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December's Museletter is a compilation of three recent pieces. All three are in essence about the political failure to recognize that we are reaching real limits to growth. The first concentrates on the effect of high oil prices on agriculture; the second is a piece published in the UK newspaper 'The Guardian' summarizing the argument that the era of economic growth as we have known it is over; and the third reflects on how an inability to realize this is also hampering progress on climate change negotiations.

*Thanks for supporting the Museletter this year. All my very best wishes to you and yours for the holidays.
Richard*

Soaring oil and food prices threaten affordable food supply

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Abstract

The current global food system is highly fuel- and transport-dependent. Fuels will almost certainly become less affordable in the near and medium term, making the current, highly fuel-dependent agricultural production system less secure and food less affordable. It is therefore necessary to promote food self-sufficiency and reduce the need for fuel inputs to the food system at all levels.

The connection between food and oil is systemic, and the prices of both food and fuel have risen and fallen more or less in tandem in recent years (figure 1). Modern agriculture uses oil products to fuel farm machinery, to transport other inputs to the farm, and to transport farm output to the ultimate consumer. Oil is often also used as input in agricultural chemicals. Oil price increases therefore put pressure on all these aspects of commercial food systems.

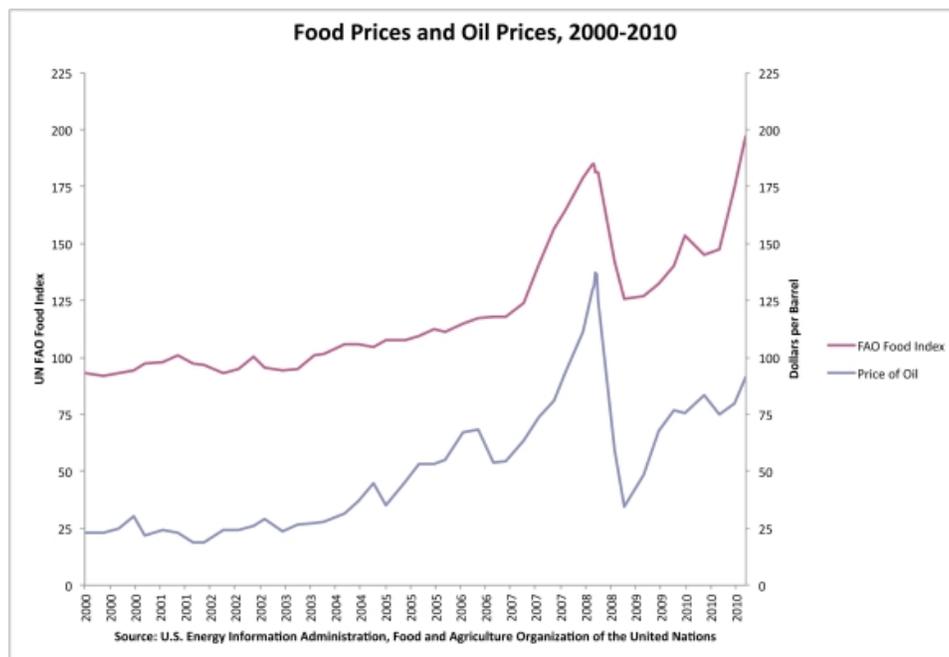


Figure 1: Evolution of food and fuel prices, 2000 to 2009
Sources: US Energy Information Administration and FAO.

Thus there is concern that high and volatile prices of crude oil may cause food prices to continue to increase (Bloomberg, 2011).

Moreover, as oil prices rise, so does demand for biofuels, which are the only non-fossil liquid fuels able to replace petroleum products in existing combustion engines and motor vehicles. But biofuels are often made from corn and other agricultural products. As demand for these alternative fuels increases, crop prices are forced upwards, making food even less affordable.

Export-led agricultural strategies also increase the world's vulnerability to high oil prices. Most donor agencies have encouraged the less industrialized countries to focus on the production of cash crops at the expense of staples for local consumption. As a result, people in these countries are forced to rely increasingly on imports of often subsidized cereals or those funded by food aid programmes. However, rising transport costs contribute to rising prices of food imports, making them ever less affordable. Fuel costs represent as much as 50 to 60 per cent of total ship operating costs. [1] From early 2007 to mid-2008, as fuel prices soared, the cost of shipping food aid climbed by about \$50 per ton – a nearly 30 per cent increase, according to the United States Agency for International Development (Garber, 2008).

Meanwhile, many poor farmers who cannot afford machinery, fuels and commercial farm inputs find themselves at a disadvantage in the global food economy. Compounding this are agricultural policies in industrialized food-exporting countries that subsidize domestic producers and dump surpluses onto developing countries, thus adding to the economic disadvantages of the smallholder farmers in those countries. As a result, millions of those farmers are being driven out of business annually, those countries are giving increasing priority to production for export and they are witnessing a burgeoning landless poor urban class (whose immediate ancestors were

subsistence farmers) that is chronically malnourished and hungry.

Soaring food and fuel prices have a disproportionate impact on developing countries and on poor people in developed countries. Americans, who, on average, spend less than one tenth of their income on food, are able to absorb the higher food prices more easily than the world's poorest 2 billion people, who spend 50 to 70 per cent of their income on food.

Why are oil prices so high? Speculative investment in commodities plays a role, though there is a persuasive case to be made that oil prices would be rising even if oil futures speculation were entirely curtailed. The oil industry is changing, and rapidly. As Jeremy Gilbert, former chief petroleum engineer for BP, has put it, "The current fields we are chasing we've known about for a long time in many cases, but they were too complex, too fractured, too difficult to chase. Now our technology and understanding [are] better, which is a good thing, because these difficult fields are all that we have left" (Gilbert, 2011).

The trends in the oil industry are clear and undisputed: exploration and production are becoming more costly, and are giving rise to greater environmental risks, while competition for access to new prospective regions is generating increasing geopolitical tensions. According to the International Energy Agency, the rate of world crude oil production reached its peak in 2006.[IEA 2010a) The IMF has joined a chorus of energy industry analysts in concluding that scarcity and high prices are here to stay.[IMF 2011a, 2011b]

A collapse in demand for oil resulting from sharply declining global economic activity could cause oil prices to fall, as happened in late 2008. Indeed, this is a fairly likely possibility. But while it would make oil *cheaper*, it would not make fuel more *affordable* to most people. It is theoretically possible for the world to curb oil demand through policies that limit consumption, and it is also conceivable that some unexpected technological breakthrough could rapidly result in a cheap, effective alternative to petroleum. However, these latter two developments are rather improbable. Thus there is no likely scenario in which the services provided by oil will become more affordable within the context of a stable global economy at any time in the foreseeable future.

While wealthy consumers are able to absorb incremental increases in food prices, a sudden interruption in the availability of fuel (due to geopolitical events) or a significant gradual curtailment of fossil fuel production (due to the continuing depletion of world hydrocarbon reserves) could lead to a breakdown of the food system at every level, from farmer to processor to distributor to retailer and finally to consumer.

To summarize, high oil prices contribute to soaring food prices. Our modern global food system is highly oil-dependent, but petroleum is becoming less and less affordable. Extreme weather events also contribute to high food prices, and, to the extent that such events result from anthropogenic global warming, they are also ultimately fuel-related. Thus there is no solution for the world's worsening food crisis within current energy and agricultural systems.

What is needed is a major redesigning of both food and energy systems. The goal of managers of the global food system should be to reduce its dependence on fossil energy inputs while also reducing GHG emissions from land-use activities. Achieving this goal will require increasing local food self-sufficiency and promoting less fuel- and petrochemical-intensive methods of production.

Given the degree to which the modern food system has become dependent on fossil fuels, many proposals for delinking food and fossil fuels may seem radical. However, efforts to this end must be judged not by the degree to which they support the existing imperatives of the global food system, but by their ability to solve the fundamental challenge that faces us – the need to feed a global population of seven billion (and counting) with a diminishing supply of fuels available to fertilize, plough and irrigate fields, and to harvest and transport crops. Farmers need to reduce their dependence on fossil fuels in order to build resilience against future resource scarcity and price volatility.

In general, farmers can no longer assume that products derived from petroleum and natural gas (chiefly diesel, gasoline, synthetic fertilizers, and synthetic pesticides) will remain affordable in the future, and they should therefore change their business plans accordingly. While many approaches could be explored, which in any case would depend on specific geographic locations, the necessary outlines of a general transition strategy are already clear.

- Farmers should move towards regenerative fertility systems that build humus and sequester carbon in soils, thus contributing to solving climate change rather than exacerbating it.
- Farmers should reduce their use of pesticides in favour of integrated pest management systems that rely primarily on biological, cultural and physical controls.
- More of the renewable energy that will power farming activities can and must be generated on farms. Wind and biomass production, in particular, can provide farmers with added income while also powering farm operations.
- Countries and regions must undertake proactive steps to reduce the energy needed to transport food by reorganizing their food production systems. This will entail support for local producers and for local networks that bring producers and consumers closer together. More efficient modes of transportation, such as ships and trains, must replace less efficient modes, such as trucks and planes.
- The end of the fossil fuel era should also be reflected in changes in dietary and consumption patterns among the general population, with a preference for foods that are grown locally, that are in season, and that undergo less processing. Also, a shift away from energy- and meat-intensive, diets should be encouraged.
- With less fuel available to power agricultural machinery, the world will need many more farmers. But for farmers to succeed, current agricultural policies that favour larger-scale production and production for export will need to change in favour of support to small-scale subsistence farming, gardening and agricultural cooperatives. Such policies should be formulated

and put in place both by international institutions, such as the FAO and the World Bank, and also by national and regional governments.

If such a transition is undertaken proactively and intelligently, there could be many additional benefits, with more employment in farming, more environmental protection, less soil erosion, a revitalization of rural culture and significant improvements in public health. Some of this transformation will inevitably be driven by market forces, led by the rising price of fossil fuels. However, without planning, the transition may prove destructive, since market forces acting alone could bankrupt farmers while leaving consumers with few, if any, options for securing food supplies. Removing fossil fuels from the food system too quickly, before alternative systems are in place, would be catastrophic. Thus the transition process requires careful consideration and planning.

There are reasons for hope. A recent report on African agriculture by UNCTAD and UNEP (2008) suggests that organic, small-scale farming can deliver the amount of increased yields thought to be possible only through industrial farming, and without the environmental and social damages caused by the latter. Recent research by Badgley et al. (2007) also concludes that organic and low-input methods can increase yields in developing countries while maintaining yields in industrialized countries.

Generally, smaller farms have greater biodiversity (Hole et al., 2005), place greater emphasis on soil-building (D'Souza and Ikerd, 1996) and display greater land-use efficiency than large farms (Rosset, 1999).

Nevertheless, despite these promising trends and findings, it is axiomatic that no food system tied to the earth's finite soil and water resources can support an ever-expanding and ever more resource-demanding population. The prudent path towards reforming the global food system must therefore coordinate agricultural policy with appropriate population, education, economic, transport and energy policies. The transition to a post-petroleum food system will need to be comprehensive. In its scale and required speed it promises to be one of the greatest challenges in human history. But the challenge will only grow the longer it is postponed.

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Welcome to the Post-Growth Economy

The tide of economic growth that has flowed since World War II may finally be ebbing.

For politicians and most economists, this is like saying the sky is falling. Growth has become guidepost and grail, the *sine qua non* of economic existence. Growth is necessary to job creation and the health of businesses. Without growth the rolls of the homeless and jobless swell, requiring governments to shoulder more responsibility; yet at the same time tax revenues fall, making both new and existing government debt unbearable.

Stimulating growth has become job number one for policy makers. David Cameron insists that his nation must deregulate business and reform employment law in order to "go for growth." And at the conclusion of the recent G20 global economic summit, President Obama reported that the discussions there had revolved around the question, "How do we achieve greater global growth?" Such statements raise nary an eyebrow; they are entirely expected.

Nonetheless, in recent years a few economists have advanced a contrary view. Tim Jackson in the UK, Herman Daly in the US, and Serge Latouche in France have argued that growth is not always good for the environment or for the real health of communities, and that GDP growth is impossible to sustain over the long run anyway

because we live on a planet with limited natural resources. Their position has won few adherents in the mainstream. In the “real” worlds of politics and economics, questioning growth is like arguing against gasoline at a Formula One race.

But doubts about growth are no longer theoretical. We seem to have arrived at a moment when further economic expansion is hemmed in by financial as well as natural limits. As extraction industries chewed through the low-hanging fruit of the world’s oil, coal, natural gas, and other minerals, and turned to lower-grade and thus more expensive ores and fuels, managers of the economy tried to keep growth going by piling up debt in the mistaken belief that it is only money that makes the economy run, not energy and raw materials. Today, high oil prices are keeping a lid on commercial expansion in the older industrial nations as petroleum demand shifts to the hyperactive economies of Asia, which for now can afford steeper fuel prices. Meanwhile we in the West seem to have maxed out government and consumer credit, and that realization is sending financial markets into fibrillation. With energy resources and credit both stretched tight, that means more economic growth may simply not be possible in the US and Europe, regardless of our opinions about it.

If policy makers fail to recognize this and continue assuming that the current debt crisis is just another turning of the business cycle, then we may lose whatever opportunity still remains to avert a crash that could bring civilization to its knees. Over the short run, this is scary business. Financial markets have a hair trigger, and fears about flagging growth could bring down governments and banks.

Still, over the longer term there will undoubtedly be life after growth, and it doesn’t have to play out under miserable conditions. With less energy to fuel globalization and mechanization there should be increasing requirement for local production and manual labor. We could meet everyone’s basic needs by prioritizing jobs in manufacturing and agriculture while downsizing the financial industry and the military. We will also have to reduce economic inequality and corruption (as the rapidly spreading Occupy movement rightly insists). As we do these things, we must reform economics to reflect ecological reality: nature is not, after all, just a pile of raw materials waiting to be transformed into products and then waste; rather, ecosystem integrity is a precondition for society’s survival. Adaptive responses cannot only be left up to government officials and economists; for their part, households must rein in debt and over-consumption while contributing more to community resilience.

There’s light at the end of the tunnel. If we focus on improving quality of life rather than boosting quantity of consumption, we could be happier even as our economy downsizes to fit nature’s limits.

But a benign future is unlikely to transpire if we all continue living in a dream world where growth knows no bounds, where debt can be repaid with more debt, and where natural resources are assumed to be endless.

Alarm bells are ringing. Wake up to the post-growth economy.

Behind the Durban Blame Game

Why did the Durban climate talks fail? Ultimately, the culprit is the near-universal pursuit of economic growth. All the major players want growth: the US, because it's still pulling out of a recession; China, because it knows 10 percent annual growth can't go on forever, but is trying to avoid a hard landing; Europe, which is trying to pull out of its sovereign debt spiral. The US and China, in particular, know that fossil fuels have given them growth in the past, and are especially reluctant to give them up now.

The Chinese pulled a PR coup during the talks by announcing that they were willing to consider emissions cuts if the US signs onto a global binding agreement. Perhaps Beijing felt safe saying this because there is a general understanding that binding climate action is currently unthinkable in the US for domestic political reasons. If China were indeed seriously concerned about climate, then as the world's foremost greenhouse gas emitter it could simply unilaterally cut back on emissions and then challenge the US and other countries to follow suit. But of course that's not what we're seeing; instead, China is leading not only in total national emissions but in rates of emissions increase, due to its phenomenal coal consumption.

Can the world decouple GDP growth from carbon emissions? To a certain extent, yes. During the 90s there was some decoupling, especially in the US, but it was mostly due to globalization and financialization. Industrialized countries outsourced much of their production, mainly to China, which burned its coal to make America's consumer goods; meanwhile, the financial industry blossomed as debt grew faster than GDP and banks leveraged that debt through securitization and derivatives. But, as we've seen since 2008, growing the size of the financial industry relative to the size of the rest of the economy can have some nasty long-term side effects.

Over the past decade, most of the decoupling effect has disappeared globally, and energy use and GDP growth have moved in tandem. In 2010, greenhouse gas emissions actually grew faster than GDP. So we're moving in the wrong direction, and accelerating.

Could we still have economic growth while transitioning to renewable energy? Perhaps, but renewables typically have high up-front investment requirements. Once one has a solar panel up and running, one gets very low-cost energy, but buying and installing the panel is quite expensive—and for the world that's problematic at a time when investment capital and credit are scarce. So, as regular oil and coal grow more costly, countries are often motivated to solve their energy supply problems simply by digging deeper into their resource base for lower-grade fossil fuels, such as tar sands, which just make the climate problem worse.

This dynamic is only likely to change when we finally get to the point where we are concerned less about short-term economic growth than about our longer-term survival prospects. But by then it may be too late to avert catastrophic and irreversible climate change.

Here's the bitter irony: we are postponing serious climate action for

the sake of immediate economic growth. But with a flood here, a drought there; with a famine here, a mass migration there, we soon arrive at a place where economic growth is unachievable in any case.

Nobody expected much from the Durban talks. Thanks to the US and China, the negotiations fully lived down to expectations. It's past time for these nations to wake up and realize that even their short-term growth strategy is doomed to failure. It may be too late by now to avert serious climate impacts, but the world can still benefit by abandoning its pointless and counterproductive quest for growth at any cost.