



US Export Beef Competitiveness: Do Cattle Inventories Matter?¹

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THE US beef industry operates in a highly competitive world market. As a global leader in the production of beef cattle, its competitive advantage in beef production stems from a well-developed infrastructure as well as a reputation for quality. Nevertheless, US beef has a disadvantage in the relative cost of production. For instance, the majority of US beef is grain-fed, while a pound of grass-fed beef can be produced at a lower cost. Lack of animal traceability and mandatory national identification systems can also put US beef in a vulnerable position competing with other major export countries. There is no doubt that the US beef industry today faces a highly competitive global market place. However, are US beef exports facing significantly greater economic competition today than they did in the past, or have those export markets always been highly competitive? The beef industry has become more concentrated over the past 30 years, suggesting that examinations of export



Photo credit: Scott Bauer

competitiveness should consider the possibility of market power. We also question whether global competition is affected by the inherent dynamics of cattle production and marketing in beef exporting nations. Livestock production is impacted by a biological cycle that affects the production of final meat products, and as cattle are capital and consumption goods, current breeding and consumption decisions impact future stocks.

To test the general competitive efficiency of the United States and its rivals, we construct a model of revealed comparative advantage (RCA) based upon work by Balassa to investigate market dominance of the United States. The analysis is used frequently when looking for changes in a country's trading status. Our constructed model shows how each exporter's trade-weighted share of the export market has changed over time. We include variables for cattle inventories to explore the impact of stocks on RCA.

To test for market power, we employ a model developed by Goldberg and Knetter, which has been used

extensively in research on export markets. As in the RCA model, we incorporate livestock inventories into the model in order to ascertain whether market power has changed and how much these changes (if any) are due to the underlying inventories.

Based on the examination of trade flows from 1994 to 2015, the eight largest importers of US beef are chosen for the analysis along with 11 major export competitors to the United States.² Trade in animal-derived products is often impacted by trade agreements and phytosanitary emergencies, which can change exports dramatically. A pertinent example is the BSE discovery in December 2003 and trade losses in many nations through 2007 (Figure 1). In our simulations, we ask what markets would have looked like had such impacts not have happened in order to focus on the competitive aspects in the major export markets. Simply put, we are looking for evidence that competition changed for the United States with respect to its 11 major competitors.

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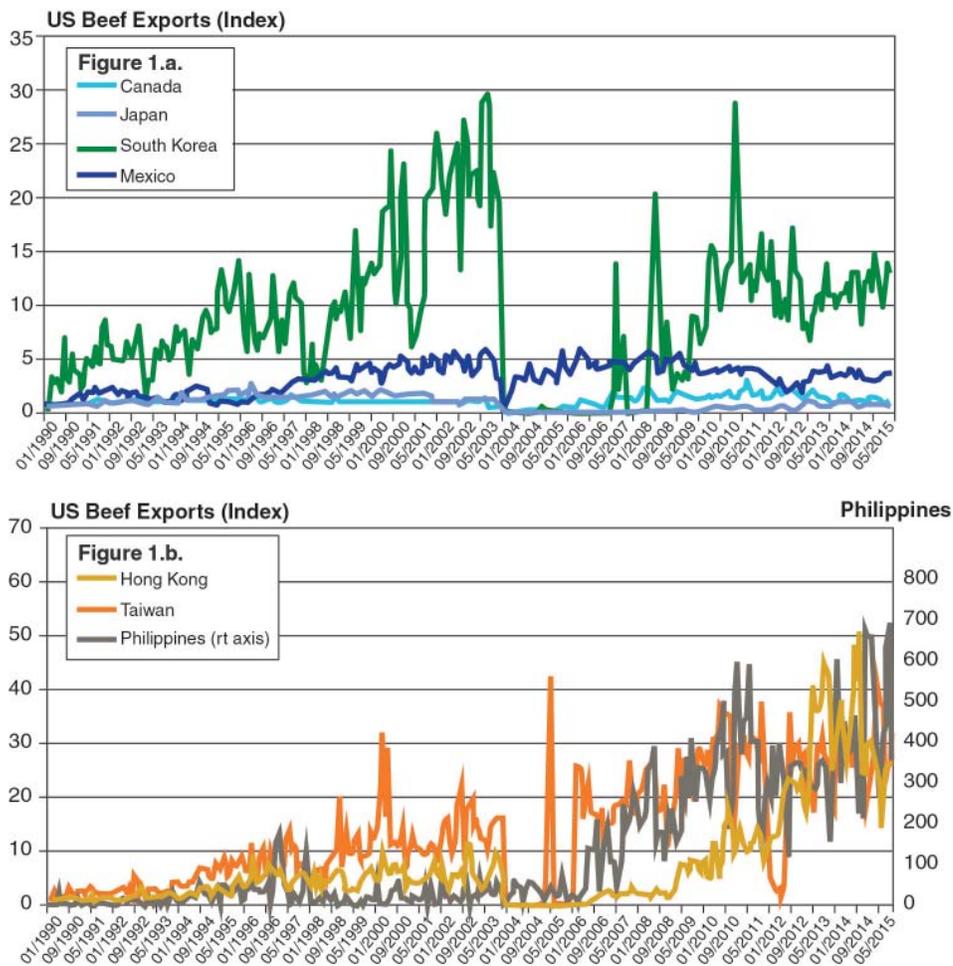


Figure 1. US Exports to Selected Nations (January 1990=1.00)

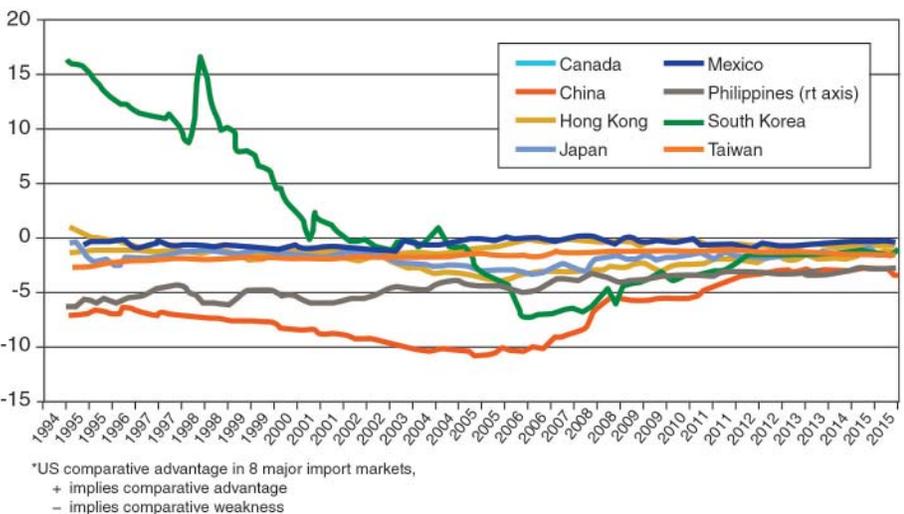


Figure 2. Simulated InRCA Indices for the United States, 1994-2015

The results for US comparative advantage are shown in Figure 2. A value of zero for $\ln RCA$ ($RCA = 1$) suggests that a nation has no more or less of a comparative advantage than its export competitors, positive values indicate greater comparative advantage and negative values indicate comparative weakness. The average for all exporters from the models' simulations of the period from 1994 to 2015 was not significantly different from zero. This means the overall average for the 11 competitors (and the United States) shows no comparative advantage when taken all together. Looking just at the United States, Figure 2 shows that other than the South Korean import market (for which we believe the large values early in the data may be due to out-of-sample errors) the US comparative advantage is consistently near zero throughout the study. There are perturbations and ebbs and flows on one side of zero or another, but for the most part (South Korea possibly being an exception), the US comparative advantage is no greater or lesser throughout the period of study. The underlying cattle cycle did have some impact, but did not seem to change the overall results very much.

The values in Figure 3 are Lerner indices, a measure of market power, for the United States in 6 major beef import markets. The cyclical changes in some of these measures indicate that the cattle cycle had some, but very little, impact in the international export market. In this test, a Lerner value that is zero or positive means one must assume a very competitive market. Based on the analysis of the 11 major competitors, we find that although 60 percent of the indices show some market power, the overall average value is quite small (near zero) at -0.03: statistically, but not economically, significant. In particular, Figure 3 shows that most of the US indices are very close to zero and the

Ag Trade and Trade Agreements

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INTERNATIONAL TRADE and trade agreements have been a major part of the political discussion during the Presidential election and in the first few months of the Trump administration. From the withdrawal of the United States from the Trans-Pacific Partnership (TPP) to the ongoing debate about the North American Free Trade Agreement (NAFTA), trade policy is transforming and trade relationships are in a state of flux. Currently, the United States has free trade agreements with 20 countries, via 14 trade agreements

(two multilateral agreements, NAFTA and the Dominican Republic-Central America-United States Free Trade Agreements [CAFTA-DR]; 12 bilateral agreements). Worldwide, there are currently 274 trade agreements in force, thus the United States is not involved in the vast majority of trade agreements. Countries in the European Union are involved in 40 trade agreements, and several other countries are involved in more trade agreements than the United States (Chile 27, Iceland 29,

India 15, Japan 15, Liechtenstein 27, Mexico 15, Norway 28, Panama 16, Peru 17, Singapore 22, South Korea 18, Switzerland 29, Turkey 22, and Ukraine 17).

Trade agreements can cover or exclude various goods and services. The choice of goods and services covered are adjusted during the trade negotiations and agreed to by all parties. For the United States, agriculture has been a major component in most, if not all, trade

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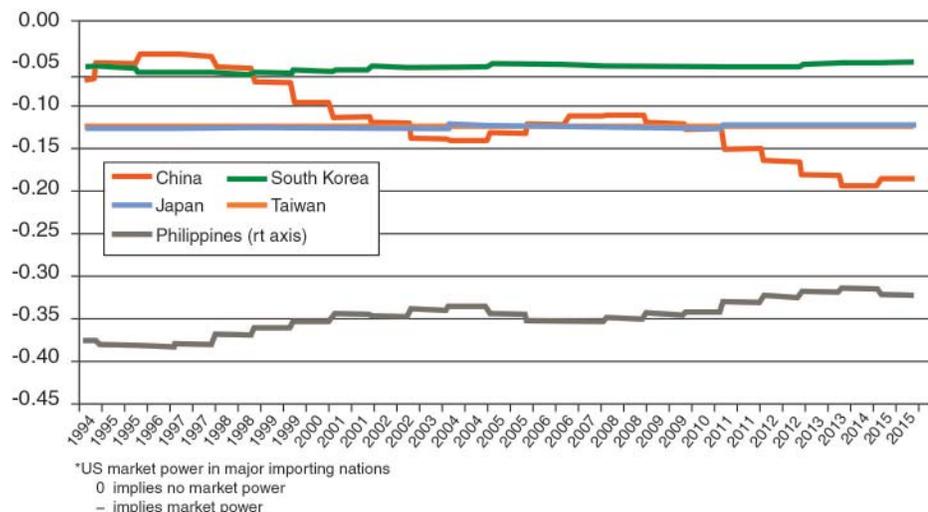


Figure 3. Simulated Lerner Indices for the United States, 1994-2015

United States would only be considered dominant in two markets: China and the Philippines. China, here, is probably an artifact of the simulations giving too much discretion to the potential for imports than reality, given that the United States has had an on-again, off-again (and now, on-again) relationship with the Chinese market for beef. The Philippines would appear to have some US dominance, likely do to the historic relationship between the two nations. Overall, Figure 3 tells a similar story to Figure 2: there are times when the

United States has market power (just as there are times when it has comparative advantage), but overall, markets are highly contested by all beef exporters and the underlying inventories have only a little impact.

The global beef market has always been highly competitive. A variety of tools are used to approach the question of whether the US export markets for beef are significantly more competitive today than they were in the past two decades and whether the underlying cycle of cattle stocks has impacted that

competition. The analyses lead us to the conclusion that US export markets for beef have always been and remain highly competitive for all beef exporters, including the United States, and that competitiveness is mostly uninfluenced by underlying cattle inventories. ■

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¹ The full study may be found online at Crespi, J.M., W. Hahn, K. Jones, L.L. Schulz, and C-T. Chen. A Study in U.S. Export Beef Competitiveness: Do Cattle Inventories Matter? ASSA Annual Meeting. Chicago, January 5, 2017. <https://ageconsearch.tind.io/record/250113/files/Export%20Beef%20Competitiveness.pdf>.

² The importing nations are Canada, China, Hong Kong, Japan, Mexico, Philippines, South Korea and Taiwan. The export competitors along with the U.S. are Argentina, Australia, Brazil, Canada, India, Mexico, New Zealand, Nicaragua, Panama, Paraguay and Uruguay.

Cover Crop Adoption Decisions in Iowa: Insights from an In-Person Survey

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CURRENT NITROGEN and phosphorus applications in the Midwest have been connected to increasing water quality problems. In an effort to improve water quality, the Iowa Nutrient Reduction Strategy (INRS), a science and technology-based framework to assess and decrease nutrients to Iowa water and the Gulf of Mexico, was developed in 2013 (INRS 2013). This framework advocates significant voluntary adoption of cover crops, which are planted between harvest and the planting of cash crops. While cover crops were utilized in the past to decrease soil erosion and build up soil organic matter, this technology has been revived recently due to its multi-functionality. Cover crops are very promising as they can reduce both nitrogen and phosphorus losses by around 30 percent (INRS 2013). The INRS proposes several scenarios to meet the N and P reduction goals including two in which row crop land cover crop adoption rates are proposed. Some Eastern states have recognized the importance of this practice such as Indiana, where 7.1 percent of farmland planted cover crops (Rundquist and Carlson 2017).

Despite cover crops' potential, this conservation practice has been adopted on a very small number of acres in Iowa. In 2013, there were just 300,000 cover crop acres planted in Iowa (Soil and Water Conservation Society 2015). This number is miniscule relative to the total number of corn and soybean acres—around 23 million. Nevertheless, the number of cover crop acres has



Photo credit: Edwin Remsburg; USDA-SARE program

doubled in two years. In 2015, there were around 592,000 cover crops acres in Iowa, accounting for 2.6 percent of its farmland (Rundquist and Carlson 2017). These adoption statistics show that substantial efforts will be needed in order to increase voluntary adoption and to reach adoption rates suggested by the INRS.

Given the potential of cover crops, a better understanding of farmers' adoption decisions, incentives, and conservation barriers becomes necessary to effectively promote this conservation technology. We obtain a first glance on these items through an in-person survey, funded through the Iowa Nutrient Research Center, given to 38 farmers from three Water Quality Initiative priority watersheds and from one non-priority watershed in Iowa. The latter had an active farmer-

led watershed group from which interviewees were sampled. Among respondents, 25 used cover crops, 12 were familiar with cover crops, but did not use the practice, and only one farmer was not familiar with cover crops. Thus, this small sample offers insights on farmers who are familiar with this promising technology. Among cover crops users, there was an average of 235 cover crops acres planted on both rented and owned land. Users reported cover crops on 140 owned acres relative to on 96 rented acres, illustrating different behavior between the two types of land.

To understand farmers' adoption decisions and incentives, the survey asked about the costs associated with this practice. Among users, the cost was roughly \$28 per acre, while the cost was \$25 among nonusers. Given

the voluntary nature of this practice, several farmers expect an incentive payment for establishing cover crops. The Environmental Quality Initiative Program (EQIP) offers payment rates that vary from \$24 to \$35 per cover crop acre, depending on the seed type (USDA-NRCS 2013). In 2013, the Water Quality Initiative offered \$25 per acre (Swobdoda 2013). Farmers were asked: (a) "How much would a payment per acre have to be in order for you to try cover crops?" and, (b) "How much would a payment per acre have to be in order for you to adopt cover crops on your farm?" Seven farmers did not respond to either question, and two farmers did not know. For the first question, three farmers answered 50 percent cost per acre, three answered zero, and two indicated that they tried on their own before incentives were in place. Among numeric responses, the averages were around \$28 and \$31 for each question respectively. These values are close to the cost reported by users. Among farmers who responded to both questions, 22 farmers provided the same answer, while 9 farmers responded differently.

Besides costs and incentive payments, farmers consider yield changes in their adoption decisions. Focusing on cover crop users, yield stayed the same among 12 farmers. Two farmers experienced a decrease in yield, while five farmers had an increase. Lastly, five users did not know whether the yield changed. Farmers were also asked about the risks, benefits,

and barriers associated with planting cover crops. Twenty-five farmers mentioned termination as a major risk associated with this practice. They appear concerned with its timing and process, which can affect the planting and subsequent growing of the cash crop in the spring. In fact, five farmers expressed their apprehension regarding the delay in spring planting. In addition, 9 farmers listed yield loss as a major risk associated with cover crops. Switching to benefits, 25 farmers mentioned improvements in reducing soil erosion, 8 farmers stated improvements in soil health or soil quality, and 14 farmers listed the increase in organic matter as major benefits associated with cover crops. Only three farmers listed water quality improvements as a benefit of cover crops.

When asked about barriers that prevent farmers from adopting cover crops, 19 farmers pointed to cost barriers. Regarding management barriers, 20 farmers said that the timing to plant cover crops is a major obstacle to establish this practice, since there is a short planting window and the growing season is very short. Eight farmers pointed to the additional time and labor required, and five farmers identified problems associated with terminating the cover crop as a barrier. These barriers are clearly connected to their perceived risks. Five farmers documented the lack of immediate benefits as something preventing farmers from adopting this practice. Lastly, eight farmers commented on

the uncertainty associated with this practice or the lack of willingness to try to new methods as potential explanations for the lack of adoption.

This small survey provides a first glance at adoption decisions and barriers of farmers who are familiar with cover crops. More research is needed to identify the right incentives that will spread this promising technology in Iowa. ■

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Redistribution or Public Good: Which Direction for the New Farm Bill?

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FARM BILL programs run the gamut from crop insurance to conservation, from invasive species control to nutrition subsidies, from agricultural research to commodity subsidies. These programs fall into two broad categories. Some, such as the nutrition programs, commodity programs, and the crop insurance program have an objective of redistributing income from taxpayers to specific groups of people. Others, such as agricultural research, conservation, and food inspection programs have an objective of improving economic efficiency by providing goods and services that the private sector underprovides, or by mitigating undesirable market outcomes. The key decision that the Senate and House Agricultural Committees will need to make in the 2018 Farm Bill is how to split up a fixed amount of funds between redistributive programs and those that improve efficiency.

Both types of programs can improve society. Agricultural research and food inspection programs have given us less expensive and safer food. Redistribution under the nutrition programs have a strong record of reducing the negative impacts of poverty on children and adults. However, just because Congress decides to fund a program does not imply that it improves society. For example, USDA's Conservation Stewardship Program often makes payments to farmers for conservation practices that they are already doing. When this occurs, the only benefit of the program is a private benefit to farmers of more income.

A desire to protect farmers from financial stress is clearly a motivating factor for some supporters of farm payments. But such protection can be counter-productive because financial stress serves the economic purpose of signaling farmers that they need to change what they are doing. Response to market signals is what makes capitalism work.

It is easier to garner funding for programs that generate private benefits than public benefits for the simple reason that private beneficiaries have a strong incentive to spend money and exert efforts to push Congress to pass their favored programs. No such push comes when the benefits of a program are widely dispersed among all of us. This truth about how policy is formed is inconvenient for our elected representatives, so advocates of private benefit programs represent their favored program as improving society. Examples abound. Taxi companies and drivers fight for public intervention against Uber in the name of maintaining public safety when

their real fight is against increased competition. Domestic manufacturers and unions regularly argue for taxing imports by invoking national security concerns or that foreign suppliers are unfairly subsidized.

Supporters of farm subsidy programs never argue publically that income should be redistributed to farmers based on the fact that farmers are somehow especially deserving. Rather they couch arguments in terms that may have some public appeal. A common justification for farm subsidies made by members of the Ag Committees is that they are needed to ensure an adequate food supply for Americans. A cursory look at this argument reveals its fallacy. According to USDA, only 46 percent of US corn is used to feed US livestock or as a food ingredient. The rest is used to produce ethanol or is exported. Only 29 percent of US grain sorghum is fed to US livestock. About 54 percent of US wheat, 59 percent of US rice, and 45 percent of US soybeans are used domestically. In aggregate, roughly half of US production of the commodities that receive subsidies is used to feed US livestock or produce US food. In addition, a growing amount of the corn, soybeans, wheat, and grain sorghum that is fed to domestic livestock is exported. About 26 percent of US produced pork, 14 percent of US milk solids, and about 16 percent of US broiler meat is exported. Rather than the US food supply being threatened, the United States is likely the most food secure country in the world. There simply is no association between US food security and farm payments.

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Four Reasons Why We Aren't Likely to See a Replay of the 1980's Farm Crisis

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THERE ARE plenty of alarming signs indicating a possible farm crisis: current corn prices are half the 2013 peak level of US \$7/bushel; farm income has declined for major commodities (corn, wheat, cattle), falling from the previous year to levels well below recent years; weak farm income and worsening credit conditions continue to trim farmland values, which are expected to trend lower in the months ahead, thus weakening the equity position of producers and the collateral value for lenders. Given the heightening farm financial crisis, many agricultural lenders, academics, and other stakeholders in the US farm sector worry another farm crisis is looming. However, there are four economic and legal reasons why this farm downturn is unlikely to slide into a sudden collapse of agricultural markets.

Reason 1: Much stronger, real income accumulation before the current downturn

When debunking or confirming the idea of a farm crisis replay, it is useful to closely investigate the previous farm crises of the 1920s and 1980s, and it's equally important to investigate the golden eras before them. Through that comparison, I argue that the much stronger income accumulation during the late 2000s, fueled by growing export demand from China, historically low interest rates, and the expanding biofuel market, puts agricultural producers and businesses a much better condition now to weather storms.

Table 1 presents the average annual percentage change in inflation-adjusted Iowa land values, gross and net farm income for the three golden eras, and

farm downturns. While it is concerning to see that since 2013 gross and net cash income has decreased 4.5 percent and 9.8 percent per year, respectively, it is equally important to note that from 2003 to 2013, gross and net income consistently grew 4.5 percent and 8.1 percent every year, reaching almost record-high levels in both farm income and land values. Forecasted income for 2017 by USDA-Economic Research Service seems to suggest that farm income is stabilizing for Corn Belt states like Iowa.

A comparison between this third golden era and the two previous reveal that farmers accumulated much more income, especially cash, during the most recent decade than during the 1910s and 1970s before those farm crises. Net cash income before the 1980s farm crisis is actually much smaller, even though land values skyrocketed during the same time. In other words, high commodity prices in the 2000s seem to have positioned agricultural producers nowadays to withstand the current headwinds.

Reason 2: Historically low interest rates

Put simply, land value is the net present value of all discounted future income flows. With certain assumptions imposed, one could think of land value being net income divided by interest (discount) rate.

Low interest rates are favorable to keep the farmland market afloat: on the one hand, it encourages stronger loan demand due to lower interest payments, and on the other hand, low interest rates also signals that the returns for other competing assets, such as stocks and bonds, aren't so robust that farmland investors are willing to accept a lower rate of return. Figure 1 reveals that even with recent hikes, interest rates are still very low compared to the 1980s, and the Federal Reserve is likely to raise the interest rate at a slow pace as opposed to a sudden hike, which makes loan restructuring possible for producers wanting to take advantage of current favorable interest rates. ➡

Table 1. Average Annual Percentage Change in Inflation-adjusted Iowa Land Values and Farm Income

	Average % change in inflation-adjusted values per year		
Golden Eras	Land	Gross Income	Net Income
1910-1920	1.2%	0.8%	0.2%
1973-1981	9.7%	0.9%	-3.2%
2003-2013	11.1%	4.5%	8.1%
Crises and Declines	Land	Gross Income	Net Income
1921-1933	-5.8%	-1.9%	-1.0%
1981-1987	-15.0%	-2.5%	2.6%
2013-2017	-4.5%*	-4.5%	-9.8%

Note: The average land value change from 2013 to 2017 is approximate because 2017 land values are unknown. The 1910-1933 gross and net farm income changes are for the whole United States due to limited data at the state level. Land values are based on USDA Census of Agriculture and USDA NASS Land Value and Cash Rent Survey, while the data on farm income is from the USDA Economic Research Service Farm Income and Wealth Statistics database.

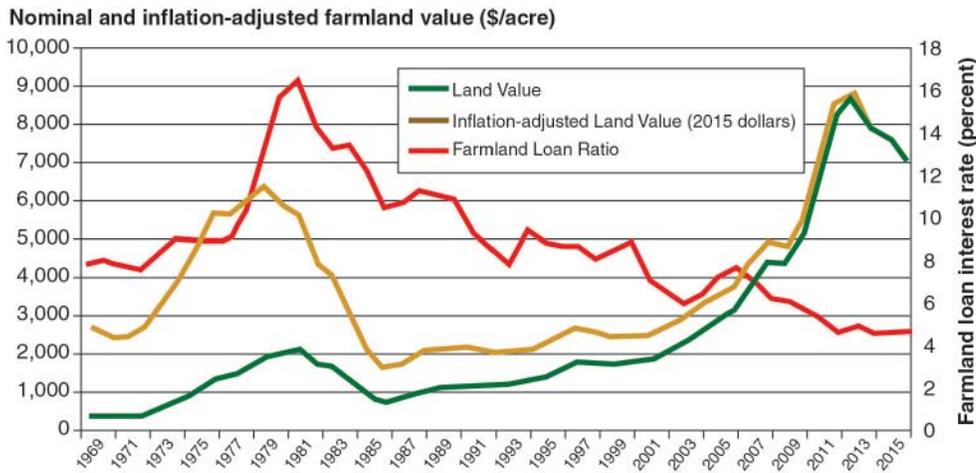


Figure 1. Iowa Farmland Value and Farmland Loan Interest Rates 1969-2016

Source: Farmland value data is from Iowa State University land value survey and the farmland loan interest rate is from the Federal Reserve bank at Chicago.

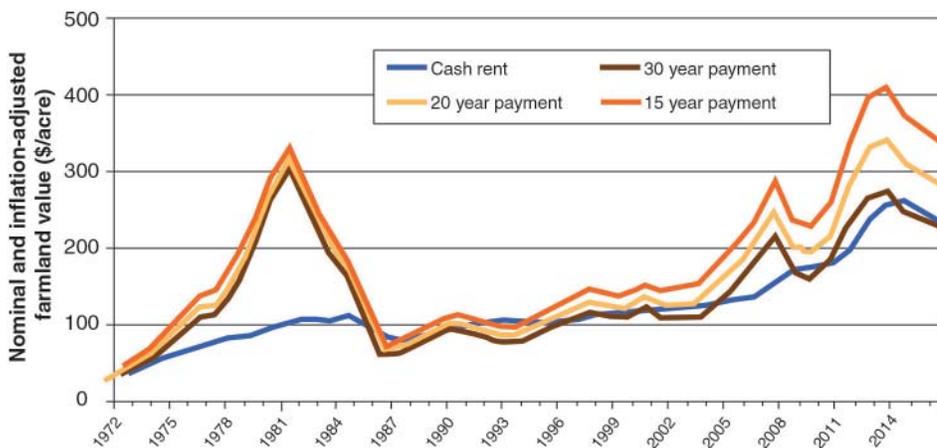


Figure 2. Cash Rent and Annual Mortgage Payments for Iowa Farmland Loans Under Prevailing Interest Rates

Source: Farmland value data is from Iowa State University land value survey (Zhang 2017), cash rent data is from the ISU cash rent survey, and the farmland loan interest rate is from the Federal Reserve bank at Chicago.

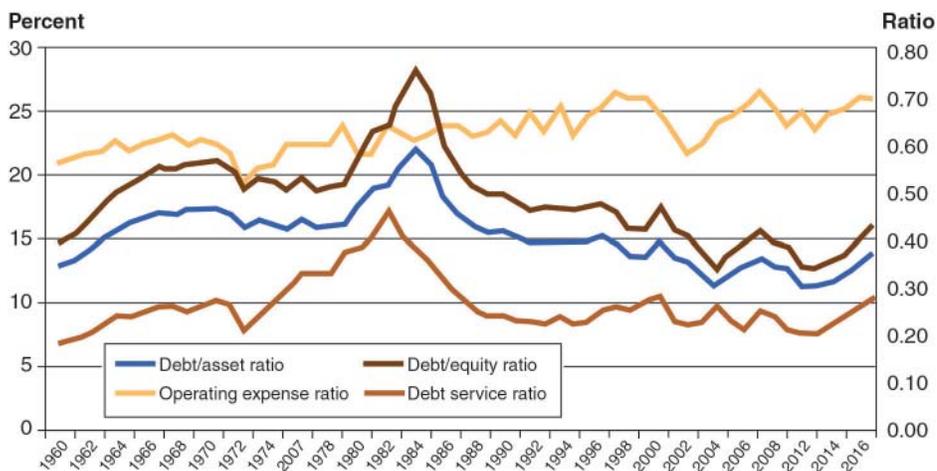


Figure 3. The Agricultural Liquidity, Profitability and Solvency Ratios for the U.S. 1960 – 2016

Source: USDA Economic Research Service Farm Income and Wealth Statistics. Please use the right y-axis titles for the two dashed lines: total rate of return on farm assets, and debt to asset ratio.

Figure 2 specifically compares the average cash rent and annual mortgage payments per acre for a typical Iowa farmland loan under prevailing farmland loan interest rates and varying terms.¹ It shows that due to abnormally high interest rates in the 1980s, the mortgage payment for a typical farmland loan was almost three times higher than the typical cash rent, and extending the farmland loan repayment schedules from 15 to 30 years did almost nothing to alleviate the financial burden faced by landowners. However, under today's low interest rate environment, debt restructuring is feasible and makes sense: under current prevailing farmland loan rates, extending a farmland loan from a 15 to 30-year repayment schedule would cut the annual mortgage payment needed from over \$350 per acre—higher than the 2016 cash rent of \$230—to a level comparable to the typical cash rent. In fact, many lenders are now advising their clients to take advantage of the current favorable interest rates to secure repayment capacity.

Reason 3: More prudent agricultural lending in part driven by more stringent regulations

The most striking aspect of the 1970s land boom during this high-inflation era is that debt capital largely financed the massive investment in agricultural assets. One reason is that loan requirements by lenders like Farmers Home Association were fairly lenient—it was not uncommon for agricultural lenders to give out large-cap loans up to 80 or even 85 percent of the collateral value. What made it worse was the way collateral value was calculated—market value unadjusted for inflation, which means that the book value of collateral rose when inflation skyrocketed. Figure 2 shows that both factors, in addition to high interest rates, contributed to the staggering agricultural debt and highly

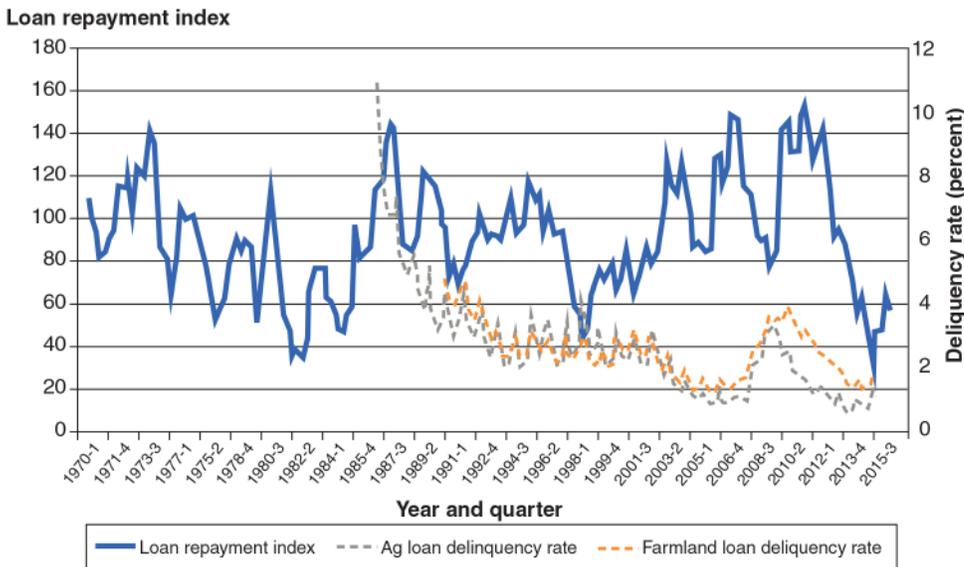


Figure 4. The Agricultural Loan Repayment Index and Delinquency Rates 1970-2015

Source: Federal Reserve Bank (2017).

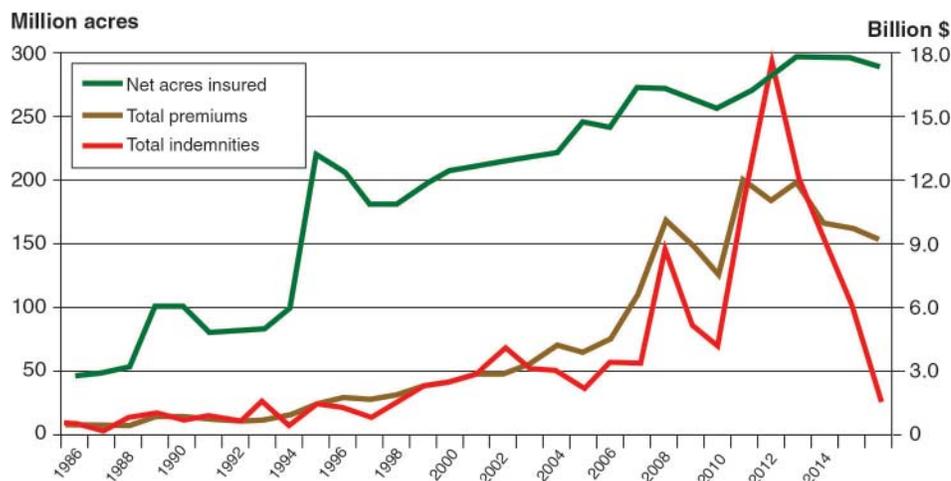


Figure 5. Crop Insurance Coverage for U.S. 1986-2016

leveraged agricultural sector. By 1978, the debt incurred averaged 76 percent of the purchase price, and between 1970 and 1980, the amount of farm mortgage debt increased 59 percent.

After the 1980s farm crisis, the regulations on agricultural lending limits got tighter, and agricultural banks reverted to a 65 percent loan-to-value ratio, which became an even more stringent 50 percent loan-to-value ratio after the 2007–2008 financial crisis. Nowadays, one more factor helps limit the amount of debt and leverage faced

by the US agricultural sector—collateral value is often calculated using a cash flow approach, as opposed to inflated market value. For example, in 2012 even though corn prices are approaching \$7/bushel, the long-term average price of \$4/bushel is often used by lenders like Farm Credit Service in calculating collateral value.

Lower interest rates and more prudent lending practices definitely help agricultural producers manage debts now. Figure 3 shows the agricultural liquidity and solvency ratios for the

United States since 1960, and Figure 4 shows agricultural loan delinquency rates since 1970. Although the current rate is rising, it is still well below the 1980s farm crisis level. The profitability ratio, such as rate of return on farm assets, is now inching down, but is also higher than the 1980s levels. It is likely that with the current stagnation of commodity prices and continued decline in farm income, the debt service ratio will continue to rise and the profitability ratio remain flat or decrease. However, it is more likely a liquidity and working capital problem, as opposed to a solvency problem. The balance sheet of the US farm sector is still very strong, which can be seen from the low level of debt to asset ratio in Figure 3. Similarly, although we see in Figure 4 the loan repayment index continued to decline, but the delinquency rates for both agricultural loans in general, as well as farmland loans, are still at very low levels.

Reason 4: Stronger government safety net

It is very important to point out the strength of the agricultural safety net—in 1987, only 50 million acres in the entire United States were insured in the Federal Crop Insurance program. Today, just the total cropland insured in Iowa exceeds 25 million acres, representing 93% of Iowa’s corn and soybean production acres (USDA RMA 2015, for more information please see *Crop Insurance in Iowa*, http://www.card.iastate.edu/ag_policy_review/display.aspx?id=26). There is arguably stronger support from the livestock insurance program as well. In addition, payments from federal and state commodity programs and disaster relief programs provide significant revenue and price protection. The 1980s farm crisis represents the failure of the government’s safety test in the ‘stress

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Another frequent argument made for farm subsidies is that farming is a risky business and all that stands between a farmer and financial ruin are farm subsidies and the crop insurance program. Stam and Dixon (2002) showed that farm bankruptcy rates were only high in the 1930s and the mid-1980s, periods of severe financial stress in the farm sector. The annual rate of bankruptcy in the 1930s peaked at about 0.13 percent. In the mid-1980s the rate of bankruptcies was higher at 0.25 percent. Data on current bankruptcy rates are not readily available, but bankruptcy rates outside these two periods of extreme financial stress are below 0.03 percent. It is tempting to use this statistic to conclude that more than 99.97 percent of farm payments do not prevent bankruptcy, but it cannot be known for certain whether bankruptcy rates would be higher or lower without farm programs, outside periods of severe financial stress. Suffice it to say that outside periods of severe financial distress, the vast majority of farm

payments do not prevent bankruptcy.

A desire to protect farmers from financial stress is clearly a motivating factor for some supporters of farm payments. But such protection can be counter-productive because financial stress serves the economic purpose of signaling farmers that they need to change what they are doing. Response to market signals is what makes capitalism work. Current farm payment formulas use either fixed prices or past market prices to determine when payments are made. Some justify these formulas on the basis that farmers need to be protected from long-lasting declines in price; however, low prices signal that the world has abundant supplies. Buffering farmers from this market signal simply prolongs low-price periods.

The crop insurance program offers an alternative way of buffering farmers from financial stress. Although it is easy to identify changes to the program that would make it more efficient, the program's overall structure has a number of positive attributes. Program guarantees adjust each year to pre-planting time market price levels, so only unexpected declines in market prices or yields trigger payments. A

minimum 15 percent deductible means that revenue must decline below expected levels before a payment is received. Lastly, although premiums are heavily subsidized, at least farmers must pay a portion of the cost of the program so years in which they do not receive a crop insurance indemnity, they end up sending their crop insurance company a payment.

The likelihood of Congress tilting their funding decisions away from redistributive commodity programs that benefit a small group of farmers towards programs that serve the public may not be zero, but it is close to it. This low likelihood reflects both the strength of the status quo in determining policy directions as well as the strength of the lobbying efforts that support redistribution. However, the recent House action cutting \$840 billion over 10 years from the Medicaid program demonstrates that status quo redistributive programs may not always win out. Whether a willingness to cut a redistributive program that benefits poor people augers a willingness to cut redistribution to relatively wealthy and high-income farmers will soon be seen. ■

test,' however, agricultural producers and the farm sector in general now have a much stronger safety net compared to the 1980s.

Despite the deteriorating agricultural financial conditions and continued decline in farm income, the current farm downturn is more likely a liquidity and working capital problem, as opposed to a solvency and balance sheet problem for the entire agricultural sector. Rather than an abrupt farm crisis, we are likely

experiencing a gradual, drawn-out downward adjustment to the historical normal return levels for the agricultural economy. ■

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¹This calculation makes two assumptions: (a) the average land value and cash rent value from ISU surveys is used as proxy for gross income and asset/collateral value; and (b) it assumes certain loan-to-value ratios based on regulations on agricultural lending and common lending practices, which we will discuss more in detail in Reason 3.

Table 1. Countries with Trade Agreements with the United States

Australia	Costa Rica	Israel	Oman
Bahrain	Dominican Republic	Jordan	Panama
Canada	El Salvador	Mexico	Peru
Chile	Guatemala	Morocco	Singapore
Colombia	Honduras	Nicaragua	South Korea

Source: USDA-FAS

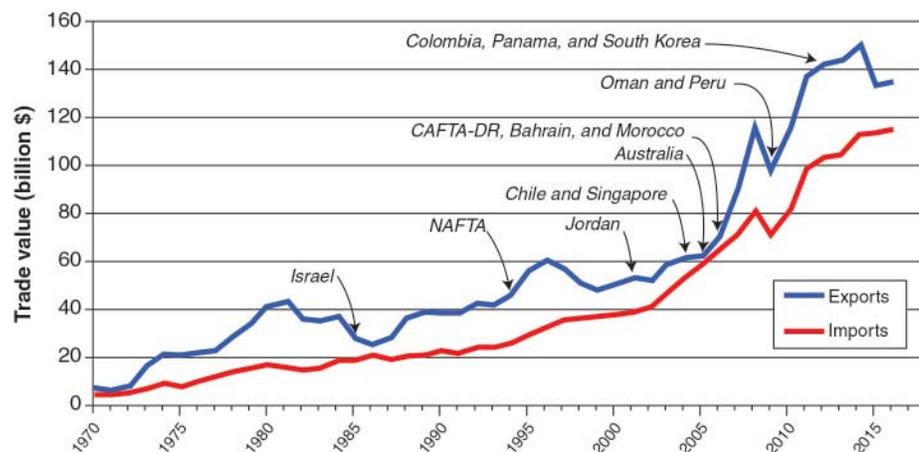


Figure 1. Value of US Agricultural Trade

Source: USDA-FAS

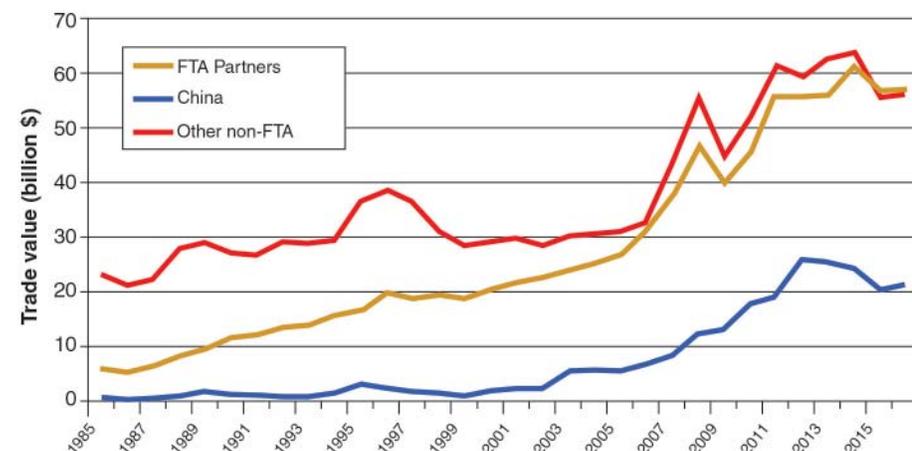


Figure 2. US Ag Exports

Source: USDA-FAS

agreements; and agriculture is one area that has definitely benefitted from more open trade brought about by trade agreements and an area where the United States has traditionally enjoyed trade surpluses.

Figure 1 shows the historical growth in US agricultural trade and the timing of these trade agreements. One thing to remember about most of the agreements is that the provisions

are typically slowly rolled in over a number of years. For example, NAFTA was signed in 1994, but was not fully in effect until 2008. Agricultural trade was relatively small prior to the early 1970s. The development of global agricultural trade in the mid-1970s boosted farm prices—agricultural trade values quadrupled during the decade. The impact of the 1980s farm crisis can be seen in the trade flows as

well. It was in the depths of that crisis that the United States signed its first free trade agreement with Israel in 1985. NAFTA was agreed to in 1994. In the early 2000s, there was a flurry of activity with multiple trade agreements being consummated. The latest set of agreements, with Colombia, Panama, and South Korea, were signed in 2012.

Since the time of that first trade agreement, US agricultural exports have grown from \$30 billion to the current total of \$135 billion. Agricultural imports have grown as well, but not as quickly, moving from \$20 billion in 1985 to \$115 billion in 2016. To highlight the impacts the free trade agreements have, Figure 2 breaks down US agricultural exports by partners (free trade agreement [FTA], China, and other non-FTA). As the figure shows, much of the growth in US agricultural exports has occurred with our free trade partners, with Canada and Mexico representing a substantial portion of that growth. Since 1985, US agricultural exports have averaged a 29 percent growth rate with our FTA partners. Over the same period, our agricultural exports have averaged a 7 percent growth rate with non-FTA countries, including China. Removing China from the non-FTA list slows the annual export growth rate to 5 percent.

More open and free trade has benefitted US agriculture, while it is not the only driver in export growth, as the growth in the US-China trade exhibits, it is a very significant factor, which makes sense from an economic perspective. Economic theory in trade outlines the idea of comparative advantage, the ability for an entity to produce a good or service at a lower cost than other entities competing with it. Different countries will have different products where they have a comparative advantage. Given the dispersion of comparative advantage across countries and products, trade can be mutually beneficial to all countries

involved. Tariffs, border taxes, and other trade-restricting policies distort cost structures and thus, distort comparative advantages and trade flows.

In the case of agriculture, the United States has a comparative advantage. We are the world's largest producer of many agricultural products and have developed significant resources to transport our agricultural products throughout the country and around the world. Compared to other countries in the world, the United States is a high production, low cost source of agricultural products. As the figures show, the removal of trade barriers, such as tariffs, via free trade agreements provides an economic boost to US agriculture.

Many of our agricultural products now rely on international demand as a major component of total demand. For the major Iowa crops, exports for the 2016/17 crops consume 15 percent of US corn and 48 percent of US soybeans. However, other crops are just as, if not more, reliant on exports. Forty-five percent of the US wheat crop is exported, along with 47 percent of US sorghum, 51 percent of US rice, and 84 percent of US cotton. International trade is also important to the livestock and dairy industries. Twenty-one percent of all US pork is shipped to other countries, along with 10 percent of US beef, 17 percent of US broilers, 9 percent of US turkeys, and 22 percent of US dairy. US agricultural production has

expanded to match the demand we see from the rest of the globe.

So the chatter about the renegotiation of trade agreements has concerned many in US agriculture. The industry does not want to lose the gains of the previous couple of decades. Much of the new administration's discussion of trade has highlighted sectors of the economy where the United States arguably does not have a comparative advantage. However, as Secretary Perdue enters his new role, he has moved to highlight the importance of trade for US agriculture by creating a new position in USDA, Undersecretary for Trade. The question for agriculture going forward is how strong a voice will USDA have as new trade talks begin. ■

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