


Farming, Finance,
AND THE *Global Marketplace*
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Closing Session:

The Agricultural Marketplace in the 21st Century

Farming Finance and the Global Marketplace: A Synopsis

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I have been asked to be the rapporteur for this Symposium and I am pleased to do so. As a result, I will try to provide some closing perspective on what we've heard over the last two days, by discussing six takeaways from the symposium. Then I have eight characteristics of the agricultural marketplace in the 21st century I would like to discuss, some briefly and others in more depth. First, my six takeaways.

Six Takeaways

1) Unanticipated Events:

Every speaker suggested a very positive outlook for agriculture long term. That is a supportable perspective based on expected demand growth. But I am concerned we did not talk enough about what sometimes is referred to as “the unanticipated surprises.” We did talk about volatility, but that volatility was more in the context of operational volatility. What is the equivalent for agriculture of the oil drilling industries' current crisis as a result of BP's Gulf oil spill? Maybe our past experience with Mad Cow disease or H1N1 is close.

And it could be on the upside as well. So we ought to make sure we don't focus all our attention on the downside. We will talk about the tails later.

2) Consolidation and Concentration

Agriculture will experience increased consolidation and concentration across the entire value chain. The debates will be about whether value chains will be vertically integrated or coordinated -- by that, I mean the difference between ownership across the value chain or various forms of tight linkages without open market transactions. JBS is taking the concept of larger scale vertically aligned systems to the global meat market. This structural change has profound implications for suppliers and buyers in terms of with whom they are going to do business. Production agriculture is moving to a 90/10 industry, 90 percent of the output being produced by 10 percent of the producers. If you don't determine how to do business with those producers as a fertilizer, seed, chemical, or machinery supplier or financier, and how to do so before they get big (because once they are big, they have a tendency to want to stay with who helped them get there), you will struggle in the new marketplace. The agricultural industry will increasingly be more consolidated and more vertically aligned at all levels.

3) Cost of Capital

The global economy is recovering. It is interesting that the big elephant in the room – the cost of money and the cost of capital – has not been talked about in this two-day session. There is concern about the speed of recovery and how sustainable it is, but the consensus suggests we will experience a slow but rocky recovery. The question is the implication for interest rates. We talked about access to capital, but not the cost of capital. I think we have to talk about the cost of capital. Does anybody believe interest rates are going to go down? The only question is how fast and how far they go up. That raises some really interesting questions -- if this industry is facing a higher capital cost than it has for the last three, four, or five years (or, as some people say, since the decade of the 1980s), what does that mean for the sector? We will return to this topic.

4) Risk and Uncertainty

Agriculture will experience increased risk and uncertainty. Increased risk/volatility/change is not necessarily a new idea. But we need to talk about, more than I think we have, what we should do about it. How do we manage our businesses? What do we do to accommodate, to mitigate, to absorb, to transfer that risk? We are going to return to this topic as well.

5) Logistics

Logistics, supply chains, and distribution infrastructure are critical to the performance and global competitiveness of the agricultural sector. Some have argued that the source of the U.S. competitive advantage in global markets historically has not been because we have vastly superior and lower cost production and production systems. It's been our distribution system -- it's the logistics, distribution, water, rail -- our entire system of bringing inputs from the world into rural America and moving products out. If you fast forward 20 years, what's going to be the comparative advantage we used to have, relative to many other parts of the world, in our distribution system? Our locks and dams are 1930's technology. What is Brazil doing? Brazil is modernizing their transportation/distribution system.

6) New Forms of Globalization

Globalization in agriculture has historically been focused on growing foreign demand and the opportunity to fulfill or export to that growing demand. But globalization will increasingly occur as foreign direct investment (FDI). Increasingly, a larger portion of the activity in terms of internationalization will not be shipping products across borders; it will be shipping money and building plants. U.S. companies are building processing facilities in Europe, China and elsewhere, and sourcing raw materials locally to fulfill the in-country demand. The same thing is happening in terms of companies coming to the U.S. as we heard yesterday from JBS.

There will be more FDI and more financial flows in the future across borders. So it's not just, how do we figure out how to develop global markets and export into them? Increasingly it is, how do we compete in a market that has substantial financial capital as well as product flows across borders in various different directions?

Eight Issues for Agriculture

With these six takeaways, now let us use these as the entrée point into my perspective of the eight critical issues in the agricultural marketplace in the 21st Century. We cannot talk in detail about all eight of those, so I will elaborate on the first two and the last one. But let me start by sharing my perspective of all eight.

We'll discuss the first -- *capital market challenges* -- in more detail later – it is not just availability; it is cost and what that means for the industry. We will also come back to the second -- *resurgence of risk* -- because I am not sure we have thought enough about what to do about that. Risk has been underpriced in the capital markets. We must more aggressively price risk-- how much risk pricing differential are you doing now in your loan portfolio? We do risk ratings, but we do not do very much differentiation -- not much spread in rates associated with the risk ratings.

The third issue is *growth/consolidation/structural change*. There is not much question, as we have already suggested, that growth and consolidation will continue. The classic economic arguments are that larger scale and growing businesses generally have lower costs, higher prices and better operating profit margins than small scale operations. But this is not the whole story. The larger operating profit margins per unit of output for larger size businesses when combined with the higher output results in more total income and profit for larger compared to smaller businesses. And larger businesses have lower salaries/withdrawals/payout percentages. This lower cash drain on earnings combined with the typically higher earnings results in substantially more retained earnings for larger scale businesses compared to those of smaller size/scale. A larger absolute amount of retained earnings means that larger scale businesses can acquire more resources and increase their output more rapidly than a smaller scale business that may need to use most of their earnings to support the withdrawals or payouts to the entrepreneur and management team. In this context, growth is a “natural” result of business success (earnings and savings behavior), and larger businesses have more “natural” growth potential because of their typically higher savings or retention rate compared to smaller businesses.

Probably the hottest topic in much of the discussion we have with agribusiness companies today is the fourth issue -- *the sustainability imperative*. What are we going to do as an industry to respond to this increasing demand or expectation (not yet from the government, but from the retail end of the food chain) concerning agriculture's environmental footprint? By 2015, Wal-Mart expects to implement environmental footprint labeling on every product sold in their store. How are we going to respond to that? What should we be doing? How can we shape this debate so sustainability is not exclusively about cost? Can we create value and a revenue stream in some way?

I would return again to BP's Gulf dilemma. One way you create value is to continue to have what is frequently referred to in the industry as “freedom to operate.” Do you think BP has the same freedom to operate today they had two or three months ago? So what happens to our freedom to operate, if we do not concern ourselves with the fact that even if many consumers are

not willing to pay for sustainability, they do expect, not just safe food, but that they do not have to worry about chemical contamination in their water supply? And, rightly or wrongly, they associate that with agriculture.

What are we doing about sustainability? I want to emphasize this will likely not be government-regulation driven – it will be supply-chain driven. And the opportunity/challenge is different for input suppliers than for those like Coca-Cola or Wal-Mart who are at the end of the value chain where they have a chance to sell to a customer/consumer that might be willing to pay something for “sustainability.” How does Syngenta or an ag retailer doing business selling to farmers – fertilizers, seed, and chemicals – create value for their customer in this sustainability context? There is a big difference in terms of where you are in that value chain in terms of capturing value from sustainability initiatives.

The next issue is *resource availability/productivity*. Agriculture will have to increase its productivity over time to adequately respond to the growing demand. The most serious constraint for expanding global production is not as much land as it is water. Farmers in the Midwest just do not understand what producers in California live with daily (as well as farmers in much of the rest of the world) concerning water availability. Water is in fact likely the major constraint in terms of our being able to fulfill the growing demand for agricultural raw materials.

Innovation and technology is the sixth issue -- a key to the productivity challenge is innovation and new technology. Three types of technologies that complement each other have the potential to change agriculture profoundly. One is biotechnology and nutritional technology, controlling the growth processes of plants and animals by knowing the biological processes that impact growth. Second is information technology to real-time monitor the growth process and determine what might be impeding that growth process in real time – is the plant running out of water, is there a weed problem, where in the field do we have a weed problem, etc.? With this technology for example, water and chemicals are not applied in a preventive fashion, but when and where they are needed. With irrigation technology, we can do that – center pivot systems and drop nozzles replacing flood or row technology, and now irrigation water is applied when the plant sensor or soil sensor says we need it. And using GPS different amounts of water are applied at different locations. Irrigation technology is an example of process control technology – the third type of technology. So we have three intersecting technology bundles– nutritional and biotechnology, information technology, and process-control technology. These technologies take agriculture from growing “stuff,” which is what it has historically done (but not being very precise about it), to an industry that has the opportunity to be “biologically manufacturing specific-attribute raw materials for unique end uses.” That is a very different industry.

We see this already happening in the livestock sector. The modern poultry barn uses scales, sensors and automation to monitor weight gain, temperature and air quality, and growing conditions and adjust the rations and building environment to achieve desired weight gains. And as we indicated, automated irrigation systems linked to GPS and plant growth monitoring systems is an example of using similar technology in crop production.

The seventh issue is the *role of the public sector*. Who cares about the Farm Bill today? Even farmers are less concerned or interested than in the past. The public policies that are increasingly more important for agriculture are well beyond the Farm Bill. If you are in California, the most important policy issue is probably immigration policy or maybe water policy. Some argue that farmers receive more money as an indirect subsidy from energy policy (the tax credit of \$.45 a gallon of ethanol passed through from the blender) than they receive in direct payments from the Farm Bill. EPA and environmental rules, global warming and cap and trade, the current USDA/Justice hearings on competition in the markets, transportation policy, energy policy – these are all important policy debates.

But there is a dilemma. Much of the policy shaping agriculture today is policy we in agriculture do not have skill, capacity, credibility, or context to help shape. When it comes to the Farm Bill, we know who to talk to. But we do not have a lot of good friends in EPA. And we are not necessarily perceived in many of those other policy-setting arenas, whether they be in the U.S. House or Senate committees or in particular parts of the Administration, to be credible or even be the “good guys.” We have a dilemma in that a broader set of people are determining the policy constraints and setting the agenda. We in agriculture aren’t even in the room and activists are at the podium. We have to fix that, if we expect to shape the important policies that are going to influence this industry.

Finally, the eighth issue – the growing importance of the *bioeconomy* -- we are going to talk in more detail about that later.

So those are the eight critical issues concerning the future of the agricultural sector. Now let me come back and flesh out in more detail the three that are not only important, but maybe haven’t been given enough emphasis, generally in the industry and maybe in this conversation.

I believe – and I’ll give you two of the nine arguments why I believe this – that there is no way we are going to have capital costs do anything but go up in general and for the agricultural industry more specifically. As to interest rates, let me give you some numbers to support this assertion: three month LIBOR futures, June 2010 – 0.41 percent; three month LIBOR futures, June 2015, 4.98 percent. Note this isn’t the yield curve -- it’s the same maturity. It is a thinly traded market out in 2015, but from 0.41 percent to 4.98 percent!

There is another space where I do not think the market is yet fully informed -- in my judgment the market is substantially underpricing inflation. A 2 percent or so rate of inflation, which is what the implied inflation rate is from TIP bonds, is “just not in the cards” given the combination of fiscal and global (I did not just say U.S. Federal Reserve) monetary policy in my judgment. We have ramped up the money supply in this country and in the world profoundly. Everybody understands the concept of too much money chasing fewer or the same amount of goods results in higher prices. It is not just that we ramped up the money supply in the U.S.; because of the sovereign debt problem in Europe, they have reversed course and ramped up their money supply as well. And the U.S. monetary authorities have agreed to backstop the European authorities.

How do you globally unwind that money supply? And we are not talking about a small amount here. We are talking about doubling and tripling the money supply. Our back of the envelope calculations indicate that if we return to the lending and spending behavior of 2007 with our current money supply in the United States, we get price increases that exceed 10 percent per year. I do not believe we are going to have that level of inflation -- we will not return back to the spending and lending behavior that we had in 2007. But what if we return to half that level and do not unwind the money supply rapidly enough? It is not difficult to see inflation rates that are maybe twice what the markets are saying today -- 4 or 5 percent -- not in 2011-12 but in 2013-15.

So what does all this mean? If I look at what the markets are already indicating is going to happen to interest rates on the short end -- a 400-450 basis point increase, we add 200 to 300 more basis points for underpricing of inflation, and we consider a normal yield curve with 250-300 basis points for shorts compared to longs, long-term (7-10 year) rates can easily be high single digit and maybe double digit.

What we're suggesting is that capital costs will be higher. Higher capital costs say something about how you manage your business and what you do about managing debt in that business. I would argue that relative low capital costs have encouraged faster growth rates for many farmers than they might have had otherwise. We have modernized this industry -- we have made significant investments in machinery and equipment, capital expenditures, farmland, etc.. If capital costs are higher, the costs of ownership are higher. So we slow down our growth rate; we use less leverage.

To illustrate the risk of higher interest rates, our analysis of a 40 percent debt-to-asset ratio grain operation (one half of their debt at 3.5 percent and the other half at 5.5 percent) with current operating margins will now meet all credit standards in terms of debt-service coverage ratio, current ratio, working capital, debt-to-asset ratio, etc. But a 200 basis point increase in interest rates takes them out of standard.

What do higher capital costs mean for asset values? I am not suggesting collapsing asset values. We will continue to see secondary repayment capacity in terms of values of land stay fairly strong. That is not true for livestock facilities obviously. But increasing land values will be harder to support with higher capital costs.

What about the commodity and real goods market and the financial market linkages? These markets now have become very interconnected, much more so than they have been in the past, because you have the same participants playing in the "reals" and in the "financials." So the linkages between these markets are much stronger than they have been in the past when different players participated in the different markets. Furthermore financing and funds flows are increasingly global with global participants financing and investing in hard assets around the world including farmland.

So what is the bottom line -- the capital markets are fundamental drivers of location, structural change, business model, risk and reward sharing, etc. The capital markets are huge

shapers of the overall economy. So how these capital markets play out the cost and the availability of funds and how they reward those who are taking the risk and penalize those that are not managing the risk is a really key issue relative to the agricultural sector.

Lenders and investors are no longer just “the providers of funds” to “grease the skids” for businessmen to do what they want to do. They basically set the rules of the game. Capital markets used to be the facilitator of the activities in the “real” sector; increasingly they are the driver of “real” sector activity

The second issue is the resurgence of risk. As to operating risk, the relevant risk is not price risk, it is margin risk. We have experienced the margin risk in the livestock sector – feed costs rising without product price increases. If you take price minus cost and capture the volatility in the cost as well as volatility in prices in grain production, the margin risk has increased by a factor of three to four times. Furthermore, the tools to manage that risk on the operating side (hedging, contracting, crop insurance, government programs, etc.) are much less effective or more costly than they have been in the past.

So, financial management strategies are much more critical than they ever have been for a successful risk manager. Risk can be mitigated by managing the operating side of the business and/or the financial side of the business. If tools for managing operating risk are less effective and operating risk has increased, the only way you manage/mitigate risk is on the financial side. Fixing interest rates is not easily done. We’ve looked at hedging interest rates -- it is very difficult to do today -- the futures market has already priced increases into interest rates. Another strategy is to restructure debt to lock in rates -- restructuring with some of the current debt moved to longer-term fixed rate debt. Increasing working capital is also a critical financial management strategy to manage risk.

But there are other risks -- we have not talked about the capital wipeout risks, the strategic risks. These are the risks that Taleb in the book *The Black Swan*, identify as, “the tails of the distribution” – risks with a low chance of occurring but are disastrous if they do.

The tails count. And we have a tendency to ignore the tails. I am concerned about what is called a fat tail problem. The recent modeling of the financial instruments offered in the securitization of housing loans was based on very short time-line datasets with limited observations in the tails because there were no outliers in that period of time. We learned our lesson. It is important to understand that extremes can happen, whether they are on the upside or on the downside.

I would recommend to you, by the way, another book -- *Risk Intelligence* by Apgar -- that basically says that competitive advantage in the future will not be a function simply of market position or cost. It will be determined by those who have the most intelligence about how to manage risk, as well as having the right supply chain partners that will help you manage/mitigate risk.

And finally, the bio-economy. Agriculture in the future will be a raw material supplier, not just for the nutrition industry but for the energy, industrial products, fiber, polymers and health/pharmaceuticals industries. Right now 33 percent of the U.S. corn crop is mandated to be used for ethanol and not for food. The BP disaster in the Gulf may result in that going up, particularly if we go to a 15 percent ethanol blend. But, we are just starting to recognize the multi-functionality of agricultural raw materials in the energy, industrial products, and health/pharma industries that will present real opportunities for increased demand, but a big dilemma if we encounter short crops and high prices for food. What do we do in terms of giving up energy? Between now and when adequate production capacity is developed to fulfill all of those demands, we might end up with a “significant shortage problem.”

Let me conclude – there are three ways to think about the new economy for agriculture. The first is globalization. That is not really new, except globalization has been expanded in terms of a broader set of new dimensions – product, resources, and finance. If have not read Friedman’s book *The World Is Flat*, you ought to read it.

The second, which we have not spent enough time on, is financialization. These are the linkages between the real and the financial markets that have not necessarily been that explicit until recently. These markets are now more tightly aligned. The capital markets drive the real world and transparency is critical for them to function efficiently and effectively. Another book recommendation is Smick’s *The World Is Curved*. Smick’s argument is that Friedman has it wrong in the financial markets, because “you cannot see over the edge.” The world may be flat, but you cannot see over the edge because we do not have transparency in the financial markets, which results in chaos in both the real and financial markets and pressure for additional financial regulation.

Finally, consolidation/integration/concentration and what might be described as industry convergence. Twenty years from now when the pharmaceutical/health industry and/or the energy and industrial products industries are major users of agricultural raw materials, what is the relationship going to be between that big pharma company and Cargill or ADM? Who is going to be the chain captain? Industry convergence has happened in the information industry and in the communication industry. The implication – people who are not even on our radar screen will now be our customers and/or competitors.