



# ECONOMIC IMPACTS OF LOCAL AND REGIONAL FOOD SYSTEMS: RESPONSE TO QUESTIONS FROM MAY 20, 2013 WEBINAR

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JULY 2013

To address the current state and future direction of economic analysis with regard to local and regional food systems, the Michigan State University Center for Regional Food Systems (CRFS) and the Union of Concerned Scientists' (UCS) Food & Environment Program convened a meeting of a group of economists and local food researchers in early 2013. The group examined how economic analyses of local and regional food systems are currently conducted and discussed considerations for future studies.

A two-page brief provides a summary of the discussion that took place at this meeting. The brief (available at <http://foodsystems.msu.edu/resources/econ-analysis-brief>) includes questions that those commissioning an economic impact analysis of local or regional food systems may want to ask.

A May 2013 webinar (a recording of which is available at <http://foodsystems.msu.edu/resources/econ-analysis-webinar-recording>), sponsored by CRFS and UCS, provides a synopsis of the meeting outcomes. Participants weighed in with wide range of comments and questions on economic impact studies of local and regional food commerce.

With more than 260 participants in the webinar, there was inadequate time to respond to many of the questions asked. CRFS followed up by asking several of the economists who participated in the May 20 webinar and the original winter 2013 convening to respond. Respondents were:

- Dr. Shermain Hardesty, Univ. of California-Davis
- Dr. David Hughes, Clemson University
- Dr. Steve Miller, Michigan State University
- Dr. Jeff O'Hara, Union of Concerned Scientists
- Mr. David Swenson, Iowa State University
- Dr. Dawn Thilmany, Colorado State University

Compiled by CRFS, the questions and responses, categorized by key topic areas, are below. *Please note that opinions expressed in this document by responding economists do not necessarily reflect those held by MSU, the Center for Regional Food Systems or its staff.*

A bibliography of recent studies addressing the thematic areas raised in the webinar questions compiled by UCS economist Jeff O'Hara can be found in the Appendix.

## UNDERSTANDING ECONOMIC IMPACTS OF LOCAL FOODS

**Q: Understanding that studies need to examine economic impacts beyond jobs, do you have ideas as to the optimal way to look at jobs created in the system? What are the best ways to frame that piece?**

*Thilmany:* We generally don't promise that answer... many of these systems are inherently entrepreneurial and may more fully employ part of a farm or food business family, or allow for them to be less reliant on non-farm income, so we think the more interesting answer may be firm establishments.

*Hughes:* We need to look at the quality and type of jobs and who the jobs are going to. My observation is that much of the local food system jobs are part-time or supplemental income in nature. Also, I wonder to what degree historically disadvantaged individuals (such as minority farmers) find opportunities in local food systems.

*Swenson:* Proponents, in my view, are mostly concerned about their small neck of the woods – how have local foods affected regional production practices, how much has it grown, who's effected, and what are the localized gains. As Hughes and I argue,



though, using those conclusions without considering the regionalized opportunity costs (i.e., agricultural land shifting, reduced demand at traditional grocery outlets) is disingenuous and produces conclusions disproportionate to net regional productivity gains.

I believe advocates need to clearly define what they mean by local foods, who the producers are, what the foods are, how the emerging or envisioned system differs from some baseline, i.e., the status quo, and then estimate the regional productivity gains that might be realized through incremental progress towards some regional goal. In my experience, people have highly specific (my farm) ideas or vague (wouldn't it be nice) ideas of what constitutes local foods. By being specific, measuring well what can be measured, and by clearly stating production and policy objectives, economic analysis can be effectively brought to bear on both policy perspectives and measures of regional well-being.

*O'Hara:* Focusing exclusively on the number of jobs can mask some of the more fundamental economic issues that local food systems may promote, including aspects relating to equity, fostering entrepreneurship, or increasing social capital.

**Q: What studies, if any, are definitive on the relative value of job creation and local economic benefit among different kinds of food business (or functions in the supply chain), such as processing, food service, and urban food production?**

*Thilmany:* USDA's Economic Research Service (ERS) has begun looking at this in terms of wealth creation rather than job creation, which encompasses the firm establishments referenced above.

*Swenson:* None. This kind of work can be simulated using economic models, but I'm not aware of anything useful to date. I am leery of the economics of urban food production. There are safety and efficiency concerns. Much urban land that appears suitable is likely toxic. While it takes relatively few acres to produce for quite a lot of people, finding cohesive and suitable production units of sufficient size to achieve production efficiencies will practically deter much growth. In addition, no matter what, urban land rents

are significantly higher than rural areas, so subsidization will have to be higher.

*Miller:* There exists a rich history of studies of a related topic evaluating the contribution of locally owned businesses to chains and big box stores that, while not sufficient to address this question, does show locally-owned businesses generally have deeper value chains in the local economy.

I'm undertaking a study on the value chain food production. In this study we surveyed several food processors in Michigan concerning their purchases and sales. We are then comparing their responses from data underlying most economic impact studies. The hope is that we can validate existing data or provide insights to where that data systematically differs from survey data.

**Q: Could you elaborate on the point about local food plans creating competition? Jeff O'Hara mentioned this on his last slide on future research priorities. Is this related to the point made later about being clear on why you are doing a study versus doing the study simply because a neighboring jurisdiction has already done so?**

*O'Hara:* The issue here is that while it may be in an individual region's interest to promote import substitution, if all regions do this then they could be collectively worse off, as this would imply that they would no longer have markets for food products that they export out of the region.

**Q: This is basically the input substitution argument, right? And do you think that breaks down anywhere before you get to the point of some places (countries) having higher environmental or labor standards than others?**

*O'Hara:* Import substitution is one argument for economic impacts. Another is that it provides market access for farmers that otherwise would not be capable of farming. Farming is capital-intensive and a difficult business to enter, and shorter supply chains are a possible way for young or beginning farmers to access markets and promote competition.

*Thilmany:* Yes, but there is some consumer evidence that, if traceable and properly marketed, there are



those that will pay for the higher standards, particularly in direct markets.

*Miller:* We should also keep in mind that there are economic and social benefits behind such regulation. Of course, the value of those benefits may or may not exceed the costs. Unfortunately, many such gains and costs are difficult to measure, resulting in some discord. But as Dawn has pointed out, some consumers have shown a willingness to pay for higher standards.

**Q: How does one account for locally-produced food products that are exported out of the region in the impact model?**

*Thilmany:* If considering IMPLAN, it is already assumed much of this happens, and so, if primary data is collected, only that share which is sold locally and directly is measured different than the baseline scenario.

*Hughes:* These would be treated as regional exports that could then be “shocked through the model”. The nice thing about regional exports of local foods is that you typically don’t have to worry about the opportunity cost of that spending in your economy because the money is “coming from the outside”.

*Swenson:* Local foods imply import substitution. This is to be distinguished completely from export-based production. If a region is producing for export, one could assume that production is in excess of regional needs. When we did the Upper Midwest study (2010), we excluded from our list of fruits and vegetables those that were produced in excess of the entire region’s demand (sweet corn, melons, cherries, etc.) from the list. We were looking at the potential value of new production.

**Q: We would very much like to expand into the local foods segment of agriculture but finding reliable, farm-level cash flow and profitability data is a big challenge. Is farm-level benchmarking a potential research focus?**

*Thilmany:* Yes... there are efforts at several universities to begin doing this... organic is about 5 to 10 years ahead of local.

*Hughes:* Yes, this is a real need. A North Carolina State project that Dave Swenson and I are somewhat involved in is trying to look at this a little bit as is, I believe, a project being led by Tom Johnson at University of Missouri.

*Swenson:* In my opinion, much more university research needs to be conducted on suitable types of production, recommended practices, and costs of production. I have yet to populate a model with decent cost of production data from a university (excepting some work that I did on organic crop conversion on a comparatively large scale).

*Hardesty:* I did a study comparing the relative profitability of three local food marketing channels based on data for just 3 farms. There are many synergies across market channels. It’s in Renewable Agriculture and Food Systems. (*Editors note: found in the bibliography*)

**Q: Have you seen any studies that looked at whether food businesses (processors, manufacturers) and the local region would get more benefit from selling to a local market as opposed to an export market?**

*Thilmany:* None I know of; just anecdotal evidence.

*Hughes:* No I have not. However, I have a little anecdotal evidence; a very large (and very sharp) fruit-vegetable producer told me recently he could make about as much profit with 10% of his current acreage if he switched to meeting local food demand directly (probably a key). However, he indicated no plans to do such a switch.

*Hardesty:* Similarly, I only have anecdotal evidence. I have seen farmers with annual gross revenues over \$1 million who market primarily through wholesale channels, but also sell direct; there were 126 farms in California in the \$1 million sales category who were involved in direct marketing. They appear to find this multi-channel strategy profitable; they can market their ripest fruit locally, while it might even be considered overripe for the wholesale market.

*Miller:* Once we uncover all the layers of this question, it really reveals itself to be complex. From a regional perspective, regions build wealth by exporting what



they provide with a comparative advantage. This has been known well before the birth of modern economics. From a firm perspective, if selling locally creates greater benefits than exporting, then it would be conceivable that a firm could be made better off by abandoning exports altogether and only sell locally. However, more realistically I would expect local firms to participate in both markets. I think evidence that local markets provide greater benefits would be in the observation of firms targeting the local market. I think we see this clearly in niche markets, especially in areas with agricultural tourism.

**Q: How do we research economic impacts of serving local foods in schools (with or without food, agriculture, nutrition education) that can, in turn, impact fruit and vegetable preferences among students?**

*Thilmany:* Would require long term behavioral change studies... there are currently none I know of.

*Miller:* I would not anticipate that such a study would be undertaken soon. Estimating educational impacts is the current priority for this cohort.

*Hughes:* The USDA-ERS publication *Local Food Systems: Concepts, Impacts, and Issues* has some discussion of this issue (page 45). I am sure there is also more recent literature but can't provide any citations off hand.

*Swenson:* This one perplexes me. The local food potential for schools in a large swath of the U.S. is very limited. School is in session when you can't grow much fresh produce. I believe this is a confused area that is using student nutritional and behavioral deficiencies as an emotion-based foundation for justifying local foods.

*Hardesty:* Feenstra and Ohmart began preparing evaluations of the Davis Farm to School program in 2002-03. They have developed an extended data set regarding local purchasing; some of their reports include comments from students that provide some qualitative impacts. Here is the link to their most recent report:  
<http://www.sarep.ucdavis.edu/sfs/files/Davis%20Farm%20to%20School%20Eval%202012.pdf>

As Dawn Thilmany indicated, long-term studies of behavioral changes would need to be done to quantify such impacts.

*O'Hara:* There have been studies of eating patterns at farmers markets, and those studies have found greater fruit and vegetable consumption than would have otherwise occurred. The reasons for this are not yet known – an interactive shopping experience or greater quality of the produce are possibilities – so more research here is needed.

**Q: Other than IMPLAN, what do you think are the other good tools to measure impact of local food systems?**

*Thilmany:* Network analysis (exploring more and stronger ties among stakeholder groups), equilibrium displacement and other models.

*Miller:* I think looking at social capital and the formation of economic development resulting from social capital effects is a promising and interesting way to cast the economic question.

*Hughes:* It depends on what you mean by impacts; if you are looking for regional economic impact, then Regional Input/Output Modeling System (RIMS) II produced by U.S. Department of Commerce is a reasonable alternative to IMPLAN; there are also "relative price flexible" models such as Regional Economic Models, Incorporated (REMI) which are expensive and sometime hard to trace causality for results. There also are Computable General Equilibrium (CGE) Models (which are often based on IMPLAN data; also with the explaining results issue). Frankly, I think that flexible relative price models are down the line in terms of need; I would prefer that we get the input-output coefficients for local food systems in better shape before moving to more sophisticated modeling methods. The nice thing about IMPLAN is that if you know the model well it is relatively easy to change coefficients.

*Swenson:* Simple and straightforward objective analysis of the production characteristics of existing or proposed systems. Beyond that, I have argued that the local foods movement is more importantly considered as a sociological phenomenon, not an



economic one. It promotes community and regional cohesion and re-establishes physical interaction between producers and consumers. Coupled with other community-sustaining activities, it becomes part of the bundle of amenities that define the livability of an area.

## VALUE OF PROJECT EVALUATION IN ECONOMIC IMPACTS OF LOCAL FOODS

**Q: Evaluations of economic impacts aren't necessarily part of formal studies because they are not generalizable and specific to programs/projects/initiatives, but can be a rich source of information on actual/real economic impacts of local food system efforts as opposed to economic models/scenarios. I'm curious if a literature review was done of evaluations of local food system efforts that may not be in peer-reviewed papers.**

*Thilmany:* When I have students do literature reviews, I generally turn to peer-reviewed articles. However, to augment those, and depending on the key community questions, I then have them also search through studies done at key centers (Leopold Center for Sustainable Agriculture, MSU Center for Regional Food Systems, Wallace Center National Good Food Network) to explore any interesting data collection or community engagement models used.

*Swenson:* I think USDA-ERS's Local Food Systems: Concepts, Impacts, and Issues did an excellent job of covering the research.

*Hardesty:* In addition to reviewing journal articles, I always look for newspaper articles/newscasts/blogs for anecdotal information about local food systems projects, especially because we are dealing with a topic for which there are such limited data

*O'Hara:* The Union of Concerned Scientists wrote a report on this in 2011 titled *Market Forces*. (*Editor's note: found in the bibliography*)

## CLIMATE CHANGE AND ENVIRONMENT

**Q: How do we assess whether or not proposed actions increase or decrease the rate of global warming as well increase or decrease local/regional self-reliance and resilience?**

*O'Hara:* In terms of greenhouse gas (GHG) mitigation, the geographic implications of distance are not clear (except for the case of when food is flown, which has a high GHG footprint). However, eating more fresh fruits and vegetables (food that characterizes what is sold in local markets) instead of more processed foods like beef can reduce GHG emissions. Local food markets can also potentially be a way of adapting to climate change – for example, California, where fruits and vegetables are extensively grown, may be water constrained in the future and have challenges producing large volumes of fresh produce.

**Q: Besides the production, distribution and consumption of local food, have there been studies regarding connecting impact of waste?**

*Hardesty:* The Feenstra and Ohmart evaluations of the Davis Farm to School program include some data on food waste. Here is the link to their most recent report:

<http://www.sarep.ucdavis.edu/sfs/files/Davis%20Farm%20to%20School%20Eval%202012.pdf>

Some collegiate dining programs (including UC Davis) reported that they “went trayless” to reduce food waste and enabled them to offset the higher cost of their locally grown produce.

*Miller:* I've only seen studies comparing volume waste of processed versus fresh. Look at the ERS studies of nutritional content across food processing methods.

**Q: Is anyone studying ecosystem services resulting from the creation of local/regional markets for food?**

*Miller:* I am not aware of anyone. I believe the question comes down to, “do local market-centric producers employ practices that differ from those producing for conventional food systems?” The answer is likely yes. While most local food is generated by larger producers, a greater share of smaller farm output is directed at local farms. The question then becomes do smaller farms differ in production practices than larger farms. I think this question can be easily answered using USDA-ERS Annual Resource Management Survey (ARMS) data and/or USDA surveys of pesticide use (as a starter).



**Q: Have there been studies to show that local and regional food system can have economic benefits given certain site constraints (eg. local soils, climate, landscape) that impact productivity and efficiency?**

*Swenson:* All of our studies (Iowa, Midwest) must limit the bundle of fruits and vegetables to what can be feasibly and profitably produced. In addition, we assume that existing cropland must be used, so the definition of capacity begins with existing harvested (for all crops) acres.

### HUNGER/EQUITY

**Q: Is hunger-relief ever included as an economic impact in studies?**

*Hughes:* I am part of a project looking at food banks and local food in South Carolina but we don't have any results as of yet.

*Swenson:* No, and it should not be. Instead, one would use a well-crafted benefit-cost structure to measure the comparative value of different public policy approaches to alleviating hunger and promoting nutritional health. Ideally the policy or policies that produced the greatest stream of benefits (wellness, workplace productivity, longevity) over costs (illness and disability, premature death, decreased workforce participation) would be selected.

*Miller:* A whole literature has developed, at least in the U.S., linking local gardens and economically underserved communities from both economic and sociological perspectives. I don't know about international research, but I would be surprised if research does not exist in the international economic development literature.

**Q: To what extent has anyone looked at racial equity impacts in labor market and conditions**

**around the food sector, including equity impacts beyond the food consumption side of the supply chain?**

*Hughes:* In terms of local food systems, no one has as far as I can tell. I do have what I feel is a pretty good Social Accounting Matrix that can be used to look at distribution of impacts by income class. That model could speak to equity impacts.

*Swenson:* We know full well that the preponderance of agricultural hired labor is Hispanic and that work conditions and pay are questionable. Labor force issues have not been addressed and need to be.

*O'Hara:* This issue arose in a recent economic impact assessment of organic dairy farms that I recently undertook. Large concentrated animal feeding operation (CAFO) dairies may be more inclined to hire immigrant labor than smaller organic dairy farms. If wages are being used for remittance payments and no adjustments are made for this in the model, then the economic impacts of that farming system will be overstated. We didn't take this into account in the study, however, since it wasn't clear the correct way to make this adjustment.

*Editor's note:* There are several recent publications that speak to racial equity impacts in the food sector. Two of these are listed in the Appendix (bibliography) to this document. 



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