

# **The Dynamic State of Agriculture and Food: Possibilities for Rural Development?**

**Statement of**

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My remarks today focus on the changing structure of the agriculture and food system and how it impacts farmers, eaters and rural communities. For farmers – and by extension the Farm Credit System – it is critically important to be prepared for changes in the way consumers view food and the food system because it has potential to impact and change different production systems currently in use by member borrowers. By the same token, rural communities – to a greater or lesser extent – will be affected by any changes taking place in the agricultural sector, some of which may portend new opportunities for rural development.

Agriculture is in a very dynamic state today. So-called “conventional” agriculture – and by that I mean commodity agriculture like grains, livestock production and fruit and vegetables – is extremely consolidated today. There are fewer and larger farms, a change that corresponds to fewer and larger input supply firms, grain handling facilities, processing firms, distribution firms, grocers and even food service distributors. However, this consolidation of production, processing and distribution is not the only story of agriculture and food. A new story comes from the consumption side, where an engaged consumer has emerged across the United States, in both rural and urban areas. This engaged consumer is likely to ask more questions about where their food is produced, how it is produced, and who is producing it. This means there are many emerging opportunities for different actors in the agriculture and food system – from farmers who sell through local farmers’ markets and community supported agriculture farms, to farmers of the middle (and associated processors, distributors and grocers) who can supply emerging markets of higher volume differentiated food products. New value chains are emerging in food and agriculture, and likely their biggest challenge is in developing capacity – to grow, aggregate, distribute and market the products that engaged consumers desire. This should be of importance to the Farm Credit System because growing this capacity requires financing, in both new and old forms.

## **Consolidation in Commodity Agriculture**

The food system in the US has become increasingly integrated and concentrated during the last hundred years. A common method to describe this concentration is to examine the industry’s

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four-firm concentration ratio (CR4), which measures the total percentage of a market controlled by the industry's four largest firms. Scholars have documented extensively the increase in concentration in virtually all sectors of the food and agriculture industry (see, for instance, Drabenstott 1999; Hendrickson et al 2002; Howard 2009). For example, in 1967 the four largest firms controlled one-quarter of the non-poultry animal slaughtering industry, but by 2007 that share more than doubled. In wet milling, the four largest corn milling plants controlled 68% of the market in 1967, but by 2007 that share increased to 83%. Similarly, the four largest flour milling firms controlled 30% in 1967, but increased their share to 55% in 2007 (see James 2013 for source details).

Table 1 presents the CR4 for several agricultural markets in the United States, as well as names of the top firms if known, for a 20 year period between 1990 and 2011. The table reveals several important patterns. First, with one exception (flour milling), the food sectors represented became more concentrated – meaning the top four firms controlled a larger share of the market. Second, the increase in concentration can occur relatively rapidly. For example, the pork production capacity of the four largest firms nearly doubled in a 10 year period of time. Third, some firms dominate multiple sectors and thus represent both industry concentration as well as vertical integration. Cargill, for instance, produces and processes an array of meats, provides feed and trades/processes corn and soybeans. Tyson is able to provide a full array of protein – beef, pork and broilers – that food retailers like Wal-mart want. Finally, the four largest firms are not the same over time. Some firms dominating their sectors in 2011 were not present in 1990, thus illustrating how quickly firms can come to dominate their industry.

For commodity farmers, markets are also consolidated at the input supply level (see Table 2). A Canadian non-profit, ETC Group (2013), estimates that the top four firms have almost 60 percent of the global proprietary seed market, with market leaders Monsanto and DuPont alone having approximately 44 percent. In the U.S., Howard (2009) documented the consolidation of the seed industry after the introduction of commercially popular Round-up Ready seeds in 1996, which were genetically engineered to resist the spraying of Round-up weed killer (see also Moss 2010, 2011; Hubbard, 2009). Some estimates show that 70 percent of the corn seed market in the U.S. in 2009 was controlled by two firms, DuPont (Pioneer) and Monsanto, while they controlled 59 percent of soybean seed (Pollack, 2010). On the fertilizer side, ETC Group (2013) estimates the top four firms with close to a quarter of the global market, although it is difficult to account for different kinds of fertilizer markets. However, we know that potash and phosphorous production has long been organized in cartels (Blas 2010; Etter 2008), where three cartels are thought to account for 70 percent of the global trade in these two fertilizers (Blas 2010).

The commodity farmers who are integrated into these global networks of production (Hendrickson et al 2008) must fit into the scale of these networks. Hoppe and Banker (2010) report only 12 percent of US farms account for 84 percent of gross sales. Larger entities are interested in dealing with entities of a similar size which can provide the quantity of product with the greatest efficiency of transaction. And this is not just a farmer issue. In the 1990s, the food retail industry in the United States consolidated rapidly, primarily due to Wal-Mart's entry into

groceries in the late 1980s. By 2000, Wal-Mart was the second largest grocer in the US (Hendrickson et al 2002) and is now the dominant firm with market share estimates ranging from 25 to 33 percent (Mitchell 2011; Clifford 2011). Grocery distributors either consolidated or failed, including most notably Flemings. For small rural grocers, this has meant increasing difficulty with accessing supplies, decreasing their competitiveness, and causing loss of business in rural communities. Finally, there has also been great change in the structure of financial services in rural areas. Tolbert et al (2014) documented dramatic declines in local ownership of traditional financial services in rural counties between 1976 and 2007, suggesting that ownership of financial services has consolidated in places far away from these areas.

<b>Industry Sector</b>	<b>1990</b>	<b>1999</b>	<b>2011</b>
Beef Slaughter – Steer & Heifer	69 percent <ul style="list-style-type: none"> <li>• IBP</li> <li>• ConAgra</li> <li>• Excel (Cargill)</li> <li>• Beef America</li> </ul>	79 percent <ul style="list-style-type: none"> <li>• IBP</li> <li>• ConAgra</li> <li>• Excel (Cargill)</li> <li>• Farmland National Beef</li> </ul>	82 percent <ul style="list-style-type: none"> <li>• Cargill</li> <li>• Tyson</li> <li>• JBS</li> <li>• National Beef</li> </ul>
Beef Production/Feedlots	n/a <ul style="list-style-type: none"> <li>• Cactus Feeders</li> <li>• ConAgra (Monfort)</li> <li>• J.R. Simplot Co.</li> <li>• Caprock (Cargill)</li> </ul>	1,349,000 capacity <ul style="list-style-type: none"> <li>• Continental Grain Cattle Feeding (405,000)</li> <li>• Cactus Feeders Inc. (350,000)</li> <li>• ConAgra Cattle Feeding (320,000)</li> <li>• National Farms Inc. (274,000)</li> </ul>	1,983,000 <ul style="list-style-type: none"> <li>• JBS Fiver Rivers Cattle Feeding (838,000)</li> <li>• Cactus Feeders (520,000)</li> <li>• Cargill Cattle Feeders LLC (350,000)</li> <li>• Friona Industries (275,000)</li> </ul>
Pork Slaughter	45 percent <ul style="list-style-type: none"> <li>• IBP</li> <li>• ConAgra</li> <li>• Morrell</li> <li>• Excel</li> </ul>	57 percent <ul style="list-style-type: none"> <li>• Smithfield</li> <li>• IBP Inc.</li> <li>• ConAgra (Swift)</li> <li>• Cargill (Excel)</li> </ul>	63 percent <ul style="list-style-type: none"> <li>• Smithfield Foods</li> <li>• Tyson Foods</li> <li>• Swift (JBS)</li> <li>• Excel Corp. (Cargill)</li> </ul>
Pork Production	n/a <ul style="list-style-type: none"> <li>• Murphy Farms</li> <li>• Tyson Foods</li> <li>• Cargill</li> <li>• National Farms</li> </ul>	834,600 sow capacity <ul style="list-style-type: none"> <li>• Murphy Family Farms (337,000)</li> <li>• Carroll's Foods (183,600)</li> <li>• Continental Grain (incl. PSF) (162,000)</li> <li>• Smithfield Foods (152,000)</li> </ul>	1,618,904 sow capacity <ul style="list-style-type: none"> <li>• Smithfield Foods (876,804)</li> <li>• Triumph Foods (371,000)</li> <li>• Seaboard (213,600)</li> <li>• Iowa Select Farms (157,500)</li> </ul>
Broiler Slaughter	45 percent <ul style="list-style-type: none"> <li>• Tyson</li> <li>• ConAgra</li> <li>• Gold Kist</li> <li>• Perdue Farms</li> </ul>	49 percent <ul style="list-style-type: none"> <li>• Tyson</li> <li>• Gold Kist</li> <li>• Perdue</li> <li>• Pilgrim's Pride</li> </ul>	53 percent <ul style="list-style-type: none"> <li>• Tyson</li> <li>• JBS (Pilgrim's Pride)</li> <li>• Perdue</li> <li>• Sanderson</li> </ul>

Turkey Slaughter	31 percent <ul style="list-style-type: none"> <li>• Louis Rich (Philip Morris)</li> <li>• Swift (Beatrice/KKR)</li> <li>• ConAgra</li> <li>• Norbest</li> </ul>	42 percent <ul style="list-style-type: none"> <li>• Jennie-O (Hormel)</li> <li>• Butterball (ConAgra)</li> <li>• Wampler Turkeys</li> <li>• Cargill</li> </ul>	58 percent <ul style="list-style-type: none"> <li>• Butterball (Smithfield/Goldsboro)</li> <li>• Jennie-O (Hormel)</li> <li>• Cargill</li> <li>• Farbest Foods</li> </ul>
Flour Milling	61 percent <ul style="list-style-type: none"> <li>• ConAgra</li> <li>• ADM</li> <li>• Cargill</li> <li>• Grand Met (Pillsbury)</li> </ul>	62 percent <ul style="list-style-type: none"> <li>• ADM</li> <li>• ConAgra</li> <li>• Cargill Flour Milling</li> </ul>	52 percent <ul style="list-style-type: none"> <li>• Horizon Milling (Cargill/CHS)</li> <li>• ADM</li> <li>• ConAgra</li> </ul>
Wet Corn Milling	74 percent <ul style="list-style-type: none"> <li>• ADM</li> <li>• Cargill</li> <li>• A.E. Staley (Tate and Lyle)</li> <li>• CPC</li> </ul>	74 percent <ul style="list-style-type: none"> <li>• ADM</li> <li>• Cargill</li> <li>• A.E. Staley (Tate and Lyle)</li> <li>• CPC</li> </ul>	87 percent <ul style="list-style-type: none"> <li>• ADM</li> <li>• Corn Products International</li> <li>• Cargill</li> </ul>
Soybean Processing	61 percent <ul style="list-style-type: none"> <li>• ADM</li> <li>• Cargill</li> <li>• Bunge</li> <li>• Ag. Processors</li> </ul>	80 percent <ul style="list-style-type: none"> <li>• ADM</li> <li>• Cargill</li> <li>• Bunge</li> <li>• Ag Processing</li> </ul>	85 percent <ul style="list-style-type: none"> <li>• ADM</li> <li>• Bunge</li> <li>• Cargill</li> <li>• Ag Processing</li> </ul>

Sources: 2011 data is taken from Table 1 in James, Hendrickson and Howard (2013) and 1999 data is reported in Heffernan, Hendrickson and Gronski (1999). 1990 data is reported in Heffernan and Constance (1990). Sources of individual data are available in each publication.

<b>Table 2: Global Input Markets</b>	
Seeds (Proprietary Seeds)	CR 4- 58%. Firms - Monsanto, DuPont, Syngenta and Vilmorin
Fertilizers	CR 4- 24%. Firms – Yara, Agrium, The Mosaic Company, PotashCorp
Chemicals	CR 4- 62%. Firms – Syngenta, Bayer, BASF, Dow AgroSciences
Source: ETC Group (2013)	

The big question of course is why this is important to farmers, the Farm Credit System, and rural communities. My colleague Harvey James and I have written about the *constrained choices* that farmers face. Consolidation in these markets “constrains – as in limits or inhibits – the decisions of farmers by restricting choice options or the types of decisions they can make. ... Second, it constrains – as in compels or obliges – the choices of farmers by forcing them into the kinds of decisions that they otherwise would not have chosen for ethical or other reasons” (Hendrickson and James 2005: 283; see also James and Hendrickson 2008). The Farm Credit System may face similar constrained choices – as their customer pool declines through these consolidation processes, they may be forced into narrower channels of lending that require larger amounts of

capital, and are influenced by events that take place within global networks of production, distribution and consumption. Certainly American commodity farmers can be – and are – successful within these global networks. However, the investment and knowledge required to compete in these networks reduces the flexibility of these operations. Poultry or hog growers have significant capital invested in single-use facilities. Crop farmers tied to large, extensive crop production rely on large investments in agricultural inputs or ever larger single-use machinery and storage facilities. The problem with consolidated markets and the required capital outlays to participate in these markets is that farmers have few options if anything goes wrong. Moreover, these farmers will have a harder time responding to the new market signals that are emerging from the engaged consumers. If FCS members have placed all their eggs in the basket of financing these farmers, then they share this risk.

## **The Dynamic Food & Agriculture System**

What makes the food and agriculture system so dynamic presently is the emergence of an “engaged” consumer. As Zepeda and Nie (2012) report, organic food sales are approximately 4 percent of the US food market, and “local” accounts for almost another half percent. However, these markets are growing rapidly, around 40-60 percent per year, which is unusual in the somewhat stodgy food business. Engaged consumers are generally interested in food sustainability, but may bring many different sorts of motivations to the table, such as desire for humane treatment of animals, a “buy local” resistance to corporatization, concern over use of pesticides and fertilizers, interest in personal health, dislike of transgenics and/or support for family farms. Engaged consumers can be found in both urban and rural areas across the United States, and their engagement can happen at both the market and policy levels. For instance, ballot issues over the labeling of transgenic foods (termed genetically modified or GM) have occurred in Washington and California, and California and four other states have outlawed some animal production practices. While the ballot issues on GM labeling have failed to pass, the money spent on advocacy brought the issue to the attention of some who were previously disengaged and who now may pay attention. Certainly some retailers and processors are betting on it. Whole Foods announced that all products in their stores will be labeled for GM by 2018, while General Mills announced they will label Cheerios as “not made with Genetically Modified ingredients” (Bittman, 2014). Meanwhile Tyson and Smithfield are moving away from sow gestation crates as “[m]ore than 60 major food companies, including McDonald’s, Burger King, Safeway and Costco have demanded pork suppliers phase out gestation crates. Another major supplier, Cargill, has said it has gotten rid of 50 percent of its crates.” (Andrews, 2014)

This is not an urban phenomenon. In rural areas of Missouri and Nebraska, my colleagues and I have discovered very similar narratives of the benefits of local foods among both rural and urban consumers. These consumers believe local foods have superior quality and can help to support their community and local economy. However, participating in local food systems also gives consumers personal satisfaction and peace of mind, and helps them connect to their community. Many buy local foods for health and safety reasons, and they trust local farmers much more than they do the “corporate food system.”

These engaged consumers are shaking up the state of the agriculture and food system today. The announcements by Tyson, Smithfield and others have direct impact on their contract growers and the facilities they have invested in – i.e. who will pay for upgrades to respond to these consumer markets? On the other hand Whole Foods' announced initiative might open up significant new market opportunities among both livestock and crop farmers. For instance, farmers producing hogs in certified humane conditions for companies like Niman Ranch will now need to source non-GM crops for feed. Which farmers and companies can source non-traited soybean and corn seed? Who is already producing non-traited crops like sorghum and oats? Such changes on the consumer end require different infrastructure on the production side – on-farm infrastructure like smaller bins to hold identity preserved crops, or the ability to clean out machinery and trucks between different kinds of crops, and non-farm infrastructure like aggregation and milling facilities for different grains. If there is continued growth in these markets, processing facilities for livestock could be required.

These markets all require some investment and capacity to participate in and are particularly suited to what is called “agriculture of the middle” – those farmers who are too large to rely on direct markets like farmers' markets or Community Supported Agriculture but who are too small to effectively compete in the changing global commodity markets. Many of these farmers are traditional commodity farmers who are now branching into these markets, making their smaller facilities and machinery an asset rather than a liability. The key for these farmers may be to serve these differentiated markets which are primarily regional or national in scale. (Don't forget that differentiated markets for identity preserved grains and other products exist on a global level as well. Global does not have to imply massive scale. For instance, a farmer group in Missouri that processes native pecans exports organic pecans to the United Kingdom.)

On the other hand, another important dynamic is that those farmers who have been participating in direct markets are seeking to scale up to supply new products to schools, food services, grocery stores and distributors. “Scaling up” local food systems primarily means going beyond the direct relationships of farmers' markets, roadside stands, U-picks, CSAs and deliveries of produce to chefs to markets that are still local or regional in scope but are intermediated by supply chains. To scale up for these markets, farmers need different kinds of infrastructure. They need the ability to pack, sort and grade locally produced produce and deliver it to customers. They need new kinds of storage and processing facilities, especially if they are interested in value-added products. Food hubs, which USDA defines as “a business or organization, that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand” (Barham et al 2012) have been popping up across the country. However, a basic need for scaling up is the creation of value-chains, basically a set of working partnerships, that move local or regional foods from farmer to consumer in a way that allocates resources and profits in a fair and transparent manner.

## The Credit Needs of Emerging Markets

The credit needs of these farmers – and associated businesses, like equipment dealers, seed suppliers, smaller processors and handlers who can segregate differentiated products, distributors and grocers – are potentially different than the traditional needs of commodity farmers. For example, investments in the value chain may come from a wide array of actors, some of whom may even be public entities. Evaluating the risk and benefit of emerging markets and the new business capacities they require may be more difficult. The contracts that are negotiated in emerging value chains may be much different. Finally, judging the credit worthiness of farmers and their partners could be more difficult. What I have outlined so far is all the risks of the emerging markets created by engaged consumers. However, there are potential benefits to the FCS, including diversification into different investments with risks spread across more borrowers, the satisfaction of participating in cooperative ventures, as well as the strengthened community relationships and contributions to rural development such investments may offer.

The consolidation of the Farm Credit System has implications for farmers and small business entities. Tolbert and colleagues (2014) document the decline of traditional financial services in non-core (i.e. rural) counties across the U.S. Their conclusion is that this decline has made it much more difficult for rural small businesses to access credit from these sources which can force them to turn to alternatives sources of credit like borrowing from family and friends, financing internally (thereby tying up capital), financing on credit cards, or even employing pawnshops and car title loan operations. While their research focused on private lending institutions and was not sector specific to agriculture, their research could resonate for the FCS. Consolidated, that is “multisite financial institutions are more likely to use network-wide standardized operating procedures and asset or hard data criteria to evaluate loan and credit applications” rather than the relational lending practices that locally owned financial institutions often rely upon. Tolbert et al (2014:7) claim that “relational lending is linked to lower interest rates, reduced collateral requirements and increased credit availability.”

This relational lending might be the most important component in evaluating the credit worthiness of borrowers, helping to evaluate their capacity to serve new markets, or even understanding the risks posed by emerging market opportunities. The latter could be significant from a lender’s view. By their very nature these emerging markets are not standardized and they are very difficult to judge in terms of traditional agricultural lending. For instance, how much profit can one expect to return on a diversified vegetable operation in the Midwest? I have helped farmers search extension materials for budgets for vegetable operations and they are extremely difficult to locate and highly variable. Vegetable production requires extremely good soil, making them a lesser bet in the poorer soils of central Missouri, but the marketing outlet and volume is what determines the overall profitability of the business model. Who collects market data on vegetables in the Midwest? As a lender, how do I know which outlet my farmer client is capable of servicing successfully? And what happens when there is a crop loss? Crop insurance for Midwestern produce farms receiving a premium from local/regional markets is for

all intents and purposes non-existent. Still these farmers need credit much as a traditional farmer does.

My colleagues Tom Johnson, Randy Cantrell and I are just finishing some research that shows the economic impacts of farms oriented to local markets are larger than those for conventional agriculture. Local food producers are often less profitable than conventional farms but still generate larger income and employment effects in their communities. As a cooperative system, FCS may be interested in these community impacts and helping to deliver contributions to rural economic development. The FCS might also be interested in helping other cooperatives, which many farmers form to service these emerging markets. Helping to finance the infrastructure that these farms and their value chains require could have great community impacts. That may mean investing in aggregation and distribution facilities or processing facilities.

I may be going out on a limb here, but there may even be a role for FCS in developing new financing and investment alternatives. In the past decade the concept of Slow Money – investment that is dedicated to people and place, food security, and ecological diversity rather than fast profits – has emerged. Slow Money in some sense is the outgrowth of those engaged consumers investing in the food system they desire. According to [slowmoney.org](http://slowmoney.org), “more than \$30 million has been invested in 221 small food enterprises around the United States since mid-2010. Seventeen local Slow Money Chapters and six investment clubs have formed.” One such club in St. Louis contacted University of Missouri Extension for help in identifying worthy clients. Since Slow Money investors still seek profits, but want to direct their investments toward social and ecological goals, there may be a potential for some kind of joint partnerships between Slow Money clubs and the FCS.

## **Conclusion**

In agriculture and food nothing is ever boring! Today I have outlined changes that are occurring among traditional commodity producers, among consumers, and among farmers accessing new markets. There are risks and opportunities across the board. A concern for me is that the FCS will further consolidate and in the process lose the ability and opportunity to support new agricultural systems that can serve a newly engaged American consumer. Diversification is a mainstay of ecology, as organisms evolve to fit particular niches. Diversification of farming practices is a mainstay of sustainable agriculture because diversity can provide strength to farms and agroecosystems, helping them to absorb natural and man-made shocks. In the same way, diversification of forms in the economic system can absorb economic shocks without panic and crises. We are seeing the flowering of this diversification in the agriculture and food system but it needs to be supported. In my view, the FCS has the opportunity to encourage this dynamic agriculture, and insulate itself from the dangers of the constrained choices further consolidation in food, agriculture and finance can bring.

## Bibliography

- Andrews, James. 2014. "Smithfield, Tyson encouraging transition away from gestation crates." *Food Safety News*. January 10. Accessed at <http://www.foodsafetynews.com/2014/01/smithfield-tyson-to-make-distance-from-gestation-crates/#.UvulsPldVXE> on February 10, 2014.
- Barham, James, Debra Tropp, Kathleen Enterline, Jeff Farbman, John Fisk, and Stacia Kiraly. 2012. *Regional Food Hub Resource Guide*. U.S. Dept. of Agriculture, Agricultural Marketing Service. Washington, DC. April.
- Bittman, Mark. 2014. "How many cheers for Cheerios?" *New York Times*, 1/7/14.
- Blas, J. 2010. End Looms for Fertiliser Cartels. *Financial Times*, August 19.
- Clifford, S. 2011. Groceries fill aisles at stores like CVS. *New York Times*, 17 January.
- Drabenstott, M. 1999. Consolidation in U.S. agriculture: The new rural landscape and public policy. Federal Reserve Bank of Kansas City, *Economic Review* First Quarter, 63-71.
- Etter, L. 2008. Lofty prices for fertilizer put farmers in a squeeze. *Wall Street Journal*, May 27, A1.
- ETC Group. 2013. Putting the Cartel before the Horse.... and Farm, Seeds, Soil, Peasants, etc. ETC Group Communique #111. Accessed at <http://www.etcgroup.org/sites/www.etcgroup.org/files/CartelBeforeHorse11Sep2013.pdf> on 1/31/14.
- Heffernan, William D. and Douglas Constance. 1990. CR 4 Tables. University of Missouri.
- Heffernan, William D., Mary K. Hendrickson, and Robert Gronski. 1999. "Consolidation in the Food and Agriculture System." Report to the National Farmers Union. Jan. 8. Accessed January 12, 2012. <http://www.foodcircles.missouri.edu/whstudy.pdf> .
- Hendrickson, M.K., and H.S. James, Jr. 2005. The ethics of constrained choice: How the industrialization of agriculture impacts farming and farmer behavior. *Journal of Agricultural and Environmental Ethics*, 18: 269-291.
- Hendrickson, Mary K., William D. Heffernan, Philip Howard and Judith Heffernan. 2002. "Consolidation in Food Retailing and Dairy." *British Food Journal* 103(10):715-728.
- Hendrickson, Mary K., John Wilkinson, William D. Heffernan, and Robert Gronski. 2008. *The Global Food System and Nodes of Power*. Report prepared for Oxfam America with electronic copy available at: <http://ssrn.com/abstract=1337273>.

- Hoppe, Robert and David E. Banker. 2010. Structure and Finances of U.S. Farms: Family Farm Report, 2010 Edition. USDA Economic Information Bulletin # EIB-66. Washington, DC.
- Howard, P.H. 2009. Visualizing consolidation in the global seed industry: 1996-2008. *Sustainability* 1(4), 1266-1287.
- Hubbard, K. 2009. Out of Hand: Farmers Face the Consequences of a Consolidated Seed Industry. Washington DC: National Family Farm Coalition.  
[http://farmertofarmercampaign.com/Out\\_percent20of\\_percent20Hand.FullReport.pdf](http://farmertofarmercampaign.com/Out_percent20of_percent20Hand.FullReport.pdf).  
 Accessed 22 December 2011.
- James, H.S., Jr. 2013. Introduction to the ethics and economics of agrifood competition: Connotations, complications and commentary. In H.S. James, Jr. (ed.), *The Ethics and Economics of Agrifood Competition* (pp. 1-21). Dordrecht, The Netherlands: Springer Publishers.
- James, H.S. Jr., and M.K. Hendrickson. 2008. Perceived economic pressures and farmer ethics. *Agricultural Economics*, 38: 349-361.
- James, H.S. Jr., M.K. Hendrickson, and P.H. Howard. 2013. Networks, power and dependency in the agrifood industry. In H.S. James, Jr. (ed.), *The Ethics and Economics of Agrifood Competition* (pp. 99-126). Dordrecht, The Netherlands: Springer Publishers.
- Mitchell, S. 2011. Eaters beware: Wal-Mart is taking over our food system. *Grist*, 30 December.  
<http://www.grist.org/food/2011-12-30-eaters-beware-walmart-is-taking-over-our-food-system>. Accessed 13 January 2012.
- Moss, D. 2010. Transgenic seed: The high technology test of antitrust? *CPI Antitrust Journal* 2, 1-7.
- Moss, D. 2011. Competition and transgenic seed systems. *Antitrust Bulletin* 56(1):81-103.
- Pollack, A. 2010. Monsanto's fortunes turn sour. *New York Times*, 5 October.
- Tolbert, Charles M., F. Carson Mencken, T. Lynn Riggs and Jing Li. 2014. "Restructuring of the Financial Industry: The Disappearance of Locally Owned Traditional Financial Services in Rural America." *Rural Sociology*, forthcoming.
- Zepeda, L. and C. Nie. 2012. "What are the odds of being an organic or local food shopper? Multivariate analysis of US food shopper lifestyle segments." *Agriculture and Human Values*, 29:467-480.