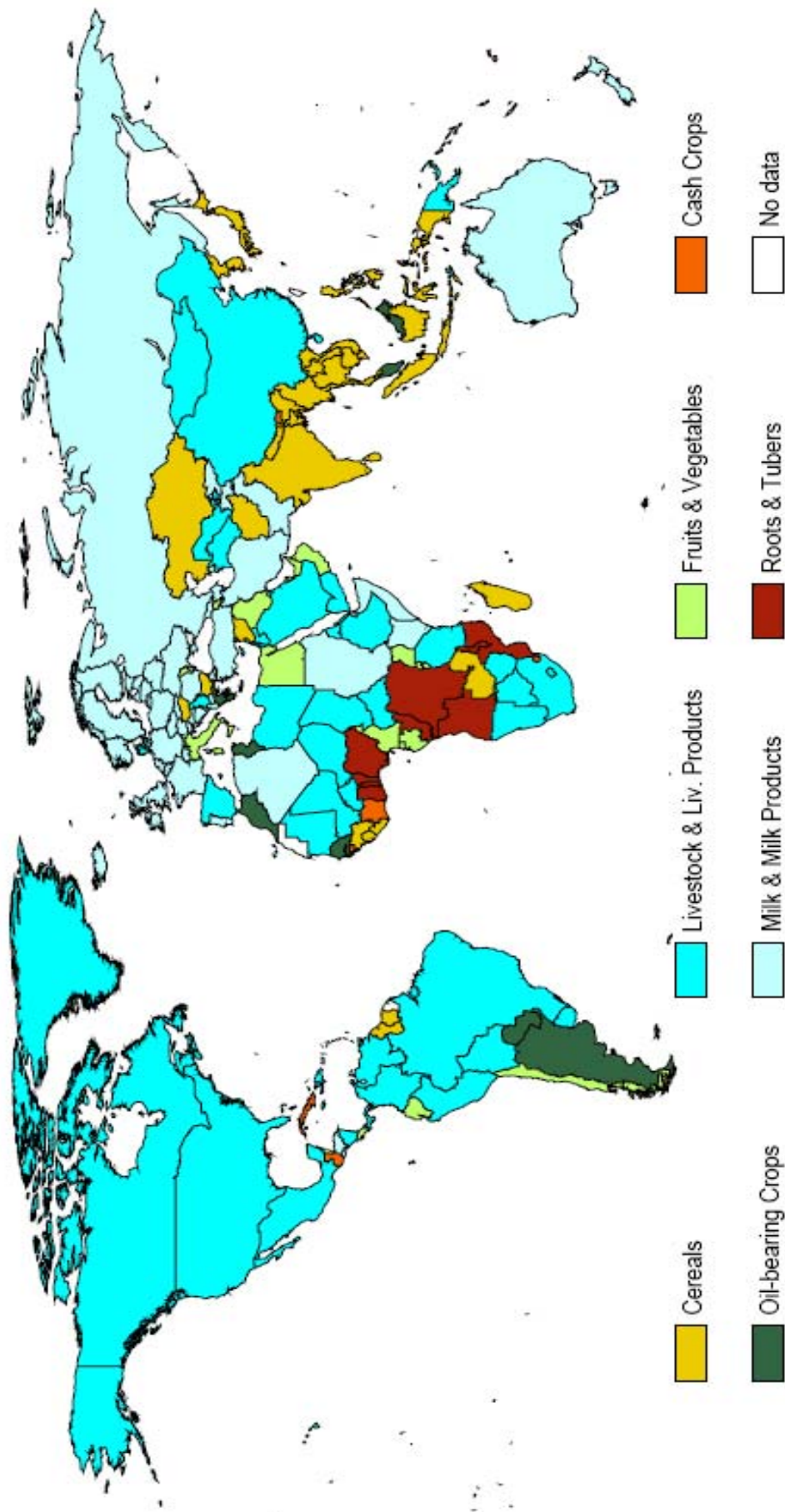
Source: FAO and Nomura Global Economics

Appendix 6: Share of rural population in total population (2007)
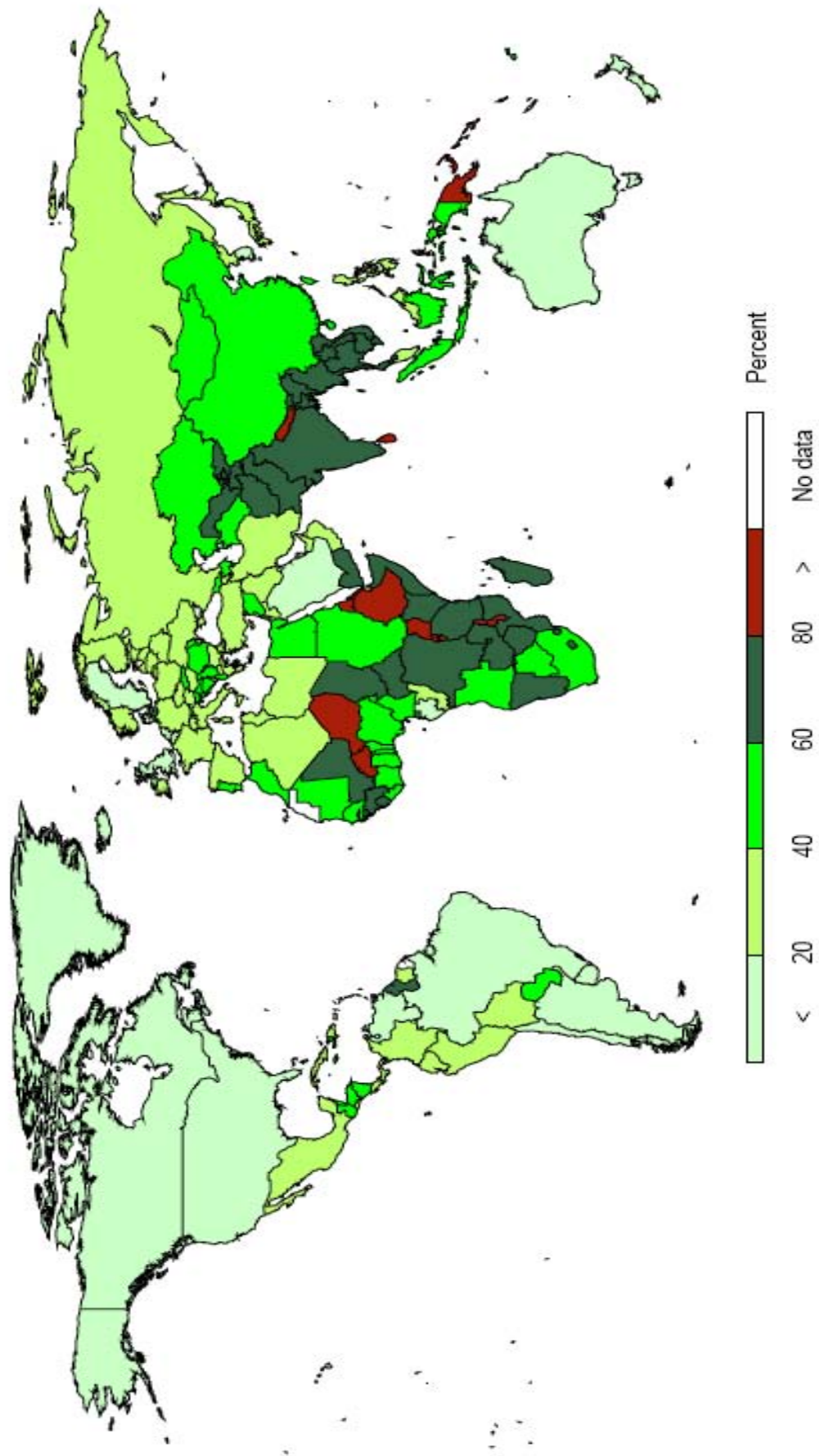
Source: FAO and Nomura Global Economics

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China Yurun Food	1068 HK	29.05 HKD	02 Sep 2010	Buy	
United Phosphorus	UNTP IN	186.95 INR	02 Sep 2010	Buy	
Wilmar International	WIL SP	6.37 SGD	02 Sep 2010	Buy	4

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China Agri-Industries	Reduce	14 Jul 2010
China Yurun Food	Neutral	17 Nov 2008
United Phosphorus	Not Rated	16 Jul 2009
Wilmar International	Strong Buy	29 Oct 2008

Three-year stock price and rating history
Not Available for China Agri-Industries
Not Available for China Yurun Food
Not Available for United Phosphorus
Not Available for Wilmar International

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