Journal of Rural Studies 84 (2021) 240–253

Contents lists available at ScienceDirect

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud

Marketing to the foodshed: Why do farmers participate in local food systems?

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ARTICLE INFO

Keywords:
Local food
Embeddedness
Civic values
Environmental values
Productivism
Moral economy
Short food supply chain

ABSTRACT

The concept of embeddedness has long been central to theory about why farmers participate in local food systems. Yet few survey-based studies, and none using a representative sample of farmers who both do and do not market local food, have systematically examined the relationship of local food marketing to farmers' sense of connection to and responsibility for larger human and ecological communities. In this paper, we address this gap in the literature by drawing on stratified, random sample survey data on 698 specialty crop growers in Michigan and Ohio. Two main findings emerge from our study. First, farmers who prioritize civic engagement and community institutions were more likely to market food through CSA, direct-to-institution and farm-to-table partnerships, and intermediaries like food hubs. Many were also earning revenue from on-farm sales, farmers markets, and mainstream sources. Results of analysis clearly show, however, that it is CSA and intermediated local supply chains that hold special appeal for, or are particularly well suited to, farmers who make farm decisions with the larger community in mind. This finding suggests that diversified, robust local food systems may provide strong support for farmers who are especially committed to making a positive impact on local politics and civic life. Second, farmers with a relatively strong sense of environmental responsibility were generally not more likely to participate in local food systems. At a minimum, this finding lends credence to skepticism that local food farmers can be considered *a priori* more likely to adhere to organic, biodynamic, or other sustainable farming philosophies. At the same time, farmers who express a less productivist approach to farming were more likely to market local food in nearly every way. Productivism has historically been associated with heavy reliance on external inputs to manage pests and supply nutrients. Findings about productivism arguably constitute good reason to explore further the environmental aspects of local food systems, even in the absence of a clear relationship between environmental values and marketing local food.

1. Introduction

Why do farmers participate in local food systems? In his 1996 essay "Coming in to the Foodshed," Kloppenburg notes the difficulty of finding Wisconsin-grown produce in Madison grocery stores. Industrial agriculture, he asserts, has erased an essential way in which people connect to their communities and the natural world. Kloppenburg frames the nascent market for locally sourced farm products as an outgrowth of people's need for food systems that are ethically nourishing as well as economically efficient. "Foodsheds," he predicts, will be characterized by "embedded [ness] in a moral economy that envelopes and conditions market forces" (1996, p.36).

A visitor to Madison today would have few problems finding produce grown within a dozen miles of the statehouse—and Wisconsin's capital is not an isolated example. Across the country, local food systems—understood as networks of supply chains structured to minimize the distance between farmers and food buyers—have exploded in popularity and complexity (Dimitri and Gardner, 2019). When Kloppenburg's essay was published, local food systems comprised mainly "direct-to-consumer" channels like farmers markets and community supported agriculture (CSA) (Lyson and Green, 1999). Today, local food is an $8.7 billion market involving 167,000 farms, 60,000 of which are engaged with "intermediated" supply chains like farm-to-school programs (National Agricultural Statistics Service, 2016b). Yet even as the

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https://doi.org/10.1016/j.jrurstud.2020.08.055
Received 21 May 2019; Received in revised form 11 August 2020; Accepted 22 August 2020
Available online 18 May 2021

market for local food has expanded, a primary claim made by Kloppenburg and others has not been adequately examined (Tregear, 2011). Namely, to what extent are farmers who market local food "embedded in a moral economy," in the sense of making decisions about farming based on ethical as well as economic considerations? And given the current complexity of local food systems, are farmers who feel connected to, dependent on, and responsible for larger human and ecological communities, drawn to some ways of marketing local food more than others?

In this paper, we use original survey data to explore whether farmers who make farming decisions based on civic and environmental criteria—a condition we call "subjective embeddedness"—are more likely to market local food, and if so, how. There are two reasons why it is now especially important to understand the motivations of local food farmers. First, foundational writing on local food has often stressed the role that civic and environmental values could play in re-localizing how people engage with food (Nabhan, 2002; DeLind, 2002; Lyson, 2005; Seyfang, 2006). As we discuss in detail below, in-depth qualitative work and case studies have provided rich resources for hypotheses about feelings of moral obligation and involvement with local food (e.g. Jarosz, 2011; Cox et al., 2014; Hvitsand, 2016). Yet few survey-based studies, and none using a representative sample of farmers who both do and do not market local food, have systematically examined whether and how farmers' values and normative goals are related to different ways of engaging with local food systems. This is a significant gap in the literature that this paper is intended to fill.

Moreover, the basic questions in this paper are of more than academic interest; the values that drive participation in local food systems may have practical implications. If local food markets are populated by actors driven by a sense of moral obligation, then robust local food systems might empower people committed to community problem-solving and environmental responsibility. These empowered people, in turn, might be more likely to participate in local civil society (Clark and Record, 2017), advocate for issues like farmland protection (Seyfang, 2006; Brinkley, 2018), and practice renewable agriculture (Dowler et al., 2009; Jarosz, 2011). If, on the other hand, farmers motivated by ethical considerations are no more likely to participate in local than in "conventional" food supply chains, then the rationale for supporting local food markets might be weaker than Kloppenburg and others have hoped. It is crucial to understand the role of civic and environmental values in local food marketing, not least so that consumers and policy-makers can make informed choices about what kinds of food systems might benefit society most.

This paper proceeds in the following way. First, we explore why farmers who exhibit a strong sense of civic or ecological subjective embeddedness might be more or less likely to market local food in different ways. We also consider how local food marketing might be shaped by farmers' economic resources and commitments to productivist agriculture. Next, we describe our data—a survey of specialty crop growers in Michigan and Ohio—and report the results of analysis. Finally, we discuss possible implications of this study for theory about embeddedness and local food systems, as well as, more speculatively, civic engagement and sustainable agriculture.

2. Subjective embeddedness and marketing local food

2.1. Defining "subjective embeddedness"

How do farmers' resources, values and identities shape participation in local food systems? In this paper, we approach these questions through the lens of what we call "subjective embeddedness." The idea of embeddedness has long been seen as central to understanding what distinguishes local from conventional food systems (e.g. Barham, 1997; Lyson and Green, 1999; Goodman, 2003). In articulating what embeddedness means and why it matters, the local food literature has drawn on rich veins of theory in economic sociology and political philosophy. As conceptualized by Polanyi, Granovetter and Block, "embeddedness" refers to ways in which economic activity ("the market") is enmeshed in—and shaped by—pre-existing social and economic institutions (Swedberg, 1997; Gemici, 2008). In the communitarianism of Sandel and Taylor, people are "embedded" insofar as it makes little sense to talk about a "self" without reference to social attachments and conceptions of the good (Boucher and Kelly, 2003). Under this broad conceptual umbrella, sociologists and geographers have examined how firms succeed or fail based on social networks (Hess, 2004; Perkmann, 2006; Coe and Lee, 2013) and emotions like "spatial loyalty" (Pallares-Barbera et al., 2004).

The putative embeddedness of people who grow, make and eat "local food" has also been a major preoccupation of research on local food systems. In local food scholarship, however, the concept of embeddedness has consistently had both an objective dimension corresponding to external relationships and cultural attachments (Murdoch et al., 2000; Sonnino and Marsden, 2006), and a subjective dimension corresponding to internal feelings of moral obligation to other people and living things (Sage, 2003; Kirwan, 2004). The first approach underlies examinations of how local food coalitions identify opportunities and manage inclusiveness (Beckie et al., 2012; Migliore et al., 2014). The second approach, focused on subjectivity and emotion, is exemplified by research that explores the lived experiences of farmers and their customers. In an essay comparing CSA and farmers markets, for instance, Hinrichs notes that "[e]mbeddedness, in this sense of social connection, reciprocity and trust, is often seen as the hallmark … of direct agricultural markets" (2000, p.296). Later, Hinrichs asserts that CSA members are characterized both by more robust social ties, and, crucially, by "learn [ing] more of each other's circumstances, interests and needs," thereby "creat [ing] a more integrated community centered on … a common identity as eaters" (2000, p.300). What is special about CSA, in other words, cannot be reduced to objective "social connection"; subjective feelings of "trust" and "common identity" also constitute the greater "embeddedness" of CSA participants. Similarly, when Sage unpacks the dynamics of "alternative food networks" in Ireland, it is not just concrete supply chain linkages, but also feelings of "regard" and shared "moral values," that bind people to one another (2003, p.58). The same is true for farm-to-school programs, where the "embeddedness" of farmers involves emotional commitment to "recirculating resources through the local community" (Izumi et al., 2010, p.381; Conner et al., 2012). In these and other studies, the idea of embeddedness is used in part to explore actors' internal ethical commitments to particular people, places and things. Indeed, the essential conceptual complementarity between external social ties and internal feelings of obligation represents an important contribution of the local food literature to larger social theory about embeddedness.

As this brief discussion makes clear, the concept of embeddedness has been used in the local food literature to describe both objective, external social, economic and even ecological ties between actors (e.g. Brinkley, 2017), and also subjective, internal feelings of connection and commitment to nearby human and ecological communities (e.g. Sage, 2003). In this paper, we use the term "subjective embeddedness," rather than simply "embeddedness," in order to make clear our focus on the internal state and subjective motivations of farmers. Specifically, by "subjective embeddedness" we mean: *feelings of connection to, dependence on, and responsibility for, larger human and ecological communities with which one shares a specific, relatively limited geographic region.* The concept of a "moral economy," frequently raised in conjunction with local food markets, centers the idea that ethical considerations might be incorporated into economic decision-making (Galt, 2013). Subjective embeddedness can be thought of as a psychological antecedent to participation in a moral economy such as, in theory, the market for local food (Lacy, 2000).

2.2. Civic embeddedness

We are concerned in this paper with the relationship of subjective

embeddedness to local food systems. In the next two sections we delineate two distinct kinds of subjective embeddedness—which we term "civic" and "ecological"—corresponding to two kinds of communities toward which people may feel morally obligated. Then we develop hypotheses about how each might be linked to involvement with markets for local food.

First, what we call "civic subjective embeddedness"—shortened throughout this paper to "civic embeddedness"—refers to feelings of connection and commitment to the economic and social wellbeing of broader communities or groups of people in one's own geographic region. The idea of civic embeddedness has a long history in sociological writing on agriculture and food. Goldschmidt (1946) and Mills and Ulmer (1946) argued in the 1940s that areas with many locally-owned farms would have a vigorous civil society, because owners of local businesses are strongly invested in their communities. The "local capitalism" thesis found support in subsequent studies (Tolbert et al., 1998; Tolbert, 2005) and led to a second idea: that farmers with a strong desire to contribute to civic life, revive rural economies and increase access to healthy food would be drawn to local markets (Obach and Tobin, 2014; Clark and Record, 2017). As envisioned by the concept of "civic agriculture" (DeLind, 2002; Lyson, 2005), farmers with a deep sense of moral obligation to their communities would see local food—Kloppenburg's "foodshed"—as a way of making progress toward social goals.

Empirical studies motivated by theories of local capitalism and civic agriculture have indeed found evidence linking civic embeddedness among farmers with marketing local food. This evidence has been most compelling for CSA and intermediated supply chains. Existing research, for instance, largely portrays CSA farmers as committed to building community, educating members and creating a healthy alternative to conventional food systems (Wells and Gradwell, 2001; Jarosz, 2011; Cox et al., 2014; Hvitsand, 2016). CSA farmers are rarely able to base business decisions solely on civic values (Feagan and Henderson, 2009; Nost, 2014). Nevertheless, according to most studies, an underlying sense of responsibility for community institutions and well-being is a central reason why farmers invest in CSA.

Like CSA farmers, farmers who market through many kinds of intermediated local food supply chains—where farm products are handled by one or more independent processors, distributors, or retailers before reaching end consumers—appear to exhibit strong evidence of civic embeddedness. Providing healthy food to children and introducing a new generation to local agriculture are important reasons why farmers participate in farm-to-school programs. (Bagdonis et al., 2009; Izumi et al., 2010; Conner et al., 2012). A recent study looking more broadly at farm-to-institution partnerships found that most participating farmers similarly want to "support the local community" and "supply healthy/local food to customers" (Matts et al., 2016). "Food hubs" aggregate product from small farms for sale to local and regional buyers (Dimitri and Gardner, 2019). Although research specifically on farmers who work with food hubs has not, to the best of our knowledge, been published, community health and food justice are major goals of food hubs nationwide (Fischer et al., 2013; Hardy et al., 2016). It is reasonable to hypothesize that food hubs would try to work with farmers who share their civic goals.

The case for a causal relationship between civic embeddedness and marketing local food is less clear cut, however, where direct-to-consumer supply chains other than CSA are concerned. Some studies have found the community-building ambitions of CSA to be shared by farmers at traditional farmers markets and farmstands (O'Kane and Wijaya, 2015; Leiper and Clarke-Sather, 2017). But on the whole, existing research points toward a different conclusion. For farmers at farmers markets, the desire to build community in enduring ways appears distinctly less important than the prospect of maximizing earnings by eliminating middlemen (e.g. Griffin and Frongillo, 2003; Kirwan, 2004; Kirwan, 2006; Oñederra-Aramendi et al., 2018).

In sum, the literature on local food supports both the conceptualization of civic embeddedness that we outline above, and the idea that civic embeddedness may motivate farmers to participate in some, but not necessarily all, types of local food supply chains. With this background in mind, we propose the following "civic embeddedness hypothesis": *Farmers with a strong sense of civic embeddedness will be more likely to market local food through CSA and most intermediated local supply chains, but not through farmers markets or farmstands.* Later in this paper, following the results of regression models, we further explore possible explanations for why certain marketing channels appear to be associated with civic embeddedness among farmers, and we elaborate how this relationship might matter for civil society.

2.3. Ecological embeddedness

Also important to the literature on farmers and local food is what we term "ecological subjective embeddedness"—shortened throughout this paper to "ecological embeddedness." By "ecological embeddedness," we mean feelings of concern for, and commitment to, ecological communities on which one depends, and which can be directly impacted by one's own actions. Our use of the term thus self-consciously seeks to capture internal, subjective emotions toward the natural environment. It is important to note that other scholars have used the idea of "ecological embeddedness" to analyze how local food markets are or are not rooted in the history and constraints of particular ecologies (e.g. Morris and Kirwan, 2011).

Like civic embeddedness, ecological embeddedness has often played a prominent role in writing about local food systems (e.g. Kloppenburg et al., 1996; Lyson, 2005; Seyfang, 2006). But qualitative and survey-based studies using purposive samples of local food farmers offer two very different perspectives on whether a relationship actually exists between environmental values and local food marketing. On the one hand, many researchers have argued that seeing one's farm as responsible for the integrity of particular, local environments may lend itself to marketing strategies that embrace human communities also reliant on these environments. The American local food movement arguably gained strength from dissatisfaction with how USDA's organic standards elbowed out critical soil health practices in favor of simple reductions in pesticides (Youngberg and DeMuth, 2013). Explorations of farmers markets and CSAs have highlighted the role of an "ethic of care" (Dowler et al., 2009) and a sense of "regard" (Sage, 2003) in spurring farmers not only to supply communities with healthy food, but also to elicit food from the earth in ways that minimize disruption to natural systems (Wells and Gradwell, 2001; Schnell, 2007; Jarosz, 2011; Furman et al., 2014). Local food farmers emerge from these portrayals as people who value, elevate and protect community in all its interlocking ecological and social forms. This argument, moreover, has played a central role not just in academic work but also in public discourse around local food. The point is frequently made—and sometimes assumed—that local food markets are environmentally laudable in part because of their relationship to renewable agricultural practices (Born and Purcell, 2006; Schoolman, 2019).

The idea of a link between ecological embeddedness and local food marketing has not always found empirical support, however. A number of studies have suggested that at most about one-third of vendors at farmers markets and farmstands cite environmental sustainability as a reason for their participation (Griffin and Frongillo, 2003; Kirwan, 2006; Tudisca et al., 2014; O'Kane and Wijaya, 2015; Leiper and Clarke-Sather, 2017). Worden (2004) finds that among CSA farmers in the northeastern U.S., just 21 percent hold "protecting the environment" as one of their goals (see also Ross, 2006). Recent examinations of intermediated local supply chains also present contradictory conclusions. According to a 2015 survey, two-thirds of food hubs report that "promoting environmentally sensitive production practices" is important to their overall mission (Hardy et al., 2016). When food hubs were surveyed two years earlier, however, "environment" was a value theme for just 10 percent of respondents (Fischer et al., 2013). Similarly, few farmers associate farm-to-school programs with heightened necessity to

adopt sustainable farming practices (Izumi et al., 2010; Conner et al., 2012; Rosenberg et al., 2014).

The local food literature is of two minds regarding how ecological embeddedness might relate to local food marketing; good arguments could be made to construct an hypothesis inspired by either position. Disagreement on this question, moreover, has consequences: because environmental values and farming practices are closely related (Dessart et al., 2019), not knowing how to characterize local food systems with respect to one makes it harder to theorize them with respect to the other. Given that sustainability and "localist" policies and values are often linked in both the public imagination and agenda-setting theoretical work (Lyson, 2004; Born and Purcell, 2006; De Young and Princen, 2012), we proceed, for testing purposes, under the supposition that the two concepts are positively related. Specifically, we propose the following "ecological embeddedness hypothesis": *Farmers with a strong sense of ecological embeddedness will be more likely to participate in local food supply chains.* Later in this paper, we return to the divergence in the local food literature where ecological embeddedness is concerned, and we suggest what the practical implications of our findings may be.

We have focused so far on conceptualizing two distinct kinds of subjective embeddedness. It is important to note, however, that although it is useful to distinguish between civic and ecological embeddedness in theory, in practice there is always the possibility of correlation and overlap. Later we present empirical findings that speak to how these two dimensions of subjective embeddedness may be related.

3. Socioeconomic explanations for local food marketing

Researchers have often explored and problematized the role of ethical values in farmers' relationships with local food markets. At the same time, becoming involved with local food is, for many farmers, at least as much a strategic economic decision as a moral mission (Watts et al., 2005). In this brief section, we lay out the rationale for three ways in which economic constraints and self-interest might shape farmers' decisions about local food marketing. This discussion serves as the basis for additional explanatory variables that we include in regression models.

First, whether a farmer chooses to market local food may be related to his or her financial resources—but this relationship can cut both ways. Larger farm operations may be more likely to look beyond conventional supply chains (Hansson et al., 2010; Feenstra et al., 2011; Inwood and Sharp, 2012) or pursue multiple ways of selling local food (Farmer and Betz, 2016). Having off-farm income may also give farmers the flexibility to engage with alternative markets (Bubela, 2016). Other studies, however, have suggested just the opposite. Small farms may be *more* likely to diversify into local markets because they have lower "sunk costs" in, and may not be well suited to, supply chains developed for large farms (Starr et al., 2003; Martinez et al., 2010; Inwood and Sharp, 2012). Off-farm jobs may also detract from the time needed to make inroads into relationship-intensive local food markets (Ahearn and Sterns, 2013).

Second, local food systems are by nature dependent on a broad base of consumer support in a particular region. Thus it is plausible—but not inevitable (Barbieri and Mahoney, 2009; Trivette, 2015)—that farms near metropolitan areas would find it easier and more lucrative to supply fresh produce to local markets (Jarosz, 2008; Martinez et al., 2010).

Third, participation in local food systems may be related to whether a farmer's identity and approach to agriculture can be considered "productivist" in nature. Historically, the concept of productivism has been used to describe farming that prioritizes maximizing crop yield and short-term profits through up-to-date agricultural technologies (Burton, 2004; Burton and Wilson, 2006). Farmers strongly motivated by productivist values tend to oppose stringent conservation requirements because of perceived economic burdens (Arbuckle, 2013; McGuire et al., 2015). For similar reasons, it seems reasonable to think that productivist values may lead farmers to view local food marketing as risky and unwise. Productivist farmers may believe that direct-to-consumer and even intermediated local markets simply cannot accommodate the tremendous yields of modern agriculture. Moreover, farm operations built around wholesale buyers and long-distance distributors would face a difficult period of adjustment to short food supply chains.

With these ideas in mind, we would argue that existing research makes a clear case for one further hypothesis: *Farmers strongly motivated by productivist values will be less likely to market local food.* Crucially, we do not conceive of productivism as inimical to civic or ecological embeddedness; productivist and embeddedness considerations may be relevant to the same farmer. Rather, productivism and subjective embeddedness are understood to involve fundamentally different values, and seem likely to relate to participation in local food systems in opposite ways.

4. The case for expanded survey research

In the second half of this paper we use survey data to explore potential drivers of participation in local food systems, focusing especially on subjective embeddedness. This work is necessary because the literature on local food exhibits two key shortcomings that have prevented researchers from systematically evaluating the hypotheses outlined above.

First, studies of why people *buy* local food have often used data from samples of consumers randomly selected from the general population (e.g. Giampietri et al., 2016). But studies of why farmers *produce* food for local markets have nearly always used data on farmers—whether drawn from single cases (Feagan and Henderson, 2009; Cox et al., 2014), relatively small groups (Ilbery and Maye, 2005; Furman et al., 2014), or large survey samples (Migliore et al., 2015; Farmer and Betz, 2016; Germeten and Hartmann, 2017; Oñederra-Aramendi et al., 2018)—who were purposively recruited for research precisely *because* of their participation in local food systems (but see Matts et al., 2016). These studies can make a compelling case for a relationship between subjective embeddedness and different ways of marketing local food. But because these studies "select on the dependent variable"—because they do not include a comparison group of farmers who *do not* market local food—they cannot claim to conclusively establish that such a relationship exists. The fact that most data used in local food studies is purposively sampled is especially problematic where significant disagreement exists between scholars: for instance, around whether ecological embeddedness is a guiding motivation for local food farmers.

Second, existing studies generally have not attempted to identify differences in the relationship between subjective embeddedness and different ways of marketing local food (e.g. Ross, 2006; Tudisca et al., 2014; Albrecht and Smithers, 2018). Important exceptions exist: Hinrichs (2000) juxtaposes farmers markets with CSA and Farmer and Betz (2016) ask why some direct-to-consumer farmers also participate in intermediated markets. Even these studies, however, are restricted either to comparing direct-to-consumer with intermediated supply chains, without looking for within-category differences, or to comparing only supply chains in one broad category.

In sum, no study conducted to evaluate subjective embeddedness hypotheses has yet used large-scale, representative data that includes both farmers who market local food in a multitude of ways and farmers who do not market local food at all. Existing research has provided a strong foundation for theory about subjective embeddedness and local food, by showing how civic and environmental commitments can play an important role in whether farmers "come in to the foodshed," to use Kloppenburg's words. This foundation would now best be served by work that heeds the advice of Tregear and others, and employs "the conscious gathering of data from sources which might question a prevailing narrative" (Tregear, 2011, p.429; Maye and Kirwan, 2010). That is what this study seeks to provide.

5. Research design

5.1. Source and scope of data

Data for this study come from a survey of specialty crop growers in Michigan and Ohio conducted in 2017. The population for the survey was defined as growers of vegetable and/or fruit crops for "fresh market"—that is, food sold in a "raw [state], without being frozen, cooked or subject to other forms of preservation." Michigan and Ohio were chosen as study sites due to the importance of specialty crops and local food markets to the agricultural economies of both states (National Agricultural Statistics Service, 2016b; Han et al., 2018). The survey questionnaire was developed in consultation with cooperative extension specialists and pre-tested with groups of farmers in both states.

Complete lists of farms in U.S. states are difficult to find or construct (Matts et al., 2016; Farmer and Betz, 2016). For this reason, the National Agricultural Statistics Service (NASS) was contracted to manage sample selection and data collection for the study. The unit of analysis was defined as a farm that was harvesting at least 1 acre of vegetable and/or fruit crops in 2016. The population frame included all 8383 farm operations in Michigan and Ohio that satisfied this definition. In order to maximize the ability of the sample to represent a diverse population, the population frame was divided into six strata according to size and whether the farm grew primarily vegetable or fruit crops. From this frame, 3000 farms were selected for inclusion in the study. Following a "tailored response" protocol (Dillman et al., 2009), farm operators received the questionnaire by mail first in late January 2017, and a second time about three weeks later. In February and March, operators who had not returned a questionnaire by mail were contacted by phone by survey enumerators.

When data collection closed in late March 2017, a total of 1401 valid survey reports had been returned (the response rate was 46.7%). Reports were deemed non-useable, however, if respondents were either no longer farming or no longer growing specialty crops; this issue with NASS population frames has been noted previously (Matts et al., 2016). Of 881 useable survey reports, 698 were from respondents growing at least 1 acre of vegetable or fruit crops for fresh market. Respondents whose farm operations grew specialty crops only for processing were deemed *a priori* unlikely to market local food, and answered only a subset of survey questions. All analyses for this study use data on just the 698 fresh market growers.

5.2. Dependent variables and regression models

Survey data were analyzed in two ways. First, seven logistic regression models were conducted with binary dependent variables for earning revenue in different ways. The first three models examine farmer participation in direct-to-consumer supply chains. In Model 1, the dependent variable is whether a farm earns revenue from a farmstand or "U-pick" operation; in Model 2, from farmers markets; and in Model 3, from CSA. The second three models examine intermediated local supply chains: in Model 4, the dependent variable is whether a farm earns revenue from selling directly to restaurants, caterers or institutions like schools or hospitals; in Model 5, from selling directly to small, independent grocery stores with one or a few locations; and in Model 6, from a food hub, growers cooperative or small farms cooperative. For comparison purposes, Model 7 assesses whether a farm earns revenue from "mainstream" sources, in this case either wholesalers, brokers, packing houses, distributors, or selling directly to large retailers.

The seven logistic regressions just described explore possible explanations for earning farm revenue from (except for Model 7) a range of different local food markets. In each case, however, the reference category for the dependent variable is farmers who do not earn revenue specifically in that way; they may still earn revenue from other ways of marketing local food. To explicitly compare local food farmers with farmers not participating in local food systems in any way, logistic results were used to inform the construction of a categorical variable for local food marketing. Specifically, a variable was generated with three possible values: 1) earning no revenue from local food supply chains (the reference group); 2) earning local food revenue only from supply chains that were *not* associated with either form of subjective embeddedness in logistic models (farmers markets and on-farm sales); 3) earning local food revenue from one or more supply chains that *were* associated with either civic or ecological embeddedness in logistic models (CSA and intermediated channels). Farmers in the third category were permitted to be earning local food revenue either from CSA and/or intermediated supply chains only, or from a mixture of CSA, intermediated supply chains and non-CSA direct-to-consumer sales. This was deemed necessary because the number of farmers selling only through CSA and/or intermediated supply chains was quite small ($n = 34$) (for a similar approach, see Farmer and Betz, 2016).

Finally, a multinomial regression was conducted using this categorical dependent variable. Model 8-a gives differences in the relative probability of being in category 2 versus the reference group of category 1. Model 8-b considers category 3 versus the reference group of category 1. The reference group for the dependent variable included 32 farmers who also did not say that they were earning revenue from either of the "mainstream" channels asked about in the survey. It was understood, based on criteria for inclusion in the NASS sample, that these farms were likely marketing in one or more "mainstream" ways not included on the survey. Models were run with and without these observations, and results did not substantively change. Results reported below include all observations.

5.3. Main explanatory variables

In order to evaluate hypotheses about civic embeddedness, ecological embeddedness and productivism, survey items were designed to examine farmers' motivations for making farm management decisions. Specifically, respondents were asked about decision-making criteria that could be expected to be important to farmers who felt—to return to our earlier definition of subjective embeddedness—connected to, dependent on, and responsible for larger human and ecological communities. This section of the survey began by directing respondents to: "Please think about how you make decisions about your farm operation." This direction was followed by the question: "For your farm operation, how important is it for you to …". A list of 26 criteria was given, and respondents were asked to rate each criterion on a 1–4 Likert-type scale: 1 (not important); 2 (slightly important); 3 (important); 4 (very important). Criteria for decision-making—such as "Support other businesses in your community" and "Consider the health of streams on/near your land to be your responsibility"—were included based mainly on their ability to reflect the civic or ecological embeddedness of farmers; many were adapted from a previous survey (McGuire et al., 2015). Items were also included to capture a "productivist" approach toward farming. Table 3 gives the text for all 26 survey items.

Variables for civic embeddedness, ecological embeddedness and productivism were constructed through a three-stage process. First, exploratory factor analysis (EFA) was used to identify latent factors—unobserved variables—that might best predict responses to these 26 items. Factors with eigenvalues greater than 1.0 were retained (Hayasbi and Yuan, 2010). Oblique rotation was used to determine which factors best fit the data (Reio and Shuck, 2015). Second, exploratory structural equation modeling (ESEM) was used to assess the fit of the model linking latent factors with observed items that emerged from EFA. ESEM is now seen as a compelling alternative to confirmatory factor analysis (CFA), because ESEM allows for models to be assessed where observed variables can cross-load onto more than one factor (Asparouhov and Muthén, 2009; Marsh et al., 2014). Finally, index variables were constructed by taking the mean of survey items for each factor, i.e. summing scores and then dividing by the number of items.

5.4. Additional variables

In addition to the productivism index, all models include independent variables corresponding to how participation in local food systems might be shaped by socioeconomic characteristics of farms and farm operators. First, variables were included to capture the impact of economic resources. Total farm revenue was expressed as a categorical variable: small (less than $150,000—the reference group); medium-size (between $150,000 and $349,000); and large ($350,000 or more). Farm size was measured as total acres under operation. Off-farm income was modeled in two ways: first, as the percentage of total household income that did not come from the farm operation; and second, with a dummy variable for whether the farm operator spent the majority of his or her worktime on an off-farm occupation.

Second, variables were included for proximity to densely populated areas. The first was a categorical variable for the farm's home county as being either metropolitan, non-metropolitan but adjacent to a metropolitan area, or completely rural (the reference category) (Economic Research Service, 2016). A dummy variable was also included for whether a farm was located in Michigan. Ohio has more people, a higher population density, and a more even statewide distribution of population centers than Michigan. Farms in Michigan may therefore be on average less involved with local food markets, due to the relative difficulty of connecting with local consumers.

Finally, regression models account for demographic characteristics of farmers. Women have historically played a central role in sustainable agriculture and local food initiatives (Trauger et al., 2010; Jarosz, 2011; Sachs et al., 2016). Farmers who market local food may be younger and less experienced (McNamara and Weiss, 2005; Hansson et al., 2010; Martinez et al., 2010). Farmers who sell through local food channels, or have diversified in other ways, may be relatively well-educated (Benedek et al., 2018; Lass et al., 2003; Barbieri et al., 2008). Models control for: 1) being female; 2) years as the principal operator of one's farm operation (this appeared to capture the same effects as age); 3) having completed a 4-year college degree.

Regressions and EFA were conducted with Stata MP/15; ESEM was conducted with Mplus 8. Regressions were run with and without sample weights and produced substantively similar results. The unnecessary use of sample weights in regression models carries the disadvantage of inflating standard errors (Winship and Radbill, 1994; Gelman, 2007). Results reported below use unweighted data.

5.5. Missing data

Missing data is a frequent problem for survey research. The amount of missing data for this study was relatively small. It is now generally agreed, however, that multiple imputation is preferable to "complete case analysis" and other ways of dealing with missing data (Allison, 2010; Lang and Little, 2018). Multiple imputation by chained equations (MICE) was used prior to regression analysis, using "congenial" imputation models and Stata's "mi" commands (Moons et al., 2006; White et al., 2011). For inferential modeling, Stata combines parameter estimates across imputed datasets; McFadden's "pseudo r-squared" was calculated the same way (Harel, 2009; Cañette and Marchenko, n. d.). For index variables, imputed values were first generated for the 26 individual items; index values were then obtained using imputed data where necessary (Gottschall et al., 2012; Eekhout et al., 2014). Variable means showed little change after imputation.

Table 1
Descriptive statistics.

	Data pre-imputation			Data post-imputation		
	N	Mean	S.D.	N	Mean	S.D.
Dependent variables						
Sources of farm revenue (binary dependent variables for Models 1–7)						
On-farm sales (farmstand or "U-pick" operation)	698	0.57	0.49	698	0.57	0.49
Farmers markets	698	0.41	0.49	698	0.41	0.49
Community supported agriculture (CSA)	698	0.08	0.27	698	0.08	0.27
Selling directly to restaurants or institutions like schools/hospitals	698	0.17	0.38	698	0.17	0.38
Selling directly to small, independent grocery stores	698	0.21	0.41	698	0.21	0.41
Food hub, growers co-op, or small farms co-op	698	0.05	0.23	698	0.05	0.23
Mainstream (wholesalers, brokers, packing houses, distributors, large retail)	698	0.38	0.49	698	0.38	0.49
Local food marketing (categorical dependent variable for Model 8)						
Category 1: Farms earning no revenue from local food (ref. group)	698	0.20	0.40	698	0.20	0.40
Category 2: Farms earning local food revenue only from farmers markets and/or on-farm sales	698	0.45	0.50	698	0.45	0.50
Category 3: Farms earning local food revenue from CSA and/or intermediated local food supply chains	698	0.36	0.48	698	0.36	0.48
Independent variables						
Acres operated	698	211.79	646.10	698	211.79	646.10
Farm revenue						
Small farm: <$150 k gross revenue (ref. group)	640	0.66	0.47	698	0.65	0.48
Mid-size farm: $150 k - $349 k gross revenue	640	0.13	0.34	698	0.14	0.34
Large farm: $350 k gross revenue or more	640	0.21	0.41	698	0.21	0.41
Proximity to urban areas						
Non-metro., not adjacent to a metro. county (ref. group)	698	0.15	0.36	698	0.15	0.36
Non-metro., adjacent to a metro. county	698	0.31	0.46	698	0.31	0.46
Metropolitan county	698	0.54	0.50	698	0.54	0.50
Farm is in Michigan	698	0.64	0.48	698	0.64	0.48
Years operating current farm operation	658	24.14	14.77	698	24.27	14.78
Farmer age	676	57.46	12.96	698	57.44	12.92
Percent of household income not from farm operation	639	49.83	38.80	698	50.36	38.77
Farmer spends majority of time on an off-farm occupation	662	0.27	0.44	698	0.27	0.45
Farmer is female	683	0.14	0.35	698	0.14	0.35
Farmer has a 4-year college degree	684	0.38	0.49	698	0.38	0.49
Civic embeddedness	602	2.60	0.66	698	2.61	0.66
Ecological embeddedness	575	3.01	0.56	698	2.99	0.57
Productivism	636	2.62	0.79	698	2.63	0.78

Table 2
Farm revenue through multiple sources.

	Farm earns revenue from two or more local food supply chains (n = 306)			Farm earns revenue from "mainstream"[a] marketing channels (n = 266)		
	Number	Row pct.	Column pct.	Number	Row pct.	Column pct.
Farm earns local food revenue from:						
On-farm sales (n = 400)	230	57.5	75.2	106	26.5	39.9
Farmers markets (n = 287)	228	79.4	74.5	91	31.7	34.2
CSA (n = 57)	54	94.7	17.7	22	38.6	8.3
Farm-to-restaurant or farm-to-school/institution (n = 120)	116	96.7	37.9	43	35.8	16.2
Selling directly to small, independent grocery stores (n = 149)	137	92.0	44.8	68	45.6	25.6
Food hub, growers co-op, or small farms co-op (n = 38)	32	84.2	10.5	17	44.7	6.4

[a] Wholesalers, brokers, packing houses, distributors, and/or large retailers.

6. Findings

6.1. Characteristics of respondents

Table 1 reports descriptive statistics for all model variables, as well as additional variables for comparison purposes. Multicollinearity was low (VIFs<5). Sample characteristics were broadly in line with USDA reports on Michigan and Ohio. The average respondent was 57.5 years old and 13.9% were female. According to USDA, principal operators growing specialty crops in Michigan are on average 56.8 years old and 12.7% are female; in Ohio the figures are 55.4 years old and 13.6% female (National Agricultural Statistics Service, 2015). Farms in this study, most of which marketed local food in some way, were located 54% in metropolitan counties, 30.8% adjacent to metropolitan areas, and 15.2% in completely rural areas. Nationwide, the corresponding figures for farms engaged in direct-to-consumer sales are 53.2%, 31.7% and 15% (National Agricultural Statistics Service, 2019a). Most farmers (64.4%) who completed a survey were based in Michigan; 58.1% of specialty crop farms in Michigan and Ohio are located in Michigan (National Agricultural Statistics Service, 2019b). The average acreage for farms in this study was 228 acres for Michigan farms and 182 acres for Ohio farms. The average size of Michigan and Ohio specialty crop farms is 231 acres and 93 acres, respectively (ibid.); larger Ohio farms would appear to be over-represented in this survey.

If USDA's extrapolated numbers from the 2015 Local Food Marketing Practices Survey are taken as a percentage of farms growing at least some specialty crops, it can be estimated that approximately 49% of such farms in Michigan and 75.7% in Ohio are marketing direct-to-consumer local food (National Agricultural Statistics Service, 2019a). For this study, as a percentage of all 881 farms who returned a valid survey form (including farms only growing specialty crops for processing), 53% of Michigan farms and 77.8% of Ohio farms earn revenue from on-farm sales, farmers markets, or CSA.

It is harder to gauge the representativeness of the survey with respect to individual local food channels, because USDA has not released requisite state-by-state breakdowns. But for Region 7, which includes Michigan and Ohio, among farms involved with direct-to-consumer marketing, 41.8% do on-farm sales, 27% sell at farmers markets, and 6.7% have a CSA (ibid.). The corresponding figures for this survey are 74.8%, 53.6% and 10.7%. USDA included other direct-to-consumer channels in its direct-to-consumer category besides those considered in this study, likely resulting in lower percentages for each channel. Michigan and Ohio also have the strongest local food economies in Region 7 (National Agricultural Statistics Service, 2016b), and so a relatively high number of farms in this survey may be marketing local food in more than one way.

Recent studies suggest that involvement with two or more local food supply chains is relatively widespread, as farmers in "alternative food networks" follow opportunities and experiment with new markets (Trivette, 2015; Clark and Record, 2017). Marketing through both local food and "mainstream" channels like wholesalers is also not uncommon (Ilbery and Maye, 2005; Brinkley, 2017). Indeed, the conceptual separation between mainstream value chains and "niche" local food is in practice increasingly blurry, as "local food" appeals to a wider spectrum of growers (Bloom and Hinrichs, 2017; Dimitri and Gardner, 2019). In this study, a high proportion of local food farmers were participating in more than one local food supply chain, and many were also earning revenue through mainstream channels (see Table 2).

6.2. Civic embeddedness, ecological embeddedness and productivism

Table 3 reports the results of factor analysis for the observed data (Stata does not currently support a method for combining EFA statistics across imputed datasets). Three factors had eigenvalues greater than 1.0 and explained 95% of variance in the 26 items. The first factor was deemed "ecological embeddedness" due to items like "consider the health of streams on/near your land to be your responsibility." The second factor was deemed "civic embeddedness" due to items like "be active in your community." The third factor was deemed "productivism" due to items like "have the highest yields per acre." Loading patterns were broadly in line with previous studies demarcating between "conservationist" and "productivist" approaches to farming (Burton and Wilson, 2006; Arbuckle, 2013). Evidence for a "civic" dimension also echoed findings from the first study that used versions of some survey items (McGuire et al., 2015). Of the 26 items examined, five were not included in further analyses, either because of low factor loadings (well below 0.4) or because they did not improve model fit.

The model of relationships between three latent factors and 21 survey items that emerged from EFA was evaluated using ESEM for both the observed data and 20 imputed datasets. The RMSEA, CFI and TLI for the observed and imputed datasets satisfied current criteria (RMSEA<0.08; CFI>0.9; TLI>0.9) for acceptable model fit (Amburgey and Thoman, 2012; Morin et al., 2016). ESEM results justified the construction of three index variables. "Civic embeddedness" was constructed by averaging 7 items; "ecological embeddedness" 11 items; and "productivism" 3 items. Factor sets of survey items had Cronbach's alpha scores of 0.84, 0.86, and 0.77, in the observed data, which, in conjunction with KMO (0.911) and Bartlett's tests ($p = 0.000$), suggested strong internal coherence for each scale.

The fact that EFA and ESEM argue for the existence of three distinct factors does not mean that these factors are unrelated. Indeed, civic and ecological embeddedness are understood to be two strands of subjective embeddedness, and productivism is different from but not necessarily orthogonal to subjective embeddedness. Correlations between factors broadly supported their theorized relationships. The Pearson's correlation between civic and ecological embeddedness was 0.610; between civic embeddedness and productivism was .292; and between ecological embeddedness and productivism was .310; all were significant at the $p < 0.001$ level.

6.3. Why participate in local food systems?

Table 4 reports the results of logistic regression models. Table 5 reports the results of the multinomial regression model. The main goal of

Table 3
Exploratory factor analysis for fresh market growers (n = 499).

	Civic embeddedness	Ecological embeddedness	Productivism
Be a leader in your community	**.739**		.232
Be active in farm organizations	**.692**		.245
Be active in your community	**.678**		
Create economic opportunities for other people in your community	**.625**	.193	
Create opportunities for people to learn about farming	**.609**	.130	
Support other businesses in your community	**.456**	.285	
Help friends and neighbors with farm tasks	**.399**	.283	
Share equipment with friends and neighbors*	.361	.193	
Cronbach's α = .84			
Consider the health of streams on/near your land to be your responsibility		**.721**	
Minimize soil erosion		**.674**	.206
Minimize the use of pesticides and fungicides		**.606**	
Minimize nutrient runoff into waterways		**.597**	.282
Maintain habitat for wildlife		**.588**	
Maintain or increase soil organic matter		**.565**	.127
Think about the health of people who eat food grown on your farm		**.494**	
Use cover crops between harvest and planting		**.471**	
Put long-term conservation of farm resources before short-term profits	.259	**.457**	
Minimize tillage	.189	**.445**	
Manage for both profitability and minimization of environmental impact	.219	**.441**	.119
Avoid fall tillage*		.388	
Keep your fields clean*		.370	.297
Work to get healthy food to people who cannot afford it*	.288	.347	
Cronbach's α = .86			
Have the highest yields per acre			**.703**
Have the highest profit per acre			**.691**
Have the most up-to-date equipment	.145		**.582**
Use the latest seed and chemical technology*		.119	.547
Cronbach's α = .77			

*Not used to construct index variable or to calculate Cronbach's alpha.
Factor loadings <0.10 not shown.

this study is to address the question: Is there a relationship between farmers' civic or ecological embeddedness and different ways of marketing local food? Our first hypothesis is that civic embeddedness would be positively associated with earning revenue from CSA and intermediated supply chains like farm-to-school partnerships, but not from farmers markets or on-farm sales.

The civic embeddedness hypothesis is largely validated by analysis of survey data. According to Model 1 and Model 2, there is no statistically significant relationship between civic embeddedness and on-farm sales or farmers markets. Model 3, however, finds that higher levels of civic embeddedness are strongly associated with CSA. Specifically, each additional "point" on a farmer's civic embeddedness score increases the odds of earning revenue from CSA by 147% (equivalent to a 0.902 increase in the natural log of the odds). Similarly, a 1-point increase in civic embeddedness is associated with a 78% increase in the odds of selling directly to restaurants, caterers, or institutions like schools or hospitals, and a 111% increase in the odds of marketing fresh produce through a food hub, growers co-op, or small farms co-op. No relationship exists between civic embeddedness and selling directly to small, independent grocery stores. With this exception, however, predictions made under the "civic embeddedness hypothesis" are borne out in logistic models. Model 7, for comparison purposes, treats earning revenue from mainstream sources as the dependent variable; neither type of subjective embeddedness is statistically significant in this model.

The multinomial model provides an additional perspective, because the reference group in this model is the absence of participation in any local food supply chains included in this study. Model 8-a shows that civic embeddedness is not associated with a change in the likelihood of being in the second category of farmers (those earning local food revenue only from farmers markets, farmstands or U-pick), relative to the reference group. In Model 8-b, however, a 1-point increase in civic embeddedness predicts a 70% higher likelihood of marketing local food through one or more of the channels associated in logistic models with either civic or ecological embeddedness, possibly in combination with farmers markets or on-farm sales. The multinomial regression, in other words, supports the same general conclusion as the logistic regressions. Farmers who exhibit relatively high civic embeddedness are more likely to market local food through CSA and many if not all intermediated local food supply chains.

According to the ecological embeddedness hypothesis, farmers motivated by strong feelings of connection and commitment to proximate ecological communities would be more likely to market local food. But we also stressed that significant disagreement exists in the literature regarding the importance of environmental values as a motivating factor for local food farmers. Regression results largely fail to reject the null hypothesis in logistic models, finding no significant relationship between ecological embeddedness and any way of marketing local food—with one exception. Model 5 finds that each additional point on a farmer's ecological embeddedness score is associated with a 59% increase in the odds of selling directly to small, independent grocery stores. Ecological embeddedness also does not predict higher odds of being in either local food marketing category in the multinomial model.

Results for demographic and socioeconomic control variables further illustrate the importance of differentiating between local food supply chains. College-educated farmers were more likely to sell at farmers markets, CSA and directly to restaurants or institutions, while female farmers were more likely to sell at farmers markets but less likely to work with intermediaries like food hubs. Medium-size and large farms were much more likely than small farms to market through mainstream supply chains such as wholesalers, and large farms were also less likely to sell at farmers markets. Relative to farms in completely rural areas, farms in metropolitan and metro-adjacent counties were less likely to have a farmstand or U-pick, but otherwise proximity to urban areas was not related to marketing local food. In the multinomial model, size in acres was associated with decreased likelihood of earning local food revenue only from on-farm sales and farmers markets.

Finally, the explanatory variable with the most consistent effect across models was having a "productivist" approach to farming. In logistic models, farmers who assigned greater importance to criteria like maximizing crop yield and profits were significantly less likely to

Table 4
Logistic regression models.

	Direct-to-consumer local food supply chains						Intermediated local food supply chains						Mainstream	
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	On-farm sales (farmstand or "U-pick" operation)		Farmers markets		CSA		Selling directly to restaurants or institutions		Selling directly to small, indep. grocery stores		Food hub, growers co-op, or small farms co-op		Wholesalers, brokers, packing houses, etc.	
Independent variables	*Coef.*	*Odds ratio*	*Coef.*	*Odds ratio*	*Coef.*	*Odds ratio*	*Coef.*	*Odds ratio*	*Coef.*	*Odds ratio*	*Coef.*	*Odds ratio*	*Coef.*	*Odds ratio*
Acres operated	−0.000	1.000	−0.000	1.000	−0.001	0.999	−0.001	0.999	0.000	1.000	−0.000	1.000	0.000	1.000
	(0.000)		(0.000)		(0.001)		(0.000)		(0.000)		(0.000)		(0.000)	
Farm revenue														
Mid-size farm: $150 k - $349 k gross revenue	−0.239	0.788	0.050	1.051	−0.404	0.668	−0.269	0.764	0.444	1.559	0.552	1.737	1.241***	3.458***
	(0.270)		(0.270)		(0.524)		(0.363)		(0.298)		(0.521)		(0.294)	
Large farm: $350 k gross revenue or more	−0.029	0.971	−0.690*	0.502*	−0.570	0.566	−0.217	0.805	0.281	1.325	0.230	1.258	1.980***	7.243***
	(0.267)		(0.283)		(0.554)		(0.362)		(0.296)		(0.563)		(0.334)	
Proximity to urban areas														
Non-metro., adjacent to a metro. county	−0.593*	0.553*	0.174	1.190	0.210	1.233	−0.159	0.853	−0.089	0.915	−0.525	0.591	0.779*	2.179*
	(0.271)		(0.271)		(0.516)		(0.349)		(0.303)		(0.561)		(0.329)	
Metropolitan county	−0.535*	0.586*	0.431	1.539	0.412	1.510	−0.136	0.873	−0.472	0.624	−0.245	0.783	0.277	1.320
	(0.245)		(0.243)		(0.457)		(0.309)		(0.277)		(0.481)		(0.296)	
Farm is in Michigan	−0.701***	0.496***	−0.145	0.865	−0.013	0.987	−0.017	0.983	−0.127	0.880	−0.098	0.906	1.345***	3.837***
	(0.184)		(0.180)		(0.322)		(0.239)		(0.213)		(0.386)		(0.236)	
Years operating current farm operation	0.021***	1.021***	−0.005	0.995	−0.028*	0.973*	−0.019*	0.981*	−0.002	0.998	−0.038**	0.963**	−0.005	0.995
	(0.006)		(0.006)		(0.012)		(0.008)		(0.007)		(0.014)		(0.007)	
Percent of household income not from farm operation	0.003	1.003	−0.000	1.000	−0.011*	0.989*	−0.007*	0.993*	−0.001	0.999	−0.003	0.997	−0.010**	0.990**
	(0.003)		(0.003)		(0.005)		(0.003)		(0.003)		(0.006)		(0.003)	
Farmer spends majority of time on an off-farm occupation	0.311	1.365	−0.429*	0.651*	−0.252	0.778	−0.294	0.746	−0.666*	0.514*	−0.348	0.706	0.109	1.115
	(0.208)		(0.208)		(0.374)		(0.274)		(0.270)		(0.453)		(0.256)	
Farmer is female	−0.250	0.778	0.755**	2.129**	0.270	1.310	0.369	1.446	0.110	1.117	−1.633*	0.195*	−0.262	0.769
	(0.242)		(0.237)		(0.393)		(0.297)		(0.283)		(0.784)		(0.309)	
Farmer has a 4-year college degree	−0.010	0.990	0.382*	1.465*	0.627*	1.873*	1.021***	2.776***	0.035	1.035	0.662	1.939	0.134	1.144
	(0.173)		(0.172)		(0.312)		(0.227)		(0.204)		(0.370)		(0.212)	
Civic embeddedness	0.285	1.330	0.130	1.138	0.902**	2.465**	0.577**	1.780**	0.203	1.225	0.746*	2.108*	0.188	1.207
	(0.160)		(0.161)		(0.312)		(0.212)		(0.192)		(0.369)		(0.191)	
Ecological embeddedness	−0.218	0.804	0.145	1.157	0.368	1.445	0.486	1.627	0.465*	1.592*	0.533	1.705	0.009	1.009
	(0.185)		(0.189)		(0.353)		(0.256)		(0.225)		(0.432)		(0.226)	
Productivism	−0.281*	0.755*	−0.261*	0.770*	−0.718***	0.488***	−0.261	0.770	−0.374**	0.688**	−0.599*	0.550*	0.534***	1.705***
	(0.122)		(0.120)		(0.204)		(0.151)		(0.139)		(0.241)		(0.148)	
Constant	1.265*	3.542*	−0.467	0.627	−3.321**	0.036**	−3.266***	0.038***	−1.855**	0.156**	−3.918**	0.020**	−3.920***	0.020***
	(0.593)		(0.591)		(1.111)		(0.828)		(0.705)		(1.350)		(0.738)	
Pseudo r-squared	0.064		0.060		0.145		0.105		0.049		0.114		0.298	
Observations	698	698	698	698	698	698	698	698	698	698	698	698	698	698

Standard errors in parentheses.
***p < 0.001, **p < 0.01, *p < 0.05.

Table 5
Multinomial regression model.

	Model 8-a		Model 8-b	
	Category 2[b] vs. Category 1[a]		Category 3[c] vs. Category 1[a]	
Independent variables	*Coef.*	*Odds ratio*	*Coef.*	*Odds ratio*
Acres operated	−0.001*	0.999*	−0.000	1.000
	(0.000)		(0.000)	
Farm revenue				
Mid-size farm: $150 k - $349 k gross revenue	−0.321	0.725	−0.277	0.758
	(0.361)		(0.369)	
Large farm: $350 k gross revenue or more	−0.310	0.734	−0.339	0.712
	(0.362)		(0.349)	
Proximity to urban areas				
Non-metro., adjacent to a metro. county	−0.635	0.530	−0.502	0.605
	(0.388)		(0.393)	
Metropolitan county	−0.346	0.708	−0.461	0.631
	(0.353)		(0.361)	
Farm is in Michigan	−1.127***	0.324***	−1.140***	0.320***
	(0.289)		(0.291)	
Years operating current farm operation	0.020*	1.021*	0.002	1.002
	(0.009)		(0.009)	
Percent of household income not from farm operation	0.006	1.006	0.003	1.003
	(0.004)		(0.004)	
Farmer spends majority of time on an off-farm occupation	0.423	1.526	−0.124	0.883
	(0.309)		(0.319)	
Farmer is female	0.791	2.205	0.861*	2.365*
	(0.420)		(0.422)	
Farmer has a 4-year college degree	−0.108	0.897	0.214	1.238
	(0.247)		(0.250)	
Civic embeddedness	−0.243	0.784	0.533*	1.703*
	(0.222)		(0.236)	
Ecological embeddedness	0.075	1.078	0.425	1.530
	(0.267)		(0.282)	
Productivism	−0.763***	0.466***	−1.039***	0.354***
	(0.193)		(0.194)	
Constant	3.919***	50.346***	1.871*	6.492*
	(0.872)		(0.902)	
Pseudo r-squared	0.128		0.128	
Observations	698	698	698	698

Standard errors in parentheses.
***p < 0.001, **p < 0.01, *p < 0.05.
[a] Category 1: Farms earning no revenue from local food.
[b] Category 2: Farms earning local food revenue only from farmers markets and/or on-farm sales.
[c] Category 3: Farms earning local food revenue from CSA and/or intermediated local food supply chains.

participate in five of six local food supply chains, and significantly more likely to earn revenue in conventional ways. In the multinomial model, higher productivist values were associated with lower odds of being in either local food category, with the difference in odds (distance from 1.0) being greatest for marketing that included CSA and intermediated supply chains. As we discuss below, this finding may have implications for the environmental characteristics of local food systems.

7. Discussion

This study represents one of the first efforts to use large-scale, representative survey data to compare the ethical views and socioeconomic characteristics of farm operators who market local food in a wide range of ways. In this section, we highlight two main contributions to the local food literature, and we explore what the broader implications of study findings might be.

First, this study speaks to the civic embeddedness of local food farmers, and offers grounds for further theorizing about local food systems and civic life. Previous research has contended that civic motivations are relatively unimportant for selling at farmers markets (Kirwan, 2004; Oñederra-Aramendi et al., 2018). This study supports this contention, and extends it to on-farm sales. Some researchers have also questioned whether community-building may be less central for CSA managers today than has historically been the case (Feagan and Henderson, 2009; Pole and Gray, 2013). Comparatively little research exists on the values and motivations of farmers engaged with intermediated local supply chains.

This study, because it is based on a large, representative sample of farmers who earn revenue in a wide range of ways, offers strong evidence that specialty crop growers who participate in CSA and most intermediated local food supply chains do exhibit higher levels of civic embeddedness. Many of these farmers are also earning revenue from farmers markets and on-farm sales, as well as mainstream channels like wholesale buyers. It is important to stress that our results do not suggest that there is anything "disembedded" or alienated about earning revenue in ways which, like farmers markets, are neither positively nor negatively related to civic embeddedness in logistic models. What this study clearly shows is that farmers for whom civic engagement and strengthening community institutions are relatively important priorities are strongly drawn to CSA, direct-to-institution and farm-to-table partnerships, and intermediaries like food hubs, either alone or in combination with other ways of marketing what they grow.

With this first principal finding in mind, two further questions about civic embeddedness might be raised. First, why should civic embeddedness be associated with CSA and most intermediated local supply chains, but not with farmers markets or on-farm sales? The most straightforward answer may be that farmers with strong feelings of connection and commitment to the wellbeing of nearby communities are choosing to become involved in marketing channels that they believe will bring concrete benefits to these communities. Earlier in this paper,

for instance, we reviewed research that showed that many CSA farmers were committed to building resilient community food systems, and farmers supplying public schools were doing so in part so that students would have healthy meals. We contrasted this with arguments that farmers markets represent a relatively "instrumentalist" kind of local food market. Results from this study lend themselves to the interpretation that local food channels frequently described, by participants in qualitative research and targeted surveys, as important to community wellbeing, are in fact associated with farmers whose sense of obligation to community is relatively strong.

The relationship between civic embeddedness and particular local food marketing channels may also owe some of its strength to the mediating potency of social networks in connecting farmers with new markets. Farmers who prioritize civic engagement, after all, may have stronger ties with community groups, nearby food businesses and other entities—like schools—interested in buying from local farmers (Lyson, 2005; Clark and Record, 2017). Informal local networks can open up concrete business opportunities for farmers (Diamond and Barham, 2011; Buckley et al., 2013). Brinkley (2017) has also shown that farmers traverse shorter distances to reach CSA members, institutional buyers, and restaurants, than to reach farmers markets. Local civic ties would in theory be especially helpful in nurturing those business partnerships where actors share a relatively limited jurisdiction. Importantly, different explanations for why civic embeddedness is related to local food marketing are not mutually exclusive. Civic embeddedness may impel farmers toward values-driven economic action while also connecting farmers to spaces where a sense of moral obligation to community can be profitably acted upon.

Along with the question of why civic embeddedness might be related to some ways of marketing local food, a second, more practical question can be asked. Namely, why might this relationship matter? Though the units of analysis for this study are individual farmers, study findings are suggestive of hypotheses about the aggregate qualities of larger food systems. For individual persons, civic values are directly related to concrete civic actions like voting and volunteering with community groups (Kahne and Sporte, 2008; Barrett and Brunton-Smith, 2014). So if civic embeddedness is associated with farmers who market local food in particular ways, then local food systems that include these marketing channels may, as a whole, be characterized by higher levels of civic engagement. More specifically, diversified local food systems that include CSA and intermediated local supply chains may be associated with relatively strong civic values, and thus—it would be reasonable to hypothesize—vigorous civic engagement from farmers.

Generally speaking, higher levels of civic engagement have important social benefits, including enhanced capacity for collective problem-solving (Morton et al., 2005; Briggs, 2008; Shandas and Messer, 2008). Moreover, the civic embeddedness of farmers in diversified local food systems, because of its possible—even likely—relationship to civic action, would have particular relevance for how farmers could help communities to address issues around agriculture and food. In a 2002 address to the Agriculture, Food and Human Values Society, Feenstra argued that "sustainable community food systems" could succeed only if people would "listen to each other's concerns and views, plan together, problem-solve" and work to shape local policy (2002, p.102). In other words, thriving markets for food that is locally sourced and sustainably grown depend on civic values and civic engagement among farmers and other participants. Subsequent research has validated Feenstra's thesis. Through collective action, local food farmers can help food entrepreneurs to jump-start new endeavors (Beckie et al., 2012; Migliore et al., 2014; Mars and Schau, 2018) and sway policymakers to support sustainable food and local agriculture (Brinkley, 2017, 2018). As emphasized, the present study does not directly examine possible practical benefits of civic embeddedness among local food farmers. But by linking civic embeddedness to specific ways of marketing local food, this study lends credence to the idea that robust local food systems may nurture farmers who are especially likely to make a positive impact on local politics and civic life.

The second main contribution of this study is that there is no statistically significant relationship between specialty crop farmers' ecological embeddedness and most ways of marketing local food. This finding provides support to earlier studies which, using mainly targeted data on farmers involved with particular marketing channels (e.g. Izumi et al., 2010; Rosenberg et al., 2014; Leiper and Clarke-Sather, 2017), raised questions about whether local food farmers were in fact unusually committed to environmental sustainability. Moreover, results concerning ecological embeddedness might be thought to have clear practical implications. Pro-environment values have frequently been linked to sustainable farming practices like reduced pesticide use and managing for soil health (Dessart et al., 2019). So the conclusion could be drawn that local food farmers, if not more motivated by ecological embeddedness, may be no more likely to employ sustainable farming practices than growers marketing mainly through mainstream channels. The results of this study in no way cast doubt on the validity or importance of case studies that have, for instance, artfully explored how some CSA farmers draw a direct connection between close attention to farming's environmental impacts and a commitment to local markets. Rather, to the extent that local food markets are often seen as a way to support sustainable agriculture (Born and Purcell, 2006; Mariola, 2008; Schoolman, 2019), this study may simply suggest a need to evaluate local food systems on a case-by-case basis, and not to presume that local food farmers are *a priori* more likely to adhere to organic, biodynamic, or other sustainable farming philosophies.

Study findings regarding ecological embeddedness and local food come with an important caveat, however. Specifically, taking a less productivist approach toward farming was associated with a higher probability of marketing local food in five of the six ways examined by the survey. Productivism was also negatively associated with local food marketing in the multinomial model. This finding was not unexpected: we hypothesized earlier that farmers committed to a high-input, high-yield, and profit-maximizing operating model would tend to view the market for local food as risky and small. Indeed, there is likely a kind of path dependence at work. Farmers who have long structured their operations around high volume, long-distance supply chains cannot easily change their approach to remaining economically viable. Conversely, farmers less concerned about yield and profit maximization—perhaps because of greater economic stability, lower sunk costs in technologies necessary to meet the demands of large buyers, or in some cases for ethical reasons—might be more comfortable turning to local markets for income.

It is reasonable to ask whether farmers who participate in local food systems, because they attach less importance to productivist considerations when making farming decisions, may also be less likely to manage their farms in ways historically associated with productivism. Productivism as an ideology or dimension of farmer identity is generally understood to prioritize maximizing the productive capacity of farmland through crop specialization, farm expansion, and reliance on external inputs to manage pests and supply nutrients (Burton and Wilson, 2006, 2012; Marsden and Sonnino, 2008). There is general agreement that core aspects of modern productivist agriculture have led to significant environmental harm through pesticide pollution, nutrient runoff and habitat loss (Tilzey, 2000; Tilman et al., 2002). At the same time, the ideas that constitute productivism are neither static nor simplistic. Against a background of changing market incentives and growing environmental awareness, productivist values can be compatible with sustainable farming practices and participation in conservation programs (Arbuckle, 2013; McGuire et al., 2015), perhaps especially when farmers are given more agency in the production of environmental goods (Burton and Paragahawewa, 2011; Emery and Franks, 2012). Our intention in this paper is not to position productivism and conservationism as inherent opposites; they are not. Our point is simply that the potential environmental implications of an inverse relationship between productivism and local food marketing should not be overlooked.

Even in the absence of stronger results for ecological embeddedness, the fact that farmers less influenced by productivist values are more likely to market local food constitutes good reason to explore further the environmental aspects of local food systems.

As noted above, this study is one of the first to answer questions about farmers and local food using large-scale, representative survey data. The involvement of NASS was instrumental in ensuring the quality of the survey sample with respect to specialty crop growers in Michigan and Ohio. Nevertheless, findings cannot, strictly speaking, be generalized beyond these two states. Despite their differences, Michigan and Ohio are similar in important ways: both are home to major metropolitan areas and thousands of farm operations focused on specialty crops. These qualities help to sustain a wide range of thriving local food markets. Both states also house influential land-grant universities that provide extensive support to farmers interested in local food. Future researchers might find it important to revisit the conclusions of this study in areas whose geography and social context are very different, and where the infrastructure for local food has developed in different ways.

8. Conclusion

The size of the nationwide market for local food will soon pass $10 billion and involve nearly 200,000 farms (National Agricultural Statistics Service, 2016a). What, if anything, will this mean for whether contemporary food landscapes will provide a supportive environment and meaningful opportunities for farmers for whom contributing to community well-being, engaging in civic life and protecting the environment are important priorities?

Though limited to specialty crop growers in a particular part of the country, this study suggests that questions about the broader implications of local food systems cannot be answered without distinguishing between different kinds of supply chains linking farmers and consumers. CSA and most intermediated local food supply chains are different from farmers markets and on-farm sales, not just in their mechanics, but also, it would seem, in the attraction they present for farmers motivated by civic values. This raises the question: do relatively robust and diversified local food systems provide greater social benefits to their communities—benefits related to the civic engagement of participating farmers? On the other hand, local food farmers appear relatively consistent both in their unexceptional ecological embeddedness and in their relative lack of adherence to a philosophy of productivism. Does this mean that the environmental characteristics of most local food systems, regardless of the diversity of constituent supply chains, are broadly similar, as well? And are the farming practices of local food farmers more in line with the results for ecological embeddedness or productivism? This study gives rise to such questions. But answering them will be a task for future research.

Credit author statement

Ethan D. Schoolman: Conceptualization; Methodology; Software; Formal analysis; Investigation; Writing; Supervision; Project administration; Funding acquisition, Lois Wright Morton: Conceptualization; Methodology; Writing; Supervision. J. Gordon Arbuckle: Conceptualization; Methodology; Writing; Supervision. Guang Han: Methodology; Formal analysis; Writing.

Declaration of competing interest

None.

Acknowledgements

The authors gratefully acknowledge the following persons and organizations for their assistance with this research: Marty Saffell and Kif Hurlbut at the National Agricultural Statistics Service in East Lansing, MI; Leah Miller at Ohio State University; cooperative extension agents at Rutgers University, Ohio State University, and Michigan State University; colloquium attendees at New York University and Rutgers; Alexander Vazsonyi at the University of Kentucky; the USDA-ARS Midwest Climate Hub; and the USDA-NIFA Cropping Systems CAP: Climate Change, Mitigation, and Adaption in Corn-Based Cropping Systems. The corresponding author would like especially to thank the Water Center, Graham Sustainability Institute, and Erb Institute, at the University of Michigan, for funding and support during a postdoctoral fellowship.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jrurstud.2020.08.055.

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