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Globalization and U.S. Trade Policy - Implications for U.S. Agriculture and Farm Profitability (Paper)

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Introduction

American farmers are doing well by any measure, with farm incomes and asset values rising to unprecedented levels. Growth in U.S. agricultural exports to emerging markets, both bulk and value added goods, accounts for a significant share of the growth in farm income. Rising global demand, combined with constraints on supply, point toward continuing growth in export demand.

Translating that demand in higher farm incomes, however, depends heavily on the ability of U.S. farmers to gain access to emerging markets in the developing world. Tapping those emerging markets will require more than lowering barriers to U.S. farm exports. Globalization has fundamentally altered the way production is organized and the basis of competition in world markets. Agriculture is not exempt from those changes. Like other U.S. industries, American agriculture must learn to compete in a more complex, more networked global economy. As is true of other U.S. industries, American farmers must learn to specialize, add value, and compete in a more complex and more networked global economy.

Trade policy should aim to facilitate that process. It must keep pace with the changes facing American agriculture and the challenge U.S. farmers face competing in global markets, where the standards they must satisfy are as likely to be set by global retailers and grocery product manufacturers as they are by foreign governments.

Multilateral negotiations on agricultural trade within the World Trade Organization (WTO) have not kept pace with those changes. While work continues on agriculture in advance of yet another ministerial meeting scheduled for the end of this year in Bali, there is little prospect of serious progress on conventional barriers to trade, much less embracing the new challenges that facilitating trade in a more connected global economy raise.

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Where progress is possible is in bilateral and regional trade negotiations. The United States has, since the end of the Bush Administration, been engaged in an effort to create a Trans-Pacific Partnership – a negotiation that includes 12 countries in the most economically dynamic region of the world. Japan’s recent entry into those talks raises the stakes for U.S. agriculture.

The same holds true of President Obama’s recent agreement to enter into trade negotiations with the 27 member states of the European Union. Conclusion of an ambitious Trans-Atlantic Trade and Investment Partnership would pay significant dividends for U.S. agriculture, both in terms of lowering export barriers and in reducing the impact of European regulations on U.S. trade with the continent and in third country markets.

Both negotiations are important in their own right, given the volume of existing farm trade among the various participants. But, their impact may be far broader. Given the size of the economies and volume of trade involved (and the WTO’s dim prospects), the negotiations could well influence the direction of global trade rules in the decades ahead.

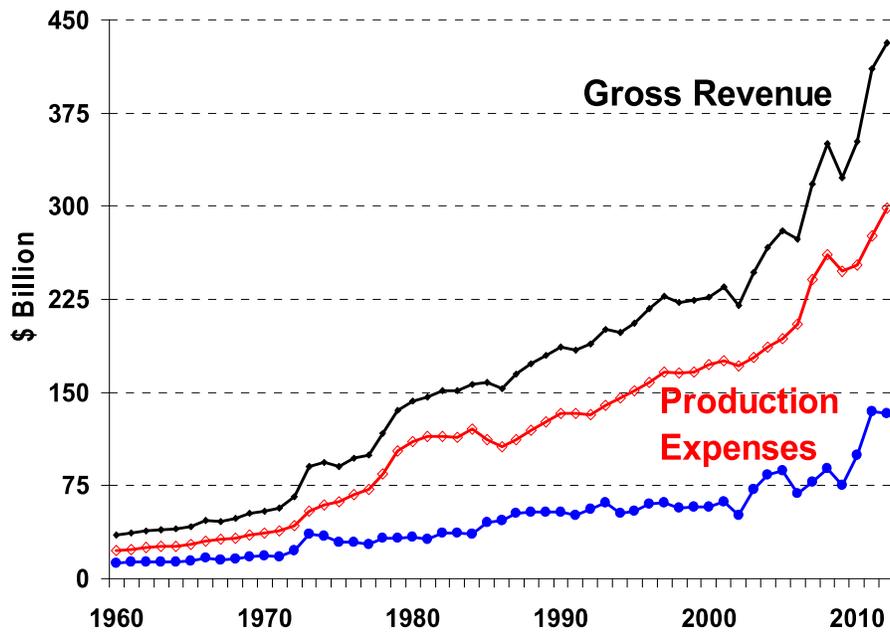
Seen in that light, both sets of talks offer U.S. policymakers an opportunity to bring our agricultural trade policy into the 21st century. That process must be informed by a clear understanding of the challenges U.S. farmers face in today’s global food markets and what those challenges imply for how we negotiate “market access” in a more networked global economy.

Toward that end, the following discussion aims to explain the forces driving the changes in global markets, what they suggest for U.S. agricultural trade policy, and what that means for farm profitability going forward. The discussion is divided into three parts. The first discusses current farm profitability and the extent to which rising exports are driving record farm income, before turning to the global trends that are shaping the demand for U.S. agricultural exports. The second part identifies forces shaping the operating environment for U.S. agriculture and explains, in broad outline, their implications for farm profitability. The third part turns to the trade policy response to the changing global environment.

I. Current Farm Income and the Rising Importance of Trade

As the chart below reflects, American farmers are, by any measure, doing well. Against the backdrop of a sluggish U.S. economy and the most severe drought in over 25 years, national net farm income for 2012 was roughly \$114 billion.¹ While down slightly (3.3%) from the record level reached the previous year, 2012 was nonetheless the second-highest total on record.²

U.S. Farm Income 1960-2012³



Source: USDA, ERS, 2012 Farm Income Forecast, November 27, 2012.

Farm wealth has risen to record levels as well, with farm asset values rising for the past four years and gaining 7% in 2012 to reach a record \$2,540 billion.⁴ That growth in asset value far exceeded the increase in farm debt, resulting in steady declines in the farm debt-to-asset ratio since 2008 to 10.5%, the second-lowest level since 1960.⁵

¹ Schnepf, R., *U.S. Farm Income*, Congressional Research Service (December 10, 2012).

² Ibid.

³ All values are in nominal terms, unadjusted for inflation. The 2011 figures are preliminary and the 2012 figures are forecasts.

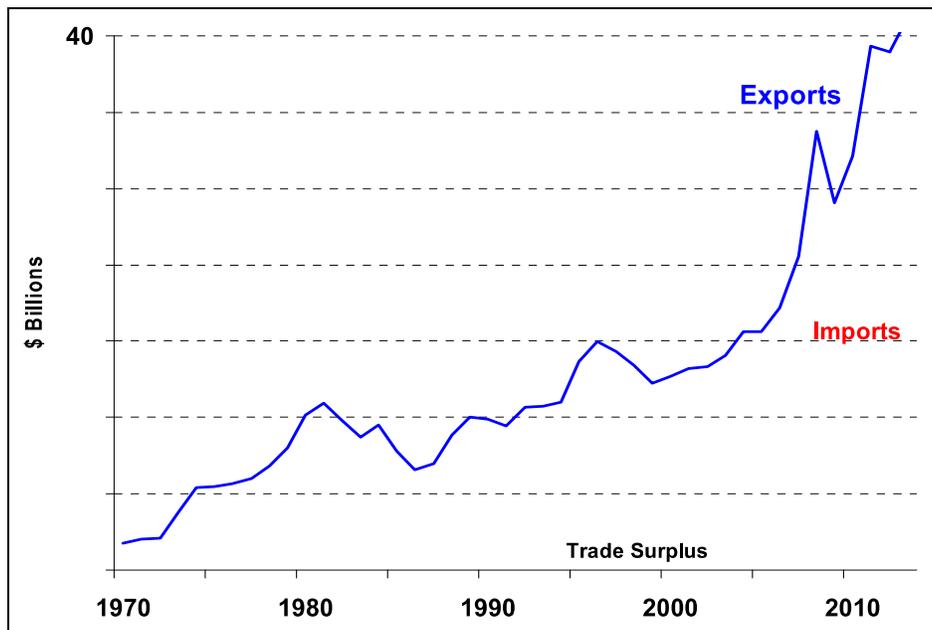
⁴ Ibid.

⁵ Ibid.

A. Growing Export Demand and the Shift Toward Higher Value Added Products

The severe drought had a significant impact on prices, particularly for corn and soybeans, but the far more powerful influence raising farm incomes was rising foreign demand and record farm exports, both bulk commodities and higher-value added goods. Exports of agricultural goods reached record levels in 2011 and fell only slightly in 2012, with projections for yet another record year in 2013 (forecast at \$143.5 billion). Agricultural imports have risen sharply as well, but the U.S. agricultural trade surplus is projected to remain above \$30 billion in 2013.⁶

U.S. Agricultural Trade Since 1970



Source: USDA, ERS, *Outlook for U.S. Agricultural Trade*, AES-76, November 29, 2012.

The strong U.S. export performance owes its vitality to two main sources. The first source involves rising demand in emerging markets, particularly China and the rest of Asia.

⁶ The rising imports are largely in higher-value added goods as well, rather than bulk commodities where U.S. farm productivity offers a decided advantage for U.S. farmers selling in their home market. See, e.g., Huang, S. and F. Gale, *China's Rising Fruit and Vegetable Exports Challenge U.S. Industries* (2006).

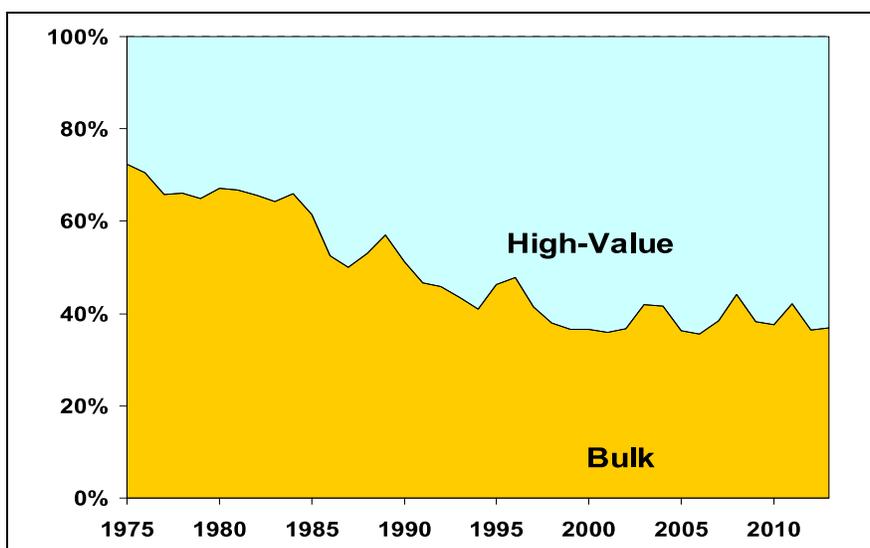
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American farmers have shipped record amounts of oilseeds to China since 2010 and have seen steady increases in animal product exports to East Asia.⁷

The second source of strong export performance is the steady growth over the past 40 years of high-valued export products, which have driven the value of U.S. agricultural exports to ever-higher totals.⁸ That pattern is continuing, with high-valued export products, such as horticultural, livestock, poultry, and dairy, expected to rise for a fourth consecutive year, to \$91.5 billion in 2013.⁹ But, it also reflects greater trade in intermediate goods and processed products (e.g., exports of vegetable oil and meal reducing demand for oilseeds in bulk), as well as shifting patterns of consumption (e.g., exports of beef and pork curbing foreign import demand for grains).¹⁰

The combined influence of the two factors – increased demand from emerging markets, particularly in Asia, and a rising share of higher-value added exports is reflected in the following chart. To the extent that the share of total U.S. exports attributable to record level higher-value added exports has abated, it is due to rapid growth in demand for both bulk crops, especially feed grains and oilseeds, and higher-value added goods in emerging markets (e.g., record exports of soybeans and meal, as well as pork to China in 2011).

U.S. Agricultural Trade: Bulk v. Value Added



Source: USDA, ERS, *Outlook for U.S. Agricultural Trade*, AES-76, November 29, 2012.

⁷ USDA, ERS, *Outlook for U.S. Agricultural Trade*, AES-76, November 29, 2012.

⁸ Gehlhar, M. and W. Coyle, *Global Food Consumption and Impacts on Trade Patterns* (2001).

⁹ USDA, ERS, *Outlook for U.S. Agricultural Trade*, AES-76, November 29, 2012.

¹⁰ Gehlhar, M. and W. Coyle, *Global Food Consumption and Impacts on Trade Patterns* (2001).

Rising demand for bulk commodities in emerging markets and the growth in U.S. higher value added exports explains, in large part, why exports now account for 31% of total gross farm receipts. That trend has obvious implications for U.S. farm profitability if it continues. A number of factors suggest it will.

B. Trends Shaping Global Food Markets

Rising global demand for U.S. agricultural exports in recent years will continue to drive U.S. farm income for the foreseeable future. That demand is being driven by three factors – (1) demographics, (2) urbanization, and (3) economic growth, which translate into rising incomes in emerging markets in the developing world. American agriculture’s future competitiveness and profitability will depend heavily on its ability to gain access to and serve those markets.

The 2008 spike in food prices marked what increasingly looks like a fundamental shift in the balance between global supply and demand.¹¹ That spike reversed what had been a long-term decline in world market prices for grains, oilseeds and livestock products over the past 40 years.¹² A number of factors contributed to the sharp increase in prices. Most importantly, however, global demand was rising even as supplies grew tighter due to decreasing rates of productivity growth, low investment in both agricultural research and productive capacity.¹³

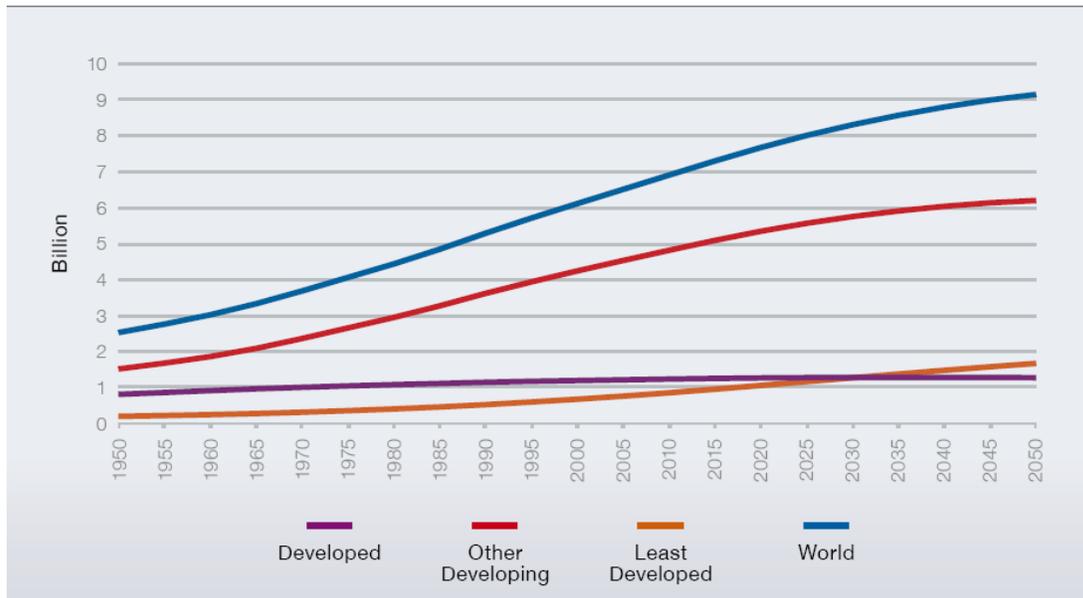
The demand side of that story is partially captured in the following chart, which shows world population growth projected to 2050, as well as the distribution of that growth between developed, least developed and other developing countries.

¹¹ The increase in prices was dramatic, rising by more than 60 percent in the two years prior to their peak at historic highs in 2008. Trostle, R., *Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices*, USDA ERS WRS-0801 (July 2008).

¹² Ibid.; see also FAO, *How to Feed the World in 2050* (2008).

¹³ Trostle, R., *Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices*, USDA ERS WRS-0801 (July 2008).

Historical and Projected World Population Growth



Source: United Nations Population Division

What the chart reflects is that, since 1950, the world’s population has nearly tripled, with most of that growth coming from the developing world.¹⁴ That trend is accelerating. By 2050, the world’s population will reach 9.1 billion, 34 percent higher than today.¹⁵ The projected increase in population translates into significantly higher demand for food.¹⁶

In that respect, Sub-Saharan Africa represents a microcosm of the global challenge. The region has actually seen remarkable gains in grain production over the past 20 years – averaging 2.8 percent per year.¹⁷ Those gains, however, have been almost entirely offset by the region’s rapid population growth (2.7 percent per year compared to 1.5 percent in the other regions).¹⁸

Rising global demand is, of course, more than a function of population growth. Incomes, particularly in the developing world, have risen sharply and are expected to grow as well. Using the World Bank’s baseline projections of economic growth, the FAO estimates

¹⁴ FAO, *How to Feed the World in 2050* (2008).

¹⁵ Ibid.

¹⁶ FAO, *The State of Food Insecurity in the World 2009*.

¹⁷ Ibid.

¹⁸ Ibid.

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an average annual growth rate of 2.9 percent of GDP between 2005 and 2050.¹⁹ With much of that income growth coming from the developing world, which is expected to grow at a 5.2 percent annual rate, the income gap between rich and poor will narrow, with major implications for the demand for food.²⁰

Equally significant, urbanization will accelerate, particularly in the developing world.²¹ By 2050, 70 percent of the world's population will be urban compared to 49 percent today.²² That shift has significant implications for food demand by virtue of its impact on lifestyles and caloric requirements, food availability and diversity, and social conditions, such as upgrading of female labor status and income.²³

Urbanization is particularly pronounced in Asia and the Pacific – the most economically dynamic region in the world and undoubtedly the largest potential market for U.S. agriculture and agribusiness over the next two decades. There, the region's "urban population is expected to grow by over 590 million people between 2000 and 2020, an increase of about 45 percent."²⁴ In China alone, the urban population is expected to grow by 67 percent, with more than 145 million people migrating from rural parts of the country to urban centers.²⁵

A demographic shift of that magnitude will require major increases in productivity by those who remain in farming. Food production (i.e., net of production for biofuels) will have to rise by 70 percent, which seems highly unlikely.²⁶ While demand is rising, the long-term trends in supply are moving in the opposite direction. According to the U.S. Department of Agriculture, the annual growth rate in the production of aggregate grains and oilseeds has been slowing.²⁷ The Department's 10-year projections for U.S. and world

¹⁹ FAO, *How to Feed the World in 2050* (2008).

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ Regmi, A. and J. Dyck, *Effects of Urbanization on Global Food Demand* (2001).

²⁴ Armbruster, W., W. Coyle, and B. Gilmour, *Where Will Demographics Take the Asia-Pacific Food System?* (2004).

²⁵ Ibid.

²⁶ The 70 percent increase in production implies an increase in annual cereal production to 3 billion tons, up from 2.1 billion tons today. Ibid. Meat production will have to rise to 470 million tons – an increase of 200 million tons over current production levels. Ibid. Neither figure seems likely to be achieved under current technological and economic constraints, particularly the policies shaping agriculture markets throughout much of the developing world.

²⁷ Whereas production rose an average of 2.2 percent per year between 1970 and 1990, the growth rate has declined to about 1.3 percent since 1990. Trostle, R., *Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices*, USDA ERS WRS-0801 (July 2008).

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agriculture suggest that the rate of growth will decline further in the decade ahead (slowing to a rate of 1.2 percent per year between 2009 and 2017).²⁸

As an indicator of what that implies in terms of prices going forward, the FAO estimates that the number of chronically undernourished people rose 842 million to over 1 billion the past two decades despite record harvests.²⁹ Looking forward, the number of chronically undernourished and malnourished in the world is expected to rise, rather than fall, despite income growth in much of the developing world.³⁰

C. Influence of Biofuels

Although less significant as a driver of global demand, the rising use of biofuels has nonetheless reshaped the U.S. market and, even at a global level, has played a role in driving prices higher at the margin.³¹ The acreage used for biofuels represents a *de minimis* share of total productive capacity, even among the top six producers of ethanol and other fuels globally.³²

But, the Renewable Fuel Standard provision of the Energy Independence and Security Act (EISA) of 2007, requiring fuel producers to use at least 36 billion gallons of biofuel by 2022, has led to a marked jump in the share of total domestic corn production now dedicated to ethanol.³³ Ethanol's share of U.S. corn production had already risen from 7.5 percent in 2001 to 22.6 percent in 2007 based on previous mandates and the USDA expects ethanol production to consume over 35 percent of U.S. corn production by 2016.³⁴

Moreover, even if global growth in grains- and oilseeds-based biofuels production slows in the next several years, as the Department of Agriculture expects, biofuels continue

²⁸ Ibid. The most recent Food and Agriculture Organization (“FAO”) report on food supply and prices highlights the challenge. According to the FAO, “[g]lobal cereal supply and demand balance is forecast to tighten considerably in 2012/13, due mainly to declines in wheat and maize production.” Food and Agriculture Organization, *Food Outlook* (November, 2012). The FAO’s report highlights the fact that even a small decline from 2011’s record cereal crop (i.e., a reduction of 2.7 percent) would lead to a “25 million tonne contraction in world stocks” and a corresponding uptick in prices. Ibid.

²⁹ FAO, *How to Feed the World in 2050* (2008).

³⁰ FAO, *The State of Food Insecurity in the World 2009*.

³¹ Trostle, R., *Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices*, USDA ERS WRS-0801 (July 2008).

³² Ibid.

³³ Malcolm, S., and M. Aillery, *Growing Crops for Biofuels Has Spillover Effects*, Amber Waves (March, 2009).

³⁴ Ibid.

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to influence prices in what look to be tight markets for the foreseeable future.³⁵ As in any commodity market characterized by inelastic demand and supply in the short run, even marginal impacts can have outsized effects on prices when demand rises and there is little room for a corresponding response in supply.³⁶

Apart from the impact of biofuels, what the foregoing means in practical terms for U.S. agriculture and farm profitability is that we are entering an era of rising demand, constraints on supply, and higher prices generally, which bodes well for American farmers to the extent they can translate those trends into sales and higher farm profits. As the discussion of the trends above suggests, however, doing that will depend heavily on U.S. farmers' ability to gain access to and serve emerging markets in the developing world – markets driven by different consumer tastes, income profiles, modes of distribution and points of sale.³⁷

D. The Geography of Global Demand

What is most striking about the picture drawn above is what it suggests about the geography of demand for U.S. farm products. By 2008, for the first time as a group, developing countries accounted for more than 50 percent of total U.S. export sales of agricultural products.³⁸ That trend was amplified by the financial crisis – while developed economies slowed their consumption, developing country growth, income and consumption continued to expand.³⁹

Significantly, the evidence points not only toward higher spending and consumption, but also toward greater convergence in the patterns of food consumption as incomes in the

³⁵ Hertel, T., and J. Beckman, *Commodity Price Volatility in the Biofuel Era: An Examination of the Linkage Between Energy and Agricultural Markets* (2011).

³⁶ Hallam, D., *Agricultural Commodity Price Volatility: How Improved Information and Transparency Can Limit the Swings* (2011).

³⁷ Meade, B., A. Muhammad, and N. Rada, *Income Growth in Developing Countries Can Increase U.S. Agricultural Exports* (2011).

³⁸ USDA, ERS, *Developing Countries Emerge as Biggest Destination for U.S. Food Exports* (2008).

³⁹ Peters, M., M. Shane, and D. Torgerson, *What the 2008/2009 World Economic Crisis Means for Global Agricultural Trade* (2009).

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developing world rise.⁴⁰ Consistently, rising incomes translate into higher demand for “some combination of increased quality, convenience, and variety of foods.”⁴¹

The rise in developing country incomes and the demand for quality, convenience and variety has paralleled and reinforced the rise of modern grocery retailing in the developing world, particularly in large emerging markets. That convergence highlights the extent to which changes “in food preferences and food delivery mechanisms are often mutually reinforcing, as when modern retailing increases access to processed foods or to perishable meats, fruits, and vegetables.”⁴²

The higher demand for quality and service complements the increasing consumer preference for higher value-added products, both of which, in turn, favor modernization of the retail sector.⁴³ For reasons of scale and distributional efficiencies, modern retailers can deliver a wider range of higher quality food at prices low enough for low-income families to buy.

Both converging consumer spending preferences and the emergence of modern retailing in developing country markets offer advantages to U.S. agriculture. Converging spending habits imply a rising preference for the value-added products American farmers produce. American farmers are, moreover, entirely familiar with the ways in which modern retailing shapes the demand for farm products because those retailing concepts emerged first in their home market.

That said, there is a caveat. While there is a convergence in consumer spending in terms of broad preferences, such as higher protein consumption, and rising demand for non-price characteristics like quality, diversity, and food safety, those trends should not be misread as a homogenization of consumer tastes.

Differences in consumer preferences have driven very different patterns of penetration by modern food retailing.⁴⁴ Similarly, for all of the broad convergence, there

⁴⁰ Frazao, E., B. Meade, and A. Regmi, *Converging Patterns in Global Food Consumption and Food Delivery Systems*, Amber Waves (February 2008).

⁴¹ Ibid, see also Gale, F. and K. Huang, *Demand for Food Quantity and Quality in China* (2007).

⁴² Regmi, A., H. Takeshima, and L. Unnevehr, *Convergence in Global Food Demand and Delivery* (2008).

⁴³ The evidence suggests that “growth in demand for non-price characteristics, such as convenience in food shopping and preparation” – a feature of value-added products – drives the expansion in retailing. Tandon, S., M. Landes, and A. Woolverton, *The Expansion of Modern Grocery Retailing and Trade in Developing Countries* (2011).

⁴⁴ Ibid (e.g., with Eastern Europe and Asia having similar growth in modern grocery formats, the pattern of growth has been markedly different due to the demand for different food products in the two regions).

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remain sharp differences between countries regarding consumer preferences for convenience versus nutrition.⁴⁵

Thus, while the general pattern points toward continued growth in value-added products, which is consistent with the statistics noted above with respect to the value-added share of U.S. exports, the demand will continue to be differentiated across markets based on consumer tastes.⁴⁶

Supermarkets' role as a conduit for American farm products has implications for demand as well. There are marked differences in the types of foods in which supermarkets succeed in penetrating particular markets, with penetration in fresh foods, which includes many value-added products U.S. farmers produce, lagging behind market penetration in processed and packaged goods.⁴⁷ The gap closes over time, as consumers grow more comfortable with supermarkets serving their needs for meat and fresh produce.⁴⁸

Even taking that lag into account, what the discussion above highlights is the growing importance of retailers to U.S. farmers as integrators of markets and as the organizers of global supply chains that are capable of responding to differences in consumer preferences between emerging markets in the developing world. Retailers serve the function of translating those consumer preferences back into demand for bulk and value-added goods American farmers can produce. The ability of retailers to play that role helps explain the emergence of global agribusiness value chains, which will be discussed in greater detail below.

But, the more important point from a trade policy perspective is what those trends suggest in terms of how we define market access and the goals of U.S. agricultural trade policy. To the extent that U.S. farmers' success in emerging markets will be determined by their sales through channels other than traditional commodity markets, U.S. agricultural trade policy should aim to liberalize distribution and marketing channels, even while continuing to press for the removal of market access barriers as conventionally defined.

⁴⁵ Regmi, A., H. Takeshima, and L. Unnevehr, *Convergence in Global Food Demand and Delivery* (2008) (e.g., convenience ranked far higher in developed countries, such as Japan, which may be attributable to a higher opportunity cost of time spent preparing food, than in Mexico or Egypt and there were marked differences even between Mexico and Egypt).

⁴⁶ Meade, B., A. Muhammad, and N. Rada, *Income Growth in Developing Countries Can Increase U.S. Agricultural Exports* (2011).

⁴⁷ Reardon, T., *Retail Companies as Integrators of Value Chains in Developing Countries: Diffusion, Procurement System Change, and Trade and Development Effects* (2005).

⁴⁸ Ibid.

Indeed, as the discussion below amplifies, the aim should be to liberalize the entire agribusiness value chain as a means not only of reducing conventional barriers to trade, but also as a means of lowering the transaction costs U.S. farmers face in competing in global markets.

II. Redefining Market Access in a Global Era

To understand how and why the determinants of market access are changing requires an appreciation of the extent to which the forces driving the deeper integration of world markets have fundamentally altered the way in which production is organized, the pattern of international trade, and the basis of international commercial competition.

The net effect has been to alter the way that products, including farm products, reach markets globally. To take full advantage of rising global demand, U.S. farmers will have to find ways to succeed in a more complex global agrifood sector and a more networked global economy.

A. Forces Driving the Deeper Integration of Global Markets

A number of factors have contributed to the globalization of world food markets. They include geopolitical shifts that erased divisions in the world economy, choices by governments, particularly in the developing world to rely more heavily on markets and open their economies to trade, the long-standing, U.S. led effort to liberalize trade and investment barriers, and, perhaps most importantly, a revolution in technology.

1. Geopolitical and Economic Shifts

Among the forces driving globalization and the integration of world markets, the most often overlooked is the Cold War's end, which erased political barriers that divided the world economy for the better part of the 20th century.⁴⁹ Erasing those barriers had the effect

⁴⁹ As an indication of how severely the political conflict isolated east from west, in 1938, prior to the onset of World War II, trade between what were to become East Bloc states and the "West" accounted for 73.8% of the East's total. Findlay, R. and K. O'Rourke, *Power and Plenty – Trade, War, and the World Economy in the Second*

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of dramatically expanding the reach of global markets and creating new opportunities for trade and specialization. It also created a broader plane across which the other forces driving globalization played out.

One of those forces is inescapably intertwined with the Cold War's end – the choice by many countries in the developing world to rely more heavily on markets as a means of organizing economic activity.⁵⁰ The shift toward reliance on markets included a shift away from policies that isolated their markets from the world economy and a greater openness to trade and foreign investment, particularly in Asia.⁵¹

Just as important, the shift toward greater reliance on markets implied the need to adopt their institutional underpinnings, from property rights to freedom of contract to greater regulatory certainty.⁵² The reforms reduced the uncertainty, risk, and transaction costs associated with doing business in those markets.

2. Trade Liberalization

The liberalization of trade and investment barriers globally has had the same effect in terms of reducing uncertainty, risk, and transaction costs of engaging in trade. The World Trade Organization (“WTO”) and its predecessor, the General Agreement on Tariffs and Trade (“GATT”), largely succeeded in establishing a rules-based international trading system. Trade rules, combined with a means of resolving disputes over the implementation and interpretation of those rules, has had a powerful liberalizing effect wholly apart from the

Millennium (2007). By 1953, as the Cold War reached the height of its tensions, East-West trade had fallen to 14% of the East's total. East-West trade fell sharply as a share of the West's trade as well, accounting for only 2.1% of the West's trade in 1953. Ibid.

⁵⁰ One of the outcomes of the post-World War II wave of independence movements were newly created states that tended to pursue inward looking trade policies that were simply an extension of a broader trend toward greater government control of the “commanding heights” of the economy. The “developing world” pursued those policies for a variety of reasons – the example presented by the Soviet Union's economic growth and industrialization; the rejection of the economic model represented by past colonial powers; misguided economic theories favoring “import substitution;” and a belief that “a state should assert its independence by actively pursuing ‘state-led industrialisation’ policies that were inevitably inward looking. Ibid. The effect of that choice is reflected in India's share of world exports, which declined precipitously from 2.7% prior to independence in 1948 to 0.7% by 1970 at the height of the regulatory state's power. Ibid. See also Taylor, A., *On the Costs of Inward-Looking Development: Price Distortions, Growth, and Divergence in Latin America* (1998).

⁵¹ Sachs, J., and A. Warner, *Economic Reform and the Process of Global Integration* (1995).

⁵² Ibid.

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WTO's contribution to reducing tariffs and other trade barriers.⁵³ That liberalizing effect flows from the greater consistency it encourages in the application of the rules of the game, which has the effect of reducing uncertainty and risk associated with international trade, just as sound domestic legal institutions do in the area of contracts.⁵⁴

At the same time, the WTO and the GATT have also made progress in lowering trade and investment barriers. That liberalization paralleled and reinforced a dramatic rise in world trade. On a trade-weighted basis, successive GATT rounds reduced tariffs on manufactured goods for an average “of roughly 35 percent before the creation of GATT in 1947 to about 6.4 percent at the start of the Uruguay Round in 1986,” which resulted in the creation of the WTO.⁵⁵ The Uruguay Round lowered tariffs still further. The reductions in tariffs paralleled a dramatic surge in trade – over the roughly 40 year period from the GATT's inception to 2000, trade increased to 25 times its initial level.⁵⁶

The following chart illustrates the effect over the past three decades, with average world tariffs falling from roughly 9 percent in 1980 to less than 3percent in 2010 and trade volumes rising from roughly \$2 trillion to nearly \$14 trillion over the same timeframe.

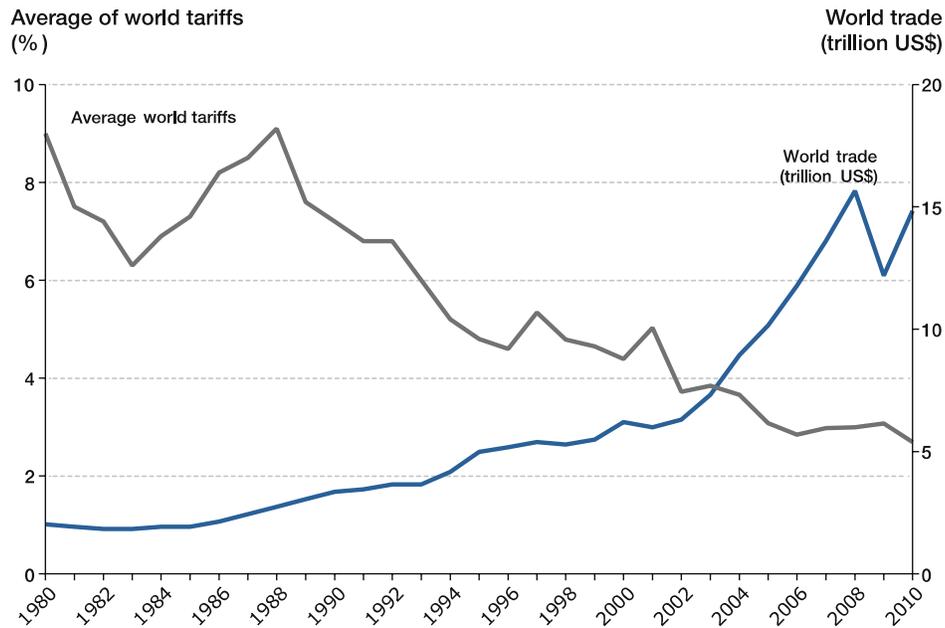
⁵³ Bown, C., *On the Economic Success of GATT/WTO Dispute Settlement* (2003) (highlighting the value of dispute settlement in encouraging the elimination of trade policies inconsistent with both WTO rules and the optimal allocation of capital and resources).

⁵⁴ See Irwin, D., *The GATT's Contribution to Economic Recovery in Post-War Western Europe* (1993) (highlighting the importance of “binding” tariffs (i.e., a commitment not to raise tariffs above agreed levels) relative to the modest reduction in tariff levels in early GATT negotiating rounds due to the reduced uncertainty flowing from the binding). See also Handley, K., *Exporting Under Trade Policy Uncertainty: Theory and Evidence* (2011) (suggesting that reducing trade policy uncertainty can be as effective as liberalization in encouraging firms to undertake the investments needed to engage in exporting).

⁵⁵ Crowley, M., *An Introduction to the WTO and GATT* (2003).

⁵⁶ *Ibid.*

Tariffs and Trade, 1980-2010



Source: World Bank

It is worth stressing that not all trade liberalization within the WTO context is accomplished through negotiating rounds involving the entire membership. In agriculture in particular, more actual liberalization has taken place through the “accession agreements” that formed the predicate for the People’s Republic of China and, more recently, Russia joining the WTO. In each instance, the acceding member country made deeper commitments to liberalize trade in agriculture than are common among the vast majority of current WTO members.⁵⁷

⁵⁷ Russia’s recent accession provides a case in point. In terms of food and agricultural products, the United States is Russia’s third largest supplier, with exports in 2010 of \$1.3 billion. Office of the United States Trade Representative, *U.S. Agriculture Sector - Russia’s Membership in the WTO Will Provide Significant Commercial Opportunities for U.S. Exporters* (2012). In acceding to the WTO, Russia agreed to reduce tariffs substantially on a wide range of farm products, both bulk and value added. Russia will, for example, cut its tariff on imports of U.S. soybeans to zero, and reduce its tariffs on meal and oil to 2.5 percent and 15 percent respectively. Ibid. Russia also agreed to expand its tariff rate quotas on pork, beef and poultry and, perhaps most importantly, will be bound in the future by the WTO rules governing sanitary and phyto-sanitary standards. Ibid. The deal is also helpful to other segments of the agribusiness value chain. Russia represents the 4th largest export market for U.S. farm equipment. International Trade Administration, U.S. Department of Commerce, *Russia’s Accession to the WTO - Opportunities for the U.S. Agricultural Equipment Sector* (2012). Absent WTO disciplines, U.S. farm equipment makers would have faced tariffs above 15 percent ad valorem on exports of combines; under the accession agreement, Russia will cut its tariffs below 5 percent. Ibid.

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Equally important, the WTO rules allow for members to go further than current WTO rules through the negotiations of free trade agreements or customs unions. As will be discussed in greater detail below, those bilateral and regional arrangements have proved more far reaching in liberalizing trade in agricultural goods than the GATT and the WTO.

The effect of liberalizing trade, whether at the multilateral level in the GATT and WTO or within regional or bilateral groupings, extends beyond the reduction of barriers to trade. Like the political and economic shifts discussed previously, trade and investment liberalization expands the plane surface of the global economy. From the perspective of global economic growth, broadening the plane surface of the global economy is important because it facilitates the diffusion of technology, both in terms of products and processes, which drives economic growth.

In the event, trade and investment liberalization contributed powerfully to empowering and expanding the economic impact of the technological revolution in computing, communications, transportation, logistics and finance that paralleled the geopolitical, economic, and trade policy shifts discussed above.

3. Technological Revolution

In some respects, the best way to visualize the revolution in computing is simply to say that computing power in the average cellular telephone exceeds that of the original room-sized ENIAC computer that launched the revolution. Unpacking that example, however, helps demonstrate what the computing revolution has done in economic terms. The progressive miniaturization of microprocessors and memory devices made computing power physically accessible and lowered its cost to businesses, including farms, which improved their ability to manage their operations.

The accessibility of computing power combined with significant advances in communications technology, particularly the introduction of fiber optic cable, cellular communications, and wireless connectivity, in powerful ways. One was to make a wide variety of information available to businesses, including farmers, that improved their productivity. In the agricultural arena, that information included advances in agronomy, biotechnology, weather forecasts, extension services, and farm management, among others.

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Technological change has an impact both on and off the farm. Of growing importance on the farm is the slow but steady adoption of precision information technologies, such as yield monitors, variable-rate applicators, and global positioning systems (“GPS”) maps.⁵⁸ Variable-rate technology applicators can, for example, “apply seeds, fertilizer, and pesticides to suit different sections of a field depending on soil conditions, nutrient needs, and the severity of pest problems, thereby economizing on inputs without sacrificing yield.”⁵⁹

As important as information technologies can be to yields, the arguably bigger impact lies off the farm. By lowering information barriers that are often the most significant obstacles to connecting buyers and sellers in market-based transactions, information technology offers new ways for producers to connect to markets, both locally and globally. Such technologies have, for example, played an instrumental role in the development of domestic and global agribusiness value chains that are reshaping agricultural markets and distribution channels.

Having said that, there is a reason to focus on transport costs due to their outsized impact in shaping agricultural trade. In farm products, geography plays a significant role in determining who trades and what gets traded, even in our domestic market.⁶⁰ The consistent relationship between freight costs and trade flows illustrates that effect.⁶¹

Looking at one mode of transport – maritime shipping – that affects both bulk and a sizeable share of value-added food commodities illustrates the complexity. According to a recent study by the Organization for Economic Cooperation and Development (“OECD”), maritime transport costs alone represent 10 percent, on average, of the imported value of

⁵⁸ Schimmelpfennig, D. and R. Ebel, *On the Doorstep of the Information Age – Recent Adoption of Precision Agriculture* (2011).

⁵⁹ Ibid.

⁶⁰ The size of an economy and distance account for roughly 70 percent of cross-country variations in trade. Behar, A. and A. Venables, *Transport Costs and International Trade* (2011). Other geographic variables are significant as well, including a country’s physical size, the extent to which it is landlocked, the borders it shares, etc. Ibid.

⁶¹ Ibid. Having said that, actually measuring the impact proves complex. The type of product, producers’ relative use of transportation services, and different modes of transportation all complicate the effort to develop a single measure of transportation costs. Hummels, D., *Transportation Costs and International Trade in the Second Era of Globalization* (2007). Furthermore, improvements in transportation technology, such as containerization, can be offset by rising input costs, such as energy prices. Ibid.

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agricultural products – essentially the equivalent of the average tariff on agricultural goods.⁶² Thus, it would not be unreasonable to expect that a sharp reduction in transportation costs could have the same effect as negotiating new disciplines on trade barriers in terms of its practical impact on trade flows.⁶³

But, the impact of the revolution in transportation technology and logistics on agricultural trade, both within the United States and globally, extends well beyond reducing costs. Advances that have reduced delivery times and improved storage facilitated the growth in trade of perishable food products, accounting, in part, for the shift highlighted above in the composition of U.S. agricultural trade from bulk commodities to higher value-added, non-bulk items.⁶⁴ Innovations in packaging, coatings for fruits and vegetables, bioengineering, and other efforts to reduce the deterioration of perishable products have helped extend the marketing reach of U.S. growers and that of their competition.⁶⁵

B. Impact on the Organization of Production and the Pattern of Trade

Globalization's most obvious impact is seen in the sharp reduction in transaction costs associated with engaging in trade and the impact that reduction has had on the

⁶² Korinek, J., and P. Sourdin, *Clarifying Trade Costs – Maritime Transport and Its Effect on Agricultural Trade*, OECD (2009).

⁶³ *Ibid.* By the same token, an increase in maritime shipping costs can have the opposite amplified effect. According to the OECD, a doubling of maritime transport costs would yield a 42 percent drop in trade on average in agricultural goods overall. *Ibid.* Delays in transit can have the same effect – an additional 20 days at sea, for example, translates into a 4.5 percent reduction in trade between two trading partners. *Ibid.* Those figures create something of a paradox. The evidence suggests that maritime shipping costs for all agricultural products rose by 26 percent from 1991 to 2007, despite significant improvements in shipping technology, including containerization and larger, lighter, and faster ships. *Ibid.* Yet, agricultural trade rose, rather than fell, during that timeframe. The explanation lies in the fact that maritime transport costs can vary widely between commodities and trade routes. Any average figure masks some important differences in transport costs among commodities and between different destinations. Maritime transport costs can be particularly high for some agricultural products due to their weight-to-value ratio. Goods shipped in bulk, such as cereals and oilseeds, for example, are acutely sensitive to changes in maritime transport costs. The cost of shipping grains can equal 20-30 percent of their value in some markets. *Ibid.* Agricultural trade between the United States and South America offers a case in point. While maritime transport costs measured as a share of the value of the traded goods from all other regions of the world were between 5.5 and 7.5 percent, as of 2007, the cost of shipping agricultural products from South America into the U.S. market were, at 10 percent of the value of the traded goods, the highest in the range, due largely to the content of the trade. *Ibid.* South America's agricultural exports to the United States are generally bulk products, such as grains, as opposed to the processed products and higher value added goods that characterize agricultural trade with other regions. *Ibid.*

⁶⁴ Coyle, W., W. Hall, and N. Ballenger, *Transportation Technology and The Rising Share of U.S. Perishable Food Trade* (2001).

⁶⁵ *Ibid.*

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economics of industrial organization. One of the lessons of the economics of industrial organization is that firms offer a means of organizing economic activity that reduces or avoids a number of costs that would otherwise arise from trying to achieve the same result through a series of market-based exchanges.⁶⁶

An environment of high transaction costs favors vertical integration of production within a single firm; a low transaction cost environment enhances the ability to engage in impersonal exchange and, therefore, reduces the need for vertical integration.⁶⁷ By sharply reducing transaction costs, the forces driving globalization encouraged de-verticalization, greater horizontal reach, and softer boundaries at the edges of enterprises.⁶⁸

Altering the organization of production globally has, unsurprisingly, had a profound effect on trade. More and more of the world's economic activity is now organized through global value chains and strategic networks, rather than through arm's length sales between vertically-integrated buyers and sellers in different countries, as the textbook examples of international trade imply. The most obvious evidence of that trend lies in the percentage of world trade made up of intermediate goods – a nearly 60 percent share of world imports.⁶⁹

The impact of global value chains extends well beyond the higher volume of trade in intermediates. Global value chains draw “a broader range of establishments, firms, workers, and countries into increasingly complex and dynamic divisions of labor,” which has driven a

⁶⁶ See Coase, Ronald H., *The Nature of the Firm* (1937); Williamson, Oliver E., *The Economic Institutions of Capitalism* (1985); Grossman, Sanford J., and Oliver D. Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration* (1986).

⁶⁷ Sturgeon, T., *Modular Production Networks: A New American Model of Industrial Organization* (2000) (“Higher transaction costs lead firms to internalize functions, while lower transaction costs (or zero transaction costs as assumed by standard neoclassical theory) result in industry structures where amalgams of smaller firms interact through arm-length, price-based market transactions—the Marshallian norm.”).

⁶⁸ The “rising integration of world markets has brought with it a disintegration of the production process, in which manufacturing or services activities done abroad are combined with those performed at home.” Feenstra, Robert, *Integration of Trade and Disintegration of Production in the Global Economy* (1998). That shift implies “a breakdown in the vertically-integrated mode of production,” in which firms find it increasingly “profitable to outsource increasing amounts of the production process, a process which can happen either domestically or abroad.” Ibid.

⁶⁹ Sturgeon, Timothy J., and Olga Memedovic, *Mapping Global Value Chains: Intermediate Goods Trade and Structural Change in the World Economy* (United Nations Industrial Development Organization 2011), Figure 1. Interestingly, United Nations statistics showed trade in intermediate goods falling from the early 1960s to the late 1980s before once again rising over the past 25 years. That may be a function of the failure of U.N. statistics to capture the true value of intermediate goods trade, but the period in which intermediate goods trade fell also coincides with a number of other features of the global economy that may have driven greater consolidation and vertical integration, which would imply a lower volume of trade in intermediates.

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much deeper and more far-reaching change in the organization of production globally and the basis of competition.⁷⁰

What that means, ultimately, is that globalization has altered the way in which firms, including U.S. farms, connect to markets globally. Participation in global value chains is fundamentally different than engaging in exchange in the textbook example of a completely undistorted market under conditions of perfect competition.⁷¹ Participation in value chains requires the ability to communicate effectively up and down the chain, which requires an infrastructure that supports such communication, as well as rules that protect those communications.⁷² Increasingly, participation in value chains also requires the ability to innovate with other links in the chain, which requires a higher level of both technological sophistication and human capital and institutions that foster entrepreneurial innovation.⁷³

⁷⁰ Ibid.

⁷¹ Linkages in a value chain consist of “more than just the purchase of raw materials and standardized intermediate goods.” Grossman, Gene M., and Elhanan Helpman, *Outsourcing in a Global Economy* (January 2002) (examining the determinants of the location of sub-contracted activity – i.e., instances where the economics of the firm dictated that the activity would be outsourced, leaving only the question of where the work would be done). It requires “finding a partner with which a firm can establish a bilateral relationship and having the partner undertake relationship-specific investments so that it becomes able to produce goods or services that fit the firm’s particular needs.” Ibid. Establishing the required linkages to form a global value chain “depends inter alia on the thickness of the domestic and foreign market for input suppliers, the relative cost of searching in each market, the relative cost of customizing inputs, and the nature of the contracting environment in each country.” Ibid. Furthermore, in the case of arm’s length sales, price is both the principal determinant of competition and the principal means of conveying information about the value that buyer and seller attach to the good or service exchanged. Very little more needs to be shared between buyer and seller to effect a transaction, particularly if the exchange is an isolated, rather than repeated, event. In contrast to market-based transactions, participation in a firm’s supply and value chain requires a good deal more in the way of sharing information, which underscores the importance of rules and other institutional arrangements that protect that information, whether in the form of patents, copyrights, trade secrets, or other institutional arrangements.

⁷² Sturgeon, T., *Modular Production Networks: A New American Model of Industrial Organization* (2000) (emphasizing the frequency of interaction and the volume of “codified information flowing across the inter-firm link” and drawing an explicit contrast between “the rich streams of data that flow across the inter-firm links in the modular network and the simple price information and specifications that form the basis of the traditional characterization of arms-length market transactions.”).

⁷³ Including suppliers in the process of innovation not only spreads the risk and required investment, it flows from the nature of what the links in the value chain provide. “Integral product architectures are more likely to require non-standard inputs, and changes in the design of particular parts tend to precipitate design changes in other areas of the system.” Gereffi, et al. Sharing information with suppliers and involving them in innovation and design facilitates that process and reduces its cost. Studies of various industries, such as the automotive industry, reinforce that conclusion, indicating that suppliers are increasingly “selected and involved before components are designed,” with suppliers assisting with prototype development long before the lead firm launches high volume production of a new car. Sturgeon, Timothy J. and Richard Florida, *Globalization and Jobs in the Automotive Industry* (November 2000). Early involvement of suppliers in the design phase has the concomitant benefit of improving the value chain’s ability to redesign products for new markets and other design and production changes. Ibid.

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As a consequence, competition in this networked world is becoming less based on price alone. It increasingly depends on the capacity of firms to integrate themselves into the value chains that serve regional and global consumer markets. While the impact of globalization is more pronounced in other industries, agriculture is not immune. The difference in the extent to which agricultural production can be fragmented compared to the electronics or automotive sectors is one of degree, rather than a difference in kind. To the extent that participation in global value chains represents the new gateway to global markets, U.S. farmers, as with all other U.S. firms, will be obliged to “find ways to participate, add value, and *specialize*.”⁷⁴

C. The Rise of Global Agribusiness Value Chains

The most direct evidence of that fact has been the rise, over the last two decades, of agribusiness value chains. Such value chains, often organized by retailers, have begun to have a significant impact on sourcing and production decisions. To the extent that retailers or other downstream links become the gateways for market access, the key to increasing profitability for U.S. farmers becomes one of meeting the specific demand of those downstream links in the value chain, rather than simply selling at arm’s length into global commodity markets.

Intertwined with the emergence of global agribusiness value chains is the issue of standards, both public and private. Food standards have proliferated, both in terms of their purpose and their scope. Market access now depends not only on satisfying product quality standards, but also meeting separate quality standards for processing and implementing procedures that ensure traceability. The fact that private standards often exceed those of government regulators simply ratchets up their significance in defining market access in practice.

That effect can be seen in the impact that retailer-driven value chains often have on the local supply chain and local farmers. Retailers often leverage their “symbiotic relationships with modern wholesale, logistics and processing firms” to establish a more efficient local supply chain, which not only improves the local environment for retailing, but

⁷⁴ Ibid.

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also has the effect of allowing the retailer to tap local sources of supply for fresh food as well.⁷⁵ In other words, the efficiencies the retailer's value chain brings with it tend to reshape the local marketplace in both direct and indirect ways.

While the changes wrought by the rise of global agribusiness value chains are significant, their emergence is best understood as an extension of an existing phenomenon, rather than something wholly new. The U.S. pork industry, for example, has undergone a substantial transformation in terms of both structure and organization.⁷⁶ Much of that change has involved the advance of vertical coordination, either by contract or through vertical integration, which has increasingly displaced hog purchase in the open market.⁷⁷

Thus, rather than representing something wholly new, globalization has essentially extended the logic that drove the development of agribusiness value chains in the United States to world markets. What that should offer is some assurance that U.S. farmers are among the best placed in the world to take advantage of global markets in which access is determined by participation in such value chains.

Whether U.S. agricultural trade policy can amplify the advantage that U.S. farmers hold due to the nature of the competition in their home market is a separate question.

III. U.S. Trade Policy and Its Implications for Farm Profitability

As noted, globalization has significant implications for how we define "market access" in a more globalized world economy. To the extent that globalization has fundamentally altered the meaning and the determinants of market access, U.S. agricultural trade policy should necessarily take that into account.⁷⁸ Simply lowering conventional barriers to farm trade is not enough. Widening the channels through which our farm products reach emerging markets, ensuring that conditions of competition in those markets

⁷⁵ Reardon, T., S. Henson, and J. Berdegúe, *"Proactive Fast-tracking" Diffusion of Supermarkets in Developing Countries: Implications for Market Institutions and Trade* (2007).

⁷⁶ Martinez, S., *Vertical Coordination in the Pork and Broiler Industries – Implications for Pork and Chicken Products* (1999).

⁷⁷ According to the Department of Agriculture, nearly 40 percent of hog sales to packers were already being coordinated by contracts and integrated operations by 1998, reflecting a significant shift from 1980, when such sales represented only 3 percent of the total. *Ibid.*

⁷⁸ Whittaker, D. Hugh, Tianbiao Zhu, Timothy J. Sturgeon, Mon Han Tsai, and Toshie Okita, *Compressed Development* (October 2008).

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are fair and that the rules and regulations governing them are transparent becomes at least as important, if not more so.

Yet, U.S. negotiators remain focused almost exclusively on the same barriers to farm trade that have animated U.S. agricultural trade policy for the last seven decades since the GATT's founding. There is a reason for that continuing focus, even if it comes at a cost to a more forward-looking agricultural trade policy.

A. Failure of the Multilateral Process

As noted above, actual progress on liberalization multilaterally under the GATT and WTO has largely been limited to the area of developed country industrial tariffs, whereas tariffs, quotas and trade-distorting subsidies, rather than undistorted markets, continue to shape much of world agricultural trade. While some developing countries have undertaken significant trade reforms, virtually none have proved willing to bind those changes in the form of WTO commitments.

Indeed, of late, the largest emerging markets have rolled back previous reforms or introduced new barriers to trade and investment on the theory that such barriers would improve the prospects for developing new industries in their markets. Deep commitments toward liberalization in new areas like services, investment and intellectual property remain limited to a handful of (largely developed) countries.

For now, moreover, further progress within the WTO framework seems unlikely. The Doha Development Agenda, which was originally intended to make significant inroads in terms of liberalizing agricultural trade, remains mired in an ugly stalemate. While another meeting of WTO member trade ministers is scheduled for December in Bali, preparatory discussions in Geneva have ground to a halt. To the extent there is a face-saving agreement that emerges out of the Bali ministerial meeting, there is no chance that it will involve significant market access gains for U.S. farmers, particularly in those emerging markets that account for much of the rising global demand for farm products.

B. Shift Toward Bilateral and Regional Trade Agreements

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Given the inability to make progress within the WTO framework after more than a decade of fruitless negotiations, it is no surprise that governments and market participants have increasingly turned to alternative means for negotiating for expanded market access and improved rules. Over the past decade, there has been a fundamental shift toward bilateral and regional trade liberalization as the process of multilateral liberalization has stalled within the WTO.

But, in fact, that process predates the Doha round's decade of dysfunction. The United States kicked the process off with its negotiation of the U.S.-Israel and U.S.-Canada Free Trade Agreements in 1984 and 1987, respectively. The U.S. efforts accelerated significantly with the conclusion of the North American Free Trade Agreement ("NAFTA") in 1994. The U.S. negotiation of bilateral free trade agreements hit a crescendo in the past decade with the Central American Free Trade Agreement and separate accords with Chile, Colombia, the Dominican Republic, Panama, and Peru. In each instance, U.S. negotiators sought and reached agreements on agricultural trade that were essentially "WTO plus" (i.e., deeper liberalization than required under current multilateral rules, particularly with respect to technical barriers to trade and sanitary and phyto-sanitary standards applicable to agricultural trade).

Those efforts paid off for U.S. farmers. With NAFTA, for example, while not all of the growth can be attributed directly to the agreement, the Department of Agriculture indicates that U.S. agricultural trade with Canada and Mexico has nearly doubled since the agreement went into effect in 1995, whereas concerns that certain U.S. farm sectors would be swamped by low cost competition from Mexico have failed to materialize.⁷⁹ Indeed, U.S. farm exports to Mexico have grown faster than total our agricultural exports to the rest of the world – total U.S. farm exports rose 47 percent from 1993 to 2005, whereas U.S. agricultural exports to Mexico rose 161 percent over the same period, which suggests that the Mexican market alone accounted for over 27 percent of all U.S. export growth over the two decade period.⁸⁰

While the United States moved first and farthest in some respects, other countries have aggressively pursued bilateral and regional trade liberalization as well. The arrangement

⁷⁹ Zahniser, S., and J. Link (eds.), *Effects of North American Free Trade Agreement on Agriculture and the Rural Economy*, WRS-02-1, U.S. Department of Agriculture, Economic Research Service (2002).

⁸⁰ Larsen, T., and M. Coe, *Analysis of US-Mexico Agricultural Trade Since NAFTA*, Colorado Department of Agriculture.

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that has had the most significant impact on U.S. agricultural interests is one that is often overlooked by trade analysts and economists who tend to focus exclusively on conventional trade agreements. That impact flows from reunification of Germany and the “enlargement” of the European Union to incorporate much of Central and Eastern Europe following the end of the Cold War and the dissolution of the former Soviet Union in 1991.⁸¹ Enlargement expanded the reach of the Common Agricultural Policy (“CAP”), changed the calculus in terms of EU trade policy with respect to agriculture, and widened the area in which rules regarding the use of genetically modified organisms and other EU administrative regulations applied, with all that implied for U.S. farmers’ market access.⁸²

Other regional groupings that affect the outlook for U.S. farm trade and agribusiness have emerged as well. Those include the Association of Southeast Asian Nations (“ASEAN”).⁸³ Significantly, the ASEAN countries are net exporters of agricultural products to the United States, but, with the notable exceptions of rice and vegetable oils, the ASEAN countries export goods U.S. farmers do not produce.⁸⁴ The main impact of ASEAN’s trade policy on U.S. farm interests flows from its negotiation of free trade agreements with countries that are major agricultural exporters.⁸⁵

⁸¹ From the perspective of U.S. farmers, the reunification of Germany and the enlargement of the European Union to include major agricultural producers like Poland altered the competitive landscape in the European market. Koester, U., and K. Brooks, *Agriculture and German Reunification, Volume I* (2002) (detailing the rapid structural change and rise in farm productivity in East Germany following reunification); Kryn, J., *A United Front: European Union Enlargement, the Common Agricultural Policy, and Polish Agriculture* (2003); Cochrane, N. and R. Seeley, *EU Enlargement: Implications for New Member Countries, the United States, and World Trade* (2005).

⁸² The concern for U.S. farmers does not relate simply to the expansion of the European Union and the potential displacement of U.S. exports to the expanded market. The same concerns arise when the European Union negotiations result in bilateral free trade agreements with other trading partners. The European Union is currently negotiating free trade arrangements with India, Canada, the Association of Southeast Asian Nations (“ASEAN”) and the Mercado Comun de Sur (“Mercosur”), (an alliance of South American countries discussed below). European negotiators have also aggressively pursued preferential trading arrangements with developing countries that were former colonies of European Union member states, principally in Africa and the Caribbean.

⁸³ ASEAN, which was originally formed in 1967, now includes the original members – Indonesia, Malaysia, the Philippines, Singapore and Thailand, plus Brunei, Myanmar, Cambodia, Laos, and Vietnam. While the ASEAN economic relationship does not entail the sort of deeper economic integration of either the European Union or NAFTA, it has moved consistently to liberalize trade among countries which now cover most of the most dynamic region in the world economy.

⁸⁴ Wainio, J., J. Dyck, M. Gehlhar, and T. Vollrath, *Are Competitors’ Free Trade Agreements Putting U.S. Agricultural Exporters at a Disadvantage?* Amber Waves (June 2011).

⁸⁵ ASEAN has an active agenda in terms of bilateral free trade negotiations. The ASEAN countries have already concluded free trade negotiations with Australia and New Zealand, and are currently negotiating with Japan, China, and South Korea in what is known as the ASEAN Plus 3 talks.

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A similar process has been unfolding in South America. Formed in 1991, Mercado Común del Sur or “Mercosur” now covers much of South America.⁸⁶ The main effect of Mercosur on U.S. farm trade has been the displacement of U.S. exports to the individual member countries by exports from other Mercosur members. That effect became one of the principal arguments U.S. farm interests made in support of the United States’ free trade agreements with Colombia, in particular. Conclusion of Mercosur’s ongoing free trade negotiations with the European Union would exacerbate that displacement effect by offering Brazilian, Uruguayan and Argentine agricultural exports preferential access to European markets.⁸⁷

More recently, a new South American grouping has emerged, known as the Pacific Alliance. It includes Chile, Colombia, Mexico, and Peru. The intent behind the Alliance is to liberalize trade among the four countries and to pursue trade and investment liberalization with trading partners in Asia. Given that the United States has free trade agreements with each of the Alliance members, the impact on U.S. agricultural exports of their liberalizing trade amongst themselves is likely to be muted. Both there, and in the case of any future free trade negotiation with Asian trading partners, the issue will be any erosion of the preference that U.S. farm exports might currently enjoy by virtue of our existing arrangements.

There are a number of other less robust trade arrangements, including in the Middle East and Africa, such as the Gulf Cooperation Council, which includes Saudi Arabia and the smaller Gulf States, the East African Community, the Community of Eastern and Southern Africa, and the Southern Africa Development Community. None are of current significance to U.S. agriculture as a whole, although individual countries do represent important export markets.

⁸⁶ Mercosur united Argentina, Brazil, Paraguay and Uruguay – all significant agricultural economies – in a customs union with a common external tariff. Connolly, M. and J. Gunther, *Mercosur: Implications for Growth in Member Countries* (May 1999). Venezuela joined in 2012 and Bolivia has followed suit, although legal formalities remain before it becomes a full member. In the interim, Bolivia remains an associate member of the group, together with Chile, Colombia, Ecuador, Guyana, Peru, and Suriname. Ibid.

⁸⁷ Further progress on the EU-Mercosur negotiations has been put in doubt, not only because the EU remains intensely focused on its own internal economic difficulties, but also because recent shifts in Argentine economic policies, including the expropriation of the local holdings of Brazilian firms, has put Mercosur’s own continuing existence in doubt.

C. Opportunities to Chart a New Course

The United States Trade Representative, who leads U.S. trade negotiations and formulates U.S. trade policy, is currently engaged on two fronts that offer the opportunity to address the challenges that U.S. farmers face competing in a more complex and networked global food markets. Those include the effort to form a Trans-Pacific Partnership (“TPP”) with trading partners throughout Asia and the Pacific and the recently launched Trans-Atlantic Trade and Investment Partnership (“TTIP”), which involves free trade talks between the United States and the European Union.

Of the two, the TPP negotiations are significantly more advanced. In addition to the United States, the TPP talks involve Australia, Brunei, Canada, Chile, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam, and Japan, which joined the talks only recently. The stated objective of the TPP is to craft a “comprehensive and high-standard” free trade agreement that would eliminate barriers to trade between the participants, including in the area of agriculture. But, at the same time, the United States and the other participants also see the TPP as a potential template for a still broader agreement among members of the Asia-Pacific Economic Cooperation forum, which would include China, South Korea, and all of ASEAN.

The 11 TPP countries already account for \$108 billion in two-way agricultural trade with the United States. American farm exports to the TPP 11 totaled \$59 billion in 2012 or 42 percent of all U.S. agricultural exports globally. The TPP 11 are also significant sources of U.S. agricultural imports, accounting for 48 percent of all U.S. imports in 2012. The United States’ farm sector ran a positive agricultural trade balance of \$10 billion this past year.⁸⁸

In short, from the perspective of American farmers seeking access to new markets in the most economically dynamic area in the global economy, there is a lot at stake. Negotiators have completed eighteen formal rounds of negotiations at this point. The United States has pressed for a broad opening of the regional market for U.S. farm exports.

⁸⁸ The numbers are, of course, skewed by the presence of Canada and Mexico, which ranked first and second, respectively, as export markets for U.S. farm products in 2012. Indeed, U.S. exports to four current free trade agreement partners among the TPP 11—Canada, Mexico, Australia, and Chile—accounted for 85 percent of our exports to the group. That, however, does emphasize the value to U.S. producers of reducing barriers to farm trade.

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Since the United States already has free trade agreements with a majority of the participating countries, American farm interests have focused intently on those countries where the United States has yet to achieve a similar level of access – Japan, Malaysia, and Vietnam.

Japan is the world's third largest economy and represents America's fourth largest market for agricultural exports, despite its relatively high barriers to trade in certain commodities of interest to U.S. growers, particularly on products like beef, citrus, and rice. American farmers could reasonably expect to see increased access to the Japanese market flow from an eventual TPP, although the likely sticking point will be rice. There are indications that the Japanese will seek an exemption for rice, much like the exclusion the United States previously sought in its free trade talks with Australia.

Yet, as important as Japan is to the negotiations on agriculture, the more significant long-term markets for U.S. farm products are likely to be the other two targets, Malaysia and Vietnam, if the trends in population, income and urbanization discussed above continue on their current course. All things being equal, those trends will expand the market for U.S. food products, as long as American farmers have access to both markets on terms as good as other countries' producers. Significantly, U.S. cotton could see its fortunes rise in response to higher demand from Vietnam's textile industry, if U.S. barriers to trade in textiles and apparel are eliminated and Vietnam is not stuck with unworkable rules of origin that negate any liberalization of the U.S. barriers.

In terms of other countries' interests, New Zealand has pressed for elimination of barriers that inhibit exports of its dairy products to the U.S. market. Australia has, predictably, sought to eliminate the exclusion of sugar from its previous free trade agreement with the United States. To date, U.S. negotiators have resisted that effort and any attempt to open access to U.S. sugar markets more generally. That position will prove harder and harder to reconcile with U.S. export interests, particularly with respect to Japan's rice market, as the negotiations unfold.

Whereas the prospects for significant inroads in terms of market access are critical to U.S. farm interests in the TPP negotiations, the negotiations with the European Union have much more to do with the European regulatory process and current EU rules on genetically modified organisms and certain categories of U.S. farm products, particularly U.S. hormone-fed beef. The rules matter more in other export sectors as well, particularly in transportation and financial services.

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That is not to say that U.S.-EU trade is insignificant, but that, in general, the barriers to Trans-Atlantic trade are already quite low (average U.S. and EU tariffs on an applied basis average roughly 3.5 percent ad valorem for the United States and about 5.3 percent for the European Union. Nonetheless, any reduction in those levels would be significant simply due to the volume of goods and services traded between Europe and the United States.

The more interesting fact is that the U.S.-EU bilateral investment relationship vastly outstrips our two-way trade. As large as our bilateral trade is (roughly 30 percent of global trade), the two-way investment relationship involves a combined \$3.7 trillion in each other's economies. That investment stake reflects many of the dynamics of globalization discussed above, wherein investment in a foreign market represents an alternative means of market access.

While the talks are at an early stage, with negotiators having concluded only one round of exchanges, it is not hard to foresee where the major sticking points will lie. Unless both sides use the opportunity to do something really substantial, such as agree to reform their respective farm subsidy programs (a topic generally reserved for multilateral negotiations), the most difficult issues will surround the EU's definition of the "precautionary principle" in regulating farm trade.

Both sides employ the precautionary principle (i.e., ensuring that goods with the potential to harm individuals or the environment do not find their way into the marketplace), the EU's version shifts the burden of proof to the proponent of market access and requires them to establish, in many instances, that there is zero risk of potential harm. Indeed, the EU has gone further, suggesting that one facet of the precautionary principle is a political, rather than scientific, decision – one that takes into account the sentiments of vocal objectors to the particular good even in the absence of any scientific evidence that the product might do harm.

The United States has always pressed for "science-based" and "evidence-based" determinations under any interpretation of the precautionary principle. That runs directly contrary to the EU's proposed approach, which has resulted in bitter trade disputes about U.S. farm products incorporating GMOs and U.S. exports of hormone fed beef. The fights have dragged on for the better part of three decades, with the United States successfully litigating its complaint in the WTO dispute settlement process, only to have the European Union ignore the WTO's ruling and accept the United States' trade relation in return.

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Ironically, being able to see exactly where the trouble spots will arise in both the TPP and the TTIP provides the strongest evidence that the current U.S. negotiating positions have not been altered to address the broader challenges that American farmers confront competing in a more complex global food economy. The intense focus on issues that have divided the U.S. and Japan or the U.S. and the European Union for thirty years strongly suggests that the negotiators have yet to think through the implications of a globalizing food economy for what market access means.

That is not an argument to forego the opportunity to eliminate Japan's barriers to rice and beef imports or to eliminate or substantially reduce the impact of the EU's interpretation of the precautionary principle. Those steps are necessary, but not sufficient. To address the challenges that U.S. farmers face today competing in a more networked world economy will require something more. It will require thinking of trade policy the same way that U.S. farmers must increasingly think about their place in the global value chain.

Adopting that approach suggests a far different way of bargaining for market access. It suggests bargaining for the elimination of barriers to trade along the entire agribusiness value chain – from seed, fertilizer and capital equipment all the way through production, processing, distribution and retail. It also implies a different goal, which is not the removal of the individual barriers. That is a means to an end in trade policy terms, not the end itself. Rather, the goal must be to reduce the overall cost of engaging in trade from the U.S. farmer's perspective.

An example from previous U.S. negotiations on farm trade helps illustrate the point. In the context of bargaining over China's accession to the WTO, U.S. negotiators pressed the Chinese side for significant liberalization of Chinese restraints on distribution and retailing. The U.S. negotiators were not thinking in terms of the impact on U.S. farm trade; they were seeking market access on behalf of U.S. retailers like Walmart. That said, in retrospect, the deal on distribution and retailing has proved to be a significant benefit to U.S. farmers because it widened the channels through which their products could flow to the Chinese market, either as direct exports or as inputs incorporated in the goods sold by U.S. grocery manufacturers to Walmart for sale to consumers in China.

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Bargaining for the liberalization of the entire agribusiness value chain would simply extend that approach to other links in the chain. The overall goal, as mentioned previously, should be to reduce both the ostensible barriers to U.S. farm exports and to reduce the transaction costs that inhibit the ability of American farmers to seize the opportunities that any negotiation on farm trade barriers creates.

Significantly, thinking along those lines should lead policymakers to look upstream at our domestic economic policies in the same light. Globalization has, in fact, largely erased the distinction between domestic and international economic policy. Whether it is the current discussion of a new farm bill or tax reform as it affects U.S. farm interests, policymakers should think through the implications of their choices for the transaction costs that can either enable or inhibit the ability of U.S. farmers to compete in foreign markets, particularly emerging markets where all the future growth in food markets lies.

The integration of those policies with a new approach to agricultural trade would reinforce the ability of American farmers to translate the global trends into farm profits. While that may prove to be beyond the reach of our current politics, starting that process in our agricultural trade policy would represent a sound first step.

Biofuels Policy Impact on Agricultural Profitability: Outlook for 2013 and 2014 (Paper)

*Bruce A. Babcock
Iowa State University*

In recent years energy policy has seemingly been more important to agriculture than agricultural commodity policy. RFS mandates signaled the volume of biofuels that would be consumed and tax credits induced blenders to invest in the infrastructure that was needed to transport and blend the required volumes. Through 2012, the required volumes of conventional biofuel were met by expanding consumption of ethanol. The 13.2 billion gallon mandate in 2012 is approximately equal to 10 percent of the total amount of blended gasoline consumed in the United States. Thus the mandate could be met by making nearly every gallon of US gasoline consumed a blend of 10 percent ethanol and blended 90 percent gasoline (E10).

The ramp-up in ethanol production from 4.8 billion gallons in 2006 to 13.3 billion gallons in 2012 represents approximately 15.3 million acres (net of DDGS) of increased demand. Meeting that extra demand has been accomplished with corn yields that have been at or below trend levels. The combination of this extra demand with less than ideal growing conditions has led to sharply higher prices (and higher price volatility) for corn and crops that compete with corn for acres. These higher prices have generated unprecedented profitability in the US crops sector and have allowed input suppliers to charge higher prices for seed, fertilizer, chemicals, and farm equipment. Despite the associated higher feed costs that have negatively impacted the livestock sector, agricultural profitability has never been higher. These profits combined with low interest rates are the main drivers of the strong increases in land prices that we have seen over this time period.

But continued growth in biofuel production will be more difficult. Mandates for corn ethanol are scheduled to reach their peak at 15 billion gallons in 2015. Even hitting this level of consumption will be difficult to achieve. Moving to ethanol blend rates above 10 percent will require new investments in flex fuel vehicles and pumps to sell higher blends. Such investments will not likely take place unless mandates for biofuels are maintained at levels greater than can be met with E10. Anti-biofuel forces are working hard to revise or

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eliminate mandates. For example, the oil industry recently petitioned EPA to limit biofuel mandates in 2014. If the petition is denied, then it is likely that EPA will move ahead with mandates that will force ethanol consumption beyond E10.

The issue addressed here is the impact a change in biofuel policy would have on agricultural prosperity. The major change to biofuel policy that potentially threatens current agricultural prosperity is a change in biofuels mandates. Insight into the extent to which modification of mandates would impact agricultural income can be obtained by estimating crop prices with and without biofuel mandates.

The key factor in determining the impacts of a change in biofuel policy is what demand would be in the absence of mandates. It is not obvious that the domestic demand for US-produced biofuels would radically change if mandates were eliminated. Current high crude oil prices create a favorable market demand environment for biofuels which may mitigate the effects of policy changes.

A market model of biofuels and biofuels feedstocks is used to sort out the effects of mandates on crop prices in both the 2013/14 and 2014/15 marketing years.⁸⁹ The model solves for market-clearing corn, soybean, and sugar prices, accounting for yield uncertainty, and for market-clearing prices and quantities of corn ethanol, sugar cane ethanol in Brazil, and biodiesel. The market prices for corn and soybeans will be used as indicators of agricultural profitability here. Results indicate that because of low current carryout stocks and the existence of a blending infrastructure that makes it profitable for refiners and blenders to produce and sell E10, elimination of biofuels mandate would have relatively modest impacts on 2013/14 corn prices as stocks are rebuilt. Soybean prices would be impacted more because of a sharp decline in the demand for soybean oil by the biodiesel industry without mandates. Corn prices in the 2014/15 marketing year will likely move significantly lower with or without mandates because of the increase in corn stocks.

⁸⁹ Documentation of the model is provided in Babcock, B.A., M Moreira, and Y. Peng. "Biofuels Taxes, Subsidies, and Mandates: Impacts on US and Brazilian Markets." Staff Report 13-SR 108. May 22, 2013. Center for Agricultural and Rural Development, Iowa State University.

Outlook for 2013/14

US supply and demand conditions in the model for 2013/14 are calibrated to the August 2013 WASDE projections released by USDA. To account for yield variability, 500 yields of corn and soybeans are drawn from distributions estimated from historical deviations from the August yield projections. With harvested corn acres fixed at 89.5 million acres and a yield of 154.4 bushels per acre, total corn supplies in 2013/14 would be 14.5 billion bushels. USDA projects non-ethanol corn demand at about 7.8 billion bushels at a corn price of \$4.90 per bushel. That leaves about 6.7 billion bushels for ethanol and to rebuild stocks. The maximum production capacity of the US ethanol industry is approximately 15 billion gallons according to industry statistics tracked by the Renewable Fuels Association. At 2.75 gallons per bushel, this represents potential corn use of 5.5 billion bushels. With stocks being the residual, this would mean that ending year stocks would grow to 1.3 billion bushels.

The problem for 2013/14 is that many feel that the E10 blend wall will limit US ethanol consumption to about 13 billion gallons. This represents 4.7 billion bushels of demand which makes ending stocks grow to about 2.0 billion bushels. The problem with this level of stocks is that this would represent a stocks-to-use ratio of about 16 percent. We have not seen such a high stocks to use ratio since 2004 and 2005 when corn prices were in the \$2.00 per bushel range. Of course, if prices fell significantly, exports and feed use would keep stocks from rising to this level. But we could also see higher production levels than USDA is currently projecting if growing conditions improve in the rest of the year.

Thus, if USDA projections of non-ethanol demand for corn are correct, then the level of ethanol production in 2013/14 and beyond will be critical to the prospects for corn prices and acreage. The two ways that US ethanol production can increase above E10 blend wall levels is to increase domestic consumption of E85 and E15 or ethanol exports can increase. Two billion gallons of additional ethanol consumed as E15 would require that 40 billion gallons of E15 be sold because each gallon of E15 displaces one gallon of E10 so there is a net increase of 0.05 gallons of ethanol consumed for each gallon of E15 sold. Because approximately 135 billion gallons of gasoline are expected to be consumed, this means that E15 market penetration would have to approach 30 percent of total consumption. Given the costs and logistical difficulties of installing blender pumps and the

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difficulty in meeting clear air regulations with E15, it will be difficult to increase consumption of E15 in the next year or two in a way that can boost corn prices.⁹⁰

According to a recent study by Babcock and Pouliot⁹¹, there were approximately 14 million flex fuel vehicles (FFVs) in the US fleet at the beginning of this year. These vehicles consume approximately 7 billion gallons of fuel each year. If E85 contains approximately 75 percent ethanol, and if these vehicles all used E85, this represents a potential demand of 6.3 billion gallons of ethanol after accounting for the drop in mileage efficiency. Thus to increase ethanol consumption by 2 billion gallons would require that about one-third of the miles traveled by the US FFV fleet be fueled with E85. However, less than two percent of US gasoline retailers currently sell E85 so the price of E85 will have to be heavily discounted to induce owners of FFVs to use E85.

Expanded ethanol exports are the other feasible way of supporting US ethanol production beyond 13 billion gallons. It seems reasonable to assume that low-enough corn prices would result in competitive ethanol prices that would induce buyers in Mexico, Canada, Brazil, Asia and Europe to take all the ethanol that the US could produce. However, in the results that are presented here, the Brazilian ethanol market is the only non-US ethanol market that is explicitly modeled. Brazil's large fleet of flex fueled vehicles creates a fairly elastic demand in Brazil for imported ethanol. Exports from the US to Brazil and from Brazil to the US are determined based on consumer demand, government policies, and production costs. US exports of ethanol to other countries are fixed at 500 million gallons. This quantity is based on Canadian biofuel mandates and reasonable levels of exports to Mexico, the UK and other countries given the drop in US ethanol production costs expected in 2013.

As discussed above a key factor in determining how much ethanol can be consumed in the United States is the amount of E85 that will be consumed. Of course, the E85 will have to be priced low enough to induce owners of flex vehicles to use the fuel. The results from the Babcock and Pouliot study will be used here to determine the demand for E85 under current policy. Their demand curve for ethanol consumed as E85 is the red line in

⁹⁰ EPA has not given E15 the same waiver of Reid Vapor Pressure requirements as enjoyed by E10.

⁹¹ Babcock, B.A., and S. Pouliot. Price It and They will Buy: How E85 Can Break the Blend Wall." Policy Briefing Paper 13-PB 11. Center for Agricultural and Rural Development, Iowa State University.

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Figure 1.⁹² The Babcock and Pouliot demand curve for E85 did not account for limits on the quantity of E85 that existing stations can sell. This is a reasonable assumption only if additional gas stations near existing stations begin to sell E85.

It is likely that if EPA and Congress maintain current biofuel mandates, then we will see many more gas stations selling E85 because E85 sales are likely the least-cost way of increasing ethanol consumption. If EPA and/or Congress move to eliminate mandates, then it is unlikely that significant new investments in E85 will be made. Because an increase in stations that sell E85 will change the demand curve for E85 due to a reduction in consumer cost of locating a filling station, a different ethanol demand curve for E85 under current policy than under the scenario where mandates are eliminated. The demand curve for ethanol under the scenario where mandates are eliminated is given by the blue line in Figure 1. This demand curve was used by EPA in their analysis of the impact of waiving mandates that was conducted in the fall of 2012.

The difference between the two demand curves in Figure 1 is the greater responsiveness of E85 consumption when ethanol is priced at a high discount relative to gasoline. Current mandates will push consumption of corn ethanol along this demand curve whereas with no mandates, consumption will stay between 13 and 14 billion gallons. The value to corn farmers of this extra consumption is key to whether elimination of the mandates will have a big impact on the price of corn.

⁹² Babcock and Pouliot expressed their demand curve as a function of the energy-adjusted ethanol price. The price ratio in Figure 1 demand curve is expressed in non-energy adjusted terms

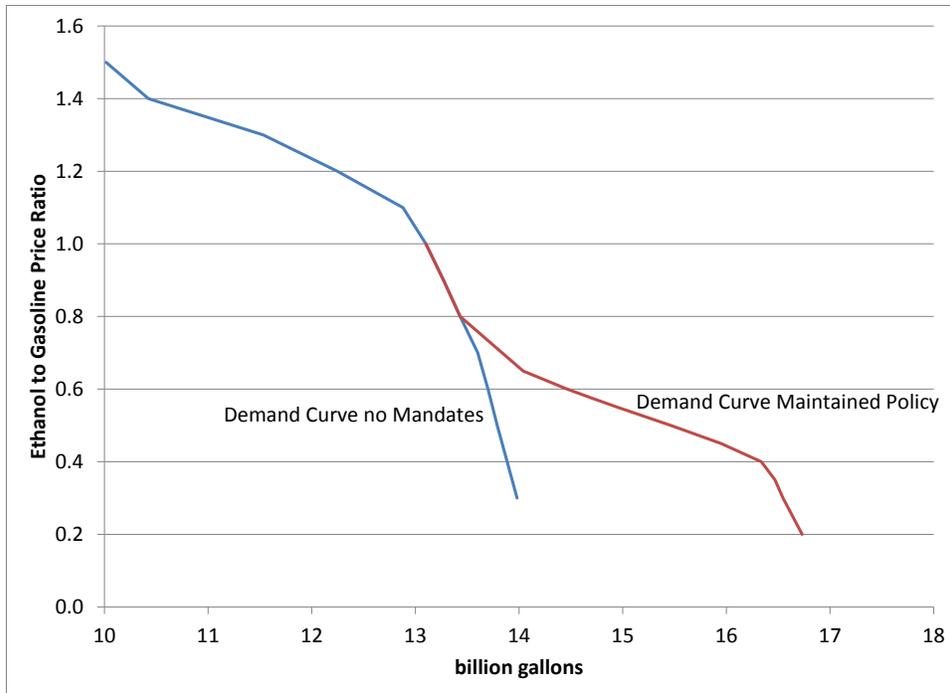


Figure 1. Ethanol Demand Curves for the 2013/14 Marketing Year

Results

The mandates for the 2013/14 marketing year that are included in the model are the conventional ethanol mandate, which is assumed to be met by blending 13.5 billion gallons of corn ethanol with gasoline and by using 700 million banked RINs; the biodiesel mandate, which is met by blending 1.28 billion gallons of biodiesel, 600 million of which are assumed to come from soybean oil; and the “other” advanced biofuel mandate, which is assumed set at the 2013 level of 830 million gallons. This last mandate is met by a combination of soybean oil-based biodiesel and sugarcane ethanol. The exact proportions of each fuel used to meet the advanced mandate are determined in the model. In addition, biodiesel consumed in the United States qualifies for a \$1.00 per gallon tax credit. The short-run impact in the 2013/14 of eliminating these policy instruments can be estimated by re-running the model without them in place. Table 1 summarizes key results.

The average corn price across the 500 model solutions under the assumption that current policy is maintained is \$5.35 per gallon, which is about 9 percent higher than the current mid-point of the USDA WASDE projection. The difference in corn prices is primarily driven by USDA projecting that 4.9 billion bushels of corn will be consumed by the ethanol industry versus an average of 5.2 billion bushels consumed in the model

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solutions. These 5.2 billion bushels represent an average production level of 14.2 billion gallons. Approximately 800 million gallons of ethanol are exported, on average, with the balance consumed domestically. Corn stocks grow to an average level of 1.7 billion bushels. The average price of ethanol received by plants is \$2.05 per gallon. The average value of ethanol as a transportation fuel is \$1.82 per gallon. The difference, \$0.23 per gallon, is the average RIN price for conventional fuel. The average RIN prices for advanced biofuel and biodiesel across the 500 model solutions is \$0.82 for both fuels. The reason why the average RIN prices are equal is that both biodiesel and imported sugarcane ethanol contribute towards meeting the other advanced ethanol mandate. An average of 300 million gallons of ethanol are imported from Brazil to meet a portion of the advanced mandate.

The model was re-solved taking away all mandates and the biodiesel tax credit. Everything else was held constant other than the demand for E85 which was reduced to the blue demand curve shown in Figure 1.. The results in Table 1 show that for corn, the effects of taking away the policy instruments are modest. Ethanol production drops by an average of only three percent to 13.8 billion gallons. Domestic consumption drops by an average of 600 million gallons. Half of this drop in consumption is accounted for by a drop in domestic production and half by a drop in imports which fall to zero. The reason why the drop in domestic consumption is not greater is because the market demand curve for ethanol shown in Figure 1 is quite inelastic (not price sensitive) for quantities between 13 and 14 billion gallons. This demand curve simply reflects the recent history when blenders find it profitable to use ethanol in their gasoline blends because it is a less expensive fuel and it allows oil refineries to reduce costs by producing 85 octane gasoline. This lower octane gasoline when blended with 10 percent ethanol will produce an 87 octane gasoline blend. Because ethanol production drops by such a small amount, the average price of corn drops by 20 cents per bushel (about four percent) from elimination of the mandates. Corn stocks rise by about 7 percent.

Table 1. Average Model Solutions for the 2013/14 Marketing Year

	Current Policy	No Mandates	Difference
Corn Price (\$/bu)	5.35	5.15	-4%
Ethanol Production (billion gal)	14.2	13.8	-3%
US Ethanol Consumption (billion gal)	13.8	13.2	-4%
US Ethanol Imports (billion gal)	0.3	0	-100%
US Ethanol Exports (billion gal)	0.8	0.6	-25%
Ending Corn Stocks (million bushels)	1,743	1,858	7%
Soyoil Biodiesel Production (million gal)	925	0	-100%
Soybean Price (\$/bu)	11.26	10.48	-7%
Soybean Meal Price (\$/ton)	312	324	4%
Soybean Oil Price (cents/lb)	48.4	34.8	-28%

Note: The model assumes 680 million gallons of biodiesel are produced from waste grease, chicken fat, lard, and tallow.

Ethanol exports to Brazil drop significantly when the mandates and tax credit are eliminated. The reason for this decline is that Brazilian domestic ethanol supplies increase because they export less to the US under the no-mandate scenario. This increase in Brazilian domestic supply in turn reduces the demand for U.S. ethanol. This results show how current U.S. policy can stimulate two-way trade in ethanol.

The elimination of mandates and the biodiesel tax credit policy have a larger impact on biodiesel and soybeans. Biodiesel production from soybean oil drops from 925 million gallons to zero. Soybean oil prices drop by 28 percent. Soybean meal prices rise by four percent because fewer soybeans are crushed domestically. Soybean prices drop by about 7 percent. These results indicate that biodiesel is much more dependent on mandates and subsidies than corn ethanol because when they disappear, so too does production of biodiesel produced from soybean oil. To see why, consider that it takes 7.6 pounds of soybean oil to produce a gallon of biodiesel. At 34.7 cents per pound this adds up to a feedstock cost of \$2.64 per gallon. Add in 40 cents of other production costs net of byproduct value for a total production cost of \$3.04 per gallon. Compare this production

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cost to the average wholesale diesel price in this analysis of \$2.94 per gallon. On addition, biodiesel has slightly less energy value than diesel and it costs slightly more than diesel to deliver to blending sites. Taking into account these disadvantages, the U.S. biodiesel industry cannot make a profit using soybean oil to produce biodiesel without subsidies, which is why biodiesel production from soybean oil drops to zero in the model.

The results in Table 1 indicate that current energy policy has a relatively small impact on corn and soybean prices. Corn prices are largely unaffected because past investments in ethanol production and ethanol transportation infrastructure have created a situation where it is profitable for blenders and oil companies to use blend 10 percent ethanol with gasoline. Past policies supporting ethanol clearly had some impact on these past investments. The Renewable Fuels Standard signaled blenders and oil companies that they should move to a 10 percent blend and the blenders tax credit, which expired at the end of 2011, subsidized the investments needed to move ethanol to all parts of the country. Once these investments are made, they will not disappear, even when mandates and subsidies disappear.

Under current law biofuel mandates are scheduled to continue to increase. The conventional biofuel mandate is scheduled to grow to 15 billion gallons in 2015 and the advanced mandate is scheduled to grow even more rapidly. EPA recently announced that it was likely to reduce the overall volumes of mandated biofuel consumption because of the lack of availability of cellulosic biofuels and because of limited demand for E85. To determine if the impact of mandates in the 2014/15 marketing year are likely to be greater than in the 2013/14 marketing year, the model was re-run, assuming that 2014 crop yields will equal their trend levels, acreage stays constant at 2013 levels, and beginning corn and soybean stocks are equal to the average ending stock levels shown in Table 1. The biodiesel mandate is held constant at 1.28 billion gallons. The conventional biofuel mandate is increased to 14.5 billion gallons (the rest of the mandate is met with banked RINs), and the other advanced mandated is increased to 1.1 billion gallons. The results are shown in Table 2.

The first result of interest is that regardless of the energy policy adopted, the price of corn will likely drop significantly from 2013/14 levels. The reason for this is the large increase in supply from higher stock levels, the assumed return to trend yields, and the assumption that acreage levels do not adjust downward. Under these assumptions the price of corn falls to a bit over \$4.00 even with the mandates kept in place. The price drops to

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\$3.73 with no mandates, which implies that mandates in 2014/15 increase the price of corn by about 7 percent. The price of corn does not drop by more under the no-mandate scenario because less expensive corn stimulates demand. Ethanol production and domestic consumption increase by 500 million gallons relative to 2013/14 levels even with no mandates because less expensive corn means more competitive ethanol. Corn stocks continue to grow in 2014/15 which imply even weaker prices in the 2015 marketing year unless acreage is cut sharply or growing conditions are unfavorable.

Not surprisingly, the impacts of mandates on the price of corn are higher in 2014/15 because the mandates stimulate ethanol production by more than in 2013/14. Ethanol production without the mandates would drop by 6 percent and corn prices would drop by 7 percent. The effects on the soybean complex are similar in 2014/15 to what they were in 2013/14. Soybean oil prices drop significantly, soybean meal prices rise, and soybean prices drop by a modest amount.

Table 2. Average Model Solutions for the 2014/15 Marketing Year Holding Acreage Constant at 2013 Levels

	Current Policy	No Mandates	Difference
Corn Price (\$/bu)	4.02	3.73	-7%
Ethanol Production (billion gal)	15.20	14.3	-6%
US Ethanol Consumption (billion gal)	14.80	13.8	-7%
US Ethanol Imports (billion gal)	0.5	0	-100%
US Ethanol Exports (billion gal)	0.9	0.5	-44%
Ending Corn Stocks (million bushels)	2,486	2,634	6%
Soyoil Biodiesel Production (million gal)	1,032	0	-100%
Soybean Price (\$/bu)	10.51	9.87	-6%
Soybean Meal Price (\$/ton)	288.0	324	13%
Soybean Oil Price (cents/lb)	47.80	33.3	-30%

Note: The model assumes 680 million gallons of biodiesel are produced from waste grease, chicken fat, lard, and tallow.

Summary and Implications

The results of this analysis indicate that the most important energy policies that positively affect agricultural prosperity will have a modest impact on corn prices over the next two years. This conclusion is driven by the assumption that oil companies and fuel blenders will continue to have a profit motive to use inexpensive ethanol (relative to gasoline) in their blends. If true, then mandates will increase corn ethanol consumption in the United States by at most two billion gallons because a maximum of 15 billion gallons of corn ethanol can be used to meet mandates and 13 billion gallons of ethanol demand in 10 percent blends will continue even without mandates. This two billion gallon difference in demand represents at most about 550 million bushels of net (of distillers grains) demand, or about four percent of total future corn use. The actual impact on corn use from elimination of mandates would be less than this because lower corn prices result in lower supplies, higher use, and increased demand for U.S. ethanol abroad.

The impact of eliminating biodiesel mandates would be felt more by biodiesel producers than soybean producers. Biodiesel production would drop sharply with elimination of the mandate and the biodiesel tax credit because producing biodiesel from soybean oil (or other vegetable oils) is more expensive than the diesel that it displaces. Soybean oil prices would drop sharply with a reduction in biodiesel production. But soybean prices would not drop as much because soybean meal prices would increase.

Even though the impacts on corn and soybean prices from maintenance of current biofuel policy are modest, this does not imply that agriculture does not have a significant stake in the Renewable Fuels Standard. First of all, even 20 cents per bushel on corn and soybean prices represents approximately \$3.5 billion of farm revenue. Furthermore, maintenance of mandates will stimulate long-term use of E85 through an increase in the flex vehicle fleet and in the number of stations that sell E85. These investments would represent long-term demand growth that would underpin ethanol demand in the future, as it does in Brazil. In addition, a significant portion of expanded mandates for cellulosic biofuels would be met by biofuels produced from agricultural residues, primarily corn stover. Besides a potential revenue source from selling corn stover, partial harvest of corn stover would allow many Corn Belt farmers to plant corn after corn. In addition, to the extent that dedicated biomass crops ever get planted, they will be planted on crop ground, which will only work to increase other crop prices.

Panel Discussion (Remarks)

*Joe Outlaw
Texas A&M University*

Good morning. I am the co-director of something called the Agricultural and Food Policy Center and for about 30 years we've been doing work, mostly behind the scenes, for the Congress, helping them with commodity policies work. Most of that work has been done where we work with something we call representative farms, about 96 groups of producers all across the country and I am going to be talking about a couple of them. Now I spend most of my time in Washington, but I do like to go out on the road and visit with rural farmers on what's happening. I just recently updated the Nebraska and Iowa farms. That has been a very interesting position for me to see.

I am going to start with that. I am going to blaze through, because I got really excited when Grant's trade stuff was mostly what I was thinking, so I wasn't wrong that badly. I do want to talk about something other than policy. Obviously, policy is important, but there are a number of other factors this whole conference has talked about, including the weather.

This morning Ray [Wyse] briefly talked about the competitive reactions among other countries and the influence of these relatively high prices we've had in commodity markets across the last few years. Those prices translate into increased production incentives in other countries and they also translate more importantly into increased investment in infrastructure, which is the thing that is not going away when our prices go down. Those investments are being made and that is going to put us in a different competitive advantage in some crops, so maybe if you want to think about longer term it may change things dramatically.

Regulations are important. On the animal side, we talk about gestation crates for hogs, free-range chickens, or any kind of housing for poultry. In my work – and I spend almost every waking moment on farm policy on the Farm Bill – I can tell you this. Regulations are much more important to people and boots on the ground out there than a lot of what goes on in Washington.

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If some of the things the EPA has thought about over the last couple of years that have been thought by a number of farm groups, whether it's navigable waters and spraying around them, if those things were to come true it would change the cost structure of farms and they are a big deal.

One other factor is who is going to own the meat processing and packing in the United States? Is it going to be solely foreign investors? I had some conversations earlier where people were talking about JBS or what was going on with other entities. If companies are motivated by the same profit incentives as our companies are, then I really have no problem. Those people have brought up families.

I have a number of my family in the cattle business, and I am as well. I was told a lot of interesting facts that might happen that were learned at the coffee shop. I've been dispelling some of those myths about hauling cattle from Brazil to be processed here and things like that. My father is unfortunately the father of the university idiot, who doesn't know anything.

When you talk about trade policy, again this is not really my area but I came close to what Grant said, but probably not done so eloquently, basically we know the rules of the game that have been set forth and we know what's going to happen when we don't follow them. We found out very clearly with Brazil and we're trying to make those adjustments, albeit very, very slowly. I do believe bilateral agreements are the way to go. Again I agree with Grant. If the President hasn't really asked for trade promotion already, then there isn't much going on.

Obviously, we could all agree or disagree on how many people are going to be around in a few years to be fed. As all of us economists know, it's not just demand but it's the ability to pay. It is the financial side of it that really comes into play. The numbers are exciting, they get the press, and they get in the paper, but if people don't have money or the income – which many do – then it's really a lot less exciting. I'm not blazing new trails there. Basically, being the last speaker of this conference, I'm not blazing very many new trails anywhere. Those are my thoughts.

When you look at energy policy – and this is something I've spent a lot of time thinking about but Bruce did a really nice job discussing – I want to remind most people in this room, when the 2005 energy policy act was introduced, the champion of that was none other than Joe Barton from Texas, who is chairman on the Committee on Energy and

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Commerce, and today would not want any of this to be happening. I suspect that the policy winds have changed on the Renewable Fuel Standard significantly. I'll say a bit more about that in a few seconds.

As was mentioned earlier by Ray again, the EU considered lowering their food crops of transport fuels. That deal is one more piece of evidence that around the world the excitement about renewables, specifically biofuels, has waned a bit. Not that places aren't making money and doing things, but that euphoria that was around a few years ago has really waned. As I mentioned, we spent a lot of time and our group has done a lot of feasibility work and we did a lot with corn-based ethanol. We basically told people that you can do this, you should do this, but if you are going to do it, you had better get in a hurry about getting those plants built, because sooner or later some will get caught up. That has not changed.

When you look at energy policy, my question is, How long until somebody gets really excited and wants to change the rules on fracking? I don't think it is going to be very long. In my whole state of Texas, you can't point to an area that doesn't have a big booming fracking industry going on right now. We have communities in Texas that have 30 days' water supply from the reservoir and basically there is fracking going on in the same area, which is using water (they are trying to use waste or reclaimed water). It really begs the question of some of the conflicts that are going to come up.

Has it been good for rural communities? As I told folks earlier, there are certain parts of the state, when I travel, that you cannot be within three hours of that town, because the oil companies have hotel rooms basically bought for the year. Actually the Texas oil companies are building hotels to have a place where their folks can stay. It is a big deal in rural communities.

The agriculture issue is making millionaires out of people, who absolutely didn't have any resources previously. The question we have a lot to answer is what it is really going to do long term for the environment. That is not my field but I just leave it out there, as there are questions about the environment.

Obviously, most of the attention in this country has been on the Renewable Fuel Standard. Most states have renewable portfolio standards with regard to wind energy and other types of energy production. One of the things that I believed was passed in the

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legislation that happened at the end of the year, was that they extended the production tax credit again for wind energy, which is going to be a big boon.

As I mentioned earlier, we do a lot of work and our group has been focusing for the last three years on algae. Algae was supposed to be the thing that could basically be produced anywhere, mostly with sunlight, and it sounded like a really good thing, except it doesn't work.

There are going to be leadership changes from the Midwest: Messrs. Harkin, Baucus, and Conrad, who is already gone. I went back and checked how they voted on the first Renewable Fuel Standard and the second, and all these people voted for it. They are going to be replaced with people who would likely support it as well, but they aren't going to be replaced with people who have been there 30 years or more. There are some challenges for the Renewable Fuel Standards to stay in place.

Now, without consulting what Bruce did, I say it's not likely to matter very much. Yes, could you envision a situation where the corn price plummets, oil prices plummet, and then it matters? Yes, I can, but that is not really what people were talking about.

Obviously, relative oil prices are very important. The weather's impact on corn and oil prices is going to be very, very important. EIA's middle road is a baseline-type of analysis of where oil prices are expected to go over the most recent report.

The red line at the top shows some pretty hefty prices on oil. I don't think that's going to happen with all the fracking we're doing. We're starting to generate a lot of oil production. But it depends. If we stay on course with the middle line, then I don't see that the Renewable Fuel Standard is going to be all that big of a play. But, if we fall down to green, then I think it is going to be much more important.

One of the things that gets people interested, and obviously I'm from a big cattle state, is if anybody looks at the herd numbers. I have a very small herd and I'm about to be a big rancher in Texas, because we're losing operations right and left.

From the dairy industry perspective and from the cattle industry perspective—poultry and pork—the ability to use distillers grains is a really a positive. But it's not the positive the industry would really like you to hear. You don't take 56 pounds of corn and take it out of the market and give me 17 pounds of something else back that's equivalent and make everybody better off. There are a lot of things out there that are not really correct.

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In regard to animal agriculture, the downsizing and some of the pressures that have been put on because of feed availability during droughts, obviously the prices are outstanding. If you can't make money at this, then it's really a tough situation for you.

One of the things that everybody in this room knows, when ethanol prices started rising and generating more production, as Bruce said earlier, all the crops benefited, some much more than others, some directly and some indirectly from bidding acres away. I figured out that the trade associations were the ones who really got upset about acres shifting. The farmers, if they could make money with a crop, they will make money with a crop. Basically, all crop prices have increased, some a lot more than others.

When you look at farm policy, and Pat Westhoff could correct me, over the last few years, say, five to six, the policies that pay based off of prices being low pay around a billion dollars a year, on average. Policies that really kick in when things start going bad – which they haven't been bad other than for a couple of crops – about a billion dollars a year in spending.

You get about \$5 billion a year, roughly, in direct payments that have been going out regardless. And it doesn't matter whether you're Senate, House, Republican, or Democrat – there are a lot of people who say, “Hey, we don't need to be paying people \$5 billion a year, especially in these market conditions.”

When I say traditional policy tools are largely irrelevant, that's the point. Prices have been significantly higher than any of the mechanisms that would trigger payments.

What hasn't been irrelevant is crop insurance. In this area of the country, crop insurance works wonderfully, because you typically have good yields (APHs) that you could protect, a large amount of investment with. If you come from where my state is, there is buy-up in Nebraska. The levels of coverage of the Iowa and Nebraska farms is higher (one of them was at 80 percent coverage of revenue and the other one was 85 percent revenue – that's what they buy). In Texas, if you can get 65 percent, the *only* reason why you're buying 65 is because your lenders are making you buy it, so they will lend you money to put in a crop.

Insurance doesn't work the same for everybody. It is designed the same, but when you have different experiences and different yield issues it just doesn't provide the same amount of protection. But it is not the government's fault.

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What is the government's fault is basically how they choose to set the initial price levels. I can tell you this that, using the futures market, most of the people who do what I do in economics would say that's absolutely the best way to go. By default, I think that is the best way to go.

When we had \$1.23 per pound as the initial price based off of some really big speculation in the cotton market a couple years ago--\$1.23 per pound was the market price for cotton at that point, coming off 75 to 80 cent cotton price--there were a lot of people who put cotton in. And we can all say that people are going to do their best, but sometimes their best is a little different. When the government is basically guaranteeing something that is so far out of the money, it draws attention to your programs. It doesn't mean there is anything wrong with it, it just means it draws attention. Right now, in Washington DC, there is a lot of attention on things that don't look right all the time.

If, as I expect, crop insurance again will likely one day very soon – not this farm bill but probably the next one – be the only policy tool we're talking about (safety net tool) in this country, then the scrutiny on it is going to get [tighter]. Right now you have people arguing over target prices and these things. When crop insurance is largely all there is, then it is going to get all the scrutiny and all the other groups are going to be attacking it and some groups more than others.

I do want to mention, since this is a lender group, we have the dairy industry largely unprotected at this point. If anybody thinks they are really protected, then maybe they'll loan at this line for new loans for dairy operations, probably over here where nobody is going to be.

I always have dairymen as students in my class because they are families. I know them, and they have their students take my policy class. I tell all the girls that the guys are a lot better looking than they appear, because there are going to be days when they are really well off and they have to remember how much they like them, because they may not be so handsome anymore. The dairy industry is very cyclical. There is really not a whole lot of support in place to keep them in business. It is very unprotected, which in this environment makes it something that is difficult to loan to.

When you start talking about future policies, obviously Pat Westhoff and I, and Bob Young from Farm Bureau over here, we worry about what those individuals in Washington say *every day* and we follow it very closely. All I can tell you is, if you have been paying

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very much attention, there are not very many people who understand our policies in agriculture and there are a lot more people who do not like them than those who do like them.

We don't have much of a safety net. I will tell you this. You pass the Senate Bill as it was. You pass the House Bill as it was. Either way, if we have a big-time problem, as has been talked about several times in this conference with prices falling low, we're going to be in deep trouble.

It is not my decision whether we do it or not, but the safety net that Congress asked Pat Westhoff and me to help them craft is going to diminish. You do not take a bunch of money out of the safety net and make producers better off. There is no way to do it. There is no mathematical equation that is going to give you more support for less money. It just doesn't happen. When you start talking about what the Farm Policy is going to do to you, what the folks in Washington will do –if they ever get their act together and get a bill done— you can bank on the fact there is going to be less support for it.

As I've had to explain to my state – because my state is not Iowa or Nebraska or any of these surrounding states -- 99.99 percent of the producers in Texas have to go every year to the bank and get a loan to put in a crop. When they lose direct payments, there is going to be a bunch of them that automatically will not be able to get a loan, because they are doing cash-flow base lending, they are not doing asset-based lending, and they are going to go under without the direct payment in there.

“You are close but you are not there. Do something different. Figure out some other configuration of crops or I can't give you any money. It's as simple as pie.”

After just visiting Iowa and Nebraska, I was fascinated by some of the cattle members we have been visiting with for 20 years. Like this last time in Iowa, a guy comes up to me and says, “You were here a long time ago. And I just want you to know, I don't spend money like this very often.”

And I said, “What do you mean?”

He said, “I didn't want to pay any taxes, so I put in the biggest barn you've ever seen in your life.”

I said, “Well, just make sure you don't take any debt out on this, because I've seen these times happen before and prices can go down.”

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“Well, I know. We do these costs, we were very precise, and go into all this detail,” he said. And never in his lifetime did he think he was going to have a barn full of brand-new equipment.

And I said, “The main thing you need to understand is all these need to be paid off as fast as you can get there, because otherwise your costs are going to be higher.”

Because of that, the representative farm we work with in Iowa explained, “We don’t really throw out too many cost numbers, but I can tell you this. They have gone from being the lowest prices that we deal with to prices that have been talked about in this conference and are going to make them unprofitable.”

Some of that is because of things they’ve done in purchasing things and hopefully those are paid off, because if we get below \$4 a bushel even the best of the best are going to be in a little bit tighter straights than they are used to.

The last thing I’ll say is there are a lot of groups that are clamoring to reduce the safety net. You can read the paper and there is a group of this and a group of that. Many of us in this room never heard of them until this Farm Bill.

It’s pretty apparent to me that, while a lot of them want some sort of reform, what they really want is no money spent on farmers in general. And, if they succeed on pushing out the Title 1 of farm safety nets, the next thing will be crop insurance. Crop insurance is an interesting thing, because there is a provision that was passed that if you have over \$750,000 AGI, a three-year moving average of adjusted gross income, your crop insurance subsidies would be reduced by 15 percent.

It sounds like a no-brainer, but we have in our farms across the country, the farms that hit that the most now are in the Midwest. They used to be the big cotton farms and places. But guess what? Cotton is moving to a policy that doesn’t have that right now. It’s a very interesting situation, but when you have most of your safety net going to be in crop insurance, then you start making adjustments to it. It’s going to weaken the safety net.

Finally, I’ll say this with regard to dairy. There is a huge fight going on between the processors and producers as to which policy is the best. Scott Brown from the University of Missouri has done a lot of work on that and is somebody I’d trust. You know what? When it comes to Washington, there really is no right answer on all this stuff.

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I can tell you this. This is my fifth Farm Bill that I've been around for and some more involved in than others. Dairy has held it up every time that I can recall. There have been other holdups, but dairy is basically the last thing that gets agreed to.

For those of you who do lend in that area, producers do need margin insurance; they need some protection. When the milk price drops substantially and you have feed costs really high, they need more protection than what they're getting, because now they don't have much of anything.

With that, I'll close. Thank you very much for the invitation to come and I look forward to your questions. [applause]

General Discussion (Transcript)

*Moderator: Alison Felix
Assistant Vice President and Denver Branch Executive
Federal Reserve Bank of Kansas City*

Allison Felix: If each of you were given a magic wand and could create, eliminate, or modify one agriculturally related policy what would you do?

Grant Aldonas: I'm not sure it would be agriculturally related. It might be something like the Jones Act, so as to dropping shipping costs – things that would really make a difference in terms of the efficiency of moving goods. Ultimately, the competitiveness of our guys depends more on the transaction cost through the entire distribution channel. Those really aren't on the farm costs. It is off-the-farm costs that drive that. So the things I'd be thinking about are things like the Jones Act and tax policy that aren't agriculturally related, but have a big impact on the costs of trying to get goods to market.

Bruce Babcock: As an economist, the dead-weight losses, or the efficiency losses, from almost all our agricultural policies now are really small. The markets are primarily determining what farmers plant and what they don't plant.

So I would advocate keeping it that way and basing things off markets and anything that fixes a price at some predetermined level – like a target price – to me is a move backward to the kind of policies we had in the 1970s and 1980s that dramatically distorted markets and led to disruptions when the markets were saying “adjust,” but the policies were there that couldn't adjust. So I would say the PLC-type programs in the House have the most danger for distortions.

Joe Outlaw: I guess I'll take the exact opposite of that one. The honest answer is you would like for markets to send the signals and do everything that needed to happen. The question I would pose (you asked me one and I'll ask them) is, Is there a level we should provide some sort of a safety net for producers to try to allow them to start again next year? If things were to fall to the \$3 range, that is a catastrophic deal, because the most profitable farms have costs of production in the \$4 range. That is wiping everybody out. So, if you have a cushion, you have a financial cushion you can fall back on. I don't know the answer

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to what specific tool, but I would like to see that we have something substantial so that if things go to pieces we don't have a bloodletting of farmers around the country.

Walt Gardiner, Farm Credit Administration: I'd like to compliment the organizers of this conference for bringing this nexus of trade policy, agricultural policy, and energy together, because the impact on agriculture is incredible. And maybe that's the problem. Maybe you can shed some light on it, because all these policies are negotiated in different groups and, when we look at the driving force behind our Renewable Fuel Standard, the goal was to wean us off the dependency on volatile oil markets from countries that don't like us a whole lot.

As a result, we are trying to become more energy independent there, but again we've crushed the livestock industry as a result of that policy. Because they seem to be the big adjustor, because China is going to come in and take the corn they want, so who is left to do the adjustments? We are essentially shifting these economic rents around it. You look at expected benefits to the oil industry of this whole thing, even though they were fighting it now they're some of the biggest beneficiaries.

Is there some way to envision how we can get together agricultural policy, trade policy, and energy policy, because they seem to be compartmentalized and we need to find some way of doing this all together so we get the benefits of this all at the same time?

Grant Aldonas: I agree with you completely. Your comment is completely well taken. Everything I was saying, certainly the trade policy suggests you need the integration, because you want the negotiators at the table to understand what you're trying to accomplish in terms of energy policy and in terms of agricultural policy in what they bargained for at the table. Now the odds of getting there are zero, as far as I can tell. Most of that has to do with the woods I used to haunt when I was on the Hill, serving as the chief trade counsel on the Finance Committee. The jurisdiction on the Committee cuts against the idea of trying to bring that together.

The only time, though, interestingly enough, you do see that synthesis is what Joe was referring to, if you try to move a bill that is about trade negotiating, what that actually compels you to do is now talk about the negotiating objectives. That forces you to work backwards. And the helpful thing on the Finance Committee is that first of all, every Senator has some agriculture in his state. I know the chairman when I was there was Bill

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Ruff. He couldn't get away from chickens and corn any time I'd talk with Bill. It's there and people on the Finance Committee get it.

They are going to be helpful in terms of trying to drive the influence into the process. But you need a legislative vehicle that compels it. One of the ones that I think could do it is what Joe pointed to. If the President in light of the negotiations "wants" to have a serious conversation and build a consensus that would allow him to implement the agreement when it comes back, which is really what this is all about, if you want economic changes, that actually could drive as much of the conversation as possible, rather than having things work oftentimes at cross purposes.

Bruce Babcock: They can't do a Farm Bill, so I don't see them doing three things at once.

Ryan Connors, Janney Montgomery: This is a question for Joe. It seems like you're an advocate of the Farm Bill, the safety net, and so forth. One of the theories that has emerged in the wake of the failure in the House was, in part, there is an apathy on the part of the farmer himself. He has done so well for so many years and is kind of saying, "Who needs this safety net? Things look just fine from our perspective."

To what extent do you agree or disagree with that thesis? To what extent does that create an issue for the policy going forward?

Joe Outlaw: I think that there is some of that sentiment. When you talk about all-time record prices for certain crops, then it does bring into question how much the farmers are actually pressed right this second. As I testified in front of the Senate a year or two ago, I told them the last time we had numbers that looked this good were right before the collapse in the 1996 bill. The ink wasn't dry and they were already having to make adjustments to it.

This is my chance to make this point, because I forgot to earlier, I have explained to them over and over again, "You can like types of policies and not like certain things. It doesn't really matter. But the fact of the matter is you don't do Farm Bills for the good times, you do them for the bad."

Even the members of Congress were getting told record corn prices, record soybean prices, and wheat was really high at the time. This Farm Bill has been going on so long. We were in record times and now looking at things going a lot different in the same negotiating period.

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There is probably some truth to your premise, but basically there are a number of people who understand it. Their process is for when things go bad and they have to keep focusing on that.

Terry Detrick, American Farmers & Ranchers: We've talked a lot about corn ethanol. We've talked a lot about the price of oil and how it affects all of our input costs. Then we got around to the fracking issue and a product, as a result of the fracking, is natural gas. I've not heard anybody talk about compressed natural gas, which the President and others have just recently endorsed. What kind of an impact do you see compressed natural gas making on the entire picture?

Bruce Babcock: I don't know how deep it is, but the low-cost way of using this compressed or liquefied natural gas is in the truck fleet. So it's a substitute for diesel at least first for the next five or ten years. If the natural gas prices stay this low, you will see the markets adjust and use it in transportation. It's so hard coordinate individual automobile drivers and automobile companies to set up the infrastructure to use natural gas in cars, so it would be in the long-haul fleets. They use a significant amount of diesel.