CENTER ON INTERNATIONAL COOPERATION

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Rising food prices: international drivers and implications

Overview / key themes

- **Food prices are going up**. Average food prices went up by 3% in G7 economies between July 2006 and July 2007, and by 10.5% in developing countries; over the same period, corn up 60% and wheat around 50% on US market.
- **Demand growth is accelerating**. Historically demand growth averaged around 1.5 %/yr; now 2.0%, and Goldman Sachs estimate 2.6% within a decade. World Bank estimates food production will have to rise nearly 50%, and meat by 85%, from 2000 to 2030. World food consumption has been greater than supply for past five years, say International Food Policy Research Institute.
- **The relationship between energy and agriculture is changing**. Since food can be used for fuel, the potential for an arbitrage relationship opens up, implying greater linkage between prices for both.
- **From yield expansion to acreage expansion**. Historic demand growth has been met through increasing crop output per unit of land, but commodities analysts say amount of land cultivated will need to expand to meet rising demand. Strong potential for competition between land uses: food, feed, fibre, fuel (and increasingly, carbon sequestration?)
- **Rising food prices are one of a suite of 'scarcity issues'**. Strong interlinkages and overlaps between climate change, energy security, water depletion, fisheries depletion, deforestation and other issues – never more so than in the case of agriculture and food (see appended table).
- **An increasingly central issue for development and state fragility**. While recent development discourse has concentrated on aid, trade and debt relief (and latterly governance too), scarcity issues – and above all climate, energy and food – and how to build **resilience** to them, are likely to emerge as increasingly central.
- **Serious lack of multilateral capacity**. Recent UN reform efforts have highlighted problems of fragmentation, 'silo' organisations and poor coordination. Multilateral coverage of the global food system one of the most acute examples – yet barely addressed by the recent UN High Level Panel on System Coherence.
- **Massive uncertainties involved** – e.g. on climate change, energy security, technology development, economic outlook and Black Swan issues where link to food security will only become clear in hindsight – means that policymakers can't rely on ability to prevent all shocks and turbulence. **So resilience needs to become a central policy concept** for all relevant players – including governments, donors, companies, communities and individuals.

Why are food prices rising? – drivers and issue linkages

- In the short term, the drivers most often cited are demand for crops for biofuels; rising demand from emerging economies, especially China and India; rising input costs (especially energy); and perturbations such as poor harvests resulting from extreme weather or depleted grain stocks. Analysts disagree over respective weight attached to each, but tend to agree on this list of drivers.
- In the longer term, other drivers may become more significant (though n.b. high uncertainty attached to each): climate change, oil depletion, water scarcity, change in subsidies and trade policy.

Energy: Biofuels

- US currently spends $7 billion a year supporting ethanol, a price of around $500 per tonne of CO2 abated – well over ten times as expensive as carbon permits in the EU emissions trading scheme. Ethanol consumes 20% of US corn crop (likely 32% by 2016). Current 51c / gallon subsidy is equivalent to $20 / barrel – so ethanol competitive as long as oil price > $60 barrel.
- Demand for crops for biofuels may abate as second generation biofuels (e.g. cellulose) get to market – but ethanol from cellulose currently 2 – 3 times as expensive as using other crops, so not a near term solution. So if countries deliver their stated targets on biofuels (e.g. 10% of EU transport fuel by 2020, US Energy Bill proposes 36 billion gallon renewable fuel target by 2022), may cause serious repercussions in market.
- Some analysts argue that importance of biofuels in increasing food prices is overstated: e.g. 2006 grain supply shortfall in North America, Australia, Europe was 4 x greater than increase in cereal use due to ethanol.

Economy: China and India demand

- Food demand in emerging economies rising sharply due to burgeoning middle classes. Increased demand for meat and dairy products (and hence grain as feedstock – meat and dairy products highly inefficient in terms of grain and water use) is especially pronounced.
- While some commentators speculate that rising world population (6.5 billion now, projected to be 9.2 billion by 2050 by UN) is a main driver, most analysts agree that rising per capita consumption in rich and emerging economies is much more significant
- Key variable: outlook for emerging economy growth rates (currently around 10% in China and 8% in India). Some analysts (e.g. Minxin Pei at Carnegie) argue that drivers within China call sustainability of growth into question; others (e.g. Nouriel Roubini at Stern School, NYU) argue that emerging economies are not immune to current credit crunch. Either way, hard landing for emerging economies would have a strong impact on demand for food (and other commodities).

Energy: Input Costs

- Three main sets of input costs for food: fuel, land, seeds & fertiliser – all currently rising, but importance of rising energy costs especially salient.
- Fuel important not only for cultivation, but also processing and freight. Freight transport costs have doubled over past year; shipping costs now ten times their 1998 level.
- Bringing new land into cultivation also expensive (c.f. parallel with oil markets, and large investment price tag for new exploration and production). Much new land would be in remote parts of the world, with poor infrastructure.
- Fertiliser costs also rising sharply, and also linked to energy: e.g. nitrogen fertiliser (derived from natural gas) now three and a half times its 1999 level.

Environment / Economy: Short term perturbations

- UBS argue that short term weather perturbations have been more significant factor in food prices over last 12 months than generally acknowledged. Poor crops in many key exporters incl. Australia, Canada.
- Stocks also smaller than historical levels. World consumption of food has outstripped supply for past five years, eroding stock levels (now at lowest level, as proportion of production, ever recorded); but some stocks (notably US and China) now eroded. C.f. parallel with oil markets.

Environment: Climate Change

- Effects of climate change likely to be most pronounced in long term. Rain dependent agriculture (=95% of African agriculture) may be halved by 2020; tropical harvests likely to fall; adverse impacts likely in temperate regions. This *may* be offset by better growing conditions in historically colder regions.
- IPCC Fourth Assessment Report concludes, though, that "modelling studies suggest that increasing frequency of crop loss due to extreme events, such as droughts and heavy precipitation, may overcome positive effects of moderate temperature increase", that "climate change increases the number of people at risk of hunger", and that "climate change alone is estimated to increase the number of undernourished people to between 40 million and 170 million".
- Current serious lack of country (or even region) specific data about likely effect of climate change on agriculture. Sept 07 study by William Cline of Center for Global Development concluded that developing countries would suffer average 10-25% decline in agricultural productivity by 2080s, assuming business as usual emissions, with some countries much greater (e.g. India 30-40%).

Environment: Water scarcity

- Global demand has tripled in last 50 years: 500m people in countries chronically short of water, likely to be 4 billion by 2050. 70 per cent of all water used by humans goes into food production. 1 kg wheat takes 1,300l water; 1 kg beef takes 15,000l water.
- 97.5% of water is salt water; of remainder, two thirds in glaciers, ice, snow, permafrost. Only 0.4% of global fresh water is available at surface as rivers, lakes, soil, biomass. Vast majority is underground; *only* source of drinking water for one quarter of world population, including many large cities. Countries in which aquifer withdrawal > rate of recharge incl: US, Libya, Egypt, Israel, Saudi Arabia, Pakistan, India, China.
- International Water Management Institute: "Many of the most populous countries of the world have literally been having a free ride over the past two or three decades by depleting their groundwater resources. The penalty for mismanagement of this valuable resource is now coming due and it is no exaggeration to say that the results could be catastrophic for these countries and, given their importance, for the world as a whole."

Economy: Subsidies / trade policy

- Some commodity analysts apportion part of blame for recent price rises to US and EU agriculture subsidies, which have made agriculture unprofitable for various other countries. E.g. Goldman Sachs: "The US and Europe were exporting agricultural deflation; now they're exporting agricultural inflation". (C.f. parallel with energy market, where low return on capital has led to underinvestment in energy market infrastructure.)
- Outlook on trade policy in future – incl. prospects for Doha round (currently on life support) and for elimination of subsidies in US and EU – hence a major variable in determining longer term food price outlook.

Implications of a long term higher food prices scenario: 10 areas for research

1. Who wins and loses from higher food prices?

- Potential countries to win from higher food prices could include the US, Canada, Australia, Brazil, Argentina, Namibia (performance of latter two described as "staggering" by OECD / FAO), India, South Africa, Swaziland. US net farm income this year $87 billion, 50 per cent higher than average of last ten years.
- Major food importers will lose out: includes Japan, Mexico, Saudi Arabia, Bangladesh, Nepal, Benin, Niger. Food import bill for developing countries this year 10% higher than last year.
- Some speculation about whether higher food prices will mitigate gap between (higher) urban and (lower) rural incomes in developing countries. World Bank: 3 billion people live in rural areas in developing countries, including three quarters of world's poorest people. The Economist: "So in principle the poor overall should gain from higher farm incomes. In practice many will not. There are large numbers of people who lose more from higher food bills than they gain from higher farm incomes. Exactly how many varies widely from place to place."

2. Food prices an increasingly central factor in development?

- UN Food and Agriculture Organisation estimates that food import basket for least developed countries (LDCs) will cost 90 per cent in 2007 than in 2000. Food usually 10-20% of consumer spend in developed countries, but up to 65% in developing countries. Important to distinguish between situation of [a] poor consumers in low income countries (LICs) and [b] poor consumers in middle income countries (MICs) with growing middle classes (e.g. Brazil), or LICs that are rapidly approaching MIC status (China, India) – where developed and least developed standards of living coexist.
- Many aid donors very unclear on their role in MICs that have long poverty 'tails' but also – at least in theory – the endogenous *capacity* (even if not political will) to tackle poverty. Barclays Capital: "cereal prices… can be even more regressive than energy in terms of national income distribution, as well as raising questions on international equity and income distribution". Scarcity issues – incl. especially food prices – will increasingly become core business for donors, preoccupying not only rural development specialists but also economists and governance advisers, as scarcity management becomes a core macroeconomic issue. Donors' anti-corruption agendas will need to pay increasing attention to access to renewable resources and natural assets (e.g. grazing land, water, forestry). DFID and World Bank have expertise in this area, but needs to become a higher political priority in both agencies.
- *Resilience* will need to become a central theme across an extremely diverse range of development programs. Some work already underway in this area (e.g. resilience to conflict and climate change), which – encouragingly – stresses that resilience to one kind of shock helps with other kinds too. But risk of long term higher food prices – or short term price spikes – so far largely absent from these efforts. Some donors (incl. DFID) innovating in area of social safety nets, which are relevant – but risk that these could become swamped by rate of change in some scenarios. More attention to *regional* dimensions likely to be an important element of promoting resilience.

3. Increasing stress on humanitarian aid system?

- World Food Programme says rising food prices "already having an impact" on humanitarian aid: "there is a realisation we face a new level of challenge". WFP currently feeds 90 million people annually; this could rise substantially if current pace of food price rises is sustained.
- IFPRI stresses need to move from an emergency system to an insurance system for humanitarian aid. UK has been at the forefront of efforts to promote this reform agenda in multilateral system (especially UN Central Emergency Response Fund), but actual progress so far limited (while CERF likely to meet 2008 target of $500 million, 2007 humanitarian requirements for specific

crises came to $4 billion; the older and more reactive Consolidated Appeals Process remains the window used for the bulk of funds – even this only 90% funded for food aid in 2006, and much less for other types of humanitarian aid).

- Higher food prices are raising intensity of debate about best form of food aid. Currently c. half donations to WFP are in cash (often tied to donor country exports), and c. half are in kind. (Much NGO opposition has been targeted at the latter – but important to note that donations in kind can in some circumstances be more appropriate: e.g. if high food price inflation on the ground, or lack of infrastructure means high local procurement costs).

4. A potential driver of state fragility and conflict?

- Quality of analysis of links between conflict and climate change is improving (e.g. recent work by International Alert which found 46 countries, home to 2.7 billion people, where "the effects of climate change interacting with economic, social and political problems will create a high risk of violent conflict" – plus another 56 countries with 1.2 billion inhabitants where "weak institutions of government … are likely to struggle with the additional strain posed by climate change.)
- Integrating food security risk into these analytical frameworks needs to be the next step. High food prices have already caused unrest and/or riots in last 12 months in e.g. Mexico, Yemen, Burkina Faso, and protests in Italy, France. FAO head Jacques Diouf: "If prices continue to rise, I would not be surprised if we began to see food riots".
- Particular areas for investment: ensuring conflict early warning systems take adequate account of perturbations in international food markets, and integrating food security into peacebuilding (and vice versa). Plus as noted in 'development', above, promoting resilience needs to become a key strand of development programming. This already happening at the most acute / short term end of the risk spectrum (e.g. disaster risk reduction), but less evolved on 'slower-burning' crises.

5. Virtual water trade to become increasingly important and/or contentious?

- While water scarcity is normally an issue limited to specific local or regional contexts by river systems, aquifer access etc., virtual water can translate the issue to the global context. Virtual water = "the amount of water that is embedded in food or other products needed for its production" – e.g. 1,300 litres of water needed for 1 kg wheat; so when traded, 1 kg wheat embodies 1,300l of virtual water. Hence a water-scarce country can import products that are water-intensive to grow / manufacture, rather than producing them domestically.
- Current net *exporters* of virtual water include US, Canada, Thailand, Argentina, India, Vietnam, France, Brazil. Current net *importers* of virtual water include Sri Lanka, Japan, Netherlands, South Korea, China, Spain, Egypt, Germany, Italy.
- Virtual water has a geopolitical dimension in that it induces dependencies between countries. World Water Council: "it can [therefore] be regarded either as a stimulant for co-operation and peace or a reason for potential conflict". As with food security more generally, this factor tends not to be routinely well integrated into conflict risk assessment.

6. New dimension in US-China relationship?

- Complex interdependence relationship between US and China (trade deficit, dollar holdings etc.) already well documented – but less often noted is potential for food prices to become a new element of the equation.
- China has become net importer of grain since 2004: World Bank - "although China and India are relatively self-sufficient on food, some economists doubt that this can continue as incomes rise and [think] that they will need to rely much more on imports". IFPRI head Joachim von Braun: "Over the next 12 to 24 months [as national grain stocks run down] we are in a fairly risky situation. Large consuming nations, particularly China, will feel pressed to enter international markets to bid up prices to unusual levels."
- Some commentators, e.g. Lester Brown of Earth Policy Institute (whose forecasts about food prices, made several years ago, have so far proved correct), predict that long term scarcity

drivers (e.g. climate change) will mean that as with energy supplies, Chinese import needs will become an increasingly important security issue. In particular, China *could* find itself in position of dependence on US, world's biggest agricultural exporter.

7. A driver for improving coherence in multilateral system?

- Recent UN reform efforts, especially High Level Panels on (a) threats, challenges and change and (b) system-wide coherence in environment, development and humanitarian aid have focused heavily on need to overcome 'silo' problems in organisational configuration and move to more integrated surveillance, decision-making, implementation and evaluation – but neither addressed global food security in any significant way.
- Yet problems of fragmentation arguably more acute in food and energy than *any* other cluster of policy issues, including climate change or water.
    - Surveillance: FAO outlooks of high quality, but increasing links between food, energy and other issues will increasingly call for much more *integration* of analysis, which multilateral agencies not well configured to provide
    - Decision-making: FAO summits have no political clout and poor track record of implementing decisions. But like other political economy issues, food has no obvious high level decision-making forum, as falls down crack between dysfunctional UN ECOSOC system and less legitimate IFI forums.
    - Implementation: alphabet soup of different agencies, including Rome-based food agencies (FAO, WFP, IFAD), aid donors (incl. UN funds, programs, specialised agencies, IFIs, regional development banks, bilaterals, NGOs, vertical funds), water system (34 UN agencies on water alone), energy system (IEA, UN Energy), climate change system (UNFCCC, UNEP, UNDP, DESA, World Bank), trade system (WTO, regional agreements, bilateral agreements), etc.
- Surveillance may be a good place to begin catalysing closer working, develop relationships between officials from different agencies: e.g. UN Energy work on biofuels widely applauded as high quality integrated analysis, FAO and OECD have produced several well-received Outlook reports together.
- Pressure for a global 'buffer stock' of food (or co-ordinated system of national stocks) may grow, but expensive and raises difficult questions of burden-sharing.

8. Impact of measures to protect domestic consumers?

- Many countries already introducing measures to control domestic prices. Options include increasing domestic subsidies; capping food prices; scrapping import tariffs; imposing export tariffs; mandating suspensions of some exports. Examples:
    - **Russia** – price controls on bread, cheese, milk, eggs, vegetable oil;
    - **China** – new food price controls imposed October 22;
    - **India** – upping grain imports in order to build up a strategic reserve;
    - **EU** – has mooted dropping import tariffs on all cereals except oats. Fischer Boel: "I hope this proposal will help facilitate cereals imports from outside the EU and reduce tensions on European grain markets";

  Other countries that have introduced some of the above measures include Argentina, Egypt, Jordan, Bangladesh, Mexico, Morocco, Vietnam, Serbia, Ukraine.
- On the plus side, high food prices present a potential window of opportunity for countries to move away from support measures and subsidies, thus potentially helping to ease political pressure on a contentious issue in current trade talks.

9. Inflationary pressure?

- Current food price inflation is part of a wider upwards trend in commodity prices including oil, precious metals, base metals – demand growth from emerging economies a key factor in all

cases. Chinese inflation already at highest level in a decade, with many economists citing food as the main driver.

- At the same time, current financial market liquidity crisis / credit crunch implies significant downside risk to global growth (especially in US and industrialised economies), leading to some media speculation about risk of return to 1970s style stagflation. Outlook for emerging economies, and extent to which they are decoupled (or not) from US demand, is a major variable in determining outlook.

10. The bottom line – how do we feed everyone?

- In short term, more integrated policy (e.g. on trade, biofuels) can make significant progress, *if* political will is there. Multilateral system must be a particular focus – food security needs high level political attention on 38th floor of UN, at World Bank etc., and integrated approach across all agencies. But governments also need to get their house in order – especially in integrating trade, development, energy and environment policy.
- But longer term progress may depend on devising comprehensive management frameworks for scarcity problems that – like climate change, energy security, water depletion – are quintessential 'wicked' problems. Convergence of scarcity issues over the next 10-20 years is arguably the ultimate joined-up government challenge.
- Issues of international equity may emerge as major focuses of media and public interest and of NGO campaigning (already happening to some extent with awareness of equity dimensions of climate change): in addition to emissions, other equity variables could come to include virtual water, consumption of meat and dairy products, use of bioethanol as a fuel.

- **Above all, note the massive uncertainties involved in forecasting global food security.** Medium to long term food outlook depends on variables including:
    - Extent / abruptness of climate change impacts;
    - Oil price outlook (in turn depends on demand, investment in new sources, geological fundamentals);
    - Hard vs. soft landing scenarios for emerging economies currently driving demand growth, especially China, India and Brazil;
    - Extent of progress on trade policy / whether food scarcity drives (a) protectionism & isolationism or (b) policies based on appreciation of interdependence;
    - Technology variables, e.g. how much gain can be expected from GM technology, drought-resistant strains of crops;
    - And numerous other variables, including Black Swan events not imagined here.

  Because of impossibility of predicting these variables – and hence of being able to rely confidently on ability of policies to avoid all shocks, perturbations and other turbulence in food supply – resilience must become a core organising concept for all relevant players, including governments, donors, companies, communities and individuals.