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Structural Transitions in Global Agriculture: A Summary of the 2014 Agricultural Symposium

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Sharp changes in market conditions often induce industry transitions or realignments. The changes may be accentuated if there are also strong underlying trends already in motion. In agriculture, such a trend in the last decade and across the supply chain has been the intensifying global demand for agricultural products.

Over the past year, however, agricultural commodity prices have changed sharply. Following a strong rebound in global crop production in 2013, crop prices have tumbled. Meanwhile, livestock prices have taken flight. Sharply lower crop prices have raised concerns of tighter profit margins in crop production, despite a brighter livestock outlook. Globally relevant, commodity-dependent institutions have been forced to respond to the recent volatility, repositioning themselves for long-term opportunities that other underlying trends may still afford.

On July 15-16, 2014, approximately 200 agricultural finance and business leaders met at the Federal Reserve Bank of Kansas City's symposium, "Structural Transitions in Global Agriculture." The symposium explored how global agricultural institutions and industries might reposition themselves for long-term growth alongside the sharp changes in agricultural commodity prices and the broader, all-encompassing trends of recent years.

The Agribusiness Response

Agribusinesses have been forced to respond to wide price fluctuations in major agricultural commodity markets while also attempting to meet the complex demands of their end-users. Yet, despite the challenges of market volatility, opportunities for solid long-term growth abound. Agribusinesses have remained focused on the rising demand for food and energy products when assessing future growth potential, recognizing that the opportunities and challenges may go hand in hand.

Globally, food demand is expected to grow substantially alongside a rising world population and increases in income. The United Nations projected in its 2013 report that world population would increase to 9.6 billion people by 2050, and to 10.9 billion people by 2100 (United Nations, 2013). Expected population growth has been well documented in recent years, but it is the combination with rising incomes, particularly in emerging economies, that underlies expected growth in food demand. The

Table 1
Size of the Middle Class, by Region
Millions of people and global share

	2009		2030	
North America	338	18%	322	7%
Europe	664	36%	680	14%
Central and South America	181	10%	313	6%
Asia Pacific	525	28%	3,228	66%
Sub-Saharan Africa	32	2%	107	2%
Middle East and North Africa	105	6%	234	5%

Source: Kharas and Gertz, 2010. The New Global Middle Class: A Cross-Over from West to East. In: Li, C. (ed.) China's Emerging Middle Class: Beyond Economic Transformation, pp. 32-51. Brookings Institution Press, Washington, D.C.

World Bank has reported that between 2009 and 2030, Asia Pacific will add approximately 2.7 billion people to the Middle Class (Table 1).

Asia Pacific, specifically China, has continued to remain a key factor in the opportunity for future growth among agribusinesses. In his comments, Carl Casale, president and CEO of CHS Inc., noted that establishing a meaningful position in Asia is necessary to be successful and relevant over the long term. While there is often debate about whether China's GDP growth rate will be 7 percent or 8 percent, for example, China's growth has far surpassed that of most developed economies. Moreover, China's population also accounts for about 20 percent of the world total.

The ethanol industry has accompanied China as another primary source of demand for agricultural commodities. USDA projects the ethanol industry will use more than 5 billion bushels of corn in 2014, similar to 2013, accounting for almost 40 percent of total corn use. Although ethanol used for transportation fuel in the United States is close to, or near, its maximum attainable level under current policy, ethanol is also a commodity that can be exported. Todd Becker, president and CEO of Green Plains Inc., explained that there is significant growth potential for ethanol in places like China. Whereas the United States consumes about 135 billion gallons of gasoline annually, roughly 10 percent of that being ethanol, Becker noted that China consumes only about 30 billion gallons annually. A substantial increase in Chinese incomes, therefore, could present the ethanol industry with a long-term opportunity for growth in an effort to help satisfy Chinese fuel demands.

Although agribusinesses have identified key areas driving long-term growth potential, there are challenges to overcome. Businesses connected to major agricultural commodity markets have faced wide price fluctuations the last several years, with extreme shifts occurring over the past 12 months. Moreover, as Jean-Philippe Gervais, chief agricultural economist at Farm Credit Canada, pointed out, "consumers rule." Agribusinesses must ultimately meet the needs of their consumers while maintaining cost competitiveness.

Recent fluctuations in the price of corn exemplify the volatile nature of agricultural commodity markets over the last several years. From 2000 through 2005, average monthly corn prices varied relatively little, from a minimum of $1.45 per bushel to a maximum of $3.15 per bushel. Since 2006, however, prices have swung from a low of $1.90 per bushel to a record high of $8.49 per bushel in 2012. In the past 18 months alone, corn prices have plummeted by more than 100 percent.

Changes in livestock prices have been no less dramatic. Sparked by relatively low inventories and steady demand, live cattle prices have soared to all-time highs, increasing by 32 percent over the past year, and are more than double the level of a decade ago. Hog prices have increased about 50 percent over the past decade. The surge in cattle and hog prices has led to record prices for both beef and pork products.

Agribusinesses have sought to identify strategies to combat commodity market volatility. Mary Shelman, director of the Agribusiness Program at Harvard Business School, described four ways in which agribusinesses are addressing volatility: by tightening supply chains, stimulating supply growth, expanding internationally and creating differentiated products.

Shelman explained how more food companies are thinking "farm-to-fork" as a supply chain management strategy. In the United States, Domino's Pizza now works with its protein suppliers to determine the best time to purchase animal feed. In Italy, Barilla contracts with farmers for specific wheat varieties. As an example of managing supply chains internationally, Nestlé and Fonterra have been developing large-scale dairy farms in China, while Mission Produce, the largest U.S. distributor of avocados, has expanded production to Peru.

Some of the strategies agribusinesses have employed to manage volatility coincide with the goal of meeting consumer demands. Shelman noted that consumers have an increasing desire to know where their food comes from. By taking more of an all-encompassing role in supply chain management, food companies are better able to provide traceability information to consumers. In Ireland, McDonald's newspaper ads have prominently featured local beef producers. In New Zealand, the clothing firm Icebreaker provides a "baa code," enabling consumers to trace the wool used in its products to the source and see the living conditions of the sheep used to produce the wool.

Consumers also demand efficiency and 100 percent reliability. Carl Casale noted that to be seen as a reliable tier 1 supplier in a global market, you must have global origination. A supplier cannot simply tell a customer a product is sold out; the customer is unlikely to come back a second time. In the farm machinery business, users have improved efficiency through technological advancements and data availability. However, as Chuck Studer, director of Industry Relations at Deere & Co., pointed out, the rate of adoption of any technology is directly related to that customer's confidence in repeatability, in addition to other concerns surrounding privacy and data protection that must be adequately addressed.

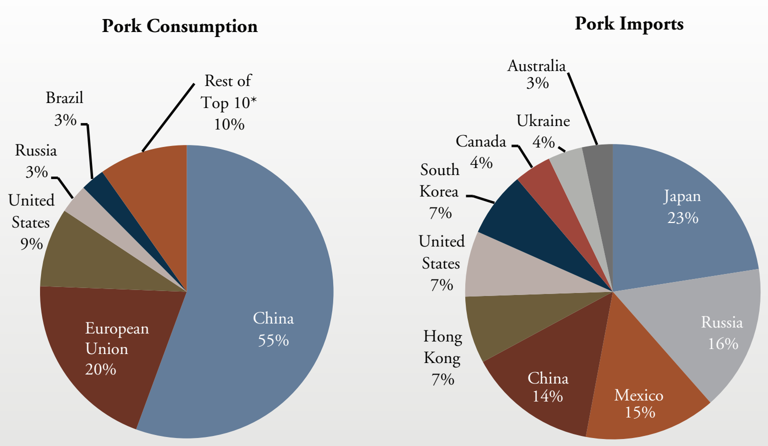
A Livestock Sector Crossroads?

Dramatically lower feed prices and record-high livestock prices have renewed optimism in the animal-based protein sector. Some may question whether the rebound is sustainable as some livestock producers have transitioned from steep losses to profit margins once unimaginable. The sector's future will ultimately depend on long-term demand prospects for meat products amid increasing global competition and a growing emphasis on food safety and product differentiation.

The extreme fluctuations in agricultural commodity prices have precipitated equally extreme changes in profit margins for livestock producers. Cattle and hog prices have surged in the last two years, driven by relatively low inventories combined with strong demand. Data from USDA and Iowa State University show that cattle feeding profit margins have improved from an average loss of $25 per hundredweight in August 2012 to a gain of approximately $25 per hundredweight two years later. Average profit margins for hog producers have also increased nearly $50 per hundredweight over that time.

Echoing the sentiment of other agribusinesses, meat producers and processors pointed to export markets as the key to long-term success. Dhamu Thamodaran, executive vice president and chief commodity hedging officer at Smithfield Foods, explained that meat consumption in the United States has declined over the past 20 years. Assuming this pattern holds, growth is export dependent. Derrell Peel, professor of Agribusiness in the Department of Agricultural Economics at Oklahoma State University, showed that global pork exports have, in fact, increased 37 percent since

Chart 1
Top 10 Pork Consumers and Importers*



** Vietnam, Mexico, South Korea, and the Philippines.*
Sources: USDA.

2005. Global beef exports have risen approximately 30 percent over the past decade.

Export markets may be the key for the livestock sector to sustain its recent resurgence, but export markets do not come without challenges. One challenge is competition. Thamodaran pointed out that, although the U.S. produces feed relatively inexpensively, the U.S. no longer is the best at raising hogs. Places like Poland and Romania, although they lag in other economic measures, have made dramatic improvements in hog production. Another challenge is currency exchange rates. Although some currency risk can be hedged, it adds a level of complexity and required focus to any organization wanting to expand globally.

Food companies have also recognized that product differentiation is an important component to long-term global growth and competitiveness. Joe Swedberg, vice president of Legislative Affairs at Hormel Foods, commented that, instead of focusing on bulk commodities, which have been volatile, Hormel looks to put a brand on everything that is processed.

Sustainable long-term growth for the livestock sector, therefore, is likely to depend on the strength of export markets. As echoed by agribusinesses at the symposium, Peel noted that China is perhaps the pre-eminent factor underlying the future strength of export markets. Although China is the largest pork producing country, and produces more than the rest of the top 10 producing countries combined, its imports have also grown rapidly (Chart 1). Peel explained that the growth in Chinese imports could quickly lead to China also becoming the largest importer of pork worldwide.

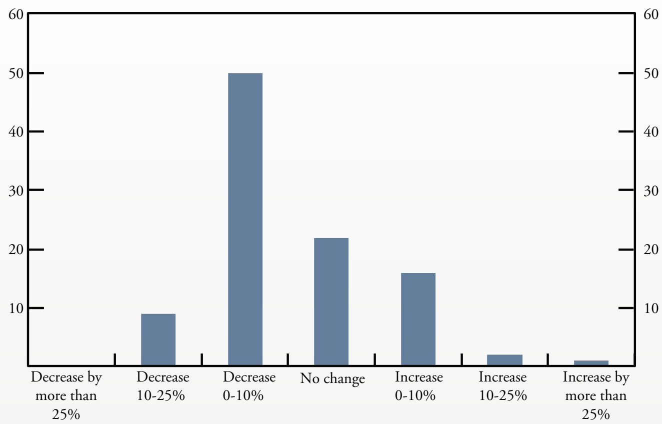
Symposium speakers suggested that higher beef and pork prices may persist, supported by relatively strong demand. In August 2014, retail ground beef prices were approximately 16 percent higher than in January, according to the Bureau of Labor Statistics. Bacon prices have risen nearly 10 percent. Peel noted, however, that we may be at the front end of a long rebuilding process.

Risks to the Rural Landscape

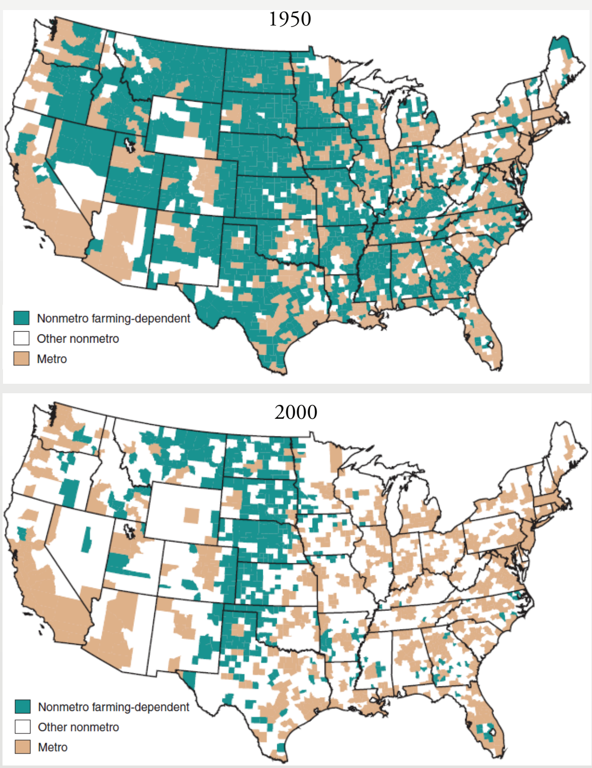
Changes in agricultural markets have raised questions about the future for rural America. Throughout the United States, rural populations are barely growing, or even dwindling, despite the recent agricultural commodity boom. Though rural America has historically been inextricably linked to agriculture, a smaller share of the country today is considered farm dependent. A broad downturn in the agricultural sector, possibly brought about by lower farm incomes, could affect some areas, but a more systemic and widespread crisis in rural America emanating from the agricultural sector might be less likely.

Following the sharp reduction in crop prices, farm incomes have been projected to be lower than in recent years. USDA has forecasted farm income to decline by 14 percent in 2014, although the forecast made in August reflected a more optimistic view than the preceding forecast made in February. Symposium participants largely echoed this view of declining farm incomes. Gervais noted that, although demand has remained strong, and will likely depend on exports going forward, competitive

Chart 2
Attendee Responses to the Question:
"Over the next 12 months, what is your expectation for high-quality cropland values in your area?"



Maps: U.S. Farming-Dependent Counties



Source: Dimitri, Effland, and Conklin, "The 20th Century Transformation of U.S. Agriculture and Farm Policy," USDA, Economic Research Service, 2005.

pressures in the marketplace will place downward pressure on farm incomes.

The prospect of lower farm incomes has raised further questions about implications for farmland values. Farmland values have risen dramatically over the past seven years, particularly in the heart of the Corn Belt. USDA data show, for example, that cropland values in Iowa more than doubled from 2008 to 2014. Despite the sharp reduction in crop prices recently, Federal Reserve survey data show that farmland values have remained relatively steady, declining only slightly in select areas. When surveyed at the symposium, however, 50 percent of attendees said they believe cropland values would decline by up to 10 percent over the next 12 months (Chart 2).

A broad decline in farm incomes, and possibly farmland values, may be thought to spill over into Main Street economies dependent on agriculture. Don Macke, director of Entrepreneurial Communities at the Center for Rural Entrepreneurship, explained that a profitable agricultural sector can provide economic stimulus and a tax base that helps rural agribusinesses and local governments prosper. Echoing this sentiment, Mark Partridge, professor in the Department of Agricultural, Environmental and Development Economics at Ohio State University, commented that large parts of the Great Plains may be more exposed to gyrations in the farm economy because agriculture plays a relatively more prominent role in those areas.

However, the nature of rural America has fundamentally shifted over the past 50 years. Citing USDA data, Partridge showed that in 1950, virtually all of rural America was farm dependent (Maps). By 2000, however, less than 20 percent of America's rural (nonmetropolitan) counties were considered farm dependent.

Partridge explored the question, then, of whether a sharp downturn in the farm economy could expose cracks on Main Street, or possibly in the banking sector. Partridge concluded that while some banks could face financial stress due to a downturn, it would be unlikely to cause widespread problems across the rural economy. This conclusion was attributed, in part, to a more diversified economy in rural America than was the case several decades ago. Macke went on to describe how areas that may be more heavily impacted by a downturn in agriculture might buck the trend—by making more intentional efforts to reinforce factors that contribute to rural community viability, such as local healthcare, education and workforce development.

The Horizon for Agricultural Finance

The shift in agricultural commodity prices has highlighted potential risks for institutions that finance agricultural operations. Yet, lending institutions have recognized that agriculture has been a recent bright spot in the global economy, with demand-driven opportunities arising across the supply chain. Aware of the potential for overheating, as exemplified by the crisis of the 1980s and concerns of today's farmland values, production-based lenders have taken a more cautious approach to balance opportunities with risks.

Strong global demand for agricultural products has translated into strong demand for financial support. Moreover, much of the global demand strength, in Asia Pacific, does not coincide with areas of supply growth, primarily in the Americas and Eastern Europe. As Elizabeth Hund, senior vice president and division head at U.S. Bank Food Industries, pointed out, this means there are many opportunities for bankers financing the food chain in an effort to move product. Brian Newcomer, executive vice president of Business Development at Rabo AgriFinance reiterated this point, saying that as emerging economies continue to flourish, incremental demand growth will have a much greater impact than in the past.

Lenders at the symposium pointed out several reasons that demand for farmland has also been strong. Throughout the symposium, speakers cited fundamentals of supply and demand that have significantly contributed to the surge in farmland values, with historically low interest rates playing a role as well. However, as Doug Stark, president and CEO of Farm Credit Services of America (FCSAmerica), explained, there have been other factors at play. Stark noted that the opportunity for farmers to acquire land represents a sense of pride and accomplishment that cannot be measured solely in economic terms; farmland is what farmers know and love. Stark also pointed out that farmers' marginal cost of acquiring additional land, historically embodied by an additional need for labor and machinery, has been drastically reduced in recent years as farmers have greatly increased their machinery capabilities.

The degree of recent price swings in agricultural commodity markets, however, has placed risk management at the forefront of lenders' concerns. Max Wake, president of Jones National Bank and Trust Co., in Seward, Neb., explained that as a small community bank, they employ a series of stress tests in addition to risk rating their loans, highlighting some of the difficulties the 1980s brought about for some institutions. Stark noted that FCSAmerica has encouraged its customers to build working capital and has taken a conservative stance on loan-to-value ratios. Nearly 80 percent of loans in FCSAmerica's portfolio have a loan-to-value ratio of less than 50 percent. Stark said that even with a 30-35 percent drop in farmland values, neither farmers nor FCSAmerica would be underwater on the loans. For financial institutions that are globally active, managing currency rate risk is also important, just as it is for global food companies. Hund explained, however, that it is not just the euro or the Canadian dollar that are of importance; it is also the Chinese yuan and the Brazilian real, noting that central bank policy and financial regulation adds complexity to the effort of managing currency risk.

Conclusion

Institutions linked to agriculture have faced an unprecedented swing in agricultural commodity prices over the past year, highlighting the relevancy of risk management tools and strategies. At the same time, agricultural industries must be ready to respond to evolving consumer preferences and demands, repositioning themselves for long-term growth. As global populations and incomes continue to rise, particularly in emerging markets such as China, long-term growth opportunities are likely to be available, despite the undeniable challenges.

Some industries, businesses and farmers may face extensive difficulties in the transition, exemplified by the transition in commodity prices. However, as Chad Hart, associate professor of Economics at Iowa State University, summarized, agriculture has responded to shifts in the past, and will continue to do so in the future.

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