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LOCAL FOOD SYSTEMS: EXPLORING ECONOMIC IMPACTS AND LIMITS TO MARKET EXPANSION

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By many measures, the interest of consumers, food retailers, policy makers, and the media in locally sourced foods is strong and has continued to grow in recent years. Reinforcing this trend are a long and growing array of government and non-governmental organization programs supporting the production, consumption, and marketing of local food products.

The benefits of local food systems (LFSs) have been explored and touted by those working in many diverse disciplines. From the perspective of marketing, local foods systems offer alternative marketing channels which may help diversify a firm's portfolio of buyers and thus reduce their marketing risk. Sociologists often point to the ideological commitment of local food buyers to civic participation, to supporting their local community, and to enhancing local social capital via this more personal form of market exchange. Fields as diverse as political science, soil science, pathobiology, public health, and women's and gender studies (among many others) have all weighed in on these benefits, which may potentially be derived from local food systems.

From an economic perspective, however, the benefits of local food systems are unclear. While many individual LFS entrepreneurs and related businesses have enjoyed financial success, questions remain regarding what, if any, aggregate net benefits are offered by local food systems. This edition of the *NC State Economist* discusses the current state of knowledge regarding the economic benefits of local food systems, as well as factors that will constrain the local foods sector from becoming more than a relatively small part of the overall agricultural economy.

Local Foods in North Carolina

North Carolina farms sold more than $31.8 million of food directly to consumers in 2012 (the most recent year for which data are available). On a per-capita basis, it is estimated that in 2012 the average North Carolina consumer spent $3.26 on food purchased directly from farms. This value lags significantly behind the US average of $4.17 per-capita direct-to-consumer farm sales in 2012, and average consumer spending of $6,599 on all food (both at and away from home) in 2012. It must be noted, however, that these local foods

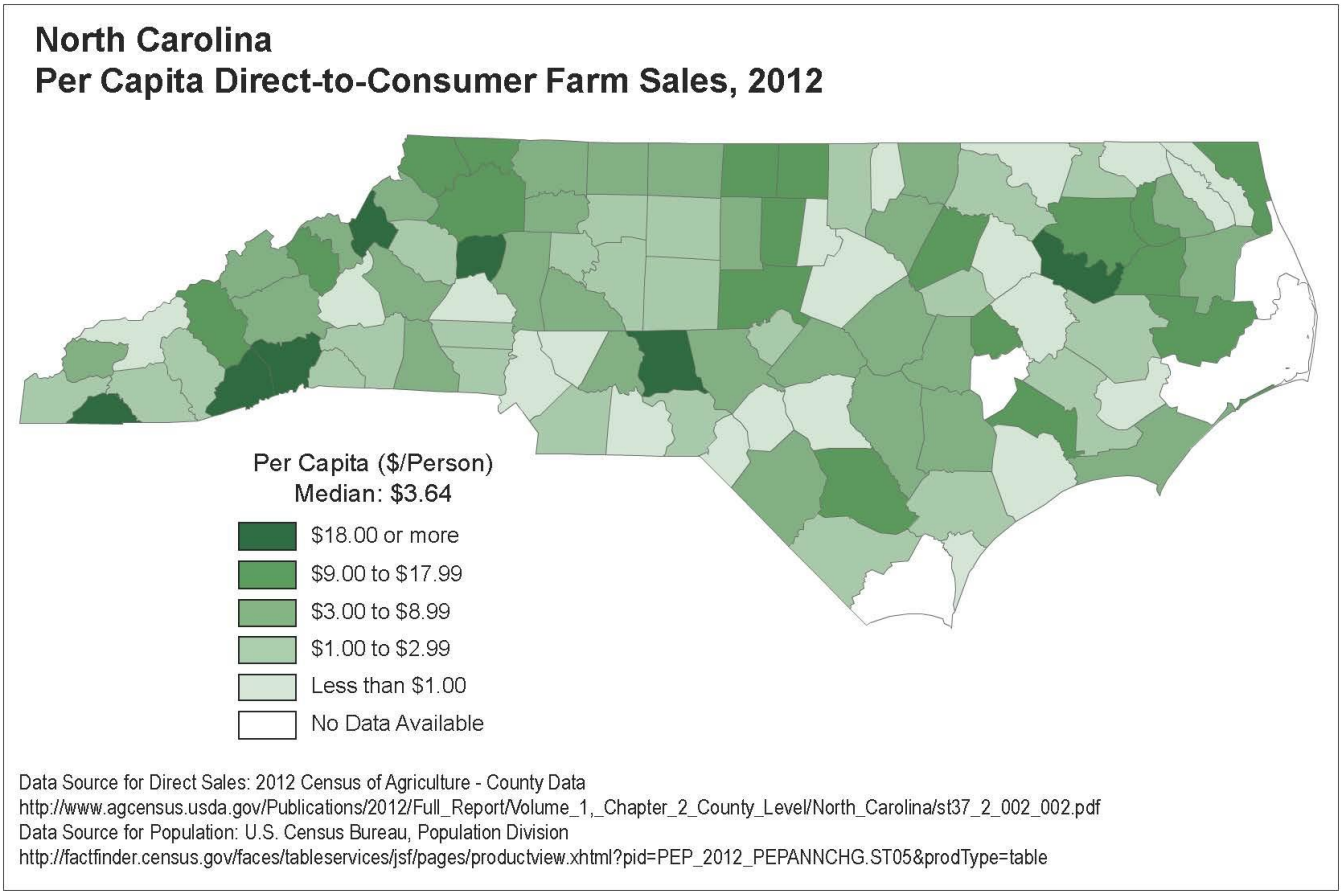

Figure 1: North Carolina Annual Per-Capita Direct-to-Consumer Farm Sales, 2012

expenditure estimates do not include indirect consumer spending on farm products which are purchased through other marketing channels, such as restaurants or grocery stores or schools (through farm-to-school initiatives).

Unsurprisingly, there is significant variation in the amount of direct-to-consumer farm sales across North Carolina's counties. Figure 1 depicts county-level estimates of annual per-capita direct spending on farm products. Factors which may influence these differences in spending include (a) the supply of local food; (b) the availability of public transportation to assist clientele of these programs and others in reaching farmers' markets; and (c) the extent to which farmers' markets participate in social support programs such as the Senior Farmers' Market Nutrition Program or the Women, Infants and Children Farmers' Market Nutrition Program. In addition, differences in demographic characteristics, and thus demand of consumers, can vary from place to place. Individuals aged 35 and over with higher incomes, at least a college degree, and who are female and/or have young families have been identified by various studies as being more likely to purchase LFS products.

There are also substantial county-level differences in local food spending trends. Between 2007 and 2012 local food sales grew by more than 10% per year in 31 of North Carolina's 100 counties. However, over the same period, one-third of North Carolina's counties experienced a decrease in average local food sales from their 2007 level. The reasons for this will vary by county. In several instances the declines are likely due, at least in part, to increased competition by local food vendors in neighboring counties or at venues in neighboring states.

Potential Economic Benefits of Local Food Systems

Numerous claims have been made concerning the potential benefits of local food systems. These include the ability of local food systems to foster entrepreneurship; to retain capital and create jobs in rural areas; to serve as incubators of job training and skill development; and to increase demand for a state's agricultural products (as opposed to products produced in another state). The type and extent to which these benefits are realized, however, is not known. To date, a majority of research on LFSs has focused on relatively small geographic areas which differ in agroclimatic and soil conditions, demographic characteristics, and cultural norms. These areas vary in their food system resources (e.g., physical infrastructure, human capital) and related policies. Case studies examining specific aspects of selected food systems often show some promising, albeit relatively minor, economic impact outcomes. Quite arguably, however, these positive outcomes may not be representative due to likely bias in the selection of successful local food systems for this type of analysis.

In attempting to quantify the economic impact of local food systems, economists often focus on one of two key mechanisms through which LFSs may contribute to a local economy. The first centers on the benefits associated with multiple businesses operating in clusters in a particular geographic area. The second is through supply chain linkages and potential multiplier effects of increased circulation of dollars within a local economy.

Economic clusters are geographic concentrations of interconnected companies including specialized suppliers, firms in related industries, and other associated organizations that both compete and cooperate producing similar products. Clusters may be generated due to independent co-location decisions of an industry's stakeholders, or through intentional firm recruitment efforts by a region's leadership. Physical proximity of clustered firms offers potential productivity advantages in the form of economies of scale, development of specialized suppliers, reduction in distance-dependent transportation costs, and improved opportunity development and recognition. The extent and means through which participants in LFSs operate in clusters—as well as the benefits that such clusters yield—has received little empirical research attention. However, clusters represent an important potential means of fostering economic development.

Supply-chain linkages—and the multiplier effects associated with them—offer another

potential mechanism through which local food systems may generate a positive local economic benefit. Consumer demand for locally produced food products in turn affects the demand for labor, transportation, seed, and other production inputs used to grow these products (termed *backward linkages*). Inputs that are sourced from local suppliers who retain profits locally offer a greater possibility for LFS dollars to circulate within the local economy and thereby generate a larger multiplier effect. LFSs may also generate positive effects through *forward linkages* when industries which use LFS outputs, such as specialized restaurants and grocers, increase in their demand for those products.

Thus far, there has been very limited rigorous analysis of the economic impact of LFSs. A recent study assessing local food sales in North Carolina found that a $1.00 change in final demand for LFS products leads to a demand of $1.69 for output from North Carolina (Marticorena, 2015). Among nearby states, a recent study of the economic impact of South Carolina's state marketing campaign, "Certified South Carolina Grown," on sales through farmers' markets found that this program did not make a major contribution to the state's economy. Taking into consideration the fact that consumer spending at farmers' markets occurs largely at the expense of purchases at other food retailers, it was found that this program generated an annual net impact of $104,000 in earned income, and generated 26.4 full-time equivalent jobs for South Carolina in 2011 (Hughes and Isengildina-Massa, 2015). Also taking into account the opportunity cost of redirected spending on LFS products, an assessment of the net impact of farmers' markets in West Virginia found that on an annual basis these markets generated 43 full-time equivalent jobs, and contributed $653,000 to that state's gross product (Hughes, Brown, Miller and McConnell, 2008).

These estimates of the contribution of LFSs are quite low compared to values which often appear in the popular press and are promoted by some advocacy groups. For example, the Charleston Regional Business Journal Reported that the Certified South Carolina Grown program generated 10,000 jobs and $132 for every dollar of state investment (Hughes and Isengildina-Massa, 2015). This disparity in estimates is often due to differences in research approach and, frequently, a failure to take into account that purchases of LFS products do not reflect a simple increase in spending, but are rather largely a substitution of spending from traditional ("imported") grocery store purchases to locally grown products. The need to have access to better quality data for this type of analysis, and to develop a standardized (and rigorous) approach to framing and measuring the impact of food system initiatives, is well recognized. To help bridge this gap, the USDA's Agricultural Marketing Service recently developed a toolkit to assist communities to understand and assess their local food systems (Thilmany et al., 2016).

Challenges to the Continued Growth of the Local Foods Movement

Given the perceived benefits of the local food movement, and the considerable efforts made to market its products, why does this sub-sector still comprise such a small portion of food markets? The answer

is that there are numerous economic constraints that limit widespread adoption of the production and consumption practices which characterize local food systems. What follows is a brief summary of some of the key realities which limit the growth and potential economic contribution of LFSs.

Constraint 1: Comparative Advantage

The concept of comparative advantage describes the ability of a firm to produce a good at a lower opportunity cost than other firms. Firms specializing in activities for which they have a comparative advantage results in resources being allocated to uses for which they are best suited. For food production systems, this implies that crops should be grown where the microclimate, soil, and input availability combine to create the highest yields and the lowest per-unit costs. Production decisions based on this criterion lead to specialization in production and results in regional surpluses that are traded out of the area in exchange for commodities in which the local area does not have a comparative advantage. This in turn enables consumers in each location to have access to an array of desired products at the lowest possible prices.

In contrast to supply chains in which farmers specialize and then trade their surplus production, localization of food systems requires that each market area produce (most) every commodity desired by consumers. In most regions, this is simply impossible. For example, many tropical commodities like coffee and bananas do not grow well in the soils and microclimates of mainland America. While in most places these and other "non-local" products can be grown in greenhouses or other enclosed production systems, the costs of doing so is often prohibitively higher than would be the case if they were grown in more efficient production sites. From the perspective of consumers committed to LFSs, the higher costs of production for goods, which are not naturally produced locally, may limit the amount of these products they are able to purchase.

In addition, production of crops for which a comparative advantage does not exist may lead to outcomes that are inferior from an environmental perspective. Due to the small scale of most local food producers, they are unable to benefit from economies of scale. In many instances this results in LFS production requiring more fuel, chemicals, land, and other inputs to produce a unit of output than would be required by a conventional agricultural producer. The same could often be said for resources used for the transportation and marketing of these products. Thus, while it is often perceived that small scale farmers are better stewards of their land and water, any such benefits may be more than offset by the use of additional inputs.

Constraint 2: Loss of Economies of Scale

Economies of scale refers to the per-unit cost advantages firms gain with increasing volume of output. Cost-savings may be derived through a number of channels; among the most commonly considered are the ability of larger firms to lower their per-unit input costs and/or to make use of more specialized inputs. Most producers participating in local food supply chains are smaller-scale operators who cannot capture the cost-reducing benefits of larger-scale or more specialized equipment, or per-unit cost

reductions available for larger volume purchases of production inputs. This in turn translates to higher prices paid by consumers. This limitation extends to upstream LFS activities too: large portions of food processing, manufacturing, transportation, and food retailing industries are also characterized by economies of scale.

To help offset these disadvantages, smaller producers have long participated in input purchasing and/or and output marketing co-operatives. More recently, farm tool co-ops and sharing websites, which generally seek to improve equipment access and foster collaboration between farms, have been increasing in both number and membership. While these efforts can help lessen the production and marketing cost gap, they generally do not offset the fundamental per-unit cost differential between localized and conventional farming systems.

Constraint 3: Net Impact of "Beggar-Thy-Neighbor" Policies

Interest in LFSs has fostered the development of a growing number of regional marketing and branding programs. The goal of these programs is generally to increase consumption of local products at the expense of comparable products imported from outside of the region. As fresh food products are frequently also sourced from neighboring regions or states, successful LFSs programs may unintentionally economically injure producers from outside of the region. Such "beggar-thy-neighbor" policies can result in retaliation by the injured regions that ultimately may lead to everyone being made worse off. As one region promotes its LFS, neighboring areas may do the same and the result may be a decline in regional exports for all.

Very limited research has examined this issue in the context of LFSs. .Some studies have found value in inter-industry advertising coordination in the context of conventional agriculture. However, relatively little is known about when it is more effective to reach external consumers through "local" branding versus coordinating a region's branding across localities. Such information would be particularly valuable when considering the promotion and potential impacts of value-added (processed) LFS products, as these items are more easily sold to non-local markets.

Looking Forward: The Future of the Local Food Movement

Nationally, all signs point to a trend of continued growth in demand for local food products. Due to the economic constraints noted above, however, it appears unlikely that the market for LFS products will outgrow the "niche market" status that it currently fills. Relatively higher production and marketing costs—and the relatively greater expense to consumers of buying products from LFS producers—are, for many consumers, too great to be outweighed by the perceived higher quality and other positive characteristics of food products sourced locally rather than through specialization-and-trade systems. However, several important factors suggest that local foods, as a unique market segment, will continue for some time.

When specialty food industry retailers were surveyed about current and future consumer

interest in local foods, 70% indicated that "local" is the most important current product claim. In a survey of specialty food distributors, 36% felt that the claim of "local" would grow the most among natural and ethical claims over the next three years (Tanner, 2013). Further, more than 70% of family dining, casual dining restaurant operators—and 91% of fine dining restaurant operators—feel that their customers are more interested in locally sourced foods than they were two years ago (National Restaurant Association, 2014).

Contributing to the potential longevity of this trend, LFSs are becoming increasingly embedded in lifestyle and community choices of households, as well as in the operation and investment practices of firms which are not part of traditional LFS networks. For example, local food production and distribution initiatives are being integrated into housing developments. Given the potential for important food security, health, and social capital benefits, some areas with low-income families and large elderly populations (e.g., retirement communities) are incorporating LFS elements, such as farmers' markets and community gardens, into housing planning. In the private sector, innovative builders are now incorporating a wide range of food system amenities from community gardens to whole working farms (livestock included) into subdivision development projects. Taken together, such factors—combined with continued innovation in production and marketing of local foods, and strengthening policy and regulatory support—bode well for the future of localized food systems.

Additional Reading

Material in this article is partially drawn from the following sources:

Hughes, D.W. and K.A. Boys. 2015. "What We Know and Don't Know About the Economic Development Benefits of Local Food Systems." Choices 30(1): 1-6. Available online at: http://ageconsearch.umn.edu/bitstream/199293/2/cmsarticle_413.pdf

Boys, K. A. and S. C. Blank. "The Evolution of Local Foods: A Retrospective and Prospective Consideration," in J. Stanton and M. Lang (Eds.), The Meaning of Local Foods: A Food Marketing Perspective (forthcoming).

Other related readings:

Hughes, D. and O. Isengildina-Massa. 2015. The Economic Impact of Farmers' Markets on a State Level Locally Grown Campaign. Food Policy 54(July): 78-84.

Hughes, D., C. Brown, S. Miller, and T. McConnell. 2008. Evaluating the Economic Impact of Farmers' Markets Using an Opportunity Cost Framework. Journal of Agricultural and Applied Economics 40(1): 253-265

National Restaurant Association (NRA). 2014. 2014 Restaurant Industry Forecast – Executive Summary. Accessed June 12, 2014. Available online at: www.restaurant.org/Downloads/PDFs/News-Research/research/2014Forecast-ExecSummary.pdf

Tanner, R. 2013. The State of the Specialty Foods Industry 2013. Specialty Foods Association. Available online at: http://northstarbdg.com/images/2013_State_of_the_Spec_Food_Industry_dl0001.pdf

Thilmany, D. et al. 2016. The Economics of Local Food Systems: A Toolkit to Guide Community Discussions, Assessments, and Choices. U.S. Department of Agriculture, Agricultural Marketing Service, March 2016. Available online at: www.ams.usda.gov/sites/default/files/media/Toolkit%20Designed%20FINAL%203-22-16.pdf