



Potential contributions of market-systems development initiatives for building climate resilience

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ABSTRACT

Market systems interventions are an increasingly common approach to agricultural development. While the impacts of these interventions on poverty reduction and market participation by smallholders has been studied, little is known about their contributions to building climate resilience. This paper analyzes the compatibility of market systems and climate resilience approaches to agricultural development, using the United States government's Feed the Future program as an empirical case study. Drawing on case studies in Ethiopia and Honduras, the paper examines the synergies and tensions between market systems and climate resilience approaches. The study finds that the market systems interventions have contributed to climate resilience, but also evidence of significant limitations due to fundamental tensions between market system and resilience approaches in terms of what their goals are, who they target, and how they approach their objectives. This study has important implications for the design and implementation of climate resilience programs and policies, as well as the expectations that agricultural development programs will be able to build climate resilience. Recognizing the inherent tensions that exist between market systems approaches and resilience approaches and explicitly discussing the trade-offs between the goals, target audiences, and primary mechanisms of each approach would represent an important step forward if market systems programs are going to contribute to climate resilience.

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1. Introduction

Market-based approaches to agricultural development, particularly those that consider market systems, are being increasingly employed as a means to encourage economic growth in the agricultural sector. As agriculture represents a key pathway out of poverty for millions of smallholder farmers, growth in the agricultural sector plays a prominent role in the development agenda (De Janvry & Sadoulet, 2010; Dorosh & Mellor, 2013; Irz, Lin, Thirtle, & Wiggins, 2001; World Bank, 2008). A market systems approach is one that seeks to connect the poor to markets and use the private sector to encourage poverty reduction and economic growth. Programs using a market systems approach focus on strengthening value chains and identifying market opportunities for the poor (Altenburg, 2007; Donovan, Franzel, Cunha, Gyau, & Mithöfer, 2015; Humphrey & Navas-Aleman, 2010; Stoian, Donovan, Fisk, & Muldoon, 2012). One of the reasons that such approaches are popular is that they aim to mobilize private sector resources for development, rather than relying solely on limited public sources of finance, and thus are viewed as more sustainable than other

approaches, although this assumption is examined critically from a resilience perspective in this article.

At the same time that we see a trend towards market-based approaches to agriculture, there is also growing recognition that climatic changes, in addition to low productivity, population growth, and environmental degradation, stress the ability of agriculture to meet the livelihood and food security needs of rural households, and that unless additional investments in agricultural resilience are made, recent poverty-reduction and food security gains could be reduced or even reversed (Lobell et al., 2008; Porter et al., 2014; Wheeler & von Braun, 2013; World Bank, 2010a). Agriculture is vulnerable to multiple climate risks, including temperature increases, increased drought and rainfall variability, diseases, and pests. Many staple crops have maximum temperature thresholds, beyond which yields decline significantly and nutritional content is compromised (Knox, Hess, Daccache, & Wheeler, 2012; Porter et al., 2014). For example, with a 1.5 °C increase in average temperature, 40% of maize-producing areas could become unsuitable for current varieties (World Bank and Potsdam Institute for Climate Impacts, 2013). Climate change will also indirectly influence food security through its impact on global food supplies and prices (Phalkey, Aranda-Jan, Marx, Hofle, & Sauerborn, 2015; Porter et al., 2014; Wheeler & von Braun, 2013).

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These two trends present an interesting question: To what extent do market-based approaches contribute to building climate resilience, and what challenges exist for integrating climate resilience in market systems programs? This paper explores the synergies and tensions between market systems and resilience approaches to development through an analysis of Feed the Future, a large agricultural development initiative of the United States government that uses a market systems approach. Numerous studies have analyzed the impacts of market-based agricultural development approaches on poverty reduction and inclusive growth (Bloom, 2015; Briones, 2015; Lowitt, Hickey, Ganpat, & Phillip, 2015; Michelson, Reardon, & Perez, 2012; Neven, Odera, Reardon, & Wang, 2009; Reardon, Barrett, Berdegue, & Swinnen, 2009; Rutherford, Burke, Cheung, & Field, 2016; Suzuki, Jarvis, & Sexton, 2011; Vagneron, Faure, & Loeillet, 2009). Few studies, however, have looked at the impacts of these programs on resilience and the ability of vulnerable households to adapt to climate change. Unlike projects specifically dedicated to climate adaptation, insights on tensions between resilience and other goals such as increasing productivity, raising incomes, and private sector engagement can be gained through an analysis of a program like Feed the Future.

The remainder of the paper will present background on market systems and resilience, a conceptual framework for the contributions of market systems to resilience and potential tensions between the two, the methodology for the case studies, and results of the analysis. It will conclude with implications for further research and policy recommendations.

2. Background

2.1. Market system interventions

Millions of people around the world are engaged in small-scale agricultural production, a significant portion of which is consumed by the household (Cohn et al., 2017). Many studies have shown how a lack of participation in markets limits the ability of households to move out of poverty, and argue that subsistence agriculture represents a “poverty trap” for poor households (Abro, Alemu, & Hanjra, 2014; Barrett, 2008; Dercon & Christiaensen, 2011; Hayami & Ruttan, 1985; Irz et al., 2001; Ruttan, 2001; Thomas & Slater, 2006). Market systems interventions aim to improve agricultural markets and encourage smallholders to participate in markets. Shifting production from subsistence crops for household consumption to production for markets, either through direct sales, or more frequently, through contract farming, is proposed as a key mechanism for reducing poverty (Barrett, 2008; Briones, 2015; Reardon et al., 2009). While this can consist of improved marketing and sale of traditionally-grown crops, often it includes the introduction of new, higher-value crops demanded by the market (Briones, 2015; Weinberger & Lumpkin, 2007). For example, a study in Honduras found that even if farmers adopted best practices for traditionally-grown maize and beans, the average household would require 5 hectares of land to generate enough income to rise above the poverty line (in a region with an average landholding of 0.5 hectares). The study thus concluded that poverty alleviation is only possible through the adoption of high-value crops and integration into larger markets (USAID, 2015).

Central to a market-systems approach is the recognition that smallholder farmers are part of a larger agricultural system, including global food markets, and transformation of the agricultural sector to one that supports poverty-reduction requires support to all of the components of the system, from production to marketing and consumption. Market system approaches seek to systematically analyze barriers across the value chain and design interven-

tions to address them. Studies have identified multiple barriers for smallholder integration into markets including: lack of access to information and technology, poor financial services, inability to meet standards of new, more formalized markets, and weak linkages between producers and consumers (Aker, 2011; Feder, Just, & Zilberman, 1985; Foster & Rosenzweig, 2010; Just, Wolf, Wu, & Zilberman, 2002; Zeller, Diagne, & Mataya, 1998). For example, Roy and Thorat find that many attempts by smallholders to participate in high-value markets in India fail due to inability to meet food safety standards, but that marketing partnerships with farmer cooperatives can help to overcome these barriers (Roy & Thorat, 2008).

The impact of these programs on smallholder incomes and household welfare is mixed. Many studies have found that participation in markets does raise household incomes (Bloom, 2015; Neven et al., 2009; Reardon et al., 2009; Rutherford et al., 2016). Rutherford et al. (2016) found that participation in value chain interventions in Liberia led to higher farm productivity and incomes, but had no impact on other welfare indicators, including nutrition. Michelson et al. (2012) found that contracts with supermarkets led to lower prices than local markets, but less price volatility, a trade-off farmers appeared willing to make. While market system interventions aim to alleviate barriers for the poor to participate in markets, there is some evidence that they may not be reaching the most vulnerable households. Studies have found that there is significant danger that smallholders may be excluded from these market opportunities (Neven et al., 2009; Vagneron et al., 2009; Weinberger & Lumpkin, 2007). For example, in Kenya, Neven et al. (2009) found that most participants were well-educated, medium-sized farmers, not small, rainfed farms, and Vagneron et al. (2009) highlight the high barriers to entry for the pineapple sector in Cote d'Ivoire and Costa Rica. Tobin, Bates, Brennan, and Gill (2016) document ways that even programs designed to support smallholders favor larger producers, in this case producers of indigenous potatoes in Peru. In contrast, Briones (2015) found a negative correlation with farm size for tobacco contracts in the Philippines, suggesting that smaller farmers were more likely in this case to participate in contract schemes. One reason smaller farmers may be more likely to participate is because of the high labor requirements of many horticulture markets (Reardon et al., 2009). Similarly, looking at the pineapple sector in Ghana, Suzuki et al. (2011) found that large firms used contracts with small producers to manage their market risks, effectively passing on the risks to the small producers, presumably because smallholders felt that they had no other alternatives and were in a poor bargaining position. This evidence suggests that even if participation in markets increases farmer incomes, there may be other trade-offs in terms of resilience, which will be explored in more detail in this paper.

2.2. Climate resilience

Socio-ecological systems literature, which emphasizes the linkages between ecological and social resilience, has been the dominant framework for analyzing climate resilience, and is of particular relevance when considering resilience in the agricultural sector (Adger, 2000; Berkes & Colding, 2003; Folke, Hahn, Olsson, & Norberg, 2005; Gunderson & Holling, 2002; Holling, 1973; Walker et al., 2006). Socio-ecological resilience can be understood as “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (Walker, Holling, Carpenter, & Kinzig, 2004). While originating in ecology, this conceptualization has been applied broadly across fields. For example, in food security analyses, resilience is often measured by the

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