Biofuels, Food Prices, Land Use & Egypt

JIM LANE, Biofuels Digest

Food price increases are upon us, as in 2008, and the government of Egypt has fallen, in part due to pressure of an impoverished population badly exposed to food and energy price volatility.

With the return of scarcity â€“ whatever is driving it, weather or growing market demand or a combination thereof â€“ the usual suspects have found their way back to the op-ed pages of the Wall Street Journal, the Washington Post, and others will follow.

Tim Searchinger wrote in the Washington Post last week:

"Each year, the world demands more grain, and this year the worlds farms will not produce it. World food prices have surged above the food crisis levels of 2008. Millions more people will be malnourished, and hundreds of millions who are already hungry will eat less or give up other necessities. Food riots have started again.

Nearly all assessments of the 2008 food crisis assigned biofuels a meaningful role, but much of academia and the media ultimately agreed that the scale of the crisis resulted from a "perfect storm" of causes. Yet this "perfect storm" has re-formed not three years later. We should recognize the ways in which biofuels are driving it."

Professor Bruce Dale at Michigan State responds:

"As usual, Mr. Searchinger does not compare the imagined problems of biofuel production with the very real problems with continuing our oil dependence. Oil and energy prices are much more responsible for increased food prices than anything else. We are not going to make progress in dealing with our energy problems until we make reasonable and realistic comparisons between oil alternatives and the costly status quo of continuing oil dependence."

Is there enough? The new Malthusiasm

The dialogue over the opportunities for biofuels continues to veer, as ever, away from the technology itself, or any emission-reducing or security-enhancing attributes of the fuel â€“ and comes down to two questions. Can biofuels be produced at prices that will support a transition away from fossil fuels, and is there enough feedstock?

The latter question â€“ is there enough? â€“ is powering a new wave of Malthusiasm.

The Background

The argument is an old one, going back to the Enlightenment. The main protagonists: Thomas Malthus and the Marquis de Condorcet.

Thomas Malthus wrote in An Essay on the Principle of Population, "The power of population is indefinitely greater than the power in the earth to produce subsistence for man". Meanwhile, the Marquis de Condorcet wrote in "Sketch for a Historical Picture of the Progress of the Human Spirit" that expanding knowledge in the natural and social sciences would lead to an ever more just world of individual freedom, material affluence, and moral compassion.

Any review of the history of the past two hundred years would emphatically support the Condorcet view, but Malthusians reappear in every generation â€“ asking if todays plenty will be tomorrows enough?

Todays version of the argument, is that there is not enough productivity to go around â€“ that increased demand must invariably be met by land use change, rising prices, and a competition between food and fuel.

In December, we wrote: " we have noted on all-too-many-occasions that there is a breakdown between those critiquing biofuels, and those developing them, based on assymmetries in available information, and different views on how the pace of innovation will play out over the 20-40 years through which the bioenergy revolution will take place.

For example, ones world view changes dramatically if one accepts the Monsanto view that, by 2030, US corn yields will average 300 bushels per acre, up from 160 right now.

In a 160 bushel-per-acre world, many worry about where we are going to find all the land to produce the food and fuel we need. In a 300 bushel-per-acre world, we wonder where we are going to find markets to utilize added production, or what to do with all the spare land.

Whos right, whos wrong? Lets look at a few trends.

Please note, readers: in the following examples, we are using some existing constants â€“ such as crop productivity â€“ to illustrate a point â€“ not in any way to suggest that those constants are valid for every specific instance of crop production.

Land Use Change

In the United States, there has been a lot of attention over the changing relationship between the acreage for soy, corn and wheat in response to food and biofuel prices. There has been less attention paid to the fact that 39 million acres have fallen out of US crop production since 1997 altogether. Those acres, at the 156 bushels per acre yields achieved (in a down year) in 2010, would have yielded 6.06 billion additional bushels of corn, at the national productivity average. Enough to produce 17.5 billion gallons of ethanol â€“ or 20 percent more than the entire US

usage. Now, there are complex forces at work in agriculture â€“ one doesnt simply re-plant 39 million acres with corn, and productivities vary intensely: we bring up the point to illustrate the concept of excess agricultural capacity.

Still going with Malthus?

Cropland Use Change

Of US croplands, approximately 23 percent is idle, or used for pasture. Thats roughly 93 million acres â€“ not counting the 38 million acres in the cropland reserve. Enough to produce 14.5 billion bushels of corn â€“ to do the math simply, using average production rates and assuming everything goes into a monocrop â€“ which either supports 42.7 billion additional gallons of ethanol and 125 million tons of distillers grains, or an additional 135 pounds of food grains for every person on earth.

Still a Malthusian?

Dietary Change

Lets look at pastureland, now. 408 million acres of US land, in the last USDA census, went for pastureland â€“ which supports, primarily, meat and cheese. Do we need all that meat and cheese? Today, the average US citizen eats 67 pounds of beef and 31 pounds of cheese. In 1970, we ate 11 pounds of cheese and ten years ago we ate 60 pounds of beef, and everyone managed to fit in their clothes all right.

Now it takes roughly 25 pounds of grain to produce a pound of cheese, and 10 pounds of grain to make a pound of beef. So we have about 570 pounds of grain supporting dietary changes. What is we simply eliminate that, in the US alone. Probably wouldnt hurt the war on obesity, and thats 3 billion bushels of grain. Enough to provide 280 pounds of grain to each one of the people who went hungry on the planet today (roughly 600 million of them) â€“ which is enough to supply them with a minimum dietary requirement for the entire year.

Still going with Malthus? Really.

Crop Productivity

Well, lets look again at the specifics on crop productivity. Monsanto is projecting 300 bushels per acre by 2030, for corn â€“ that a 3 percent annual increase. Taken across the existing corn landscape, thats 12 billion bushels, enough for 40.6 billion new gallons of ethanol and 100 million tons of distillers grains, or an additional 111 pounds of grain for everyone on earth.

Lets go to the tote board.

If you add the increased productivity, a return to previous levels of meat and cheese consumption for the sake of obesity reduction, utilize currently cropland that is not in production, and take back the land that fell out of the crop census

altogether, it becomes clear that there are billions of bushels in excess capacity, far more than needed to produce the corn ethanol currently scheduled under the Renewable Fuel Standard and capped at 15 billion gallons, representing around 5 billion bushels of corn.

Does that mean that the solution to a problem lies in producing many additional billions of gallons of corn ethanol? Of course not. Does that mean that every acre of corn must be GMO corn? No. Does that mean that the Digest is of the opinion that every fallow acre in the United States is capable of supporting advanced yields? No again.

Weve done this in simple math â€“ without resorting to general equilibrium modeling or other tools that famously put readers to sleep â€“ to make the point that what we have is not an agricultural capacity crisis but a political crisis. Namely, in the West we have too many people hogging too much of the global resource. In the developing world, we have shockingly low levels of agricultural productivity, which causes much of the food distribution imbalance in the first place.

A Comment About Egypt

The heart of the Egyptian crisis, which has included real agony over access to food, is a poverty crisis. But the cause of the poverty crisis is a statist regime that has not unleashed the productivity potential of its population. Why? Political control. Why has the US supported the regime? Political stability in the Middle East. Why is political stability in the Middle East so important that the US has not more ardently advocated its most precious heritage â€“ political freedom â€“ for the Egyptians, lets say in the way that it has advocated freedom for Iraq? Because of concerns over access to Middle Eastern oil.

As a result of insufficient investment, and failed productivity, there are real food imbalances â€“ not food shortages, for there is more food today produced per capita than in 1960.

Apparently, the role of the US farmer is to roll over, exit the ethanol industry, and sell $2 grains so that statist regimes in Egypt might continue to exist, Americans can continue to be incentivized to overeat meat and cheese, and the world can go on with its addiction to oil.

A New Birth of Freedom

What the US and the world needs is none of that. What is needs, as Lincoln once observed, is a new birth of freedom.

We have no doubt that farmers, and Egyptians, are up to the challenge, and that the Marquis de Condorcet was right. Expanding knowledge in the natural and social sciences will lead to an ever more just world of individual freedom, material affluence, and moral compassion.

But as any industrialist can tell you, you not have to make it, you have to distribute

it as widely as possible. Thats the urgent task before us, in this socially networked world where "sharing" is everything â€“ the sharing of freedom, and with it knowledge and capital.

That is the road to a better world than Malthus foresaw.

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