

**ASSESSING THE IMPACTS OF RETAIL SUPPLY CHAINS ON FOOD SECURITY
AND AGRICULTURAL SUSTAINABILITY IN THE GLOBAL SOUTH:
THE CASE OF WALMART IN NICARAGUA**

by

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Abstract

Multinational food retailers are expanding in size and reach, gaining buyer-driven power to govern global agrifood production and consumption. Alongside a rise in private governance is a growing belief by governments and non-governmental organizations (NGOs) that corporate social responsibility (CSR) will be effective at achieving rural development goals for smallholder farmers and their families in the global South.

This dissertation investigates the on-the-ground impacts of rising corporate governance for household food security and agricultural sustainability, and how and why the particular terms of farmer engagement in retail-led supply chains mediate these impacts, through the case of Walmart in Nicaragua. The analysis is based on nine months of original fieldwork in Nicaragua in 2013, including 65 interviews with produce sector stakeholders and a survey of 250 smallholder vegetable farmers, and draws on theoretical traditions in the private governance and development studies literatures.

The results show that CSR is ineffective at advancing food security and agricultural sustainability in Nicaragua. Walmart's CSR program is designed to achieve business not development goals, and farmers are exiting the Walmart supply chain due to business practices they perceive as unfair, leaving Walmart unable to exert control over its supply chains.

Cooperative organization is not sufficient for improving the terms of farmer engagement in Walmart supply chains, particularly for the most resource-poor farmers, and non-governmental organizations (NGOs) are in some cases worsening farmer vulnerability by linking them to

buyers unwilling to adapt to local needs. Instead, voluntary public standards appear to be filling a gap that private standards do not address in supporting local farmers to improve their agricultural practices.

The evidence presented in the dissertation extends understanding of why corporate social responsibility is not in many cases an effective development strategy. The findings challenge theories of private governance effectiveness, showing that multinational retail CSR programs in some cases fail to increase control over suppliers, and highlighting the agency and dynamism of smallholder farmers and governments in the global South. The findings also point to practical considerations in the design of policy to promote food security and agricultural sustainability in rural areas.

Preface

The work presented in this dissertation was written as a collection of four papers (what are now Chapters 2, 3, 4, and 5) designed for publication in refereed academic journals. For this reason, there is some repetition across the chapters, particularly the information on my case study fieldwork and methodology.

I was the sole author of Chapters 2, 4, and 5. I was responsible for all areas of research conception, theoretical framing, data collection, analysis, and manuscript composition.

A version of Chapter 3 has been published in the *Journal of Peasant Studies* [Elder, S., and P. Dauvergne, 2015. 'Farming for Walmart: the Politics of Corporate Control and Responsibility in the Global South'. *Journal of Peasant Studies* 42 (5):1029-46]. The journal article has been reproduced and published as a book chapter [Elder, S., and P. Dauvergne, 2016. 'Farming for Walmart: the Politics of Corporate Control and Responsibility in the Global South'. In Ed. Matthew et al. *The Social Ecology of the Anthropocene: Continuity and Change in Global Environmental Politics*. World Scientific Press]. I was the lead author of the chapter. The theoretical framing, methodological approach, and research objectives were undertaken in collaboration with my co-author Peter Dauvergne. I conducted the fieldwork and analysis and drafted the manuscript.

The research project reported in the dissertation, titled “Exploring the impact of retail supply chains on smallholder farmers”, was approved by UBC’s Behavioural Research Ethics Board [certificate number H12-03723].

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List of Abbreviations

CARHCO	Central American Retail Holding Company
CSR	Corporate Social Responsibility
FDI	Foreign Direct Investment
GAP	Good Agricultural Practices
MAGFOR	Ministry of Agriculture and Forestry
MNC	Multinational Corporation
NGO	Non-Governmental Organization
USAID	United States Agency for International Development

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Dedication

For the farmers of the world, upon whom we all depend.

Chapter 1: Introduction

1.1 Overview of the research problem

Multinational food retail corporations such as Walmart, Carrefour, Tesco, and Costco are increasing in size and global reach, expanding rapidly into developing countries and gaining buyer power in supply chains to control what agricultural production and consumption look like (Clapp 2016, 2015; Lawrence and Dixon 2015). Already in 2009 (the latest date for which figures are available), the top 100 food retailers in the world accounted for ten percent of global grocery sales, with the top ten accounting for 41 percent of that amount, and Walmart alone accounting for more than 10 percent (Planet Retail 2009 in ETC Group 2011, 37). More than size, concentration, and market share, retail buyer power results from the ability of multinational retailers to control where, when, how, and what is produced and consumed in the global economy through their supply chain coordination (Clapp and Fuchs 2009; Gereffi, Humphrey and Sturgeon 2005).

Many have placed high hopes on the potential transformational impact of buyer power. The overall trend toward a market-led development approach (Banks and Hulme 2014) reflects this. While certainly some governments and NGOs remain highly critical of market-oriented development projects, many governments in Latin America, Asia, and Africa (Michelson 2016) as well as UN agencies (see FAO 2013; IFAD 2011; ILO 2015) and large non-governmental organizations (NGOs) based in the global North (see ACDI/VOCA 2015; Caritas 2015; Catholic Relief Services 2015) are pursuing a strategy of smallholder farmer participation in retail-led

supply chains as a way to increase and diversify agricultural production and reduce poverty and hunger in rural areas. Scholars have started to inquire into the impacts of rising corporate power on global food security more generally (Fuchs and Kalfagianni 2010), however research has yet to empirically or theoretically link the impact of rising corporate governance of agrifood supply chains to the food security of smallholder farmers and their families in the global South.

A growing governance literature documents a rise in private governance – when private actors gain authority and set and enforce standards without government involvement (Fuchs, Kalfagianni, and Havinga 2011) – and questions its effectiveness at addressing social and environmental concerns (Distelhorst, Locke, Pal and Samel 2015; Gulbrandsen 2005; Kalfagianni and Fuchs 2015; Mayer and Gereffi 2010; Schleifer 2015; Vogel 2009). However, the focus to date has been on the design and uptake of private standards rather than on measuring the on-the-ground impacts of private governance.

Development studies scholars have examined the rise of multinational retailers and the related opportunities and challenges for producers in developing countries, but have tended to focus narrowly on market access and income (Hernández, Reardon, and Berdegúe 2007; Michelson, Reardon, and Perez 2012; Maertens and Swinnen 2009; Minten, Randrianarison, and Swinnen 2009; Miyata, Minot, and Hu 2009) and have not considered in detail the terms on which smallholder farmers participate in supply chains. This downplays the power relations in agrifood supply chains documented by private governance scholars and ignores the fact that rural development depends on both global and local processes, and the specific ways in which buyers and farmers are linked in supply chains.

This dissertation draws on the private governance and development studies literatures to examine how and why rising retail power in agrifood supply chains affects food security¹ in the global South. It does so through an empirical evaluation of Walmart's corporate social responsibility (CSR) program in Nicaragua, including a survey of 250 smallholder farmer households and interviews with 65 supply chain stakeholders. The research focuses on the case of Nicaragua where Walmart – the world's largest retailer (Global Fortune 500 2016) – is operationalizing its global CSR strategy through a pilot program targeting smallholder farmers. The study results are specific to Nicaragua, though given the rise of food retail has shared some fundamental similarities across regions and countries, and Walmart now operates in 25 countries in Latin America, Asia and Africa (Walmart 2016a), the findings shed some (albeit limited) light on what the impacts of smallholder participation in retail-led supply chains might look like in other communities in the global South.

In the course of the following chapters, I argue that multinational retail CSR is generally not an effective path to rural development. The empirical findings in Nicaragua show that participation in Walmart's supply chains is not improving farmer food security, agricultural sustainability, or wealth. Rather, Walmart's business practices – designed to gain competitive advantage, grow its business, and increase its sales – are associated with lower farmer household wealth and the destabilization of farmer cooperatives.

¹ In this dissertation, food security is defined as a situation where all people have access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for a healthy life (FAO 2002). This definition is repeated in subsequent chapters as they are standalone articles for publication.

The dissertation demonstrates that understanding the impacts of private governance for suppliers requires looking beyond whether they are able to participate to the specific terms of their participation in the supply chain. Though governance scholars expect that multinational retailers can control their suppliers to achieve CSR goals, my findings highlight the agency and dynamism of smallholder farmers and their communities. While corporations and NGOs may open and constrain farmers' choices, they do not determine their actions.

In the following section, I outline the central arguments of the dissertation in the context of the private governance literature. I then explain the research approach and methods. I conclude the chapter with an overview of the structure of the dissertation.

1.2 Private governance effectiveness

Multinational retail corporations such as Walmart, Carrefour, Tesco, and Costco increasingly set and enforce the rules that govern food quality and safety, as well as the environmental and social conditions of agricultural production (Fuchs, Kalfagianni, and Havinga 2011). This ability of private actors to undertake governance functions without government involvement is understood as private governance, and has also been termed corporate social responsibility (Auld, Bernstein, and Cashore 2008), private regulation (Bernstein and Cashore 2007; Vogel 2009), and non-state market driven governance (Cashore, Auld, and Newsom 2004).

Over the past three decades, private governance initiatives involving multinational retail corporations have proliferated rapidly in the agrifood sector (Hatanaka, Bain, and Busch 2005).

These include corporate social responsibility programs, such as Walmart's Tierra Fértil program and Tesco's Nature's Choice standard, as well as harmonized retail standards systems such as GlobalGAP certification, which requires certified producers to utilize specific good agricultural practices (GAP). These also include standards systems designed and monitored by third parties, such as Fairtrade certification (Fridell 2007).

Scholars explain the emergence and rise of private governance as the result of corporate power gained via concentration both within and along global supply chains (Henson and Reardon 2005; Gereffi 1994; Gereffi, Humphrey, and Sturgeon 2005; Mayer and Gereffi 2010), the inability of governments to adequately regulate corporate activities (Newell 2001; Mayer and Gereffi 2010), the dominance of neoliberal ideology emphasizing free trade and self-regulating markets (Mansfield 2007; Peine and McMichael 2007; Vogel 2008), and NGO pressure on corporations (Utting 2008; Vogel 2009). A key question in the literature is whether private governance is effective at addressing social and environmental concerns (Distelhorst, Locke, Pal and Samel 2015; Gulbrandsen 2005; Kalfagianni and Fuchs 2015; Mayer and Gereffi 2010; Schleifer 2015; Vogel 2009).

There is increasing recognition in the literature that it is the interaction between public and private governance, rather than each in isolation, that determines outcomes (Bartley 2014, 2011; Eberlein et al. 2014). Abbott and Snidal (2009) describe a 'governance triangle' that considers the influence of NGOs as well as corporations and states in global governance rather than simply a shift in power away from governments. While some argue that private governance is an alternative to lax national and international regulation of corporate activity in the global South

(Vandenbergh 2007), others caution against this perspective of developing countries as void of state regulation (Bartley 2014). Indeed, Bartley's in-depth explorations of the intersection between private governance initiatives and domestic law in the forestry and garment sectors provide convincing evidence that domestic regulations can affect the outcomes of private governance managed at the firm level (Bartley 2010) and that states remain important actors in shaping market access and as a site of political struggle for their citizens (Bartley 2014).

There is no consensus on how to actually evaluate the effectiveness of private governance, though two broad approaches have emerged. One approach assesses the 'input effectiveness' or legitimacy of private standards through criteria such as inclusiveness, transparency, and accountability (Fuchs, Kalfagianni, and Havinga 2011). Conceptualized this way, effectiveness is closely tied to concepts of legitimacy, authority and power. While power can be exercised through the use of force, the term authority refers to legitimate, or socially-approved, use of power (Bernstein and Cashore 2007). Given that corporate power is not legitimized by elections like that of governments, scholars have attempted to identify criteria to evaluate their legitimacy to provide such governance functions. Fuchs, Kalfagianni and Havinga (2011) argue that to be legitimate a private governance initiative must involve all stakeholders affected by the initiative, allow them a voice in the decision making of the institution, provide transparent information on the governance and performance of the initiative, and be held accountable to all affected stakeholders. This approach emphasizes procedural over substantive elements of effectiveness, with scholars arguing that it is difficult to define objectives against which the private governance initiative would be evaluated given that stakeholders with different goals define the goals differently (Fuchs, Kalfagianni and Havinga 2011), and that it can be difficult to establish causal

links between impacts and outcomes and particular private governance mechanisms (Young 2001).

A second approach to examining private governance effectiveness evaluates the ‘output effectiveness’ of an initiative, or whether or not the private standard solves a problem or meets its stated goal (Gulbrandsen 2005; Mitchell 2002). Conceptualized this way, effectiveness is studied as output, outcome and impact (Easton 1965; Fuchs 2006), and may also consider broader political and socio-economic effects (Kalfagianni and Fuchs 2015). Scholars have made progress in identifying when and under what conditions private standards are likely to be effective at solving a social or environmental problem by clearly stating the problem of interest and tracing the pathways through which private standards influence outcomes, though they tend to assume that if private standards are well-designed and being adopted by buyers, then they will be effective (Gulbrandsen 2005; Mayer and Gereffi 2010; Bernstein and Cashore 2012). Research has not looked directly at the politics of implementation and how private governance actually plays out in terms of on-the-ground impacts in the global South.

In this dissertation, I apply an ‘output effectiveness’ approach to examine the actual on-the-ground impacts of private governance, as opposed to focusing on the procedural elements of private governance. This approach is most appropriate for the goal of the dissertation – to evaluate the effectiveness of Walmart’s CSR program in Nicaragua. It draws insight from development studies research that assesses the impacts of private standards on smallholder farmers in the global South, particularly whether and when smallholder farmers are able to meet private standards and access global markets (Lee, Gereffi, and Beauvais 2010; Narrod et al.

2009; Reardon, Barrett, Berdegúe, and Swinnen 2009; Reardon and Berdegúe 2002), and the related income and employment impacts (Barrett et al. 2012; Blandon, Henson, and Cranfield 2009; Maertens and Swinnen 2009; Michelson, Reardon, and Perez 2012; Minten, Randrianarison, and Swinnen 2009; Neven, Odera, Reardon, and Wang 2009; Selwyn 2013; Sivramkrishna and Jyotishi 2008).

This dissertation investigates the link between supply chain participation and smallholder farmer food security and agricultural sustainability, with special regard to understanding how and why the specific terms of farmer engagement in the supply chain influence the on-the-ground impacts. The study reveals that Nicaraguan farmers selling to Walmart are no better off in terms of food security or the sustainability of their agricultural practices than their counterparts selling to traditional markets, and in fact are worse off in terms of household wealth. I argue that though much of the development literature (except Blandon, Henson, and Islam 2009; Guo, Jolly, and Zhu 2007; Masakure and Henson 2005; Schipmann and Qaim 2011) assumes farmers will sell to retail-led supply chains when they are able, in fact farmers do not always want to participate in these new markets.

Whereas governance scholars claim that large multinational corporations are able to control the behaviour of their suppliers to achieve CSR objectives as a result of the ‘buyer power’ they have gained from global concentration in supply chains (Dolan and Humphrey 2000; Dauvergne and Lister 2013; Dauvergne and Lister 2012; Henson and Reardon 2005; Gereffi 1994; Gereffi, Humphrey, and Sturgeon 2005; Mayer and Gereffi 2010; Peine 2010), the case of Nicaragua shows that Walmart is unable to control suppliers and that farmers are exiting Walmart’s supply

chain as a result of what they perceive are unfair business practices. Walmart is using CSR as above all a business strategy – designed to gain competitive advantage, grow markets, and increase sales – and while it is making some gains in this regard, it is not an effective path to rural development.

Though many development scholars suggest that farmer cooperatives will improve the terms on which smallholder farmers engage in retail-led supply chains (Holloway et al. 2000; Gibbon 2001; Levins 2002; Lyon 2003; Narrod et al. 2009; Rao and Qaim 2011), the dissertation develops a more nuanced argument, arguing that while cooperative members must meet minimum farm and household characteristics (Barham and Chitemi 2009; Fischer and Qaim 2012), whether cooperatives are able to maintain relationships with retailers depends more on the specific corporate practices governing the supply chain. The dissertation cautions that NGOs can increase cooperative and farmer vulnerability by connecting them to buyers that prioritize business goals over collaborative relationships with their suppliers, despite their oft-identified role in improving effectiveness of private governance by providing “on-the-ground” support to producers (Barrientos and Smith 2007).

Though current theories of private governance effectiveness rely on ‘buyer power’, my research demonstrates that government-led voluntary standards can be an effective way to improve farmers’ agricultural practices. Addressing a void in the certification literature regarding the role of government regulation (Bartley 2015, 2011; Fridell 2007, 2014; Lockie, McNaughton, Thompson and Tennent 2013), I find in Nicaragua, the government’s own public GAP

certification system (different than the private GlobalGAP certification) is doing more to regulate the transition to sustainable agricultural production than buyers and CSR.

By examining the specific ways in which smallholder farmers engage with buyers in supply chains, I show that private governance is an unlikely solution to improved food security and agricultural sustainability in the global South. Overall, I argue that private governance shapes opportunities for smallholder farmers, but does not determine their actions. Rather, smallholder farmers and their communities in the global South make decisions and exercise their agency to manage their scarce resources in ways that maximize the benefits for themselves and their families.

The dissertation uses previous research on supermarkets and smallholder farmers in Nicaragua and conversations with those researchers as a starting point (see Michelson 2016, 2013, 2012, 2010; Michelson, Reardon and Perez 2012; Wiegel 2012, 2013), both extending and, in some instances, challenging past findings. While Michelson (2013) found that supermarket suppliers were wealthier than non-suppliers in 2008, my research shows that five years later this effect may in fact be reversed for farmers selling to Walmart, with each additional year selling to Walmart associated with lower household wealth (while La Colonia suppliers had no significant difference in wealth versus non-suppliers). Michelson, Reardon and Perez (2012) found that Walmart's prices were consistently lower than those paid by La Colonia and the traditional market, but argued that there could be some benefit from reduced price variability as a result of Walmart establishing a price minimum and maximum. My findings suggest that having a contract can help improve farmers' year-round access to food, though caution (like Wiegel 2012)

that Walmart breaks its contractual agreements with farmers, rendering the price guarantee ineffective. Though Michelson (2013) noted the exit of farmers from supermarket supply chains, she did not explore the reasons behind the exits. Wiegel (2012) argued that farmers were unable to continue supplying supermarkets when NGOs stopped subsidizing the relationship. My research extends this work, examining farmer exits in depth and from the perspective of farmers, to discover that farmers are choosing to exit supply chains due to mistrust of Walmart and frustration with its business practices. In 2008, Wiegel (2012) found that NGOs were a key partner for supermarket sourcing, but my research shows that by 2013 this had proven to be a largely ineffective strategy for Walmart, particularly for the most resource-poor farmers. Overall, this dissertation demonstrates the value of continuing investigation into agrifood supply chain transformation, particularly as the presence of multinational retailers continues to increase in the global South. In 2008 when Michelson and Wiegel conducted their research, Walmart had been operating in Nicaragua for just three years. Five years later, my data shed further light on the impacts of such a large multinational retailer sourcing from smallholder farmers.

1.3 Research approach and methodology

1.3.1 Research design and specific research questions

My research explicitly links the impact of supply chain governance activities on food security and agricultural sustainability by integrating global commodity chain analysis and an assessment of household level impacts. The research follows a case study approach (Yin 2003) and uses mixed methods, including semi-structured interviews with stakeholders in the produce sector and a quantitative survey of smallholder farmers. To be able to conclude whether observed changes

were attributed to supply chain activities, the study included a control group of farmers in the survey sample, and interviews clarified the pathways through which the observed changes could or could not be attributed to supply chain activities.

In order to better understand how and why rising retail power in agrifood supply chains affects food security in the global South, I ask this overarching question of vegetable producers in Nicaragua. To further information about this, the study focuses on four specific questions:

- (1) Why do smallholder farmers choose to participate in multinational retail supply chains versus traditional supply chains, and how (and why) does their choice of market channel affect their household wealth, food security, and agricultural sustainability?
- (2) Is multinational retail corporate social responsibility (CSR) effective as a way to advance rural sustainability? Why or why not?
- (3) Are cooperatives improving the terms of farmer participation in multinational retail supply chains? Why or why not?
- (4) How and why does government policy interface with private governance to impact the sustainability of smallholder farming?

1.3.2 Case study

I focus on the case of Nicaragua for several reasons. As the aim of the study was to improve understanding of the effects of retail power in agrifood supply chains for smallholder farmers in the global South, with particular focus on the effectiveness of private governance, the case study needed to be on an agricultural product grown by smallholder farmers in a developing country

for a major multinational retailer. In order to have a control group, there had to be farmers selling the same products but to traditional markets. The case of Nicaragua allows analysis of the impacts of Walmart, which has operated in Nicaragua since 2006 (Wiegel 2012), and a useful comparison to the national supermarket chain La Colonia, the only other supermarket chain in the country. At the same time, traditional markets still move a large quantity of fresh vegetables in Nicaragua, permitting a comparison and counterpoint to the supermarket channels in this study. Because supermarket growth and sourcing in Nicaragua has been for local consumption, the impacts are likely to be observed domestically.

Walmart's size makes it an excellent test of the effectiveness of CSR. Walmart has been consistently ranked the first or second largest company in the world over the past 15 years (Global Fortune 500 2016), and now has more than 11,500 stores in 28 countries (Walmart 2016a). Twenty-five of those countries, or 89 percent of the countries in which Walmart operates, are in the global South (Walmart 2016a). Walmart operates in Mexico and nearly all of Central America, with stores in five out of seven Central American countries. It also operates in South America, Asia, and has expanded into 13 different countries in Africa (Walmart 2016a). The experience of Walmart in Nicaragua specifically is instructive as Nicaragua is the site of Walmart's Direct Farm program, which translates Walmart's broader CSR commitments to sustainable agriculture and food security into action. Walmart views its CSR program in Nicaragua as a success, and is scaling up the initiative to include products such as cotton, cashews, and coffee (Walmart 2013, 64) in places such as China, India, Brazil and South Africa (Walmart 2014a, 2011).

The dissertation focuses on vegetables specifically as food retail corporations have gained power through consolidation both along the supply chain and within specific product markets for nearly all sectors, but this is particularly so in the case of high-value agricultural products like fresh vegetables (Clapp 2016). In addition, smallholder farmers have comparative advantages in vegetable production, which is highly labour intensive, due to their low land and labour costs and long growing seasons (Diop and Jaffee 2005). Because of this comparative advantage, fresh vegetable markets are a key focus for smallholder farmer development programs (Reardon, Barrett, Berdegué, and Swinnen 2009).

The results of the dissertation are useful for understanding the way Walmart impacts farmers in Nicaragua, and provide insight into the experience of other Central American countries, which fall under the same Walmart regional office as Nicaragua. Further research in different countries and socio-political contexts is necessary, however, to understand how much of the Nicaraguan experience is generalizable to other locations. On the one hand, Nicaragua has experienced a similar pattern of supermarket growth as other developing countries in Latin America, and now Africa and Asia. Retail-led transformation of agrifood supply chains in the global South first started in wealthier countries in Latin America and East Asia in the 1980s. Countries in China, Southeast Asia, and South Asia experienced a later but much faster transformation, and most recently, this change has occurred in Sub-Saharan Africa (Reardon, Timmer and Minten 2012; Reardon, Barrett, Berdegué and Swinnen 2009; Reardon, Timmer, Barrett and Berdegué 2003). Though the transition has occurred at different scales and speeds across regions, it has shared some fundamental similarities across all three regions, particularly the increasing consolidation and coordination of retail supply chains (Michelson 2016), and the pattern of regionalization

observed in Central America is also observed in the Mercosur and Southern and East African regions (Wiegel 2012).

On the other hand, there are particular geographic, social and historic factors that may limit the generalizability of the case of Nicaragua. Nicaragua is the second poorest country in Latin America and the Caribbean after Haiti (World Bank 2014), and its smallholder farming population may have less access to capital than smallholders in other countries, affecting farmers' ability to meet strict private standards and participate in retail supply chains. At the same time, traditional markets for vegetables continue to thrive in Nicaragua alongside supermarkets, providing farmers with an alternative market for their product when they do not sell to Walmart or La Colonia. There may be very different impacts for farmers of retail supply chains where there are fewer opportunities to sell to traditional markets. The country's history of cooperatives as not only a form of economic organization but as a socio-political movement could also limit the study's generalizability.

Recent investigations into Walmart's operations in China (Michelson 2016) suggest that while some lessons learned in Nicaragua apply to China, there are also key differences in how farmers are linked to Walmart resulting from different contextual factors which could lead to different social and environmental impacts for farmer households. For example, in China, where extremely small and fragmented farms are spread out over a geographic area many times larger than Nicaragua, private supply companies have arisen to organize production, processing and delivery to Walmart, a role which NGOs fill in Nicaragua (Michelson 2016). Thus, any attempts to extrapolate the results of this dissertation to other regions in the global South where Walmart

sources from smallholders must practice caution as to the limitations of their reach. Similarly, while the case of Walmart is likely to shed some light on the impacts of other multinational retailers as they have similar sourcing strategies (Michelson 2016), there will be differences across companies and operational contexts that result in differing impacts. In short, while the methodology and overarching themes of this dissertation can usefully be applied to other contexts, how far the specific results reach requires empirical testing.

1.3.3 Data collection and analysis

The dissertation analysis is based on data gathered during nine months of fieldwork in Nicaragua between March and December 2013. During that time I conducted 65 semi-structured interviews with company executives, traditional market wholesalers, farmer cooperative leaders, NGO representatives, government officials, researchers, and smallholder farmers. I surveyed 250 smallholder farmers producing vegetables for either Walmart, La Colonia, or traditional markets only. The interviews provided context and detail on farmers' perceptions and engagement in different markets, and the survey provided quantitative data on farmer and farm characteristics, production, marketing, and terms of market engagement.

Using mixed methods allowed me to triangulate the data both across data types and different interviewee perspectives in order to better understand the multiple factors influencing household-level impacts. The combination of qualitative and quantitative data helped me to isolate supply chain type as the key explanatory factor accounting for household-level differences. Given that food security, agricultural practices, and wealth can be influenced by various socio-political,

economic and environmental factors, in this study I do not identify causation, but rather use quantitative analysis to identify correlation and then use qualitative interview data to identify the possible pathways and directions of the correlation.

During the course of nine months in Nicaragua, I conducted interviews with 21 farmers, four farmer cooperative leaders, six supermarket buyers, 14 traditional market wholesalers, two government officials, and 18 NGO representatives. Interviews were conducted in Spanish, with the assistance of an interpreter when necessary. To ensure that interviewees spoke freely and comfortably, I conducted all interviews under an agreement of confidentiality. Therefore, throughout the dissertation I refer to interviewees only by their stakeholder type (e.g. farmer, NGO representative, etc.) and identify them numerically rather than by name.

Initial interviews with NGOs operating market-led development programs in Nicaragua helped me to gain an overview of the Nicaraguan context and issues (as perceived by the development community). These interviews were also necessary for identifying the location of smallholder farmers selling to Walmart, as Walmart (in an initial interview) would not disclose the location of its suppliers. Guided by these first interviews, I selected four municipalities that make up the main vegetable-growing areas of the country to focus my farmer sampling. I used an NGO database for a project that had assisted farmers with vegetable commercialization to find farmers in the municipalities that had supplied Walmart at some time over the past eight years. I chose to assess farmer supply chain participation over an eight year period (since Walmart's entry into Nicaragua) as I wanted to capture the dynamism of farmer entry into and exit out of high-value agricultural supply chains indicated as important by recent research (Barrett et al. 2012) as well

as my initial interviews. When I could not find farmers by their name and community on the NGO list, I asked a member of that community to recommend a farmer that fit the research criteria and included that farmer as a substitute. I used lists of cooperative members to find farmers selling to La Colonia as the retailer sources from smallholders organized in several cooperatives.

I sampled smallholder farmers producing tomatoes, bell peppers, and/or lettuce for sale to traditional wholesale markets, Walmart, or La Colonia. Most farmers supply some combination of these vegetables to the same buyer. The sample of control farmers was selected from farmers neighbouring the supermarket suppliers, in the same community selling the same vegetable products since 2006, but who had never sold to Walmart or La Colonia.

I conducted semi-structured interviews with 21 farmers, including five who sold to Walmart, four who sold to La Colonia, six who had never supplied either supermarket, and six who had sold to a supermarket at some point between 2006 and 2013 but had since exited the supply chain. The guide I used for the farmer interviews is attached as Appendix A. The interviews were designed to understand farmers' experience with vegetable production, the terms of their engagement with different markets (with regard, for example, to private standards, contract specifics, cooperative organization, and wholesaler requirements and support), and their perceived advantages and disadvantages of selling to these markets.

I followed a general inductive approach to analyzing the qualitative data resulting from the interviews (Wolcott 1994; Thomas 2006). This approach was useful for identifying unexpected

findings in the data in addition to testing hypotheses developed through a reading of the literature. The interviews were recorded and transcribed for analysis. Then, I conducted multiple detailed readings of the interview notes and transcripts to condense the raw data into findings by category and to ascertain the links between the findings and the research objectives. I developed a matrix in Excel to organize the data into categories, using my research objectives as a guide but adapting the categories to accommodate new findings arising from the raw data.

I used the data from initial interviews to design the household questionnaire. The interview data helped me to ensure the questionnaire gathered information on the key issues as identified by farmers, and was relevant for the local context. I wrote the questionnaire (see Appendix B) in Spanish, piloted it in a vegetable-growing community outside the study sample, then revised it to make sure the questions were easily understandable by respondents and obtained the desired information. I hired and trained a professional survey coordinator and team of eight enumerators to conduct the survey. The survey team surveyed 250 farmer households in total: 83 farmers who had supplied Walmart at some point between 2006 and 2013, 27 La Colonia suppliers, and 140 farmers who had only ever sold to the traditional market. The survey gathered data on household demographics, entrepreneurship and income, household characteristics, land use and agricultural practices, commercialization and the terms of market participation, social capital and organization, and food security and consumption. Farmers were asked to recall market participation data for the eight year period from 2006 to 2013, resulting in time series data (see Appendix B). Data for the remaining variables were gathered for 2013 only, the year that the survey took place. Details of the quantitative measurements of household wealth, food security, and agricultural sustainability can be found in chapter 2.5.1.

I analyzed the survey data in two main ways. First, I used Tableau, a data visualization software, to explore the quantitative survey data in relation to my research questions. The numerous graphs created through Tableau revealed several interesting findings and trends in my data. I then used STATA for statistical analysis of the survey data. I ran one-way ANOVAs to analyze the statistical difference in means between farmer groups (i.e. suppliers of Walmart, La Colonia, and traditional markets, or farmers who exited Walmart versus farmers who did not exit). I also used STATA to run several methods of regression analysis, which I explain further in detail in section 2.5.1. Through regression analysis, the integrated dataset allowed for an estimation of the impacts of participation in different supply chains on smallholder farmers, controlling for other factors hypothesized to affect the outcomes. This method of analysis is established in the development literature, and I have used it successfully in previous research on the impacts of Fairtrade certification on smallholder coffee growers (see Elder, Zerriffi, and Le Billon 2012, 2013).

This empirical data was supplemented with observational data gathered through ten and a half months conducting research and writing policy at the International Labour Organization in Geneva. There, I drew on the dissertation research integrating global supply chain analysis with an understanding of food security and rural development issues to develop policy and programming on these issues as they relate to the achievement of decent work internationally but particularly among smallholder farmers and farmworkers in the global South. This data bolstered my recommendations for future research and policy implications of the research analysis and findings.

1.4 Structure of the dissertation

This dissertation is made up of six chapters. Chapters 2, 3, 4, and 5 were written as stand-alone papers, and have been modified to fit with the dissertation as a whole. They each address a discrete research question at a different entry point in the supply chain. A supply chain approach links the chapters and allows for the development of an overarching argument about the impacts of rising private governance in the agrifood system for smallholder farmers.

This first chapter introduces the research topic, the main arguments and contributions of the research, and the research approach and methodology. Chapter 2 presents the results of quantitative analyses investigating why smallholder farmers choose to sell to one market over another, and the impacts of that supply chain participation on their household wealth, food security, and agricultural sustainability. Based on the findings of chapter 2, chapters 3 through 5 take a closer look at the relationships between farmers and buyers, in order to understand why farmers are not benefiting from participation in Walmart's supply chains.

Chapter 6 concludes by summarizing the main findings and contributions (as well as limitations) of the dissertation project. It describes the implications of these conclusions for policy, and identifies several areas to focus future research.

Chapter 2: The impacts of retail supply chains on rural development in Nicaragua

2.1 Introduction

Agrifood systems in the global South have transformed rapidly since the 1990s with the consolidation of multinational food retailers along supply chains, particularly for high-value agricultural products such as fresh vegetables (Clapp 2016). This change has been accompanied by increased vertical coordination of supply chains, with the use of contracts and private production and processing standards as important features (Reardon et al. 2009). Despite the increasing presence of retailers in developing countries, the impacts for rural livelihoods are still unclear. In particular, there has been little research on the food security² and environmental impacts for smallholder farmers facing new market conditions.

Governments and NGOs are promoting smallholder farmer participation in these highly consolidated supply chains as a way to increase and diversify agricultural production and reduce poverty and hunger in rural areas. Proponents of market-led development contend that enhancing market access for smallholders will lead to increased incomes and food security (Dorward et al. 2004; Stiglitz 2002), whereas others argue that a market-based model may worsen food security

² Food security is defined as a situation where all people have access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for a healthy life (FAO 2002).

due to market dependence and volatile prices and increased environmental degradation from intensive farming practices (Altieri 1995; McAfee 2004; McMichael 2011).

There is on-going debate in the scholarly literature over the impacts of agrifood industry transformation for smallholder farmers and rural development. This research has mainly focused on whether supermarket supply chains include or exclude smallholder farmers, showing mixed results (Lee, Gereffi, and Beauvais 2010; Narrod et al. 2009; Reardon et al. 2009). The market inclusion/exclusion debate assumes that market participation is desired and beneficial to small farmers (Barrett et al. 2012; Blandon, Henson, and Cranfield 2009; Maertens and Swinnen 2009; Minten, Randrianarison, and Swinnen 2009; Selwyn 2013), yet little research has investigated farmers' market preference (for important exceptions, see Schipmann and Qaim 2011; Blandon, Henson, and Islam 2009), and the impact on participating farmers is still unclear.

Studies have begun to examine the effects of market participation on smallholder farmer income and poverty (Hernández, Reardon, and Berdegue 2007; Maertens and Swinnen 2009; Minten, Randrianarison, and Swinnen 2009; Miyata, Minot, and Hu 2009; Michelson, Reardon, and Perez 2012), but the implications for the environmental sustainability of smallholder agriculture and for food security are as of yet unknown (Barrett et al. 2012). While there is no consensus on what environmentally sustainable agriculture should look like, an increasing number of studies (Foley et al. 2011; Perfecto, Vandermeer and Wright 2009) and high-profile reports (De Schutter 2010; IAASTD 2009) highlight the promise of agroecology as a way to increase food production without environmental degradation while improving the situation of the world's most food insecure populations. Scholars argue that small and medium-sized farms based on agroecological

practices (also referred to as sustainable farming methods such as integrated pest management, manure and crop residue application for soil fertility management, and drip irrigation) can produce a comparable level of food security as conventional systems, while greatly reducing unsustainable uses of water, nutrients, and agricultural chemicals (Altieri, Funes-Monzote and Petersen 2012; Chappell and LaValle 2011).

There is some evidence that farmers adopt sustainable farming methods to meet the private standards required by multinational corporations (Asfaw, Mithöfer, and Waibel 2010; Lockie and Carpenter 2010), but in other cases participation in multinational supply chains has resulted in practices (e.g. high use of chemical inputs and animal traction and less intercropping) that drive soil degradation (Moseley 2005). The few studies that mention food security assume simply that private standards result in decreased food accessibility when they exclude farmers from global markets and their presumed income benefits (Arda 2007; Fuchs and Kalfagianni 2010; Fuchs et al. 2011).

This chapter addresses this empirical gap through a case study of farmers in Nicaragua producing fresh vegetables for supermarket supply chains. Using data from a survey of 250 farmer households in Nicaragua in 2013, as well as qualitative data from 65 interviews with produce industry stakeholders, the study analyzes the market relationships and household-level outcomes for smallholder farmers in Nicaragua producing vegetables for sale to multinational and domestic supermarket chains. It focuses on two key questions regarding the impact of rising retail supply chains in Nicaragua. First, why do some farmers choose to sell to supermarkets and others sell to

traditional markets? Second, what are the household-level impacts of farmers' market choice, not only for wealth, but for food security and the environment?

The study finds that farmer participation in supermarket supply chains is influenced by family labour and education, but is also shaped by the specifics of companies' procurement strategies and NGO support. Moreover, the analysis found that farmers do not experience benefits from selling to supermarkets over and above any they see from selling to traditional markets. Rather, whether a farmer has a contract with his or her buyer is what appears to help farmers manage year-round food access for their household.

Chapter 2 contributes to the growing body of literature on agrifood market transformation and rural development, with the specific goal of understanding the implications of smallholder farmer participation in different markets for poverty, agricultural sustainability, and food security. The research results suggest that a more nuanced understanding of how farmers are linked to buyers is needed in order to improve the rural development impacts of smallholder participation in supermarket supply chains. They point to several areas for future research to improve understanding of the multiple factors affecting farmer market participation and related impacts.

The following section outlines the rise of supermarkets in the global South, then section 2.3 provides an overview of the Nicaraguan context. Section 2.4 details the data collection and analysis methods, while section 2.5 presents the study results. Section 2.6 concludes and discusses the implications of the study findings.

2.2 The rise of supermarkets in the global South

There has been a rapid expansion of supermarkets in the global South over the past 25 years. The process has been driven by globalization, changes in communications and transport technologies, rising incomes in the global South, and the liberalization of developing country economies.

Foreign capital poured into these newly opened economies from multinational retailers expanding supermarket chains as well as fast food restaurants (Reardon and Berdegué 2002).

The growth of supermarkets in Latin America, for example, has been five times more rapid than it was in the US (Reardon and Berdegué 2002, 371). Some predict that new stores in the global South will be the main driver of retail growth into the foreseeable future (Conlumino 2014).

Scholars have noted several key features of supermarket supply chains versus traditional wholesale markets that are thought to be linked to the creation of both opportunities and challenges for smallholder farmers. First, supermarkets typically have dedicated wholesalers that coordinate buying and sorting product. Instead of buying from farmers on the spot with cash, which is normal of traditional market wholesalers, generally supermarkets contract preferred suppliers. Having contracts with farmers helps the company to ensure consistent volumes and delivery of product that meets supermarket quality and food safety standards (Reardon et al. 2009; Reardon, Timmer, and Minten 2012).

This use of private standards is a second defining feature of supermarket supply chains. Traditional markets tend to buy farmers' entire harvest, with few quality or other product requirements. Supermarkets, however, select product according to specific requirements for size,

shape, quality and safety (Reardon et al. 2009; Hernández, Reardon, and Berdegué 2007). Often, the retailer will require farmers have certification that guarantees they are meeting certain sustainability standards, such as good agricultural practices (GAP). Most major European retailers now demand GAP certification, making it de facto mandatory for producers to gain access to those markets (Henson and Humphrey 2010; Neilson and Pritchard 2009).

On the one hand, these differences in supply chain governance are expected to provide smallholder farmers with opportunities. Having a contract can reduce risk and price variability (Michelson, Reardon, and Perez 2012) and provide steady income, which has in one case been shown to reduce farmers' lean period (the time, usually after stored food has run out and before the next harvest, without sufficient food to feed the family) (Minten, Randrianarison, and Swinnen 2009). As meeting supermarket standards is often labour intensive, smallholders have a comparative advantage over larger farms due to the lower costs of family labour (Reardon, Timmer, and Berdegué 2005). Farmers incentivized to adopt GAP may also see improved health as a result of changing their agricultural practices, for example by reducing pesticide use and adopting alternative pest management practices (Asfaw, Mithöfer, and Waibel 2010).

On the other hand, meeting the strict quality and procurement demands of supermarkets typically requires more equipment, inputs, and knowledge, which smallholder farmers may not have (Reardon et al. 2009; Lee, Gereffi, and Beauvais 2010). At the same time, buyers with significant market share are increasingly shifting their costs and the risks of doing business onto their suppliers, which can worsen the vulnerability of farmer households (Brown and Sander 2007; De Grammont and Lara Flores 2010).

2.3 Study site: vegetable production in Nicaragua

Like elsewhere in the global South, supermarkets have been gaining an increasing share of food sales in Nicaragua since the 1990s. In 2006, Walmart bought a majority share in the Central American supermarket chain CARHCO (Wiegel 2012), and quickly increased the number of stores in Nicaragua from 40 to more than double that in just ten years (Walmart 2016a). The Nicaraguan company La Colonia, which has more than 20 store units in the nation's cities (La Colonia 2014), is the only other supermarket chain in the country. Much of the country's fresh produce continues to move through traditional markets, including two major wholesale markets in the capital, Managua.

At the start, the two supermarket chains sourced vegetables from traditional wholesalers at the main wholesale markets in Managua. Over time, they shifted to buying directly from smallholder farmers and their cooperatives. Walmart buys all but 10 percent of the fresh fruits and vegetables it requires for its Nicaraguan stores nationally (Interviewee I 2013). When the company first started in Nicaragua in 2006, just 30 percent of this was bought directly from smallholder farmers, including via cooperatives. Now Walmart sources 70 percent from smallholder farmers (Interviewee I 2013). Whereas Walmart buys from individual smallholder farmers in addition to farmer cooperatives, La Colonia relies heavily on two farmer cooperatives in particular to supply its stores with fresh vegetables (Interviewee II 2013).

This shift has been aided in part by large, international NGOs with a market-oriented development approach working in Nicaragua. Between 2006 and 2012, four international NGOs

funded by the United States Agency for International Development (USAID) worked with Nicaraguan smallholder farmers to build their capacity to participate in supermarket supply chains. The NGOs provided farmers with subsidized equipment, training and advice (Escoto et al. 2012). Yet, while this development strategy has received strong private sector and political support, it is not clear that it has led to improved environmental sustainability of agricultural production and food security for Nicaraguan farmers.

Walmart has made international commitments to “produce more food with fewer resources” and “support farmers and their communities” (Walmart 2014b). In Nicaragua, these declarations take the form of Walmart’s Direct Farm program, which (according to the company’s website) aims to increase market access for smallholder farmers, raise farmer incomes, and improve the sustainability of agricultural practices (Walmart 2010). At the same time, the Nicaraguan government is promoting smallholder farmer adoption of public GAP certification, counting on Walmart to prioritize certified farmers as incentive.

2.4 Methods

2.4.1 Data collection

To understand farmers’ choice of market channel and the impacts of selling to that market, I surveyed 250 vegetable farmers and interviewed 65 produce sector stakeholders in Nicaragua between March and December in 2013. The survey provides data on household and farm-level impacts, while the interviews provide context and help explain the results of the regression

analyses. Using both quantitative and qualitative methods allowed me to cross-check the data in order to better understand the various factors influencing the impacts.

Guided by interviews with NGOs and Walmart and La Colonia managers in the fresh fruit and vegetable industry in Nicaragua, I purposively selected four municipalities that make up the main vegetable-growing areas of the country. The survey sample includes smallholder farmers producing tomatoes, bell peppers, and/or lettuce for sale to traditional wholesale markets, Walmart, or La Colonia. I do not distinguish between specific crops as most farmers produce and supply a variety of vegetables to the same buyer. As Walmart did not disclose a list of its suppliers, I found farmers that had supplied Walmart at some time between 2006 and 2013 in these municipalities using the database of an NGO for a project that had assisted farmers with commercialization of vegetables. When farmers on the list could not be found, they were substituted through snowball sampling. I used lists of cooperative members to find farmers selling to La Colonia as the retailer sources almost exclusively from smallholders organized in several cooperatives. I surveyed 250 farmers in total: 83 farmers who had supplied Walmart at some point between 2006 and 2013, 27 La Colonia suppliers, and 140 farmers who had only ever sold to the traditional market. For the purpose of the analysis in this chapter, I have categorized farmers into what market they sold to in 2013: 21 supplied Walmart, 26 supplied La Colonia, and 203 supplied traditional markets.

The sample of control farmers was selected from farmers neighbouring the supermarket suppliers, in the same community selling the same vegetable products since 2006, but who had never sold to Walmart or La Colonia. In this way, the study design controls for agro-climatic

conditions. As I sampled Walmart farmers via an NGO database, and La Colonia farmers via cooperatives, NGO-assisted and cooperative members are likely over-represented in the survey sample. The study results must be interpreted with this in mind. The role of cooperative organization and NGO assistance in facilitating smallholder market participation and impacts is addressed in more detail in Chapter 4.

I conducted initial semi-structured interviews with 21 farmers – five who sold to Walmart, four who sold to La Colonia, six who had never supplied a supermarket, and six who occasionally supplied a supermarket. The interviews were designed to understand farmers' experience with vegetable production, the terms of their engagement with different markets, and their perceived advantages and disadvantages of selling to these markets. I used the resulting data to design a questionnaire appropriate for the local context. The questionnaire, written in Spanish, was piloted and then revised to make sure the questions captured the intended responses. The survey gathered quantitative data on household demographics, farmers' relationships with buyers, welfare, agricultural practices, and food security.

This chapter focuses on three indicators that are proxy measures of household-level impacts on wealth, sustainable agriculture, and food security. Table 2.1 summarizes these indicators, which are used as dependent variables in the article's analysis.

First, to estimate the impacts of market participation on household wealth, I use a productive assets index. The index was compiled using factor analysis (Sahn and Stifel 2000) in STATA 12 from survey data on household ownership of a list of assets that influence the household's

productive capacity, such as plows, oxen carts, spray pumps, etc. I excluded variables with factor loadings of less than 0.3 after testing with Cronbach's α , then used STATA's predict command to create an assets index using the remaining factor loadings. Previous research has shown that asset indices are more accurate estimates of household wealth and future poverty than income because respondents recall assets with less error than they do multiple income sources and expenditures (Carter and Barrett 2006; Michelson 2013; Michelson, Muñiz, and DeRosa 2013).

Second, to assess the food security impacts of market participation, I calculated months of adequate household food provisioning (MAHFP) for each respondent, a widely used measure of household food access, a key indicator of food security (Bilinsky and Swindale 2010). The calculation was based on a survey question asking farmers to recall whether there were any months in the last year in which their household did not have sufficient quality and quantity of food (and if so, which months) (Bilinsky and Swindale 2010). A household's resources and ability to obtain those resources affects food access; thus, changes in agricultural production, off-farm employment, household size, or other factors can affect a household's ability to meet the nutritional requirements of its members throughout the year (Bilinsky and Swindale 2010).

Third, I use whether a respondent has public GAP certification as a proxy measure of the sustainability of his/her agricultural practices. Farmers can only obtain public GAP certification once they implement specific agricultural practices that aim to reduce chemical pesticide use and facilitate a transition to agroecological production (Interviewee III 2013).

Table 2.1 Indicators of market participation impacts

Indicator	Survey question
Productive asset index	Question asking what quantity of [asset] do you own currently [in 2013], for a list of 19 productive assets.
Months of adequate household food provisioning (MAHFP)	Question asking whether there were any months during the past 12 months where the respondent did not have enough food to satisfy the family's needs, and if yes, which months.
Public GAP certification	Multiple response question asking whether farmer has GAP certification, is working to obtain GAP certification, or does not have GAP certification.

2.4.2 Modeling market adoption

I use multinomial logistic regression to examine farmers' choice between selling to the traditional market only, Walmart, or La Colonia. A multinomial regression model is used when an observation can assume any of the M predefined outcomes (Engel 1988). The general multinomial logit model is:

Equation 2.1 General multinomial logit model

$$Pr(Y_i = m) = \frac{e^{\beta_m \cdot x_i}}{1 + \sum_{k=1}^M e^{\beta_k \cdot x_i}}$$

where $Pr(Y_i = m)$ is the likelihood of a given observation Y_i assuming outcome m , x_i is a vector of explanatory variables, and β_m is a vector of regression weights associated with outcome m .

Model 1 includes all observations and measures the likelihood of farmers' participation in one of the three market channels – traditional markets, Walmart, or La Colonia – taking into consideration household and farm characteristics:

Equation 2.2 Model 1: Multinomial logistic regression model testing likelihood of market participation

$$\Pr(Y_i = m) = \beta_{0,m} + \beta_{age,m} \cdot age_i + \beta_{gender,m} \cdot gender_i + \beta_{hhsizem} \cdot hhsizem_i + \beta_{educ1,m} \cdot educ1_i + \beta_{educ2,m} \cdot educ2_i + \beta_{ai2007,m} \cdot ai2007_i + \beta_{risk,m} \cdot risk_i + \beta_{land,m} \cdot land_i + \beta_{offfarm,m} \cdot offfarm_i + \beta_{pavedrd,m} \cdot pavedrd_i$$

where m represents the market to which the farmer sold, with $m = 0$ for the traditional market, $m = 1$ for Walmart, and $m = 2$ for La Colonia. See Table 2.2 for a description of all the variables used in the regression models. $\beta_{0,m}$ is the intercept, the value of Y when the value of all independent variables is 0, and $\beta_{x_1}, \beta_{x_2},$ etc. indicate the weight of each independent variable's influence on the given outcome m . The multinomial logistic regression model (Model 1) estimates the relative risk ratio (RRR), which expresses the likelihood of the respondent choosing Walmart or La Colonia versus the base outcome of selling to traditional markets only. I used the statistical software package STATA 12 to conduct the regression analyses.

Table 2.2 Sample statistics for regression models

Variable	Description	Obs.	Mean	Std. dev.	Min.	Max.
<i>Dependent</i>						
ai2013	Productive asset index in 2013	250	0.1110	0.9501	0	1
gap	Public GAP certification, 1 = GAP certified, 0 = not GAP certified	250	0.1960	0.3978	0	8
lean	Lean period, 1 = experienced lean period of at least one month, 0 = no lean period	250	0.5040	0.6898	0	1
<i>Independent</i>						
gender	Gender of respondent, 1 = female, 0 = male	250	0.0440	0.2055	0	1
age	Age of respondent in years	250	46.3080	13.1649	21	83
hhsz	Household size	250	5.5320	3.1280	1	18
edu_d1	Primary education, dummy, 1 = primary education, 0 = no education	250	0.1880	0.3915	0	1
edu_d2	Secondary education and above, 1 = secondary education and above, 0 = no education	250	0.1520	0.3597	0	1
risk	Perceived willingness to take risks, scale of 1-10 where 1 is least willing and 10 is most willing	250	8.0640	1.7227	1	10
land	Land size in hectares	250	2.7764	3.2097	0	30.29
irrig	Irrigation, 1 = irrigation, 0 = no irrigation	250	0.7640	0.4255	0	1
labour	Number of hired labourers	249	8.4297	10.2271	0	69
off_farm	At least one household member has off-farm employment, 1 = off-farm employment, 0 = no off-farm employment	250	0.3520	0.4786	0	1
ai2007	Productive asset index, 2007	250	-0.1110	0.8658	-0.8946	6.1120
pavedrd	Distance to nearest paved road in kilometres	246	4.0097	5.0327	0	45
ngo	NGO assistance, 1 = NGO assistance, 0 = no NGO assistance	250	0.2880	0.4537	0	1

Variable	Description	Obs.	Mean	Std. dev.	Min.	Max.
yearstrad	Years sold to the traditional market exclusively between 2007-2013	250	6.1200	2.9889	0	8
yearswm	Years sold to Walmart between 2007-2013	250	1.2960	2.2335	0	8
yearslc	Years sold to La Colonia between 2007-2013	250	0.6920	2.1088	0	8
vcontract	Verbal contract with buyer in 2013, dummy, 1 = verbal contract, 0 = no contract	249	0.2289	0.4210	0	1
wcontract	Written contract with buyer in 2013, dummy, 1 = written contract, 0 = no contract	249	0.2530	0.4356	0	1

Based on the smallholder market participation literature, I expect that farmer market choice is influenced by farmer household and farm characteristics as well as contextual factors. I expect that when men are making household decisions about vegetable production and sales, the household is more likely to participate in supermarket supply chains because men tend to have better access to credit, information, equipment and technologies (and therefore are better able to meet supermarket requirements) than women farmers (Peterman et al. 2011; World Bank and IFPRI 2010). I did not include years of experience with farming in the model as it is highly correlated with a respondent's age, indicating that most of the respondents have been farming for all of their adult lives. Age may have a positive association with supermarket supply chain participation due to greater farming experience that may facilitate access and ability to meet standards. Household size indicates available family labour, which can help meet increased quality standards and facilitate selling to supermarkets. I expect that higher levels of education are associated with supermarket supply chain participation due to greater farm management and

negotiation skills. I expect that farmers with a greater perceived willingness to take risks prefer contracts with supermarkets as they can reduce price variability.

I included land size in the model to test whether farmers with smaller landholdings are excluded from supermarket supply chains, as other studies have found (Berdegué, Balsevich, Flores, and Reardon 2005; Dolan and Humphrey 2000; Narrod et al. 2009). Research also identifies non-land assets as being important for market access, and so I included whether a farmer has irrigation (to meet year-round production demands), and their distance to a paved road (to access transportation to market) (Hernández, Reardon, and Berdegué 2007). I expect the number of labourers on a farm to influence farmers' decision to sell to supermarkets by facilitating their ability to meet more exacting standards of production. The effect of having off-farm employment could be negatively associated with selling to supermarkets as households depend on other income. The asset index from 2007 productive assets is included in the model to account for farmers' wealth at the time of Walmart's entry into Nicaragua, and reduce questions of endogeneity (Blandon, Henson, and Cranfield 2009; Maertens and Swinnen 2009). I expect that all of the predicted associations will be much stronger for selling to Walmart versus La Colonia, as the literature describes multinational corporations as having much more demanding quality and procurement standards than domestic supermarket chains (Minten, Randrianarison, and Swinnen 2009).

2.4.3 Modeling the impacts of market participation

I used two different regression models to test the impacts of farmers' market choice on household wealth, food access, and public GAP certification. I used ordinary least squares (OLS) regression analysis (appropriate when the dependent variable is continuous) to test the impact of the market relationship on (a) farmers' productive asset index and (b) months of adequate household food provisioning. I used logistic regression (appropriate for dichotomous dependent variables) to test the impact of the market relationship on public GAP certification.

The general form of the OLS regression model is:

Equation 2.3 General OLS regression model

$$y = f(x_1, x_2, \dots, x_k) + \varepsilon$$

where y is the dependent or explained variable, x_1, x_2 , etc. are the independent or explanatory variables, and ε is a random disturbance (Greene 2003).

Model 2 is an OLS regression model and includes all observations and the explanatory variables *yearswm* and *yearslc*, specifying the number of years the respondent sold to Walmart and to La Colonia, respectively. It tests the effect of the market relationship on farmers' productive asset index:

Equation 2.1 Models 2 and 3: OLS regression model testing the effect of market channel participation

$$Y = \beta_0 + \beta_1 \text{gender} + \beta_2 \text{age} + \beta_3 \text{hhsiz} + \beta_4 \text{edu}_{d1} + \beta_5 \text{edu}_{d2} + \beta_6 \text{land} + \beta_7 \text{irrig} + \beta_8 \text{labour} + \beta_9 \text{off_farm} + \beta_{10} \text{pavedrd} + \beta_{11} \text{ngo} + \beta_{12} \text{yearstrad} + \beta_{13} \text{yearswm} + \beta_{14} \text{yearslc} + \beta_{15} \text{vcontract} + \beta_{16} \text{wcontract} + \varepsilon$$

Model 3 is the same OLS regression model but tests the effect of the market relationship on months of adequate household food provisioning.

Model 4 is a logistic regression model designed to test the effect of market participation on whether a farmer has public GAP certification or not. The general logit model is:

Equation 2.5 General logit model

$$P = \frac{1}{1 + e^{-Y}}$$

where P is the probability that a farmer uses a particular agriculture practice, measured separately by each of the binary dependent variables, e is a constant, and Y is the log odds of the dependent variable, given by $Y = \ln(P/1 - P)$ and assumed to be linearly related to the independent variables (Kutner et al. 2004).

Model 4 includes all observations and the explanatory variables *yearswm* and *yearslc*, specifying the number of years the respondent sold to Walmart and to La Colonia, respectively:

Equation 2.6 Model 4: Logistic regression model testing the effect of market channel participation

$$Y = \beta_0 + \beta_1 \textit{gender} + \beta_2 \textit{age} + \beta_3 \textit{hhsiz} + \beta_4 \textit{edu}_{d1} + \beta_5 \textit{edu}_{d2} + \beta_6 \textit{land} + \beta_7 \textit{irrig} + \beta_8 \textit{labour} + \beta_9 \textit{off_farm} + \beta_{10} \textit{pavedrd} + \beta_{11} \textit{ngo} + \beta_{12} \textit{yearstrad} + \beta_{13} \textit{yearswm} + \beta_{14} \textit{yearslc} + \beta_{15} \textit{vcontract} + \beta_{16} \textit{wcontract}$$

Table 2.2 describes all of the variables used in the regression models. β_0 is the intercept, the value of Y when the value of all independent variables is 0, and β_1, β_2 , etc. indicate the weight of each independent variable's influence on the dependent variable Y . The OLS regression models (Models 2 and 3) estimate a coefficient which expresses the size of the change in the dependent variable given a one unit increase in the independent variable. The logistic regression model (Model 4) estimates the odds ratio, e^β , which expresses the likelihood of change in the dependent variable given a one unit increase in the independent variable (Kutner et al. 2004).

The models are able to isolate the independent effect of years sold to Walmart and years sold to La Colonia (as well as whether the respondent had a verbal or written contract with their buyer) by including other important variables that have been shown to influence household wealth, agricultural practices, and lean periods. The models include farmers' gender, age, and education level, as these have been shown to affect farm management decisions, including what crops to

grow, what agricultural practices to use, and how to respond to market signals (Adesina et al. 2000; Honlonkou 2004) as well as household food management practices (Misselhorn 2005). I expect that being male, being older and thus having more experience with farming, and higher education levels are positively associated with household wealth and public GAP certification. When women have control over income, however, household food access generally improves (IDS 2014). Having at least one household member with off-farm employment may allow investments in production practices (Reardon, Crawford, and Kelly 1994) and food purchases (Seng 2015; Ruben and Van den berg 2001)

Land is a key resource for smallholder food production and income generation and so I included it in the models with the expectation that farmers with more land are wealthier, more likely to have year-round access to food, and more likely to have public GAP certification. Having irrigation permits year-round production for consumption and sale, and is required to meet public GAP certification standards, so it was included in the models as well. Distance to a paved road affects ease of transportation to market and access to training opportunities and so is expected to influence the outcome variables. I included household size in the model as the availability of family labour can affect production decisions; for example, replacing agrochemical use often requires more labour-intensive practices such as weeding (Shiferaw, Okello, and Reddy 2009). For the same reasons, I included the number of labourers hired by the household in the models (Leonardo et al. 2015). As several large market-oriented NGOs in Nicaragua are providing some farmers with equipment and training to intensify production and meet public GAP certification standards, I also included whether or not a farmer had NGO assistance in the models.

The following section compares farmers selling to the different markets, and their household and farm characteristics. Then, section 2.5.2 presents and discusses the results of the regression models analyzing why some farmers sell to retail supply chains, and what are the rural development impacts of that market relationship.

2.5 Results and discussion

2.5.1 Summary statistics

As table 2.3 summarizes, farmers across all markets are middle-aged and have been farming for most of their adult life. A majority of households have men in charge of vegetable production and marketing decisions. Overall, 19 percent of survey respondents have a primary education, while 15 percent have a secondary education or above.

Table 2.3 Characteristics of vegetable farmers, 2013

Variables	Traditional (T) only farmers (N = 203)	Walmart (W) farmers (N = 21)	La Colonia (C) farmers (N = 26)	F or Z statistic [†]	Significance
<i>Farmer characteristics</i>					
Male (%)	96	86	100	<i>T vs. W</i> 2.014 <i>T vs. C</i> 1.038 <i>W vs. C</i> 1.971	
Age (years)	47	43	44	1.37	
Primary education (%)	18	14	27	<i>T vs. W</i> 0.468 <i>T vs. C</i> -1.101 <i>W vs. C</i> -1.084	
Secondary education or above (%)	15	19	15	<i>T vs. W</i> -0.484 <i>T vs. C</i> 0.00 <i>W vs. C</i> 0.365	
Household size (persons)	5.01 ^a	6.62 ^b	8.69 ^c	19.95	***

Variables	Traditional (T) only farmers (N = 203)	Walmart (W) farmers (N = 21)	La Colonia (C) farmers (N = 26)	F or Z statistic [†]	Significance
<i>Farm characteristics</i>					
Land size (ha)	2.61	4.11	3.03		2.20
Fruits and vegetables area (ha)	1.26 ^d	2.87 ^e	2.53 ^e		5.28 ***
Farming experience (years)	24	21	20		1.05
Off-farm occupation (%)	37	29	27	<i>T vs. W</i>	0.726
				<i>T vs. C</i>	1.001
				<i>W vs. C</i>	0.152
Hired labourers for fruits and vegetables (persons)	4.4 ^f	8.4 ^g	8.0 ^g		5.39 ***
<i>Contextual characteristics</i>					
Member of a farm organization (%)	21 ^h	48 ⁱ	85 ^j	<i>T vs. W</i>	-2.777 **
				<i>T vs. C</i>	-6.823 ***
				<i>W vs. C</i>	-2.714 **
NGO support for commercialization (%)	29 ^k	52 ^l	58 ^l	<i>T vs. W</i>	-2.167 *
				<i>T vs. C</i>	-2.978 ***
				<i>W vs. C</i>	-0.411
Distance to nearest paved road (km)	4.34 ^m	4.06 ^{mn}	1.42 ⁿ		3.97 **
Distance to nearest market (km)	12.19	12.47	10.24		1.95

* $p < 0.1$ (F), $p < 0.0333$ (Z)

** $p < 0.05$ (F), $p < 0.0166$ (Z)

*** $p < 0.01$ (F), $p < 0.0033$ (Z)

[†] Statistic refers to F statistic from one-way ANOVA except where proportions are being compared, in which case Z scores are reported. Where F or Z statistic is significant, letters indicate differences in group means. P values for the F statistic have been corrected using Bonferroni's adjustment for three tests.

Supermarket and traditional market suppliers differ in terms of their level of specialization and availability of labour. Total land size of each household is not significantly different across market channels, but Walmart and La Colonia farmers plant a significant larger area of their land with fresh vegetables than traditional market farmers. While not statistically significant, farmers selling to supermarkets appear to depend less on off-farm income than farmers supplying

traditional markets, of whom a larger percentage have a household member working an off-farm job. Farmer households selling to La Colonia and Walmart are significantly larger than farmer households selling to traditional markets, as well as significantly different from each other, with La Colonia households having the greatest number of people. Farmers supplying supermarkets also hire a significantly higher number of labourers to work on their vegetable plots.

La Colonia buys from smallholder farmers organized in cooperatives. This is reflected by the fact that 85 percent of farmers selling to La Colonia belong to a farmer's organization, significantly more than the 48 percent that sell to Walmart, which does not have a policy of buying from cooperatives. However, the proportion of farmers selling to Walmart that belong to a farmer's organization is still significantly more than the 21 percent of farmers selling to traditional markets that are a member of an organization. Similarly, more than half of farmers supplying supermarkets received NGO assistance to commercialize their crops, while 29 percent of farmers supplying traditional markets received support from NGOs. Farmers supplying La Colonia are located closer to paved roads than farmers selling elsewhere. This makes sense as farmers must transport product to La Colonia's distribution centre in Managua (or their cooperative) themselves, whereas traditional buyers will come to the farm and Walmart picks up product from select locations in farmer communities.

As mentioned above, contracts are identified in the literature as a defining feature of supermarket supply chains. Through interviews with farmers and wholesalers I learned that in Nicaragua a verbal contract refers to a spoken agreement between a buyer and a farmer to purchase/sell a product. The agreement generally takes place prior to planting, but may also occur after planting,

and normally specifies the quantity of the product and the expected date of exchange. It may include additional arrangements, for example regarding transportation and delivery, or regarding credit for seeds and inputs. Verbal contracts are generally perceived as binding by both parties; a traditional wholesaler explained that this is because in Nicaraguan culture ‘a man is as good as his word’ (Interviewee VIII 2013).

Written contracts are agreements in writing on paper that both the buyer and farmer sign. Farmers who said they had a written contract did not always have a copy on hand during interviews, explaining that they signed a paper for Walmart but did not themselves have a copy. Farmers supplying La Colonia had either a verbal or written contract with their cooperative, and the cooperative had a written contract with La Colonia; I was unable to obtain a copy of either contract. One farmer (Interviewee XXVI 2013) provided me with his written contract for 2011-2012 with Industrias Cárnicas Integradas (ICI), Walmart Mexico and Central America’s agroindustrial division and contracting party in Nicaragua. The contract appeared to be a standard form contract revised only to specify the farmer’s name, the product variety, price range, and monthly units to be supplied.

The seven-page written contract stated that the farmer would cultivate the product himself in accordance with the instructions and quantities that the company indicated through its field manager. It specified that once the prices were set during a triweekly field visit, the farmer must comply with the volumes established by ICI, and to the company’s required standards of quality, shape, and time, stressing that this was of a binding nature to the farmer. The contract detailed that the farmer must deliver product at the place, day and time indicated by ICI, and comply with

all written requirements related to hygiene, quality control, management and transport of the product. The farmer must take back product that does not meet the quality and quantity requirements as assessed by ICI upon receipt of product at the collection centre. In the contract, ICI for Walmart agreed to pay the farmer a price within a specified range, and within eight days of product delivery. By signing the contract the farmer relieves the buyer of all responsibility and assumes total responsibility, including pecuniary, related to the supply of the product, including its planning and execution (i.e. all stages of production). Though the contract was for one year, the buyer reserved the right to terminate anytime during the contract without penalty with 30 days' notice to the farmer. The contract could also be terminated by a judicial or arbitration body in the case that one party did not meet its contractual obligations, or by common agreement.

The survey data show that 60 percent of farmers selling to La Colonia have a written contract and 36 percent have a verbal agreement with the buyer via their cooperative (see Table 2.4). The percentage of farmers supplying Walmart with a written contract, however, is not significantly higher than the percentage of farmers supplying the traditional market with a written contract. Though the mean of farmers supplying traditional markets without a contract is significantly more than that of those selling to supermarkets, as expected, it is surprising and worth noting that so many farmers selling to traditional markets have written contracts, as this has not been addressed to date in the literature.

Table 2.4 Importance of contracts by market channel (in %), 2013

Contracts	Traditional (T) (N = 203)	Walmart (W) (N = 21)	La Colonia (C) (N = 25)	Z statistic [†]	Signifi- cance
Farmers without a contract	61 ^a	19 ^b	4 ^b	<i>T vs. W</i>	3.702 ***
				<i>T vs. C</i>	5.401 ***
				<i>W vs. C</i>	1.630
Farmers with a verbal contract	19 ^c	48 ^d	36 ^{cd}	<i>T vs. W</i>	-3.068 ***
				<i>T vs. C</i>	-1.974
				<i>W vs. C</i>	0.823
Farmers with a written contract	20 ^e	33 ^{ef}	60 ^f	<i>T vs. W</i>	-1.387
				<i>T vs. C</i>	-4.395 ***
				<i>W vs. C</i>	-1.826

* $p < 0.0333$

** $p < 0.0166$

*** $p < 0.0033$

[†] Where Z statistic is significant, letters indicate differences in group means. P values have been corrected using Bonferroni's adjustment for three tests.

There are key differences in the outcome variables across farmers supplying the three market channels (see Table 2.5). Farmers supplying La Colonia appear to be the best off, with access to adequate food almost year-round (based on the MAHFP), and a greater proportion with public GAP certification or working towards it than farmers selling to other markets. While most households surveyed do not experience more than a month without adequate food, that so many go one month without adequate food for household members indicates that food access is still an issue for smallholder vegetable producers in Nicaragua. The mean number of months that farmers selling to La Colonia have adequate food is significantly more than farmers supplying Walmart and traditional markets. A significantly higher proportion of farmers selling to La Colonia and Walmart have or are working towards public GAP certification than farmers selling to traditional markets.

Table 2.5 Summary statistics for outcome variables, 2013

Variable	Traditional (T) farmers (N = 203)	Walmart (W) farmers (N = 21)	La Colonia (C) farmers (N = 26)	F or Z statistic [†]	Signifi- cance
Productive asset index	0.0838	0.1743	0.2722		0.50
Public GAP certification (%)	19 ^a	48 ^b	58 ^b	<i>T vs. W</i>	-3.068 ***
				<i>T vs. C</i>	-4.421 ***
				<i>W vs. C</i>	-0.683
Months of adequate household food provisioning (MAHFP)	10.96 ^c	11.29 ^{cd}	11.58 ^d		3.72 **

* $p < 0.1$ (F), $p < 0.0333$ (Z)

** $p < 0.05$ (F), $p < 0.0166$ (Z)

*** $p < 0.01$ (F), $p < 0.0033$ (Z)

[†] Statistic refers to F statistic from one-way ANOVA except where proportions are being compared, in which case Z scores are reported. Where F or Z statistic is significant, letters indicate differences in group means. P values for the F statistic have been corrected using Bonferroni's adjustment for three tests.

In the next section, I present the results of the regression models analyzing why farmers choose to supply one market over another, and what the impacts of that market participation are on their wealth, as well as their food access and the sustainability of their agricultural practices.

2.5.2 Regression results

2.5.2.1 Results of the market adoption model

Model 1 explores the factors influencing what market farmers decide to sell to: Walmart, La Colonia, or traditional markets only (see Table 2.6). The model uses traditional markets as the base outcome, meaning that it estimates a model to explain the factors influencing farmers' decision to sell to Walmart relative to traditional markets and a model to explain the factors influencing farmers' decision to sell to La Colonia relative to traditional markets. Model 1 is

significant overall and explains a large amount of variance in market participation, with a model P -value of <0.0001 and a pseudo- R^2 value of 0.2582. Pseudo- R^2 values in the range of 0.2 to 0.4 indicate extremely good model fit (Louviere, Hensher, and Swait 2000).

Table 2.6 Model 1: Multinomial logistic regression of determinants of market choice in 2013, with traditional markets only as the base outcome

Variable	Walmart	La Colonia
	Relative risk ratio	Relative risk ratio
<i>gender</i>	7.5534**	8.96e-0
<i>age</i>	0.9593*	0.9826
<i>household size</i>	1.2227**	1.5307***
<i>primary education</i>	0.9533	3.7966**
<i>secondary education and above</i>	1.5534	2.6358
<i>asset index in 2007</i>	0.5793	0.8790
<i>willingness to take risks</i>	0.8226	0.8104
<i>land size</i>	1.1495**	1.0373
<i>number of hired labourers</i>	1.0246	1.0291
<i>off-farm employment</i>	0.7214	0.4133
<i>distance to paved road</i>	1.0136	0.5978***
	N = 245	
	Prob > chi2 = 0.0000	
	Pseudo R^2 = 0.2582	

* $p < 0.1$

** $p < 0.05$

*** $p < 0.01$

† The relative risk ratio (RRR) expresses the likelihood of change in the outcome (e.g. selling to Walmart) relative to the base outcome (e.g. selling to traditional markets only) given a one unit increase in the independent variable. An independent variable with $RRR > 1$ is associated with an increased likelihood of selling to the supermarket relative to traditional markets only. An independent variable with an $RRR < 1$ is associated with a decreased likelihood of participating in the supermarket relative to traditional markets only. For example, a respondent who is female is 7.5 times more likely to sell to Walmart relative to traditional markets given the other variables in the model are held constant.

Model 1 shows that selling to Walmart and La Colonia is in both cases associated with household size; with each additional household member farmer households are 1.2 (for Walmart) and 1.5 (for La Colonia) times more likely to sell to a supermarket than the traditional market

only. This result is consistent with existing literature, which claims that smallholder farms have a cost advantage over large farms due to their use of family labour (Ballabh 2007), and that producing for supermarkets requires extra labour to meet quality and processing standards (Neven et al. 2009). Indeed, both Walmart and La Colonia require that product is sorted and cleaned before they receive it.

The older a farmer, the less likely he/she is to sell to Walmart versus traditional markets, though the effect is not large. Based on interviews, this is likely a result of older farmers not wanting to change their production practices to fit Walmart's demands. La Colonia buyers coordinate planting dates and delivery with cooperative leadership (Interviewee XXV 2013), but Walmart sets production requirements that farmers must adhere by or lose the market. Walmart gives farmers a 'Planting Plan' stipulating the number of plants farmers should sow, and the specific dates they must establish seeds, transplant seedlings and initiate and end harvesting. The 'Planting Plan' also sets out the expected and actual harvest quantity ('Planting Plan' form provided by Interviewee XXVI 2013). Farmers with a primary education (versus no education) are nearly four times more likely to sell to La Colonia than traditional markets, likely because of the record-keeping required of farmers by cooperatives selling to La Colonia. Consistent with previous research (Barham and Chitemi 2009; Fischer and Qaim 2012; Blandon, Henson, and Cranfield 2009), cooperatives appear to facilitate the participation of smallholders in supermarket supply chains, as farmers are able to sell to La Colonia regardless of their land size, whereas farmers selling to Walmart, which does not have a strategy of buying from cooperatives, are slightly more likely to do so when they have more land.

The likelihood of a farmer selling to La Colonia over traditional markets increases to a small degree as the distance from the farm to the nearest paved road decreases. The same effect is not observed for farmers selling to Walmart. The paved road finding is explained by the fact that farmers selling to La Colonia do so through a cooperative, which is located near a major highway crossroads in Nicaragua. Farmers selling to La Colonia generally transport their vegetables to the collective processing station, and the cooperative then delivers the product in its truck to La Colonia's distribution centre in Managua. Walmart, on the other hand, has its trucks pick up farmers' product after delivery to its stores. The trucks pick up product from locations near to producer communities, and not necessarily on the main paved road, so it is less important that farmers supplying Walmart be near a paved road.

NGO support which targets women specifically to reach gender equity goals explains why women are seven and a half times more likely to sell to Walmart than traditional markets only. The main USAID-funded market project in Nicaragua coordinating farmer sales to Walmart, ACORDAR, had an explicit gender strategy that aimed to increase the participation and commercialization of women farmers by targeting and addressing their specific needs (Catholic Relief Services 2012b). For example, the project trained two groups of women in the production of vegetable seedlings, and supported a women's group to organize farmer field schools related to the production of fresh fruits and vegetables (Catholic Relief Services 2012b). However, as the same NGO project also supported farmers selling to La Colonia, it is unclear why gender does not show up as playing the same role in explaining why farmers sell to La Colonia.

Overall, it appears that farmers choose to participate in retail supply chains not only when they have the available resources to meet supermarket demands, but when they are willing to change their practices to suit supermarket buyers. Contextual factors such as proximity to a paved road and NGO assistance appear to matter as well, although these effects differ based on the supermarket's buying strategy. The next section investigates the impacts on rural development of farmers' market choice. Specifically, it looks at the impacts for farmers' household wealth and food security, and whether they adopt public GAP certification or not.

2.5.2.2 Household impacts of supply chain participation

2.5.2.2.1 Impacts of market participation on household wealth

Model 2 explores the impact of the number of years farmers sold to Walmart and La Colonia between 2007 and 2013 on their productive asset index (a proxy of household wealth) in 2013. It also explores the impact of having a verbal or written contract in 2013. The model is significant overall with a model P -value of <0.0001 and explains 27 percent of the variance in household wealth ($R^2 = 0.2692$). This R^2 value is not unusual for household survey data, and the model identifies several variables that are significantly associated with higher productive asset indices.

Table 2.7 Model 2: Ordinary least squares regression of farmer wealth in 2013, measured as a productive assets index

Variable	Coefficient†
<i>gender</i>	0.1243
<i>age</i>	0.0007
<i>household size</i>	0.0130
<i>primary education</i>	0.0751
<i>secondary education and above</i>	0.2618
<i>land size</i>	0.0857***
<i>irrigation</i>	0.1720
<i>number of hired labourers</i>	0.0275***
<i>off-farm employment</i>	0.1011
<i>distance to paved road</i>	0.0021
<i>ngo support</i>	0.2593*
<i>years sold to traditional market</i>	0.0002
<i>years sold to Walmart</i>	- 0.0489*
<i>years sold to La Colonia</i>	- 0.0238
<i>verbal contract</i>	0.0690
<i>written contract</i>	0.0142
	N = 244
	Prob > F = 0.0000
	R2 = 0.2692

* $p < 0.1$

** $p < 0.05$

*** $p < 0.01$

† The coefficient expresses the change in the dependent variable for a one unit increase in the independent variable, holding all other variables constant.

Contrary to previous studies (Bellemare 2012; Minten, Randrianarison, and Swinnen 2009; Miyata, Minot, and Hu 2009; Neven et al. 2009), Model 2 shows that the number of years a farmer sold to La Colonia between 2006 and 2013 has no impact on their wealth in 2013. More surprisingly, the model shows that a higher number of years a farmer sold to Walmart is associated with lower household wealth. Interviews with farmers provide insight into why this is. Farmers explained that Walmart makes promises related to price and volumes and then breaks their agreements (Interviewee IV 2013; Interviewee V 2013). Walmart buys only a small

percentage of farmers' harvest, and rejects a further portion of farmers' product at their collection centre, without paying for it (Interviewee VI 2013). Chapter 3 takes an in-depth look at the politics of Walmart's CSR program in Nicaragua and why farmers have been exiting the Walmart supply chain to return to selling to the traditional market.

Model 2 shows that having more land and to a smaller extent having more hired labourers is associated with higher household wealth. This is not surprising, as land and labour are key resources for smallholder agriculture and income generation. Assistance from an international NGO for commercialization appears to have a much larger effect on farmer household wealth in 2013, likely because NGO projects help lower farmers' costs through subsidized equipment and infrastructure, as well as market coordination.

2.5.2.2.2 Impacts of market participation on household access to food

Model 3 explores the impact of market participation on whether a household was able to access sufficient food throughout the 12 months prior to the survey. The model is significant overall, with a model p-value of <0.0001 . The model has an R² value of 0.2206, which means it explains 22 percent of the variation in households' year-round access to food.

Table 2.8 Model 3: Ordinary least squares regression of months of adequate household food provisioning (MAHFP)

Variable	Coefficient [†]
<i>gender</i>	- 0.4700
<i>age</i>	0.0003
<i>household size</i>	- 0.0076
<i>primary education</i>	- 0.2479
<i>secondary education</i>	0.2780
<i>land size</i>	0.0428*
<i>irrigation</i>	0.7395***
<i>number of hired labourers</i>	0.0134*
<i>off-farm employment</i>	0.2495
<i>distance to paved road</i>	0.0040
<i>ngo support</i>	- 0.0624
<i>years sold to traditional market</i>	0.0287
<i>years sold to Walmart</i>	- 0.0367
<i>years sold to La Colonia</i>	- 0.0081
<i>verbal contract</i> ^{††}	0.4210**
<i>written contract</i>	0.7991***
	N = 244
	Prob > F = 0.0000
	R2 = 0.2164

* $p < 0.1$

** $p < 0.05$

*** $p < 0.01$

[†] The coefficient expresses the change in the dependent variable for a one unit increase in the independent variable, holding all other variables constant.

^{††} Verbal and written contract data is for the year 2013. The survey did not collect data about contracts for every year the farmer sold to a buyer.

Unsurprisingly, irrigation, larger land size, and hired labour are associated with a higher number of months of adequate food access. These resources are able to help a household smooth their income and food production over the course of a year, preventing a period without adequate food. Having irrigation in particular is associated with a farmer household having access to adequate food for three additional weeks. The effect of land size and hired labour is much smaller.

Selling to Walmart or La Colonia did not impact whether a household experienced a lean period or not. This makes sense given that Model 2 shows that farmers who sold an additional year to Walmart were more likely to have a lower asset index in 2013 than those who sold fewer years to Walmart. Chapter 3 goes into detail as to why farmers decide they are better off to exit the Walmart supply chain and return to selling to traditional markets.

Interestingly, however, selling to a market with a written or verbal contract is associated with a household having access to food for more months of the year than farmers who sell without a contract. Having a written contract is associated with a farmer household having access to another 24 days of adequate food that year. Indeed, having a contract can reduce risk and price variability and provide steady income, which has in one case of export supply chains been shown to reduce farmers' lean period (Minten, Randrianarison, and Swinnen 2009). Given the lack of association between a particular market and MAHFP, it seems it is the contract that matters, not with which buyer the farmer has a contract.

According to farmer survey responses, their verbal and written contracts generally address product volumes, frequency of delivery, quality, prices, and sometimes transportation arrangements (see Table 2.9). Contracts with traditional market buyers tend to focus less on volumes and frequency of delivery and more on price than contracts with La Colonia and Walmart. While contracts with traditional market buyers cover quality less often than supermarket contracts, quality stipulations are often included and are likely an important goal for buyers of having a contract with suppliers. More research is required to identify the specific content of the agreements and their effects, but it seems most likely that a contract helps improve

year-round food access by providing predictable and steady frequency and volumes of sales and evening out price variability. Michelson, Reardon and Perez (2012) found that having a Walmart contract from 2005 to 2008 in Nicaragua reduced price variability by setting a price floor and ceiling. However, the researchers also found a cost to these contracts, as the company's prices overall were significantly lower than the traditional market prices (La Colonia's resembled the traditional market prices). This may explain why my results show farmers selling to Walmart for longer had lower productive asset indices.

Table 2.9 Topics covered by farmer contracts with buyers

	Traditional market contracts (%)	Walmart contracts (%)	La Colonia contracts (%)
Volume	73	90	90
Frequency of delivery	16	38	53
Quality	36	61	43
Price	73	58	67
Transportation	14	13	0

NGOs and farmer organizations play a clear role in whether farmers have verbal or written contracts with buyers, as seen in Table 2.10, which shows that a greater proportion of farmers with a contract belong to a farmer organization and have support from an NGO than farmers selling without a contract. Farmers with written contracts are especially likely to have support from an NGO for commercialization. This is most likely the result of NGO efforts to organize farmers and coordinate contracts with La Colonia and Walmart.

Table 2.10 Characteristics of farmers by contract type, 2013

Variables	No (N) contract (N = 129)	Verbal (V) contract (N = 57)	Written (Wr) contract (N = 63)	F statistic [†]	Signi- ficance
<i>Farmer characteristics</i>					
Male (%)	95	98	94	<i>N vs. V</i> -0.953 <i>N vs. Wr</i> 0.290 <i>V vs. Wr</i> 1.104	
Age (years)	46	46	48	0.40	
Primary education (%)	20	18	17	<i>N vs. V</i> 0.318 <i>N vs. Wr</i> 0.497 <i>V vs. Wr</i> 0.144	
Secondary education or above (%)	10 ^a	23 ^b	19 ^{ab}	<i>N vs. V</i> -2.357 <i>N vs. Wr</i> -1.744 <i>V vs. Wr</i> 0.538	*
Household size	5.0 ^c	5.7 ^{cd}	6.4 ^d	4.35	**
<i>Farm characteristics</i>					
Land size (ha)	2.53	2.77	3.25	1.07	
FFV area (ha)	1.47	1.23	1.84	0.74	
Farming experience (years)	23	22	24	0.10	
Off-farm occupation (%)	30 ^e	32 ^{ef}	49 ^f	<i>N vs. V</i> -0.273 <i>N vs. Wr</i> -2.572 <i>V vs. Wr</i> -1.891	**
Productive asset index	0.04	0.14	0.23	0.83	
Hired labourers for FFV	7.7	7.9	10	1.50	
<i>Contextual characteristics</i>					
Member of a farm organization (%)	16 ^g	35 ^h	51 ^h	<i>N vs. V</i> -2.892 <i>N vs. Wr</i> -5.101 <i>V vs. Wr</i> -1.766	** ***
NGO support for commercialization (%)	13 ⁱ	42 ^j	68 ^k	<i>N vs. V</i> -4.410 <i>N vs. Wr</i> -7.734 <i>V vs. Wr</i> -2.863	*** *** **
Distance to nearest paved road (km)	4.03	4.00	4.03	0.00	
Distance to nearest market (km)	12	12	12	0.09	

* $p < 0.1$ (F), $p < 0.0333$ (Z)** $p < 0.05$ (F), $p < 0.0166$ (Z)*** $p < 0.01$ (F), $p < 0.0033$ (Z)

† Statistic refers to F statistic from one-way ANOVA except where proportions are being compared, in which case Z scores are reported. Where F or Z statistic is significant, letters indicate differences in group means. P values for the F statistic have been corrected using Bonferroni's adjustment for three tests.

Farmers with contracts tend to be more educated than those without contracts, though education is not a significant explanatory of food access in Model 3 (Table 2.8). It could be that farmers with secondary school education or above have a better understanding of contracts and take advantage of the reduced price variability they can offer. Many farmers are used to selling to the highest bidder and do not like to have their freedom constrained by a contract (see also Peine 2013), particularly when they do not trust the buyer to keep its promises (see Chapter 3). Farmers with written contracts tend to have larger families and at least one household member with off-farm work, which may make them better able to deal with any risks related to having a written contract with buyers.

My speculation is that when the contract is something both parties understand and can follow through on, then it can be beneficial. It is difficult to enforce contracts between smallholder farmers and buyers in Nicaragua and the success of the contract depends on both sides fulfilling their promises. When farmers have sufficient education and capacity to manage the associated risk they may prefer a written contract; otherwise, they may prefer a verbal contract in line with the cultural value that “a man is as good as his word” (Interviewee VIII 2013) or no contract at all. Given that contracts, particularly written contracts, are more common in traditional market supply chains in Nicaragua than is generally assumed in the literature (see Table 2.4), the role of contracts in traditional markets is an important avenue for future research, as it suggests that

development efforts could be well placed to focus on traditional markets rather than the current norm of focusing on supermarket supply chains.

2.5.2.2.3 Impacts of market participation on public GAP certification

Model 4 is a logistic regression that examines the impact of the number of years farmers sold to Walmart and La Colonia between 2007 and 2013 on whether they had public GAP certification for their farm in 2013. The model is not very significant with a model P -value of 0.0018 and a Pseudo- R^2 value of 0.1586 (Pseudo- R^2 values of 0.2 to 0.4 are indicative of good model fit).

Table 2.11 Model 3: Logistic regression of public GAP certification in 2013

Variable	Odds Ratio†
<i>gender</i>	0.905764
<i>age</i>	0.974376
<i>hhsiz</i>	1.126637*
<i>edu_d1</i>	0.555819
<i>edu_d2</i>	0.764952
<i>land_ha</i>	1.215226***
<i>irrig</i>	2.594695
<i>labour</i>	1.002301
<i>off_farm</i>	1.345191
<i>pavedrd</i>	0.907172*
<i>ngo</i>	2.257539*
<i>yearstrad</i>	1.095343
<i>yearswm</i>	1.066449
<i>yearslc</i>	0.904207
<i>vcontract</i>	1.472354
<i>wcontract</i>	0.777866
	N = 244
	Prob > chi2 = 0.0018
	Pseudo R2 = 0.1586

* $p < 0.1$

** $p < 0.05$

*** $p < 0.01$

† The odds ratio indicates the likelihood of change in the dependent variable for a one unit increase in the independent variable. An independent variable with an odds ratio >1 is associated with an increased likelihood of having public GAP certification. An independent variable with an odds ratio <1 is associated with a decreased likelihood of having public GAP certification. For example, a farmer who has increased household size is 1.13 times more likely to have public GAP certification than a farmer who had not experienced an increase in household size.

The general understanding in the literature is that farmers adopt GAP certification in order to meet buyer demands for it (Henson and Humphrey 2010) yet the low model fit value means that neither selling to Walmart nor La Colonia explains whether a farmer gets public GAP certification. The model suggests that farmers are more likely to have public GAP certification when they have NGO assistance, and to a much smaller extent when they have larger families, more land, and are closer to a paved road. However, as the model is not very significant overall,

these factors do not explain a significant amount of the variation in public GAP certification among farmers.

Survey responses and interviews with farmers reveal a major factor influencing public GAP adoption, the role of government policy, which is missing from the model. In interviews and a qualitative survey question, farmers with public GAP certification explained that they sought out the certification on the encouragement of the Nicaraguan Ministry of Agriculture and Forestry (MAGFOR), not as a result of buyer demand. Government officials confirmed that they are promoting GAP certification as an interim step toward agroecological production as the national norm, explaining that “there is a necessity to integrate GAP into the national market because [farmers] use a lot of agrochemicals in [the] country” (Interviewee III 2013). The government program leverages NGO support to provide technology and training. Chapter 5 further explains public GAP certification’s uptake by smallholders in Nicaragua by taking an in-depth look at why farmers are adopting public GAP certification and in many cases continuing to sell to traditional markets.

2.6 Conclusion and implications

One stream of literature on smallholder farmer market participation tends to assume that farmers want to sell to supermarkets and will do so if they are able, while at the same time another stream of research debates the impacts for farmer welfare of selling to supermarkets. This chapter aims to improve understanding of why smallholders choose to sell to supermarkets versus traditional markets, and the resulting household-level impacts of their market choice, with a particular focus

on wealth, food access, and public GAP certification. It finds that farmers in Nicaragua are more likely to sell to supermarkets when they have the family labour and education to meet supermarket demands for cheap and quality product, but that their ability to sell appears more affected by company-specific procurement strategies and the type of assistance from NGO projects. In the case of Nicaragua, farmers do not benefit specifically from selling to supermarkets, and farmers selling to Walmart have lower household wealth. Instead, having a contract may be what matters, regardless of what market a farmer sells to, in order to maintain food access throughout the year.

The paper demonstrates that, at least in the Nicaraguan context, when smallholder farmers do participate in supermarket supply chains, there are few benefits for rural development. It challenges the view that supermarket supply chain participation is in all cases an effective path to development for smallholder farmers in the global South. Instead, the paper provides a more nuanced perspective in revealing the potential for contracted – and not just any – market exchange to smooth farmer incomes and improve year-round access to food. It would be interesting to explore through future work whether this benefit is apparent for farmers contracted by traditional market buyers, and not only by supermarkets. The contribution of traditional markets to rural livelihoods is in this way still an understudied area.

The study findings point to several issues for further analysis. First, they raise the question of why selling to Walmart is associated with lower household levels of wealth. Farmers explained in interviews that Walmart rejects a portion of their product delivery, which increases their costs of selling to the multinational retailer. Many said that they sold to Walmart in the past but

stopped as a result of this practice, and because Walmart broke its agreement with them. There is also evidence that Walmart “goes after smaller farmers because they get them more easily” (Interviewee VII 2013), while those farmers with alternatives stop supplying them. Chapter 3 of my dissertation delves deeper into this issue and the politics of Walmart’s attempts to gain control over its suppliers in Nicaragua. It finds that there are a high number of farmer exits from the Walmart supply chain, which are a result of feelings of mistrust and unfairness on the part of farmers, who prefer to return to selling to the traditional market.

Second, the study draws attention to the issue of cooperatives and NGO assistance, and their role in influencing farmer participation in supermarket supply chains as well as in mediating impacts. Farmers selling to La Colonia appear to have avoided the need for larger land size by pooling their resources to meet the company’s requirements, whereas farmers with bigger farms are more likely to be able to sell to Walmart. Chapter 4 takes a closer look at the role of farmer cooperatives in facilitating market access. It also examines the role of NGO assistance, given that NGO assistance is linked to higher household wealth, while selling to Walmart (what the NGOs are promoting) is associated with lower household wealth.

Third, the findings highlight the potential for government initiative to drive adoption of sustainable agricultural practices certification. Chapter 5 investigates this topic further, exploring why farmers are attributing their adoption of public GAP certification to the government and not to buyers. It explores the rise of public GAP certification among farmers selling to the traditional market, and examines more in detail the effectiveness of public GAP certification at changing farming practices.

Overall, this paper suggests that smallholders maximize their land and labour resources to manage household wealth, food security, and agriculture. When farmers have sufficient access to these resources, they are able to make decisions that are associated with higher levels of household wealth, better year-round access to adequate food to feed their families, and improved agricultural practices. While participation in rapidly expanding supermarket supply chains may be one way of supporting livelihoods, it is not the only way, and the study results suggest that farmers make decisions based on their limited resources to diversify and manage their livelihoods in ways that best meet their own goals.

Chapter 3: Farming for Walmart: the politics of corporate control and responsibility in the global South

3.1 Introduction

Corporate social responsibility (CSR), broadly understood as when a corporation voluntarily incorporates social and environmental objectives into its business operations (Crane, Matten and Spence 2007), is now the mantra of most multinational corporations. They have publicly committed to meet a long list of public interest goals, particularly environmental sustainability (Dauvergne and Lister 2013), but also broader international development objectives, such as improving the livelihoods of smallholder farmers in the global South. While CSR of the past focused primarily on public relations and protecting corporate reputations, today's CSR is increasingly integrated into corporations' core business operations and strategy (Bansal and Hoffman 2011; Dunphy, Griffiths and Benn 2007). Business scholars have developed a 'business case' demonstrating the link between CSR and improved financial performance; Porter and Kramer's (2006) concept of 'strategic CSR' captures the idea of CSR as a win-win strategy for achieving environmental gains while maximizing profits. Dauvergne and Lister (2013) argue that companies are taking CSR even further now, defining sustainability in their own terms and using it to portray themselves as socially responsible but in fact using it as a business tool to find savings, increase profits, and control supply chains (Dauvergne and Lister 2013). Their ability to do so comes from the fact that they can use their buyer power to not only establish codes of

conduct but to also implement, monitor, and enforce rules, undertaking those governance functions traditionally performed by states (Büthe 2010).

Since 2005 Walmart has been at the forefront of CSR among the world's biggest corporations, with CSR programs not only for its stores and warehouses, but also for more than a hundred thousand suppliers worldwide. As part of its CSR commitments Walmart is now claiming to foster a sustainable food system by 'produc[ing] more food with fewer resources' and 'support[ing] farmers and their communities' (Walmart 2014b). This might seem encouraging given declining environmental conditions and rising food needs across the global South. Indeed, many analysts, especially from within business and government, see the uptake in CSR as a promising trend. Even NGOs are increasingly praising and partnering with companies like Walmart, enhancing the popular acceptance of the authority (especially the legitimacy) of multinational business within international development circles (Dauvergne and LeBaron 2014). So far, however, little empirical research has been done on the actual consequences of CSR for the livelihoods of marginalized groups in the global South (especially to separate rhetoric from reality). This chapter partially fills this research gap (although far more research is still necessary, as consequences inevitably vary across sectors, corporations, and agrarian societies).

The analysis draws on nine months of fieldwork in 2013 on Walmart's CSR program to purchase more fruit and vegetables from small and medium-sized farms in Nicaragua. The fieldwork involved 65 interviews with corporate executives, government officials, NGO leaders, and farm suppliers, as well as a survey of 250 small-scale farmers growing vegetables for Walmart, the national grocery chain La Colonia, and traditional wholesalers. This program has consequences

far beyond Nicaragua, as Walmart is in the process of scaling it up across its agrifood supply chains in the global South. The chapter aims generally to advance scholarship on the effectiveness of private governance at achieving its stated outcomes (Auld, Gulbrandsen, and McDermott 2008; Clapp and Fuchs 2009; Mayer and Gereffi 2010; Utting 2007; Vogel 2009; Graz and Nölke 2012; Auld 2014), with a specific contribution to understanding the politics of CSR effectiveness as a business tool to control supply chains and as a development program to promote agricultural sustainability and food security (understood as people's ability to 'access sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life': FAO 2002) in agrarian societies in the global South.

The findings reveal some of the innate limits of CSR, both as a business control strategy and as a mechanism to promote 'sustainable food'. Much of the literature on private governance assumes that the world's biggest multinational corporations (MNCs) can control suppliers to achieve CSR objectives, particularly business ones. Yet despite efforts, Walmart has managed to exert relatively little sustained control over farmers in Nicaragua. Instead, many farmers, after initially agreeing to sell to Walmart, are later refusing to do so after the company fails to fulfil its stated commitments to them. Interviews with farmers and supply chain experts in Nicaragua reveal that Walmart's motives are not fundamentally about improving food security and agricultural sustainability, but about securing high-quality and inexpensive food from dependable sources. The ultimate goal of Walmart's CSR in Nicaragua is to gain competitive advantages and expand business, and, despite rhetoric, more control by Walmart over local supply chains does not appear likely to translate into lasting food security or greater sustainability in agrarian societies in the global South.

We begin the analysis by reviewing the growing power of multinational retailers in the world economy and the rise of CSR as a governance tool, with a focus on Walmart. Second, we make the case that rising NGO and government support of CSR is enhancing the legitimacy of multinational retailers as governance authorities. Third, we provide evidence of the increasing economic influence of multinational retailers in Latin America. We describe Walmart's growing presence in Nicaragua, which, after Haiti, is Latin America's second poorest and second most food insecure country (World Bank 2014). We reveal the limits of Walmart's CSR program in Nicaragua, arguing that business objectives – maximizing efficiencies, lowering costs, capturing markets, selling quality fruits and vegetables, and sustaining profits – override any real chance of social or environmental benefits for smallholder farmers in rural areas. We conclude by reflecting on what the case of Walmart in Nicaragua suggests about the value of CSR in general for promoting development and sustainability in the global South.

3.2 Big retail power

Close to a third of world GDP is directly or indirectly related to retail (Dauvergne and Lister 2013, 33-34), and roughly 40 percent – US\$ 5.6 trillion in 2013 (Conlumino 2014) – of worldwide retail revenue comes from food sales (FAO 2009). Supermarkets and hypermarkets account for more than half of food sales worldwide (Conlumino 2014). Rising participation of financial actors across food supply chains is strengthening the dominance of these retailers over agrifood systems (Isakson 2014). The food retail market looks set to keep growing, and analysts expect it to increase to \$11 trillion over the next five years (Conlumino 2014).

It is no surprise, then, that the largest retailers – Walmart, Tesco, Costco, and Carrefour (Deloitte 2014) – lead the world in food sales. Increasingly, retailers see the global South as a source of new consumers as well as a basis of cheap production. In recent years, rapid expansion of retail outlets into developing countries has been pushing up global food sales, and, analysts predict, will continue to fuel further growth in the decades ahead (Conlumino 2014). Whereas mature markets in the global North are stagnating or declining, rising incomes and a growing middle class are increasing demand for retail food in the global South. In 2012, a third of the combined revenue of the world’s 10 biggest retailers came from stores outside their home countries (Deloitte 2014, G20). In the United States, there is one Walmart-owned store (including Sam’s Clubs) for every 64,000 people. In Nicaragua, there is now a Walmart-owned store per 70,000 people, and in Mexico, the density of Walmart stores is even higher, with a store per 56,000 people (author’s calculations based on Walmart’s corporate website [Walmart 2014c] and UN population data [United Nations Statistics Division 2014]).

Multinational retailers specialize in selling more for less, sourcing low-cost inputs through global supply chains, selling to customers at low prices, and profiting from large sales volumes. In order to achieve this, companies see a new approach as necessary to access sufficient high quality products cheaply. Advances in technology and transportation have helped companies to extend their reach and source further afield, including for horticulture. In the past they would buy food primarily from plantations run by companies such as Dole and Del Monte, but increasingly multinational retailers are buying directly from farmers in developing countries, where production (i.e., labour) costs are relatively low. Though these supply chains provide retailers with highly flexible sourcing and many opportunities to cut costs, they also come with higher

risks around the quality and reliability of production. To gain efficiencies, reduce costs, and mediate these risks, retailers have been adapting their business tools to control and trace production back to the farm.

As these corporations expand and enter more markets and gain power to control production conditions, they are increasingly claiming that their size and reach gives them particular capacity to address pressing global problems. Unquestionably, the power of these firms to shape global development is growing. There are many questions, however, as to whether their impact is positive or not for agrarian societies in the global South.

3.3 Rise of CSR governance

Traditionally the domain of governments, increasingly multinational corporations are setting and enforcing the environmental and social standards of production (Falkner 2008; Fuchs 2007; Levy and Newell 2005; Dauvergne 2008; Utting and Clapp 2008; Utting and Marques 2009; Beal 2014). Calling their efforts ‘corporate social responsibility’, multinational retailers claim to be socially responsible at the same time as they maximize profits and imply that the bigger the profit the better the social impact. The UK-based multinational supermarket chain Tesco, for instance, claims its ‘scale... gives [it] an opportunity to make a positive difference to some of the biggest challenges facing the world’ (Tesco 2014, 2), while Walmart says it is using ‘the size and scale of [its] business to make a difference on important social issues like food security and agricultural development’ (Feed the Future 2014a).

By publicizing their efforts as CSR, corporations are gaining support from NGOs and governments, who often see CSR as a way to improve social and environmental conditions in places where they lack financing or enforcement capacity (Utting 2008; Vogel 2009). In trying to use corporate power to achieve their own goals, NGOs and governments are in turn increasing the legitimacy of companies to govern through their support for CSR (Bernstein and Cashore 2007; Cashore 2002; Dauvergne and Lister 2012; Fuchs, Kalfagianni, and Havinga 2011; Fuchs, Kalfagianni, and Arentsen 2009; Kalfagianni 2014).

The actual consequences of CSR governance, however, are vigorously debated. Critics argue that multinational corporations are causing the very social and environmental problems they are claiming to fix, seeing CSR as little more than ‘greenwash’ (Klein 2000; MacDonald 2008; Rogers 2010). Little evidence exists, these critics contend, to support the claim that business can solve such complex problems (Frynas 2008). Supporters of CSR counter that CSR governance is more effective than the weak national and international regulation of firms now so common in producing (i.e., developing) countries, as well as more adaptive than legal regulation to the ever-shifting world economy (Vandenbergh 2007; Newell 2001; Vogel 2008). Similar efforts to govern through third-party certification have had variable impacts (Arnould, Plastina, and Ball 2009; Bacon 2010; Bartley 2010; Jaffee 2007).

How effective is CSR as a form of governance? The literature on the effectiveness of CSR programs is growing quickly (e.g., Auld, Gulbrandsen and McDermott 2008; Clapp and Fuchs 2009; Mayer and Gereffi 2010; Utting 2007; Vogel 2009; Auld 2014). A few studies (Barrientos and Smith 2007; Newell 2005; Newell and Frynas 2007; Utting, Reed, and Mukherjee-Reed

2012; Maertens and Swinnen 2009) have investigated the effectiveness of CSR for rural development in agrarian societies in the global South. And a few scholars (Dauvergne and Lister 2010a, 2012, 2013; Elder, Lister, and Dauvergne 2014; Fuchs and Kalfagianni 2010; Lee, Gereffi, and Beauvais 2012; van der Ven 2014) have probed the effectiveness of multinational retailers, such as Walmart, Costco, and Home Depot, at meeting the CSR goals they set themselves. Yet, despite firms routinely claiming that their CSR programs promote sustainable agriculture, very few scholars have actually investigated the effectiveness of CSR for improving the food security of farming families or the agricultural sustainability of smallholder farms in developing countries.

3.4 Walmart

As by far the world's largest retail company, Walmart is a critical test of the capacity of retail CSR to enhance the well-being of communities in the global South. For the past 15 years, Walmart has consistently ranked first or second in Fortune 500's list of the world's largest companies (Global Fortune 500 2016). In 2005, Walmart had 1500 stores across 10 countries (Walmart 2006). Today, it has over seven times that, with more than 11,500 retail units across 28 different countries (Walmart 2016a). Walmart's CSR strategy says it 'aspires' to three overarching aims: to use only renewable energy, to generate no waste, and to 'sell products that sustain people and the environment' (Walmart 2014b). This strategy focuses on several strategic areas, one being 'sustainable food', where the company promises to 'produce more food with fewer resources', 'support farmers and their communities', and 'sustainably source key food

commodities' such as palm oil and beef. Former Walmart CEO Mike Duke, launching the company's sustainable food commitment, declared that

[g]lobally, with a booming population, food production must increase roughly 70 percent to feed 9 billion people in 2050. Through sustainable agriculture, Walmart is uniquely positioned to make a positive difference in food production – for farmers, communities and customers.

Then, more specifically, he added '[o]ur efforts will help increase farmer incomes, lead to more efficient use of pesticides, fertilizer and water, and provide fresher produce for our customers' (Walmart 2010).

This chapter examines Walmart's Direct Farm program in particular, as it is a key way that the company is operationalizing its sustainable agriculture commitment. Under the Direct Farm program Walmart is buying fresh produce directly from farmers in the global South working less than 10 hectares of land (Walmart 2014b). A priority of the program, Walmart states in a press release, is to train farmers in sustainable agricultural practices, including efficient use of agrochemicals and water, in order to achieve its goal of producing more with less (Walmart 2010). Local sourcing and contract farming to increase control over suppliers has been an emerging trend globally for a long time now (Little and Watts 1994; McMichael 2013). What is new is that Walmart is claiming to focus on smallholder farmers because 'increased agricultural productivity and market linkages for small and medium-sized farmers are important in addressing the critical issue of food security facing our world' (Walmart 2013, 64). Unlike in the past, this new angle is helping Walmart to gain the support of international development NGOs.

The Direct Farm CSR program was piloted in Central America, where it is called ‘Tierra Fértil’, meaning fertile ground. The Walmart 2014 *Global Responsibility Report* estimates that nearly 70 percent of the produce and grain sold in its Central American stores came from 1733 smallholder farmers, earning these farmers US\$125 million (Walmart 2014d, 131). Trumpeting its Direct Farm program as a success, Walmart is now introducing the program around the world to the farmers it buys cotton, cashews, coffee and apples from for its private label products (Walmart 2013, 64).

3.5 Buying the promise of a Walmart world

Walmart is not acting alone, though. Nor does it claim to be. The company openly identifies NGOs as essential for implementing its CSR programs. This reflects a broader shift in the role of NGOs toward partnering with firms to implement CSR initiatives. In the 1980s and 1990s most social and environmental NGOs were pressuring multinational corporations to adopt CSR codes and standards and then support, rather than abandon, suppliers who were struggling to comply (Mayer and Gereffi 2010). Today, however, it is increasingly common for NGOs to participate on-the-ground in implementing corporate responsibility projects, although certainly some NGOs remain fiercely critical of CSR and NGO partnerships with corporations.

NGO participation in CSR enhances the legitimacy of corporations to set and enforce rules that govern social and environmental aspects of production in the global South (Bacon 2010; Dauvergne and LeBaron 2014). Widely seen as representing civil society, and with a history of criticizing and policing corporations, NGO endorsement of CSR tends to reassure consumers of

the value of CSR programs. Often overlooked, but no less important, NGOs' participation can also enhance the legitimacy of suppliers that participate in CSR programs. The extent of legitimacy can be critical for the degree of supplier participation (Wiegel 2012) and, as such, can be decisive in the success or failure of the CSR program. While the weighing of costs and benefits is fundamental to whether or not suppliers participate in a supply chain (Barrett et al. 2012; Cashore 2002; Cashore, Auld, and Newsom 2004; Gulbrandsen 2004; Schipmann and Qaim 2011), Wiegel (2012) found that many suppliers in Nicaragua felt a moral obligation to an NGO for providing assistance such as credit or technical inputs, and thus felt obliged to keep its agreements with NGOs (e.g., supplying a multinational retailer).

Corporate funding often benefits specific NGO projects, but this study shows the opposite, that NGO projects are benefiting corporations. In Nicaragua, governments, and not Walmart, are the main funders of NGO efforts to implement Walmart's CSR program. Lister (2011) has shown elsewhere that governments commonly back CSR governance through policies, public-private partnerships, and even co-regulation. The majority (US\$31 million) of the funding for a US\$53 million NGO project in Nicaragua to help farmers sell to Walmart (among other activities) came from municipal governments to build bridges, roads, and irrigation systems, as land to erect storage facilities, and as in-kind support for training farmers, while much of the remaining amount came from the US government through USAID (Catholic Relief Services 2012b, 18). Without this project it would have been much more difficult for Walmart to source directly from these farmers.

Donors financing CSR in the global South is a worldwide phenomenon, and such funding is a growing share of foreign aid. Since the early 2000s USAID has formed more than 1600 partnerships with the private sector. ‘The private sector’, explains USAID (2014), ‘serves as an engine of economic growth and a powerful force for helping to reduce poverty’. Beyond Nicaragua, for instance, USAID has partnered with the UN World Food Programme and Pepsi ‘to improve yields, production and availability of healthy food in East Africa’ (Feed the Future 2014b). The Canadian government also sees ‘private enterprises’ as serving ‘an important role ... in achieving lasting development’ (Department of Foreign Affairs Trade and Development Canada (DFATD) 2014). A widespread belief in market-led development as a solution to poverty (Veltmeyer 2009) is encouraging NGOs and governments to finance and partner with CSR programs, enhancing the legitimacy of MNCs as environmental and social managers in the global South.

MNCs are claiming a high level of effectiveness and NGOs and states are increasingly buying these claims. But is CSR actually effective in the sense that real benefits are accruing for real people? Let’s take a closer look at multinational retailers, and Walmart in particular, in Latin America.

3.6 Big retail in Latin America

The growth of multinational retail has been so fast in Latin America that some analysts describe it as a ‘supermarket revolution’ (Reardon and Berdegue 2006). Reardon and Berdegue (2002, 371) estimate that ‘in one globalising decade, Latin American retailing made the change which

took the US retail sector 50 years'. Retailers, especially multinationals Ahold, Carrefour, and Walmart, began investing heavily in supermarkets and fast food in Latin America in the 1990s when policy changes began to liberalize economies to attract more foreign direct investment (Reardon and Berdegué 2002). Retail investment grew in particular. Reardon and Timmer (2007) calculate that the amount of retail FDI in the global South far exceeded the doubling of international trade in products over this time.

Multinational retailers modernized procurement processes as they expanded in Latin America. As supply chains grew longer and became more complex, they required greater coordination, and retailers began using contracts with suppliers, and moving from dispersed local purchasing to a centralized procurement system. At the same time, multinational retailers adopted standards of production for suppliers, mostly to try to manage quality more efficiently and effectively (Reardon et al. 2009).

By expanding and coordinating supply chains, multinational retailers have steadily gained economic power and political influence in Latin America. The support of government and NGOs is increasing their authority, in part by awarding legitimacy to companies to manage social and environmental issues.

3.7 Walmart in Nicaragua

Walmart's growth in Nicaragua tracks the broad trend of retail growth in Latin America. In 1990, just six supermarkets were operating in Nicaragua, owned by two local companies. By

2006, the Central American Retail Holding Company (CARHCO) – a joint venture between a Costa Rican company, a Guatemalan company, and the multinational company Ahold – was running a chain of 40 supermarkets across Nicaragua (Wiegel 2012). That year Walmart moved in and bought a majority stake. Since taking over this supermarket chain (which includes low-income stores Palí and Maxi-Palí, as well as La Union stores for consumers with higher incomes), Walmart has doubled the number of its stores in Nicaragua (Walmart 2016a). Today, the country's only other supermarket chain is the Nicaraguan, family-owned La Colonia, which targets high-income consumers and has a quarter of the number of stores as Walmart (La Colonia 2014).

As the site of what Walmart calls its 'best-in-class' CSR program (LaChapelle 2012), an analysis of Nicaragua is particularly revealing of the potential – and limits – of the company's social and environmental responsibility programs, and the Direct Farm initiative in particular. As described on the Walmart website, the specific objectives of the Direct Farm program in Nicaragua and elsewhere are to: offer market access to farmers; raise farmer incomes and strengthen local economies; shorten and enhance the transparency of supply chains; and teach farmers to use pesticides, fertilizers, and water more efficiently and effectively (Walmart 2010). Given that the rise of retail has shown similar characteristics around the world (Reardon et al. 2009), looking at what is happening in Nicaragua offers insights into what we might expect to see as Walmart scales up globally the sourcing model it is piloting in Central America. Already, Walmart has expanded its Direct Farm program to include more than 750,000 small and medium-sized farms in China, India, Brazil, and South Africa (Walmart 2014a, 2011).

3.8 The failures of Walmart CSR in Nicaragua

To examine the impacts of Walmart's Direct Farm program on smallholder farmer households, we surveyed 250 vegetable farmers and interviewed 65 market actors in Nicaragua over nine months in 2013. We surveyed farmers who sold vegetables (tomatoes, bell peppers, and/or lettuce) to either Walmart, La Colonia, or traditional wholesalers, while in-depth interviews were conducted with a wider range of market actors, including farmers, but also traditional wholesalers, Walmart and La Colonia buyers, government authorities, and NGO leaders. The survey gathered data on farmer household demographics, wealth, agricultural practices, and food security, as well as details about the terms of farmer participation in different markets. The semi-structured interviews provide context and the in-depth responses help explain the survey results.

What we find is that Walmart's CSR program in Nicaragua is failing on two fronts, neither achieving Walmart's business objectives nor its expressed sustainability goals. Despite what some private governance scholars have posited (Gereffi 1994; Gereffi, Humphrey, and Sturgeon 2005; Mayer and Gereffi 2010; Dauvergne and Lister 2012, 2013), Walmart's CSR activities do not appear to be increasing its capacity to control suppliers in Nicaragua. Even as Walmart doubled the number of retail units in Nicaragua (see Figure 3.1) and increased local procurement of produce by 40 percent (Interviewee I 2013), the number of farmers supplying Walmart fell (see Figure 3.2). While over the past eight years farmers supplied local markets and the national supermarket chain an average of seven and six years (respectively), farmers sold on average fewer than four years to Walmart (see Figure 3.3). Farmers have steadily left the Walmart supply

chain, with less than a quarter of farmers supplying Walmart continuously since starting to sell to the company.

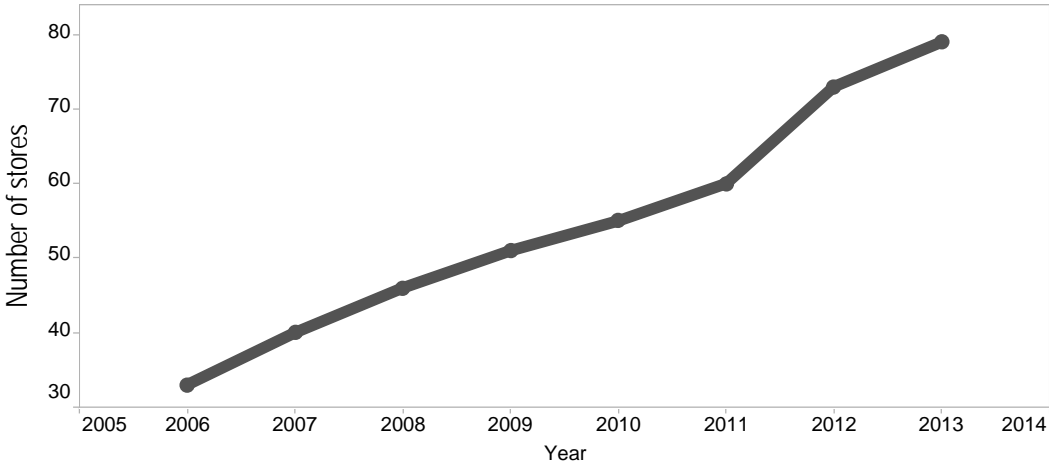


Figure 3.1 Number of Walmart-owned stores in Nicaragua, 2006–2013

Source: Walmart Annual Reports 2007-2014.

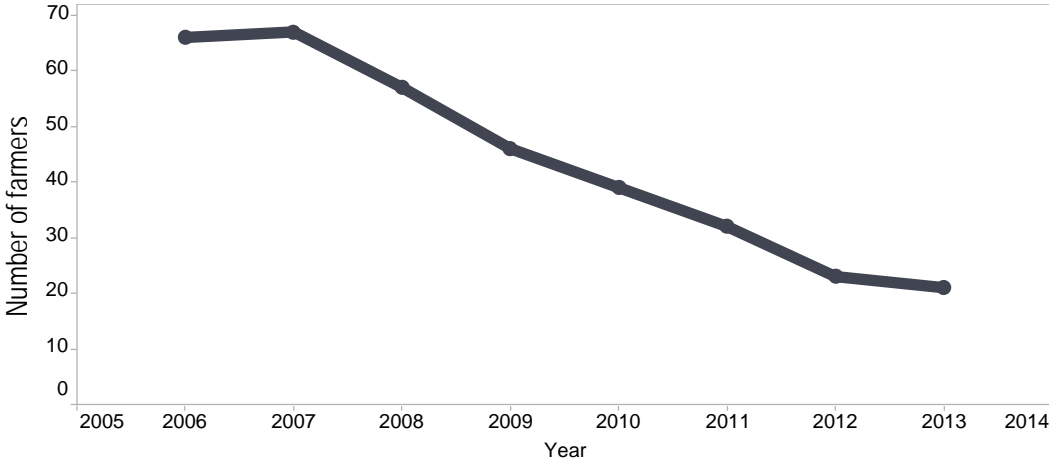


Figure 3.2 Number of farmers in sample supplying Walmart, 2006–2013

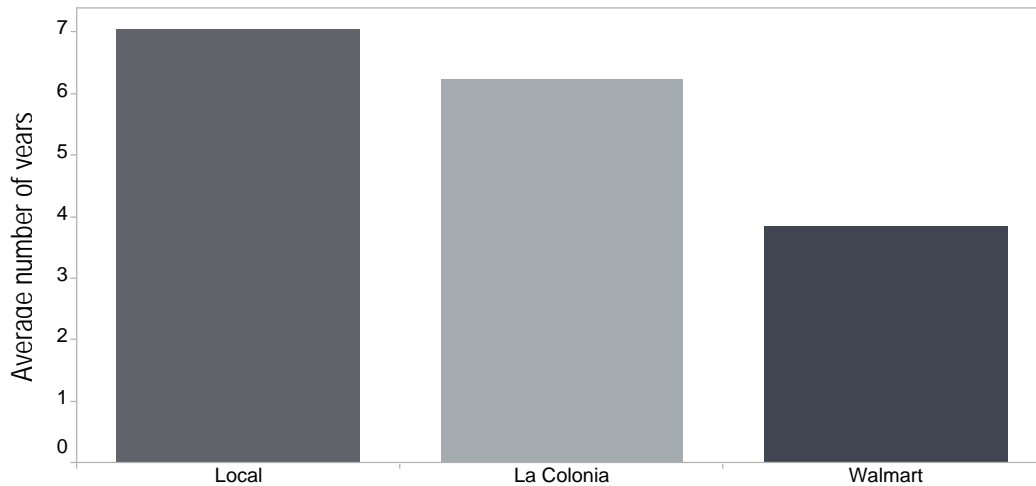


Figure 3.3 Average number of years farmers supplied different markets, 2006–2013

Walmart does not lack control for want of trying. In interviews, Walmart staff explained that side-selling is a problem for them and that they are trying new strategies to gain control (side-selling is when farmers reach an agreement to sell to one buyer, but later sell to a different buyer) (Interviewee I 2013). Well aware that control over suppliers would lead to competitive advantages by lowering costs and providing more reliable and higher quality supplies, Walmart has tried sourcing from farmer cooperatives supported by NGOs, and offering farmers guarantees of high and low prices, as well as free transportation. Their most recent attempt to increase control is to offer loans tied to selling to Walmart. Farmers can use their contracts with Walmart to obtain credit at a partner bank, and can only pay off this loan through sales to Walmart, with the company payment going directly to the bank to pay off the farmer’s debt.

Unsurprisingly, as in other studies we found that a high purchase price is a major incentive for farmers to sell to a particular market (Schipmann and Qaim 2011). Regardless of the market they

normally sell to, farmers in our sample generally switched to another buyer if a better price was on offer. In other words, they exited the Walmart supply chain to sell to the local market to gain a higher price, and they exited the local supply chain to sell to Walmart when Walmart offered a better price. Interestingly, however, rather than farmers moving in and out of the Walmart supply chain, farmers in our sample who stopped selling to Walmart generally did not return to sell to Walmart again. While Walmart deciding to stop purchasing from these farmers may explain some of the exits, our data suggest that farmers first switched to Walmart to obtain higher prices, but after exiting higher prices were not enough to entice them back. Some farmers were unable to continue to sell to Walmart when their cooperative stopped working with Walmart, while others lacked the financing to continue to plant vegetables. Many farmers, however, stopped selling to Walmart because they no longer wanted to.

Previous research has focused on determining what household and farm characteristics smallholder farmers require to be able to participate in modern retail supply chains (for exceptions, see Blandon, Henson, and Islam 2009; Schipmann and Qaim 2011). Much of this research assumes that if possible, smallholder farmers will sell to a multinational retailer. Yet as seen in chapter 2, there is no significant difference in wealth (measured as an index of productive assets) or farm size between farmers who supplied Walmart and farmers who did not. Nor is there much difference between farmers who stopped selling to Walmart and farmers who stayed. Something other than wealth and farm size is explaining the steady exit of farmers from the Walmart supply chain for vegetables.

The research suggests that the very same CSR tools that Walmart is using to try to increase control over suppliers – with, as mentioned, the aim of enhancing product quality, managing risk, and promoting reliable, consistent, low-cost production – are in fact accomplishing the opposite. Frustrated by demanding product standards, rejected fruits and vegetables, breached agreements, and delayed payments, farmers are exercising their agency and choosing not to sell to Walmart. In particular, it would seem that farmers do not trust Walmart to keep its promises, and value their independence and the freedom to negotiate with local market buyers.

Twenty percent of farmers in the study sample who sold at least once to Walmart since 2006 stopped selling to Walmart because the corporation rejected a portion of their delivered product (already sorted on the farm before delivery). Traditional local market buyers generally purchase a farmer's entire harvest and then sell produce of varying size and quality at different prices to a variety of consumers; none of the farmers we interviewed mentioned rejection of produce as a reason for exiting the local market. On the other hand, Walmart only buys what meets their product standards, requiring unblemished produce of a certain size and ripeness. After delivering products to its stores, Walmart trucks then proceed to pick up fruits and vegetables at designated roadside stops near farmers' fields; the produce is then transported to a large collection centre, which is sometimes as much as 100 kilometres from producers' farms. Walmart sorts the produce at the collection centre, giving farmers 72 hours to pick up any produce that does not meet its standards. For most farmers (more than half surveyed), the costs of transportation to collect rejected produce are prohibitive, and Walmart ends up throwing out most of the rejected produce.

Walmart routinely rejects around five percent of produce (though several farmers surveyed experienced rejection levels of more than 25 percent). In interviews, farmers expressed frustration with Walmart for rejecting their produce with such frequency, and we were surprised that actual rejection rates were not higher. For farmers it seems to matter less what proportion of their produce is rejected and more that Walmart does not buy their entire harvest. Moreover, the rejected produce is a straight loss to most farmers. Many farmers perceive this as unfair.

And therein lies the crux of why farmers stop selling to Walmart. They do not trust Walmart and perceive the company as unfair. They do not necessarily trust local market buyers either, but they do feel like they have more independence and ability to negotiate, and know what to expect from local buyers. For example, farmers can sometimes negotiate interest-free loans from local buyers that they have a close relationship with, in order to be able to plant that season. Walmart, however, makes promises that it fails to keep. In a culture where ‘a man is as good as his word’ (Interviewee VIII 2013), when Walmart offers farmers contracts that it then does not fulfil it quickly loses the loyalty of suppliers.

To try to control farmers, Walmart offers them a contract stipulating product volumes and price, quality standards, and frequency of delivery. Half of the farmers surveyed had a written contract with Walmart the last year that they supplied them. Twenty-five percent of farmers had a verbal agreement with Walmart, while the retailer bought from the other 25 percent on the spot with no prior agreement, seemingly to meet growing (and shifting) demands for products as they expand their stores in Nicaragua. By comparison, only 17 percent of farmers have some sort of verbal agreement with local buyers and none have written contracts (see Figure 3.4). Those farmers

who keep selling to Walmart tend to have no agreement or a verbal agreement, and interestingly, it is the farmers with written contracts who are choosing to stop selling to Walmart.

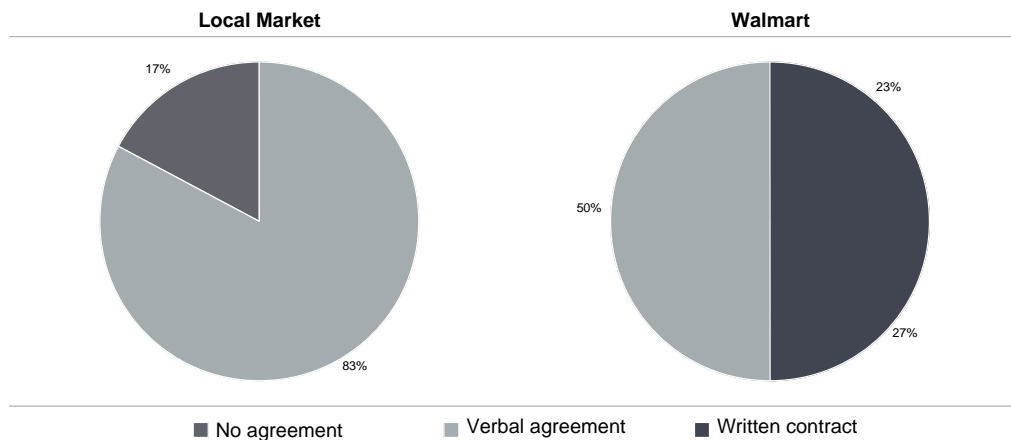


Figure 3.4 Type of agreement farmers had the last time they supplied Walmart or the local market

Walmart is trying to increase its control over farmers by formalizing procurement agreements, yet, because many farmers feel that Walmart is not honoring these agreements, in practice this strategy is sometimes achieving the opposite. A farmer explained:

I have a written contract with standards and prices with Walmart but they don't fulfill it. At the Agribusiness Fair in Managua Walmart said they would buy only from those with a contract, but that's not true, they buy wherever they can get a cheaper price... so producers no longer sell to Hortifruti [Walmart's dedicated wholesaler] by their choice. (Interviewee IX 2013)

Other farmers agreed, saying ‘if they [Walmart] find someone better then they go to cheaper’ (Interviewee X 2013) and ‘if you have a contract the intermediary [Hortifruti] will say the price is higher or lower so there is no point. I sell to my friend’ (Interviewee X 2013). A local NGO worker shared the same view as farmers, affirming that ‘Walmart is supposedly formal but it is not so – they just buy what they need’ (Interviewee XI 2013).

Walmart is clearly struggling to attain many of the business objectives of its CSR programming, but is it improving farmer incomes, food security, and the environmental impacts of farming as the company claims? The survey results reveal that Walmart’s CSR program for smallholder farmers in Nicaragua has no evident effect on wealth, food security, or agricultural sustainability.

Using productive assets as a proxy of household wealth, we created an index by surveying farmers’ agricultural equipment and infrastructure. For farmer households this method of assessing wealth has proven more accurate than income (Michelson 2013; Michelson, Muñiz, and DeRosa 2013). As mentioned, the analysis found that selling to Walmart or the local market made no difference to this index of farmers’ wealth in 2013. And farmers who stayed with Walmart were no better off than farmers who stopped selling to the company.

Furthermore, the fieldwork in Nicaragua did not find any correlation between what markets farmers chose to sell into and their level of food security. Very few experienced a lean season with stored crops running out. And nearly all of the farmers surveyed, regardless of market, were food secure at the time of the survey according to standard measures of food security, the Household Food Insecurity Access Scale (HFIAS) (Coates, Swindale, and Bilinsky 2007) and

the Household Dietary Diversity Score (HDDS) (Wiesmann et al. 2008). Although food insecurity is a problem in the regions in which we surveyed farmers, it appears that farmers who are able to grow vegetable crops for sale in addition to staple crops are wealthy enough to be food secure for most of the year.

Where Walmart's CSR program in Nicaragua may be influencing food security is for consumers. Though we did not survey consumers, our research with farmers and local market wholesalers raises concerns about the consequences of corporate 'quality' standards on food security in developing countries. Although Walmart's standards generally pertain to product appearance and ripeness (as opposed to contamination, for example), interviewees reported that produce that Walmart rejects and farmers are unable to retrieve, which normally would be sold at a local market, is thrown away. Because Walmart does not technically purchase this 'waste', it is written off as 'on-farm' loss. A former field buyer for Walmart estimated that 'probably 20 percent of what Walmart buys is thrown out (of tomatoes, lettuce, and cabbage)... even though it's better quality than normal... the losses are not really in the field'. Seeing our surprise, he then explained that 'Walmart is not interested in anything but their product' (Interviewee XII 2013). In the local market, food is less likely to go to waste because it is sold at different prices to reach both well-off and poor consumers. In interviews, wholesalers said a benefit of traditional open air markets is that consumers who cannot afford tomatoes at Walmart can negotiate a cheap price for lower quality tomatoes: 'There's a solution for poverty in Oriental [an open-air market in Managua]. I can sell burst tomatoes to people with only five Cordoba [US\$ 0.20] to give them a deal to help them' (Interviewee XIII 2013). Shoppers at a Walmart-owned store cannot negotiate the price of products.

A major claim of Walmart's Direct Farm program is that it is reducing the environmental impact of agriculture and helping farmers to use agrochemicals more efficiently. However, regardless of what market they sell to, nearly 70 percent of farmers who we surveyed use fungicides, herbicides, and pesticides; moreover, farmers who sell to Walmart for 5–8 years apply pesticides more frequently than other farmers. Some farmers in our sample are adopting integrated pest management and using organic pesticides, and some are getting (GAP) certification for their farms. Most of them, however, attribute these changes to the Nicaraguan government, training from NGOs, and their own interest in reducing the negative impacts of agriculture on human health, not to Walmart. Nicaragua, like other developing countries (e.g., the Association of Southeast Asian Nations, or ASEAN) (Amekawa 2013)), is promoting GAP as a way to promote consumer food safety while simultaneously supporting access to conventional markets for smallholder farmers. The international NGOs active in Nicaragua tend to intervene in supermarket supply chains, not local markets; one NGO leader explained that wholesalers do not want NGOs intervening in the local market, and NGOs do not understand the local market as well as supermarket supply chains (Interviewee XIV 2013). To access training from an NGO in sustainable methods of pest management then, farmers have to sell to a retailer like Walmart. That seems to be the primary reason why the few farmers implementing the more sustainable practices tend to sell to Walmart. Notably, no farmer surveyed had obtained information directly from Walmart on how to enhance the sustainability of inputs or agricultural practices, contrary to the company's claims.

Walmart's minimal impact on improving food security and agricultural sustainability is not surprising. Ultimately, Walmart's CSR program is designed to achieve business goals, not

improve the well-being of farming families. Walmart sees CSR as a tool to improve product quality, lower costs, and expand business. This was clear in the way that Walmart leaders described their Direct Farm program during a presentation in Nicaragua:

Tierra Fértil has functioned as a valid tool to substitute imports previously from Chili and USA – up to 80% of fruits and vegetables are now bought from local producers. (Walmart de México y Centroamérica presentation 2013, translated from Spanish, emphasis added)

Walmart is using CSR to try to increase its control over its suppliers and enhance the consistency and reliability of its supply of products within its specifications. Sourcing locally could facilitate Walmart's expansion in the global South by allowing Walmart to lower transport costs and decrease in-store waste (partly because the time from the farmer's field to the store shelf is shorter than sourcing internationally). Decreasing costs and lowering consumer prices is particularly necessary to compete in the global South where market growth is fast and incomes are low. 'Larger farmers don't want to sell to Walmart because they have more options and power than smallholders' (Interviewee VII 2013), and can choose to sell to buyers who have fewer requirements and whom they perceive as trustworthy. Sourcing directly from smallholder farmers who have few to no market alternatives and less power to negotiate price is essential for Walmart's ability to keep costs low. An NGO leader in Nicaragua said he heard a Walmart representative explain in a meeting that the company 'goes after smaller farmers because they get them more easily' (Interviewee VII 2013).

While Walmart has not established a steady supplier base in Nicaragua, it is still able to grow its markets and increase sales by getting the product it needs from new smallholder producers and when necessary from local wholesale markets. Though quality and costs are harder to predict, the company still benefits from relatively cheaper local prices and increasing sales volumes. The company's social responsibility rhetoric is helping it to get governments on board and gain access to developing countries where it can reach new consumers. On the AT Kearney Global Retail Development Index, 29 of the top 30 countries for retail growth are developing countries (AT Kearney 2013, 2). A key strategy to expand retail sales is to try to capture markets ahead of local firms. In Nicaragua, produce is a vital product category in this regard, as it can attract into stores consumers who then make other purchases as well. By using rhetoric to frame its business strategy as socially responsible and bringing efficiency, food safety, security, and sustainability, Walmart is justifying its expansion in countries like Nicaragua and gaining the support of governments and NGOs to do so. Jorge Calderón, a Walmart director in Central America, stated that 'in terms of sustainability, we are starting to open our model and try and involve governmental partners as well to see if this model can be reproduced in the region's public policy' (WBCSD 2009).

3.9 Conclusion

Multinational retailers such as Walmart are now economic and political powerhouses, as the case of Nicaragua shows. Although they are promising to use this rising power to enhance food security and agricultural sustainability, little evidence suggests that this is occurring in places like Nicaragua. Nonetheless, governments in both developing and developed countries are

buying into this promise and supporting CSR programs. Many NGOs (though not all) are jumping on board and are promoting CSR as an opportunity to improve social and environmental conditions for poorer populations in the global South. Despite this backing from governments and NGOs, in Nicaragua farmers are pushing back, limiting Walmart's control over their lives and farms. Many farmers see that Walmart's main priorities are to find savings and efficiencies, increase sales and profits, and expand markets and stores – and many do not seem to trust the company to keep its promises or treat them fairly.

These findings in Nicaragua add to understanding of the effectiveness of CSR governance, demonstrating that, contrary to what scholars commonly assume, at least in some cases the CSR programs of multinational retailers are failing to increase control over supply chains. Walmart's corporate sustainability initiatives are making some improvements to the company's competitive advantage, business growth, and sales; but they are doing little to improve food security, the lives of farmers, or agricultural sustainability, which explains in part why so many farmers who were once selling to Walmart decide to regain their independence and return to selling to local markets.

CSR programs like Walmart's in Nicaragua are not likely to achieve lasting social or environmental benefits for agrarian societies in the global South. NGOs and governments may want to put less faith in the capacity of multinational corporations to advance food security and agricultural sustainability. Companies like Walmart do not appear to have the power or skillsets to do this. In Nicaragua, Walmart's CSR is not designed and is not suited to this role, as the company prioritizes its corporate bottom line over community needs. Based on what we see in

Nicaragua, the global community may want to look at much stronger state and international regulation of MNCs to protect the independence and values of smallholder farmers, rather than rely on CSR governance to address the needs of agrarian societies in the global South.

Chapter 4: Multinational retailers and the destabilization of farmer cooperatives in Nicaragua

4.1 Introduction

Scholars, governments, and NGOs increasingly see cooperatives as a way to ensure the world's most marginalized farmers benefit in the face of agrarian change brought about by a globalizing food economy. A rapidly growing literature portrays cooperatives as a way for smallholder farmers in the global South to participate in the supply chains of multinational retailers on beneficial terms (Narrod et al. 2009; Blandon, Henson, and Cranfield 2009; Barrett 2008; Barham and Chitemi 2009; Fischer and Qaim 2012). Donor governments are supporting cooperatives through their development policy strategies, and an increasing number of NGOs are forming new farmer cooperatives or working with existing ones to link them to markets with the aim of achieving a variety of rural development goals, such as poverty reduction, food security, and environmental sustainability.

Research has started to examine whether and when cooperatives in particular and collective action generally achieve their purported benefits for farmers (Markelova et al. 2009; Hellin, Lundy, and Meijer 2009; Blandon, Henson, and Cranfield 2009), though there remains a need to understand and address the incentives and 'enabling conditions' for cooperatives to be profitable and sustainable (Markelova et al. 2009). The research has yet to unpack the influence of buyer business practices, as well as international NGOs acting as 'ethical agents' (Buxton and Vorley

2012) linking cooperatives to buyers. This is a particularly important gap given the rising power of multinational retailers to govern their global supply chains and influence the social and environmental conditions of production (Dauvergne and Lister 2010b; 2012; 2013), and the popularity of market-driven NGO development projects (for example, see ACDI/VOCA 2015; Caritas 2015; Catholic Relief Services 2015). This chapter contributes to both the private governance and development studies literature, addressing the gap in this research with respect to the effectiveness of cooperatives at facilitating and improving the terms of farmer participation in modern markets. Specifically, it contributes to understanding how and why some cooperatives, but not all, maintain long-term relationships with supermarket buyers. This study is one of the first to shine a light on the buyer, and to explore the outcomes for cooperatives through an in-depth case study.

This chapter uses data from my nine months of fieldwork in Nicaragua in 2013 to investigate the experiences of smallholder farmers selling fresh vegetables to traditional wholesalers, Walmart, and the national supermarket chain La Colonia. The case of Nicaragua allows for an interesting comparison, as Walmart has grown rapidly in Nicaragua over the past two decades, but exists alongside a national supermarket as well as wholesale markets for the same products. The results of this comparison provide insight into the consequences for farmers of the ongoing transition to supermarket dominance. Though further research is needed in other countries and regions with different levels of supermarket sector development and NGO supply chain involvement, given that retailers are in the process of scaling up their operations in the global South, and many market-oriented NGOs continue to promote cooperatives as a key component of their rural development strategies, the results of the analysis are of interest beyond Nicaragua.

In the case of Nicaragua, the findings demonstrate the limitations of counting on cooperatives alone to ensure benefits to farmers of market participation. Consistent with previous research (Barham and Chitemi 2009; Fischer and Qaim 2012), I found that farmer characteristics do matter, yet moreover, whether farmer cooperatives participate in supermarket supply chains depends on how the retailers govern the supply chain. The case of Nicaragua shows that farmers prefer to sell to the domestic-owned supermarket chain La Colonia, which appears to better understand the needs of farmers and the cultural constraints and business value of working with cooperatives than multinational retailer Walmart. The collaborative supply chain strategy of the domestic supermarket chain, based on a cultural tradition of managing supply chains through relationships and trust, is more conducive to the survival of farmer cooperatives than Walmart's compliance-based supply chain management strategy, which prioritizes supplier performance and deliverables over long-term relationships. Walmart's use of cooperatives as financial intermediaries to gain access to individual farmers and financial capital to fuel its market growth contributes to the destabilization of farmer cooperatives. NGOs failing to consider Walmart's practices before linking cooperatives of smallholder farmers to it exacerbate these effects.

I begin the chapter by reviewing the rise of supermarkets in the global South. Second, I outline the ways in which cooperatives are expected to help farmers benefit from the resulting agrarian change. Third, I describe the growth of foreign and domestic-owned supermarkets in Nicaragua, and how NGOs have worked with cooperatives to try to address the opportunities and challenges related to this growth. Then, I reveal the limits of cooperatives' ability to benefit the most resource-constrained smallholder farmers, particularly when they are coordinated by NGOs to sell to multinational corporations that prioritize cost and market growth over collaborative

relationships with their suppliers. I conclude with comments on what the case of Nicaragua reveals about the role of cooperatives in promoting inclusive agricultural development in the global South, and implications for the policy positions of NGOs and governments.

4.2 Supermarkets and smallholder cooperatives

The past two decades have seen the expansion of supermarkets in the global South, an expansion so rapid that some have called it a ‘supermarket revolution’ (Reardon and Berdegue 2006). Starting in the 1990s, the supermarket store format started to appear in developing countries alongside traditional open-air wholesale markets. The process was accelerated as countries liberalized their economies and changed their policies to encourage foreign direct investment, resulting in an influx of foreign capital from multinational retail corporations such as Ahold, Carrefour, and Walmart (Reardon and Berdegue 2002). The amount of retail foreign direct investment in the global South exceeded the doubling of international trade in products during the 1990s (Reardon and Timmer 2007). In just ten years, the supermarket sector in Latin America saw a level of growth that took five times as long in the US (Reardon and Berdegue 2002, 371). This growth is not set to stop any time soon. In contrast to the saturated markets of the global North, rising incomes and a growing middle class in the global South are increasing demand for modern retail. The world’s biggest retailers increasingly depend on foreign sales; in 2012, revenues from stores outside their home countries made up a third of the combined revenue of the 10 largest retailers (Deloitte 2014, G20). New retail stores in developing countries are expected to continue to drive growth in the retail sector in the decades ahead (Conlumino 2014).

Supermarkets source product differently than traditional wholesalers, changing the agrarian economy in ways that have important consequences for smallholder farmers in the global South. Wholesalers buy fresh produce from farmers face-to-face, on the spot, with cash. They have few or no standards that products must meet, and generally buy everything that a farmer wants to sell, regardless of size or other product characteristics. Supermarkets, on the other hand, have centralized their procurement systems, and typically have dedicated wholesalers that coordinate buying and sorting product from preferred suppliers. The product is selected according to strict requirements stipulating product size, shape, and quality (Reardon et al. 2009; Hernández, Reardon, and Berdegúé 2007).

Selling to supermarkets requires the infrastructure, inputs, and knowledge to meet supermarket demands for quality as well as flexible, just-on-time delivery of large product volumes.

Compliance with supermarket product specifications typically requires greater investment in production technologies (Reardon et al. 2009; Lee, Gereffi, and Beauvais 2010). Because only a few multinational companies dominate market share in developing country food retailing (Mergenthaler et al. 2009; Neven et al. 2006; Reardon et al. 2003), they are able to use their buyer power to push the costs and risks of their business down the supply chain to their suppliers (Brown and Sander 2007; De Grammont and Lara Flores 2010).

Scholars argue that cooperatives can help farmers to address these challenges (Holloway et al. 2000; Gibbon 2001; Levins 2002; Lyon 2003; Narrod et al. 2009; Rao and Qaim 2011). They maintain that by working as a group farmers can gain the economies of scale necessary to obtain technologies, credit, inputs, extension services and training more easily and cheaply than they

could alone (Blandon et al. 2009; Markelova et al. 2009). These same economies of scale also provide farmers with power to negotiate with buyers so that they can sell on beneficial terms (Holloway et al. 2000; Levins 2002; Lyon 2003; Narrod et al. 2009; Neven et al. 2009). Buyers are expected to benefit as well, as cooperatives collect and sort product, guarantee a minimum quantity and quality of product, improve traceability, and reduce the costs of buying a small amount from a large number of farmers (Narrod et al. 2009; Barrett et al. 2012).

4.3 NGOs and cooperatives

Projects that actively promote and support the formation of farmer cooperatives as a development strategy have proliferated in recent years. A number of large international NGOs in particular say they are supporting, and sometimes forming, cooperatives as a way to increase farmer incomes, to protect the environment and natural resources, and to improve food security and nutrition (e.g. ACDI/VOCA 2015; Caritas 2015; Catholic Relief Services 2015). Support for cooperatives is also increasingly integrated into UN agencies (e.g. FAO 2013; IFAD 2011; ILO 2015) and the development policy strategies of major donor countries. Canada's Department of Foreign Affairs, Trade and Development has made cooperatives a priority and works with cooperatives around the world, noting on its website that 'cooperatives provide as many as 100 million jobs worldwide, estimated to be 20 per cent more than multinational enterprises' (Department of Foreign Affairs Trade and Development Canada (DFATD) 2013). The United States' Agency for International Development supports farmer organizations 'to help them participate effectively in national, regional and global markets' (USAID 2014). The European Commission likewise states that it 'is committed to facilitate the restructuring of the agricultural

sector by encouraging the creation of voluntary agricultural producer organisations' (Bijman et al. 2012), and in 2006, the Association of Southeast Asian Nations (ASEAN) established the ASEAN Cooperative Business Forum to empower farmer organizations and promote business linkages between agricultural cooperatives within ASEAN Member States (ASEAN Secretariat 2014).

Despite high hopes for cooperatives, and farmers' organizations more generally, they have not always succeeded in achieving benefits for farmers. Minten, Randrianarison, and Swinnen (2009) concluded from their study of smallholders in Madagascar supplying European supermarkets with vegetables that there was promise for farmer cooperatives reduce transaction costs and increase investment, but acknowledged that cooperatives have not been very successful in Madagascar to date as a result of information asymmetries, despite support from NGOs and the government. In Tanzania and Ecuador, respectively, smallholder cooperatives failed when they were unable to compete on liberalized markets once government support was removed (Bargawi 2014), or when a few members used the cooperative to benefit themselves and their children rather than to collectively manage land (Bretón Solo De Zaldívar 2015). In Kenya, Fischer and Qaim (2012) investigated the impacts of farmer cooperatives formed with the support of international NGOs in order to improve Kenyan banana farmers' access to new seed technology, agricultural methods, and markets. While they found there were small income gains for farmers, mainly through increased production, and additional innovation benefits, the cooperatives had not yet been able to access the perceived higher-value supermarket supply chains as planned.

Cases of cooperatives able to maintain supply relationships share several similarities, notably their emphasis on marketing and support from international NGOs. Though as the cases above demonstrate, international NGO support is not always a prerequisite for success (Fischer and Qaim 2012). Narrod et al. (2009) found that though companies traditionally sourced green beans through farmer cooperatives in Kenya to keep transaction and traceability costs low, the composition of the cooperatives changed significantly with the introduction of buyer private standards. Groups dropped in size from several hundred members to fewer than 30 farmers in order to facilitate technical training and group monitoring, supported by large international NGOs and development funding from Northern countries. The same authors suggest that the success of grape producing cooperatives in India resulted from a key partnership between the cooperatives and a specialized marketing company that facilitated access to inputs and output markets, in addition to government support (Narrod et al. 2009).

Research on the factors that determine cooperatives' ability to access markets has focused on the role of product and farmer characteristics. Studies show that cooperatives are more likely to work well for high-value perishable crops like fresh fruits and vegetables than basic grains, because perishable crops require special equipment and transport that farmers cannot afford alone, while farmers do not need help to store and transport grains (Barrett 2008; Berdegue 2001; Barham and Chitemi 2009). Recent research has identified a trade-off between cooperatives being able to include the poorest and smallest farmers and being able to meet market goals (Spielman 2008), and which the case of green bean farmer cooperative membership downsizing above illustrates quite clearly (Narrod et al. 2009). Yet there remains a gap in the literature regarding the impact of buyer-led supply chain governance on cooperative success (Reardon,

Timmer, and Minten 2012) and the impacts of international NGOs supporting these relationships. This chapter looks closer at how and why new generation cooperatives maintain sales to supermarkets by comparing farmer cooperatives selling to a domestic supermarket chain with farmer cooperatives selling to the world's largest grocer, Walmart.

4.4 The case of Nicaragua

To evaluate the role and consequences of cooperatives selling to supermarkets in Nicaragua, I analyzed data from a survey of 250 vegetable farmers and interviews with 65 market actors over nine months in Nicaragua in 2013. The survey gathered data on cooperative participation in addition to farmer household demographics, wealth, land use, and the terms of their market engagement. I used data visualization software Tableau to examine trends in the survey responses and compare farmers selling to different buyers. Interviews with farmers, as well as with wholesalers, Walmart and La Colonia leadership, and NGO leaders, provided in-depth insight into the trends identified using Tableau. I conducted multiple detailed readings of the interview notes and transcripts to categorize the raw data into findings in a matrix in Excel, and to ascertain the links between the findings. Using mixed methods allowed me to triangulate the data both across data types and different interviewee perspectives.

The growth of supermarkets in Nicaragua follows the larger trend of supermarketization in the world. In 1990, two domestic companies owned six supermarkets in all of Nicaragua. There was a chain of 40 supermarkets in Nicaragua operated by CARHCO 15 years later (Wiegel 2012). In 2006, Walmart bought a majority share in CARHCO, and today the company has more than 80

stores in Nicaragua, including both low-income format stores Palí and Maxi-Palí, and higher-income oriented La Union stores (Walmart 2016a). La Colonia, a domestic company, is the only other supermarket chain in Nicaragua, with 20 supermarkets targeting high-income consumers in the country's cities (La Colonia 2014).

The two supermarkets have shifted from buying from traditional wholesalers at the main open-air markets in Managua to buying from farmer cooperatives. Walmart now buys 90 per cent of horticultural products for its Nicaraguan stores in Nicaragua. Of this amount, 70 per cent is bought from farmers directly, including from farmer cooperatives, up from 30 per cent when the company first started in Nicaragua (Interviewee I 2013). La Colonia also relies on Nicaraguan farmers for its supply of fresh fruits and vegetables, and on two farmer cooperatives in particular (Interviewee II 2013).

This shift in sourcing was aided by two USAID projects that funded several large international NGOs between 2002 and 2012 to help smallholder farmers in Nicaragua commercialize horticulture production and supply supermarkets. Despite Walmart's CSR claim that it is 'support[ing] farmers and their communities' (Walmart 2014b), it has never provided farmers with technical assistance or credit. Instead, the NGOs provided farmers with irrigation, technical assistance, and training to meet supermarket requirements for fresh fruit and vegetables, including product standards and year-round production (USAID 2007; USAID 2012).

Both USAID projects involved NGO support for farmer cooperatives as a way of facilitating market access, particularly by coordinating sales from the cooperative to the supermarket. Four

cooperatives have been supplying either Walmart or La Colonia in Nicaragua over the past decade; all of them have had some support from at least one of the two projects. The NGOs played a key role in mediating the relationship between supermarkets and farmers. They negotiated supply agreements and communicated between the farmer cooperatives and the supermarket procurement officers. Farmers received credit, inputs, and technical and organizational assistance from the NGO, and were expected to sell via the cooperative to the supermarket chosen by the NGO.

The NGOs targeted resource-constrained farmers in the regions where they normally focused their development programming. They provided farmers with irrigation and greenhouse equipment and training so that instead of depending on seasonal rains to grow crops, farmers could meet supermarket demands for continuous supply year-round. Prior to participation in the NGO projects (in 2001) over 80 per cent of farmers who later supplied a supermarket through a cooperative had less than seven hectares of land (the majority of these less than 3.5 hectares) and no irrigation (Michelson, Reardon and Perez 2012, 344).

Farmers have continued to supply La Colonia through their cooperatives for at least seven years straight. Yet despite the NGO support, farmers selling to Walmart through a cooperative are dropping out of the Walmart supply chain in large numbers. Farmers said in the survey that they exited the Walmart supply chain as a result of their cooperative becoming unstable. Of the farmers who supplied Walmart through a cooperative at least once since 2006, the majority (85 per cent) had exited the supply chain by 2013. In the same eight year period, between 2006 and 2013, over half of the farmers who exited the Walmart supply chain each year had been selling

through a cooperative before they exited. The few farmers that supplied Walmart continuously over the years did not sell through a cooperative, but instead sold directly to Walmart individually.

The opposite is true for La Colonia farmers, who, once they started selling through a cooperative to La Colonia, continued to sell via the cooperative to the domestic supermarket chain each year. If farmers did exit the La Colonia supply chain, they said it was because they were not a member of a cooperative. No farmers sell to La Colonia individually, outside of a cooperative; two thirds of those who tried to sell individually to La Colonia ended up exiting the supply chain by the following year, and the rest who tried to sell individually exited soon after. Not a single farmer in the study sample selling to La Colonia through a cooperative exited the supply chain once they started.

4.5 The success and failure of cooperatives in Nicaragua

This chapter set out to explain why some cooperatives have maintained a relationship with a supermarket and others have not. Specifically, it investigates why it is that the cooperatives supplying Walmart became unstable while the cooperatives selling to La Colonia did not.

Analysis of the survey data show that the difference in cooperative performance can be explained in part by statistically significant differences between farmer members of cooperatives selling to Walmart and farmer members of cooperatives selling to La Colonia. Members of cooperatives selling to La Colonia are wealthier, have more land, larger families (i.e. more labour), irrigation, and more education than members of cooperatives selling to Walmart. As such, farmers selling

to La Colonia are more able to meet the supermarket's standards and production requirements than farmers selling to Walmart.

Moreover, the interview responses reveal a story more complex than one of simply farmer characteristics determining outcomes. The failure of cooperatives to establish a beneficial market relationship for farmers with Walmart results from corporate strategies anathema to smallholder cooperative success, and misguided support from development NGOs.

Both Walmart and La Colonia seek efficient, flexible, cheap supply of quality product, but the ways they go about achieving this have different implications for farmer cooperatives. By fostering trust and supplier loyalty with farmer cooperatives, La Colonia gains a steady high-volume supply of high-quality product. Walmart, on the other hand, views cooperatives as a business tool to gain access to suppliers that will meet its requirements cheaply and fuel its market growth. Its business practices associated with this perspective contribute to the destabilization of farmer cooperatives and cause farmers to exit its supply chain.

La Colonia fosters long-term relationships with cooperatives as a key strategy to enhance supplier loyalty while keeping costs down. The majority of La Colonia contracts with cooperative members are one year in length, with the assumption on both sides that the contract will be renewed every year. The company has established a dialogue with farmer cooperatives, and involves leaders of the cooperatives in setting the terms of the supply relationship. La Colonia buyers consult cooperative leaders to decide together on a planting schedule that suits both the needs of the cooperative members and the company (Interviewee XV 2013). This

respect for farmers' agricultural knowledge has helped the company to gain farmers' trust. Farmers perceive La Colonia as flexible and willing to accommodate their needs, with many citing the example of La Colonia providing their cooperative with cold storage and a truck to transport their product to Managua when they asked for it. La Colonia has the cooperative pay back the cost of the storage facility and the truck interest-free over time with an amount deducted from each product delivery to La Colonia. The steady relationship with farmer cooperatives has business value for La Colonia. By gaining farmer loyalty, it helps to secure a supply of product in the volumes and quality La Colonia requires, and reduces transaction costs as cooperatives take on the role of sorting and transporting product to La Colonia's distribution centre in Managua.

Walmart takes a different approach to managing its supply chain, using cooperatives to gain access to suppliers that will meet its requirements cheaply and fuel its market growth. Walmart does not invest in long-term relationships with farmer cooperatives; its contracts with cooperative farmers are usually only for a single harvest, or 90 days, without guarantee of renewal. Instead it buys from whoever will sell vegetables that meet its standards for the lowest price, either individually or via a cooperative. The company pays a lower mean price than La Colonia for the same product (Michelson et al. 2012), and does not negotiate with farmers or their cooperatives. A farmer showed me the planting schedule Walmart gives them, specifying what dates farmers must plant and harvest if they want their product to be purchased by the company (Interviewee XVI 2013). None of the farmers surveyed reported receiving technical or financial assistance from Walmart. Quite the opposite, Wiegel (2012) found that the company

delays payments to farmer cooperatives so that farmers are the ones providing the multinational corporation with credit.

When not all members of a cooperative are able to meet the standards demanded by Walmart, the retailer buys directly from the few—usually two to three out of approximately 25—cooperative members that can meet its standards (Interviewee I 2013). Instead of being member-owned organizations that represent the interests of all their members, the cooperatives selling to Walmart end up benefiting only the better off members of the group by acting as ‘financial intermediaries,’ as one interviewee called them (Interviewee VII 2013). Walmart pays the cooperative via cheque to its bank account and then the cooperative pays the farmers who sold to Walmart in cash, minus overhead costs. This system benefits farmers who are the better off in the group but still do not have a bank account, something that is necessary to receive payment from Walmart, which only pays by cheque. When Walmart ends up buying from only a few members of the cooperative, the cooperative becomes of little use to other members and ultimately unstable.

Surprisingly, farmers in the survey who said they stopped selling to Walmart when their cooperative became unstable were more likely (than farmers who did not exit the supply chain) to have started supplying Walmart on the advice of an international NGO. I argue that the instability of the cooperatives occurred despite—and because of—this support.

A Walmart management team member explained that it was not part of Walmart’s original strategy in Nicaragua to buy from farmer cooperatives; the retailer preferred to source directly

from farmers to have more control over production (Interviewee I 2013). Yet established farmers saw Walmart as “demanding too much and offering too little” (Interviewee XVII 2013) and chose not to sell to the company. That many farmers in the country refused to sell directly to Walmart is part of the reason why the retailer started buying from cooperatives in the first place (Wiegel 2013). NGOs approached Walmart and proposed that they buy from cooperatives. The farmers the NGOs coordinated in cooperatives were generally in poorer, not traditionally vegetable-growing areas that the NGOs had targeted for their development programs (Interviewee II 2013). As these farmers had few alternative markets in the area, Walmart saw them as easier to ‘get’ (Interviewee VII 2013) and decided ‘it would be worth it even if they got just a couple of good suppliers out of the project’ (Interviewee I 2013).

Farmers selling to La Colonia were more likely to have decided on their own to sell as a cooperative to the domestic retailer. Half of the farmers surveyed who belonged to cooperatives selling to La Colonia reported having no NGO support. Half did have support from an NGO, but a different one than that coordinating farmers to sell to Walmart. The NGO collaborated with La Colonia and not Walmart because, according to the NGO’s staff, ‘the managers of La Colonia have a goal of helping the producers. The relationship between La Colonia and farmers has a social focus as well as a business focus, whereas [Walmart-owned] Hortifruti only sees farmers as producers of its products’ (Interviewee II 2013).

When certain NGOs brought together smallholder farmers to form cooperatives to sell to Walmart, they did not consider that the business priorities of the multinational retailer would clash with development goals (and farmer interests), so only several farmers in the group

continued selling to Walmart once the NGO projects ended. The NGO working with La Colonia, on the other hand, considered both farmer capacity and company business practices before matching the two. Thus, while farmer characteristics are an important part of the story of why some cooperatives maintain a relationship with supermarket buyers, they are not the whole story. While farmers in cooperatives selling to La Colonia farmers are more likely to have irrigation, and more land, labour and education, they are also selling to a company that involves them in decision-making, takes their needs seriously, and sees the value in working with them.

4.6 Conclusion

More and more, cooperatives are seen as a way for smallholder farmers to participate in multinational retail supply chains on beneficial terms. International development NGOs and government funds are promoting and supporting farmer cooperatives in developing countries around the world as a path to reducing poverty and increasing food security. They expect cooperatives will help smallholders establish the economies of scale required to meet supermarket demands for volume, consistency, and quality, and that cooperative members, by joining together, will gain power in supermarket supply chains to negotiate with their buyers. The case of cooperatives selling vegetables to supermarkets in Nicaragua provides evidence that contrary to what many scholars assume, cooperatives are not sufficient for farmers to benefit from selling to Walmart. The findings strengthen evidence that for farmer cooperatives to maintain a longer term relationship with a supermarket depends on farmer and farm characteristics, such as irrigation and education level. Moreover, they highlight the influence of NGO intermediaries and buyer business practices. Whether farmer cooperatives can or choose to

participate in supermarket supply chains depends in part on the buyer's supply chain management strategy and practices. Fridell (2008) shows with the case of Fair Trade that distinct buyer motivations can have different implications for production. In Nicaragua, the business objectives of La Colonia and Walmart are similar in terms of quality, pricing, and efficiency goals, but La Colonia is more attuned to local culture and farmers' needs, and the business value of fostering good relationships with cooperatives.

When designing development interventions to link farmers to markets, NGOs need to consider not only farmer and farm characteristics but the ways in which buyers manage their supply chains so as to not increase the vulnerability of smallholder farmers. Bezner Kerr (2013) has shown how in Malawi the increased position and overlap of the private and not-for-profit sectors has constrained farmer choices. It should have been a warning to NGOs that better-off farmers refused to sell to Walmart, but instead they encouraged the most resource-poor farmers to sell to the retailer. Establishing long-term relationships between buyers and cooperatives requires that NGOs appropriately assess farmers' assets, capacities, and objectives to identify the type of initiative most appropriate to improve farmers' livelihoods. The case of Nicaragua shows that NGOs may do better to partner with buyers that understand the challenges faced by local smallholder farmers and that foster collaborative relationships with their suppliers.

The research agenda on cooperatives needs to be expanded to focus on buyers. Rather than assume all buyers are homogenous, future research could explore the different identities and functions of who is encompassed by this term, and the consequences for farmers and their cooperatives. More detailed investigation of the specific terms of farmer engagement in

cooperatives and supply chains is likely to provide important insights into why some cooperatives maintain supply relationships and others become unstable. A similarly important avenue for future research is to examine more closely the role of different NGOs in mediating supply chain relationships, unpacking their relationships with both farmers and buyers. To date, research has tended to assume that farmers want to supply modern markets, but this is not always the case, as Elder and Dauvergne (2015) have shown. Smallholders assess risks, make decisions, and act based on their livelihood priorities (Vorley, Del Pozo-Vergnes, and Barnett 2012). The cooperative research agenda could also look more in depth at farmers' decision making, and how and why they decide to join cooperatives and when they decide to quit.

Promoting long-term collaborative relationships between buyers and suppliers could improve risk management and enable greater productivity and cost savings for buyers, while bringing voice to farmers and their cooperatives. There is a need for increased opportunities for dialogue between buyers, farmer cooperatives, and governments to foster better understanding of each other's cultures and needs. The International Labour Organization, with its expertise in bringing together governments, employers and workers, for example, could provide such a forum.

Governments, donors, and NGOs must also realize that market development is not the same as social policy. A different development strategy is required for the most resource-poor farmers, one that does not depend narrowly on market participation but focuses on the wider livelihood strategies farmers use to adapt to agrarian change.

Chapter 5: The politics of promoting agricultural sustainability in the Global South: the case of public GAP certification in Nicaragua

5.1 Introduction

Private certification systems have become ubiquitous in global agrifood supply chains for governing the social and environmental conditions of production. In some cases, they have become de facto mandatory for suppliers to access foreign markets (Henson and Humphrey 2010). GlobalGAP certification has become widespread since its creation by European retailers in 1997 to harmonize their food safety and production criteria (Bain 2010). The private certification system requires improved agricultural practices to address food safety, environmental management and labour issues, which are audited by an independent third party. It has been adopted by the world's largest retailers, Walmart, Carrefour and Tesco (GlobalGAP 2016b). To date, 120,000 producers have been certified (Maertens and Swinnen 2015) in more than 100 countries (GlobalGAP 2016a).

GlobalGAP certification can yield some improvements in pesticide use and occupational safety and health, but its standards can also exclude smallholder farmers from markets (Asfaw, Mithöfer, and Waibel 2010, 2009; Maertens and Swinnen 2009; Schuster and Maertens 2013). Alternatively, a number of countries in the global South are setting up and implementing public GAP certification programs as a way to include smallholder farmers in supermarket supply chains while improving the environmental impacts of local agriculture. At least eight countries in

Southeast Asia (Amekawa 2013) and Latin America (FAO 2007) have designed public GAP programs over the past 15 years. These public GAP schemes outline locally-relevant control points that farmers must meet, and generally provide extension services and subsidized technology to enable smallholders to meet the standards. Despite their potential in addressing the challenges associated with private GAP certification, there has been little attention to public GAP systems. This chapter contributes to helping fill this gap.

Chapter 5 examines the dynamics of the Nicaraguan government's GAP certification program, introduced in 2005 (Interviewee XVIII 2016) to improve farmer practices and participation in supermarket supply chains. The analysis is based on the survey of 250 smallholder vegetable producers, and 65 interviews with farmers, government officials, NGO leaders and field staff, and corporate executives. The chapter sheds light on the politics of improving smallholder farmer agricultural practices. It contributes generally to the growing literature debating the role of private versus public standards in governing global agrifood systems. It provides particular insight into understanding the effectiveness of public GAP certification in the case of a country in the global South trying to address the challenges faced by smallholder farmers in a context of increasingly de facto mandatory transnational standards governing food safety and environmental conditions of production.

My analysis reveals that government-led GAP systems can be effective at introducing improved agricultural practices and benefiting smallholder farmers. Much of the literature on the effectiveness of certification systems argues that the success of such programs depends on buyer power and demand. Yet despite their proclaimed interest in GAP certification, supermarket

buyers in Nicaragua are doing little to encourage certification. Instead, surveys and interviews with smallholder farmers reveal that the government is motivating farmers to get certified. The government is leveraging NGO support to provide technology and training to farmers, who are, as a result of improved agricultural practices, benefiting from producing a higher quality product. By educating local consumers about the benefits of GAP certified produce, the government is creating local demand for smallholder certified products.

I begin the chapter by analyzing the rise of food retail and certification systems in the global South. Then, I analyze what the certification literature says about the effectiveness of agricultural certification for governing farm practices. I present the case of GlobalGAP certification, and describe the more recent emergence of public GAP certification. Then I look closer at the specific case of public GAP certification in Nicaragua, a country experiencing a rapid rise in supermarkets. I analyze why farmers are getting public GAP certified, revealing that the government of Nicaragua is driving farmer adoption of public GAP certification through leveraging NGO support. I argue that the government's strategy of focusing on local markets is a more important determinant of the program's effectiveness than supermarket demand. I conclude by considering the implications of the case of public GAP in Nicaragua for the broader debate over the effectiveness of public and private standards for promoting good agricultural practices among smallholders in the global South.

5.2 The rise of food retail in the global South

Over the past few decades, multinational retailers have become key actors in the global agrifood system (Burch and Lawrence 2007; Clapp 2016). More than half of global food sales are now by supermarkets and hypermarkets (Conlumino 2014). The world's largest retailers – like Walmart, Tesco, and Costco (Deloitte 2014) - are increasingly sourcing perishable goods such as fresh fruits and vegetables through global supply chains.

Multinational retail corporations are rapidly expanding their sales as well as their sourcing in the global South. Consumers in developing countries are now an important customer base for global supermarket chains, and the expansion of retail stores into developing countries is the main driver of global food sales (Conlumino 2014). In 2012, the world's 10 biggest retail corporations obtained a third of their combined revenue from stores outside their home countries (Deloitte 2014, G20). This trend is expected to continue as increasing incomes and a growing middle class in the global South escalate demand for food retail.

The rise of food retail has been rapid in Latin America. Between 1990 and 2000 the Latin American retail sector achieved a market share that took 50 years in the US (Reardon and Berdegú 2002, 371). As Latin American countries liberalized their economies and encouraged foreign direct investment in the 1990s, multinational corporations such as Ahold, Carrefour, and Walmart started to accelerate their entry into these markets with supermarkets and fast food outlets (Reardon and Berdegú 2002). Supermarkets grew quickly alongside traditional open-air wholesale markets, so that the amount of retail foreign direct investment in the global South was

more significant even than the increase in international trade during the 1990s (Reardon and Timmer 2007).

5.3 Private food governance

Concurrent to the rise of retail has been a proliferation of certification schemes – including Fairtrade, Organic, Rainforest Alliance, GlobalGAP and others – that govern the production and trade of food. In the 1990s it became increasingly common for companies to state their social and environmental responsibilities in corporate codes of conduct. The industry codes of conduct that followed were somewhat more credible because they were monitored by industry associations rather than the companies themselves. Certification systems then emerged as a way to independently monitor company compliance with a set of production standards, and became more prevalent throughout the 2000s as NGOs pressured companies to adopt them. Voluntary private certification and labelling systems have grown in both volume and proportion in various agrifood markets (Potts, van der Meer and Daitchman 2010).

Although certification systems have emerged, evolved and proliferated differently in various sectors, they are similar in that they set environmental and/or social standards of production, require third-party audits, and label compliant products (Auld 2014). Certifications of agricultural commodities have arisen for different reasons, from Northern consumers standing in political solidarity with Southern producers in the case of Fairtrade coffee (Jaffee 2010; Reynolds 2009), to retailers addressing due diligence under the UK Food Safety Act in the case of GlobalGAP (Tallontire, Opondo, Nelson and Martin 2011). Certification schemes have gained

interest among private governance scholars, particularly as a way to fill a regulatory gap in the global South, where governments are perceived as lacking capacity or willingness to implement and enforce social and environmental regulations (Mayer and Gereffi 2010). Auld et al. (2007) argue that certification is an effective way to harness developed country consumers' willingness to pay to help reach development goals in the global South. Business scholars point out that it can be a useful tool for protecting brand reputation from social and environmental activists (Gereffi, Garcia-Johnson and Sasser 2001) or from selling unsafe or low-quality product (Humphrey 2008).

Certification's effectiveness at changing on-the-ground practices continues to be debated. Most studies focus on a particular certification system such as Fairtrade (for example, see Elder, Zerriffi and Le Billon 2012, 2013; Raynolds 2009; Raynolds and Ngcwangu 2010) or product (for example, see Ruben and Zuniga 2011 for coffee; Gulbrandsen 2005 for forestry), limiting conclusions regarding the overall impacts of certification systems. There is some evidence of (limited) benefits for farmer households of agricultural certification. For example, several studies of Fairtrade suggest that it can improve farmer incomes and improve the environmental conditions of production (Bacon 2005; Ruben and Fort 2011; Arnould, Plastina, and Ball 2009). However, a common theme of concern across certification system impact analyses is that the most resource-poor smallholder farmers are excluded from market opportunities as a result of being unable to meet certification standards. Smallholders have been excluded from participating in supply chains mainly due to a lack of technical and financial capacity necessary to comply with the standards, for example, in the cases of organic certification in Brazil (e.g. Blanc and Kledal 2012) and GlobalGAP certification in Kenya and Senegal (Dolan and Humphrey 2000;

Graffham, Karehu, and MacGregor 2007; Maertens and Swinnen 2009). This effect is likely to be greater when a large proportion of buyers in the market demand compliance with the same standards, those ‘voluntary’ standards become de facto mandatory for farmers wanting to access that market, as has happened in the case of GlobalGAP certification (Campbell, Lawrence, and Smith 2006; Henson and Humphrey 2010).

While much emphasis has been placed on certification systems as a way to fill a regulatory gap in developing countries, recent research suggests certification systems are better viewed as being layered on top of existing domestic regulation (Bartley 2013, 2011). Bartley (2011) argues that in fact developing countries are not void of state regulation, and that the effects of certification systems will depend on how they interact with domestic law. Bartley (2010) found that property rights and the nature of business-state relationships, for example, limited the effectiveness of forestry and labour certifications in Indonesia. Other studies illustrate cases where governments in the global South have supported private certifications (for example, Tunisia became a member of IFOAM) or helped develop private certifications (such as KenyaGAP) (Carey and Guttentstein 2008). These studies suggest that rather than pit them in opposition, it may be more constructive to study the interaction of government regulation and private certification.

Recently, some scholars have drawn attention to new, state-led voluntary public certification systems that are emerging, arguing that they deserve attention as an alternative to private certification (Amekawa 2013; Tey et al. 2015; Gazi Md Nurul 2012; Schreinemachers et al. 2012). In particular, these new public certifications could be a way to harness the strengths of

private certification while being inclusive of smallholder farmers. I turn below to the example of GAP certification to explore this issue.

5.4 GlobalGAP certification

An increasing body of scholarship looks at the impacts of GlobalGAP certification, the world's most prominent farm certification program (Maertens and Swinnen 2015). The third party certification was set up by major European food retailers in the late 1990s as a way to guarantee the safety and sustainability of fresh fruit and vegetable production to their consumers (GlobalGAP 2016a). The certification system harmonized the retailers' standards, lowering the costs of implementation and auditing for the individual companies and allowing increased flexibility to switch suppliers who all meet the same baseline standard (Bain 2010). Now, the certification has been adopted by food retailers around the world, including retail giants Walmart, Carrefour and Tesco (GlobalGAP 2016b), who require producers to meet GAP standards as a minimum for market access. Thus, while voluntary, meeting GlobalGAP standards has become in practice mandatory to access many global markets for fresh produce (Campbell, Lawrence, and Smith 2006).

Research on the impacts of GlobalGAP certification has shown it can lead to increased product yield and quality, higher prices and better incomes for farmers (Kuwornu and Mustapha 2013), as well as improved pesticide use (Asfaw, Mithöfer, and Waibel 2009) and healthier working conditions (Asfaw, Mithöfer, and Waibel 2010). Yet more and more research suggests that GlobalGAP certification benefits well-resourced large-scale farmers while further marginalizing

resource-poor smallholder producers who face challenges in meeting the certification requirements (Konefal, Mascarenhas, and Hatanaka 2005). Smallholder farmers tend to lack the infrastructure, equipment, and knowledge necessary to meet the stringent standards related to agrochemical application and traceability (Dolan 2005; Nyambo et al. 2009; Tallontire, Opondo, and Nelson 2014). In the few cases where smallholder farmers were able to get GlobalGAP certified, they had extensive support from donors and exporters (Kersting and Wollni 2012). However, in many cases, smallholder vegetable farmers have lost their access to markets as a result of GlobalGAP standards (Asfaw, Mithöfer, and Waibel 2010, 2009; Maertens and Swinnen 2009; Schuster and Maertens 2013).

As it becomes clear that agricultural certification standards are excluding the most resource-poor farmers, governments in the global South are coming up with ways to work within the global system yet ensure their smallholder farmer populations benefit.

5.5 Public GAP certification

One way that governments in the global South are doing this is by establishing public GAP certification programs, designed to be inclusive of smallholder farmers. Since 2000, public GAP programs have been created in Thailand, Malaysia, the Philippines, Indonesia, Singapore (Amekawa 2013), Brazil, Mexico (FAO 2007), as well as Nicaragua. Governments lead these programs and provide monitoring and certification services (Amekawa 2009).

Despite the growing debate over public and private standards, and the rising concern over GlobalGAP certification in particular, scholars have only started to investigate the impacts of public GAP certification as an alternative approach to governing agricultural production conditions in the Global South (Amekawa 2013; Tey et al. 2015; Gazi Md Nurul 2012; Schreinemachers et al. 2012). Initial evidence from public GAP programs in Asia suggests that their impact on smallholder practices has been limited, due primarily to a lack of technical support and farmer understanding of the principles of the program (Schreinemachers et al. 2012; Gazi Md Nurul 2012; Amekawa 2013). In one case, this meant that international buyer priorities that encouraged agrochemical use had more influence over farmer practices than the public GAP program (Amekawa 2013).

While there has been some research on the impacts of public GAP certification, these have focused on Asian public GAP programs, and mostly on the Thai Q-GAP certification system. Studies on the impact of public GAP systems in Latin America are lacking. This chapter attempts to help fill this void and contributes to the nascent literature on public GAP certification by examining the power dynamics that drive public GAP certification in Nicaragua. In the case of Nicaragua, the public GAP program is working better than in other countries, providing a particularly interesting case for investigation.

5.6 Public GAP in Nicaragua

The government of Nicaragua introduced a public GAP certification system in 2005 (Interviewee XVIII 2016) to increase smallholder farmer access to growing supermarket supply chains and

promote exports from Nicaragua. Nicaragua is an important site for research on the politics of implementing public GAP standards. The country is experiencing rapid growth in supermarkets, with the consequent opportunities and challenges for its population of smallholder farmers. The second poorest country in Latin America and the Caribbean (after Haiti) (World Bank 2014), Nicaragua is faced with growing environmental problems. A decade into public GAP implementation, it offers insight into the particular challenges faced by a developing country trying to change agricultural practices and include smallholder farmers in the transition.

Nicaragua, like most of Latin America, is experiencing a ‘supermarket revolution’ (Reardon and Berdegú 2006) which risks excluding local smallholder farmers. Walmart’s presence in Nicaragua has been growing dramatically since it bought a majority stake in the country’s main supermarket chain in 2006. Since then, the multinational retailer has more than doubled the number of stores in Nicaragua from 40 to 88, including low-income stores Palí and Maxi-Palí, as well as high-income La Union locations (Walmart 2016a). The company places high importance on sourcing quality product at low cost, and is expressly targeting smallholder producers of fresh fruit and vegetables in Nicaragua as part of its Direct Farm program. In an effort to increase its control over product quality, the multinational retailer has expressed interest in sourcing from farmers using GAP. In 2013, Walmart executives in Nicaragua had hoped that by 2015 all of their suppliers in Nicaragua would be GAP certified (Interviewee I 2013).

The Nicaragua public GAP program is designed to include smallholders in supermarkets. While farmers with medium and large farms can generally afford to invest in the changes and certification fees necessary to obtain GlobalGAP certification, the certification of smallholder

farmers presents a particular challenge. The Ministry of Agriculture and Forestry (MAGFOR) certifies farms of 25 hectares or less for an annual certification fee of just ten US dollars. Farmers certifying between 25 and 100 hectares must pay 25 USD. Government technicians visit farms and audit according to a checklist of set control points. Whereas other public GAP systems have been found to set the bar too low to be effective – for example, the Thai public GAP program requires 51 percent compliance with 84 control points (Amekawa 2013, 193) – the Nicaraguan standard is much higher, requiring compliance with 85 percent of 155 control points and proof of follow-up with the technician’s recommendations for improvement. Over 2800 farms have been certified to date, 90 per cent of which are small producers of coffee, horticulture and fruit (Interviewee III 2013).

5.7 The politics of public GAP certification

To study the politics of public GAP certification in Nicaragua, I analyse data from the survey of 250 smallholder vegetable producer households conducted in Nicaragua in 2013. The survey gathered data on farmer household demographics, farm characteristics, productive assets and consumer durables, agricultural practices, and public GAP certification. The survey targeted farmers selling vegetables (tomatoes, bell peppers, and/or lettuce) to either Walmart, La Colonia, or traditional wholesalers. The survey did not specify whether farms were GlobalGAP certified, but revealed that many smallholders were getting public GAP certified. It is unlikely that surveyed farmers had GlobalGAP certification due to their small farm size. I also conducted 65 semi-structured interviews with farmers, as well as government officials, NGO representatives, corporate executives, local traders, and wholesalers. All interviews were conducted under an

agreement of confidentiality to allow interviewees to speak freely and comfortably. The interview data provides context and an in-depth complement to the quantitative survey data, and the wide range of perspectives enable triangulation of the data.

Nearly 20 percent of the 250 farmers I surveyed had public GAP certification at the time of the survey, while another six percent were working towards meeting public GAP requirements in order to become certified. This chapter explores why farmers are working to meet more stringent production practices and getting public GAP certified.

The Nicaraguan Ministry of Agriculture and Forestry has worked hard to promote public GAP certification among smallholder farmers in Nicaragua, and is largely to credit for the uptake of the public GAP program. MAGFOR extension officers have been promoting public GAP directly to farmers as a way to meet buyer requirements but also to improve the environmental impacts of farming. The government of Nicaragua intends the public GAP standards to be not only a way to promote smallholder participation in supermarket supply chains, but a stepping stone to achieving the goals set out in the nation's agroecology and food sovereignty law. The law sets out the goal of a transition to agroecological farming, yet officials recognize the difficulty of jumping straight from conventional production to agroecological production. Therefore, they view GAP as the first step after conventional production in the move towards organic and finally agroecological production as the national norm. Government officials stressed in particular that "there is a necessity to integrate GAP into the national market because we use a lot of agrochemicals in our country" (Interviewee III 2013) and they do not want to repeat what has failed elsewhere (for example, see Bezner Kerr 2012).

The most common reason farmers gave for why they obtained public GAP certification was that MAGFOR advised them to get it (see Figure 5.1). Farmers explained that the government told them GAP certification would be required by buyers in the future. In addition, a key part of the government strategy has been to emphasize to farmers the benefits of using GAP, not only in terms of market access but in terms of farmer health and local consumption. The government’s goal is to improve agricultural practices for the local population and national consumption, as opposed to the local population consuming the worst while they exported the best (Interviewee III 2013).

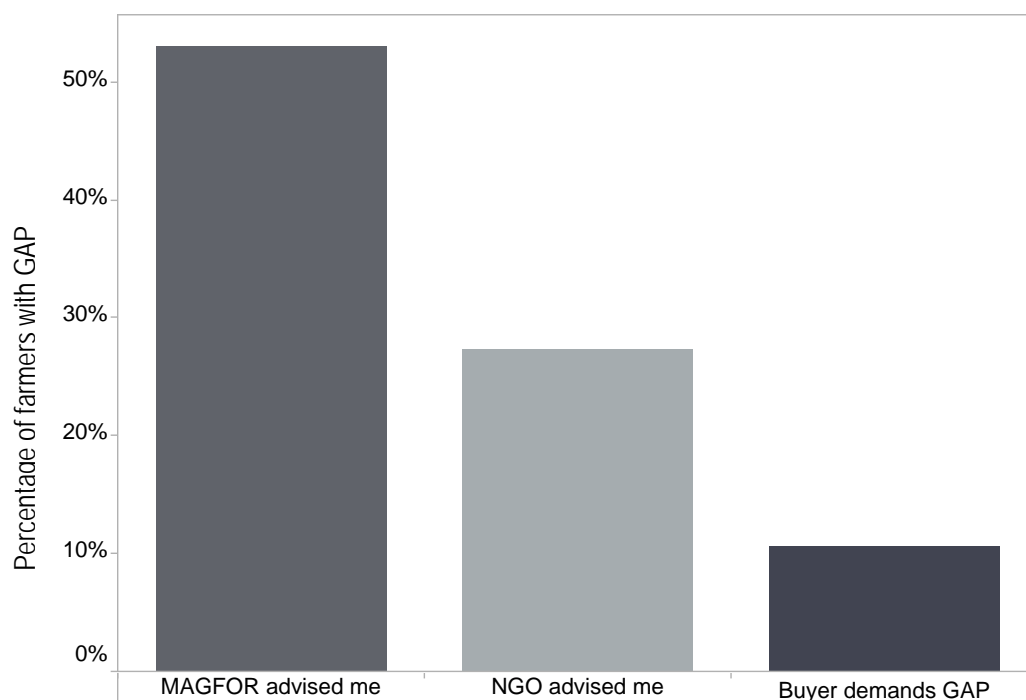


Figure 5.1 Reasons given by farmers for why they sought GAP certification

To support farmers to obtain the equipment and training necessary to meet the public GAP standards, the Nicaraguan government is leveraging NGO support. A government official explained, “we [the Ministry] do not have the resources to provide assistance to farmers in

addition to monitoring and certifying, so we rely on NGOs to provide technical assistance” (Interviewee III 2013). As seen in Figure 5.1, farmers identified this support from NGOs as important to their getting public GAP certified, explaining that “MAGFOR and [the international NGO] are helping me get GAP certified. [The NGO] helps so that I don’t have to pay” (Interviewee XIX 2013).

Between October 2010 and September 2011, international NGOs implementing the USAID-funded ‘ACORDAR’ project invested in GAP on 90 farms producing fruits, vegetables, and grains to improve the quality and safety of farmers’ produce (Catholic Relief Services 2012a, 9). The NGOs trained 1,381 farmers (in areas overlapping with the study region) in good agricultural practices, integrated pest management, soil and water conservation, organic pesticides, and targeted pesticide use (Catholic Relief Services 2012a, 11). They also organized 112 training workshops about the environment, water, food safety, safe pesticide use, and sustainable production (Catholic Relief Services 2012a, 9). In 2012, 21 producers of tomatoes, peppers, fruits, lettuce, cabbage and potato were able to become public GAP certified with this support, and NGOs were continuing to support farmers to renew their public GAP certification in 2013 (Interviewee VII 2013). NGO training has been successful, with public GAP certified farmers saying they received information about pest management from MAGFOR and NGOs, while uncertified farmers rely on other farmers or agrochemical companies for information on maintaining soil fertility and managing pests.

My survey results show that public GAP certified smallholders are adopting organic pesticides and insecticides and integrated pest management techniques (see Table 5.1). Significantly fewer

certified farmers are using herbicides than their uncertified counterparts. While public GAP certified farmers do not stop using pesticides, they reported applying them less frequently on average than farmers without GAP certification. There are no observable differences in practices to improve soil fertility among certified farmers, such as the application of crop residue and manure, than farmers without certification (see Table 5.2). Though data on quantities of agrochemicals used was not measured in this survey and would need to be tested in future work, it could be that farmers have less need for chemical pesticides and fertilizers and are applying them in lower quantities when they use organic and integrated pest management practices.

Table 5.1 Pest management practices

	GAP certified/ in progress (%) (N = 63)	Not GAP certified (%) (N = 187)	Z statistic [†]	Significance
Organic pesticides/insecticides	21	4	4.234	***
Integrated pest management	21	8	2.821	***
Herbicides	67	80	-2.112	*
Fungicides	75	78	-0.491	
Less toxic pesticides	70	72	-0.304	
More toxic pesticides	41	42	-0.139	

* $p < 0.05$

** $p < 0.025$

*** $p < 0.005$

[†] P values have been corrected using Bonferroni's adjustment for two tests.

Table 5.2 Soil fertility management practices

	GAP certified/ in progress (%) (N = 63)	Not GAP certified (%) (N = 187)	Z statistic[†]	Significance
Crop residue	19	20	-0.172	
Manure	14	11	0.639	
NPK fertilizer	87	84	0.573	
Urea fertilizer	83	85	-0.379	

* $p < 0.05$

** $p < 0.025$

*** $p < 0.005$

[†] P values have been corrected using Bonferroni's adjustment for two tests.

Certified farmers are seeing economic benefits from adopting improved agricultural practices. To measure farmer household wealth, I created a productive asset index from survey responses about farmers' agricultural equipment and infrastructure. This method of assessing the wealth of farmer households has been shown to be more accurate than income estimates (Michelson 2013; Michelson, Muñiz, and DeRosa 2013). Figure 5.2 indicates that public GAP certified farmers increased their wealth in terms of this productive asset index between 2007 and 2013 significantly more than farmers without public GAP certification. The dotted line indicates the median value, the boxes indicate the middle two quartiles of the data's distribution, and the whiskers extend to include all data points within 1.5 times the interquartile range. It is important to note that when the asset index increased it does not mean that farmers necessarily became a lot wealthier, but rather it is some indication that they are doing better off than six years before. Public GAP certified farmers have larger farms, and a greater irrigated land area planted with vegetables, both of which are correlated with increased productive asset scores, but the correlation is the same for both public GAP and non-GAP farmers and so these are not the reason for the increase in wealth. Surprisingly, public GAP certified farmers selling to the local

markets are seeing the same increase in wealth as those selling to supermarkets. What, then, explains the benefits of public GAP certification for smallholder farmers in Nicaragua?

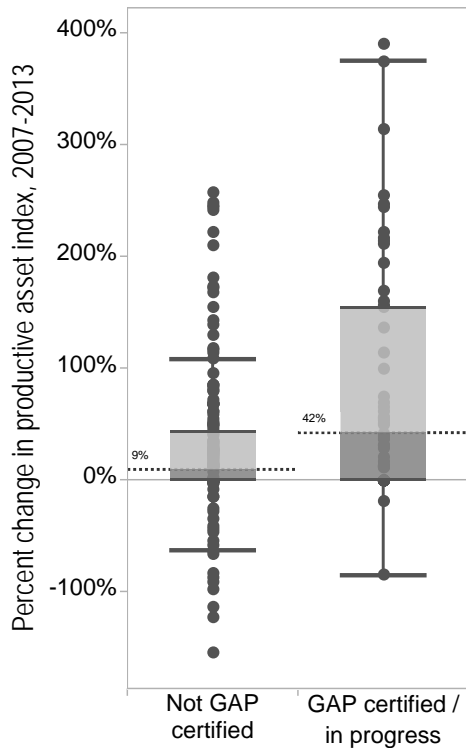


Figure 5.2 Productive asset index percent change between 2007 and 2013

Despite the claims of Walmart management in Nicaragua that “GAP is very important” and that “GAP gets producers a market with Walmart” (Interviewee I, 2013), this does not appear to be the case. Walmart does source from public GAP certified farmers, but this has occurred randomly simply as a result of Walmart buying from a population of farmers where some of them have public GAP certification. Figure 5.3 illustrates the percentage of farmers with public GAP certification in the survey sample, selling to all markets. From the pie chart on the right side of Figure 5.3, it is clear that Walmart is making no effort to seek out public GAP certified

farmers as it has the exact same percentage of farmers either certified or working towards certification among its suppliers as the general farmer population sample.

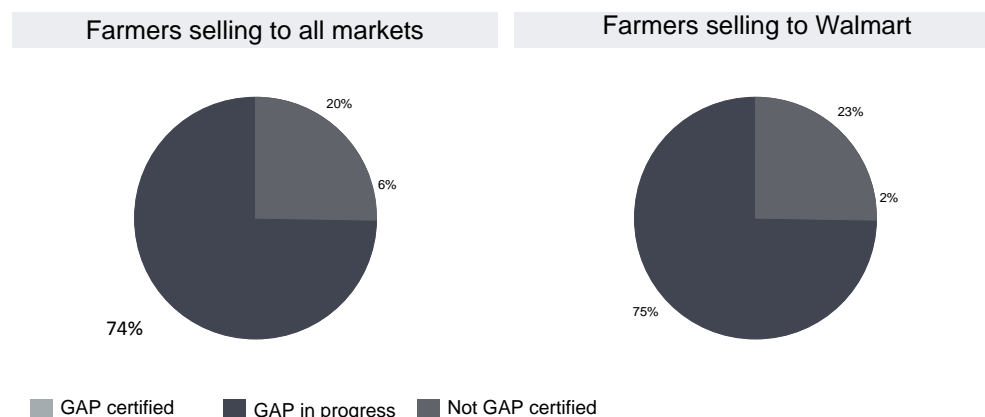


Figure 5.3 Proportion of farmers with GAP certification overall versus selling to Walmart

A Walmart buyer in Nicaragua told me that the company hoped to set a target of 2015 for all fresh fruit and vegetables in their supply chains to be GAP certified. The Nicaraguan government expected Walmart to pay a premium to certified farmers. Yet Walmart does not pay farmers with public GAP certification any differently than farmers without GAP certification. In fact, farmers in some cases have stopped supplying Walmart. One farmer who has had public GAP certification since 2012 explained:

“Six months ago I met with Hortifruti [Walmart’s dedicated wholesaler] and MAGFOR to talk about ways to work with certified farmers, as Hortifruti is supposedly selecting farmers with certification” but “I recently planted a crop and realized that Hortifruti prices were not good so I left that market”

(Interviewee XX 2013).

NGO field staff also commented on the fact that prices are no better for public GAP certified product, noting that “whether a farmer has GAP depends a lot on the farmer - there is no economic incentive” (Interviewee XI 2013).

There is no incentive to farmers from Walmart in terms of training or technical assistance either. Not a single surveyed farmer received information about sustainable inputs or agricultural practices from Walmart. On the contrary, farmers asserted that Walmart is making it even more difficult for them to meet public GAP requirements. One farmer explained that

“The problem is that Hortifruti [Walmart] brings contamination to my farm. For example they bring pests to my certified farm with dirty cases on trucks. They laugh when I mention it. I clean the cases first otherwise my product gets dirty” (Interviewee XXI 2013).

Another farmer said that “the supermarket also sells non-GAP conventional products and sometimes mixes our [public GAP certified] product with others.” (Interviewee XXII 2013).

Yet while Walmart is making no effort to seek out farmers with public GAP certification, the retailer does seem to benefit when farmers it buys from are public GAP certified. The agricultural practices required by public GAP increase the quality of farmers’ product, so that more of a certified farmer’s harvest meets Walmart’s product requirements. The company normally only buys the small percentage of farmers’ product that meets its specific size and appearance standards. Though it does not pay more for certified product, it does buy a greater percentage from public GAP certified farmers (Interviewee III 2013). Walmart suppliers with

public GAP certification are more likely to have a year-long contract with the company than farmers without GAP certification, which is significantly longer than the company’s usual single harvest, or 90-day, contract. It could be that while Walmart does not seek out farmers with public GAP, when it does find a certified farmer, it tries to ensure access to that supply of quality product with a contract.

Walmart does very little to support smallholder public GAP certification, and while it ends up buying a larger percentage of its suppliers’ product when they have public GAP certification, the company makes no effort to seek out new suppliers because they are public GAP certified. As seen in Figure 5.3, Walmart’s suppliers reflect the broader farmer population in those locations. In contrast, a third of local supermarket chain La Colonia’s smallholder suppliers have public GAP certification, while an additional 26 percent are in the process of getting public GAP certified. Unlike in Figure 5.3, where it is obvious that Walmart sources quite randomly from farmers in the study area, Figure 5.4 shows that La Colonia must have a more targeted strategy to buy from a greater number of public GAP certified smallholders.

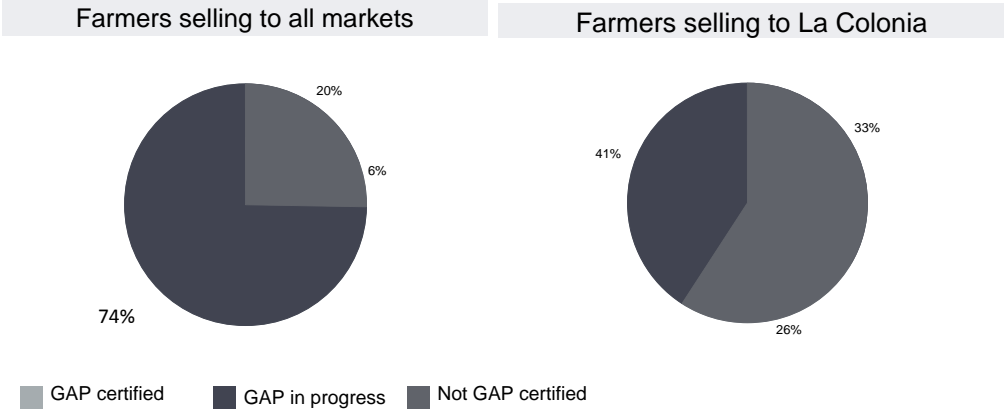


Figure 5.4 Proportion of farmers with GAP certification among La Colonia’s suppliers

In fact, La Colonia does not seek out public GAP certified farmers, but the company's strategy of buying from farmer cooperatives allows it to take advantage of public GAP certification. La Colonia buys most of its fresh produce from several farmer cooperatives in the country. Farmer members of these cooperatives have a higher rate of public GAP certification than farmers who are not organized in a cooperative. Thus while La Colonia does not go outside its preferred producer cooperatives to find individual public GAP-certified farmers, the very fact that it prioritizes cooperative suppliers leads it to have a higher rate of public GAP certification than if it were to source outside cooperatives.

The cooperatives facilitate public GAP certification for their members in two ways. First, the cooperative provides an easy partner for NGOs to work with, and as I will argue below, NGO assistance enables public GAP certification in Nicaragua. A similar effect was found in Rwanda, where coffee farmer cooperatives play an important role in influencing agricultural practices via opportunities for training and access to inputs (Elder, Zerriffi, and Le Billon 2013). A second, and related, reason that cooperatives aid public GAP certification, is that the cooperative owns (in large part as a result of NGO subsidies) equipment and technology for washing, sorting, and packaging its members' product which helps its members meet public GAP requirements. In short, the cooperatives facilitate NGO support and NGO support facilitates public GAP certification through training and subsidized infrastructure and technology. La Colonia appears to know this and sees the business value in buying from cooperatives.

La Colonia and Walmart are to some extent rewarding smallholder public GAP certification, but this does not explain the amount of farmer certification. Figure 5.5 highlights the surprising

finding that 40 per cent of farmers getting public GAP certification are selling to local markets. The figure shows that the same percentage of farmers sell to Walmart, regardless of certification, while a much greater proportion of farmers with public GAP (and working towards it) sell to La Colonia. Selling to local markets appears nearly as important for public GAP certified farmers as for farmers without GAP certification. Why are these smallholders getting public GAP certified if it does not get them access to supermarket supply chains?

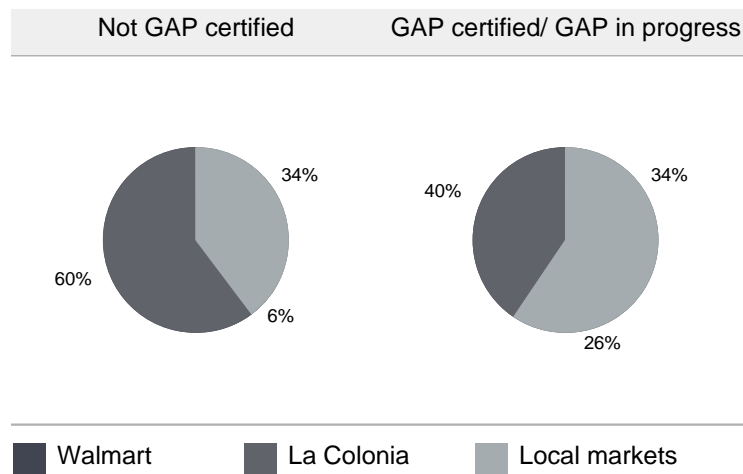


Figure 5.5 Percentage of farmers selling to different markets

Initially the government motivated farmers to adopt public GAP by saying that the certification would be required by buyers in the future. Now, it has shifted strategies to focus on consumer demand within Nicaragua as opposed to relying on supply side incentives that authorities say “never come” (Interviewee III 2013). Government officials have realized that they “can’t meet the expectation of farmers. In the supply chain in Nicaragua... the supermarket takes”

(Interviewee III 2013). They have adapted their GAP promotion strategy to raise awareness among local consumers, for example through brochures and posters promoting public GAP:

“Food produced with GAP guarantees product quality and consumer safety.”

“Provide your family with healthy food free of contaminants.”

“Support national producers’ efforts. Consume GAP products!”

(Government posters seen in Nicaragua, 2013, translated into English by the author)

Additionally, the government wants to “monitor product being sold at supermarkets and sound the alarm” (Interviewee III 2013) when agrochemical residues are higher than established limits. A MAGFOR authority stressed that “The idea is to create a consumer mentality that is to demand retailers for certification. We learned from foreign market requirements who don’t buy if don’t meet standards and want to apply locally so the consumer demands. If no demand from consumers there won’t be change” (Interviewee III 2013).

There is initial evidence that the government’s approach is working. Farmers are choosing to continue with public GAP certification even though supermarkets, and Walmart in particular, are not supporting them. It seems that in some cases local consumers may prioritize public GAP products at the local market. One farmer selling to the local market, explained that “there are national consumers who know about and look for product traceability” and “People know that I have my public GAP certificate. Everyone wants to buy something healthy” (Interviewee XXIII 2013). With the new pest management methods they learn, farmers explained that they are able

to better control pests on their farms. They are not only seeing results from the pest management methods they are learning, but they appreciate the improvements in pesticide use for the environment and for their health, saying things like “I want to produce better product and improve the environment” (Interviewee XXIV 2013) and “I received training in GAP and realized it is a good thing because the use of chemicals for produce damages the environment and health. I learned for example that mothers milk is contaminated by chemicals and that affected me a lot because I’m affected and at risk and my family too so I saw it was worth it to change” (Interviewee XXIII 2013). Farmers appear to appreciate the alternative methods of pest management that are better for the environment, their business, and their health.

5.8 Conclusion

Private certification systems are increasingly used to govern the social and environmental impacts of agrifood production. Although certifications like GlobalGAP can be effective at reducing pesticide use and increasing farmer incomes through improved access to international markets, they are at the same time increasing inequities in the Global South by excluding smallholder farmers from market participation. Some governments are trying to find a balance between smallholder inclusion and market access through the development of public GAP certification systems. The only studies to date on public GAP systems show that they have not been very effective at changing farmer practices in Thailand and Malaysia due to a lack of technical assistance and training (Schreinemachers et al. 2012; Gazi Md Nurul 2012; Amekawa 2013). However, in Nicaragua the government has leveraged the work of international NGOs to provide the necessary support to smallholders. The driving factor pushing public GAP is not

buyer demand but a large part of the reason is government policy, and to a lesser extent, NGO support. The Nicaraguan public GAP system has been effective at improving agricultural practices and farmer wealth despite a lack of buy-in from supermarket buyers, because of this NGO support, but also because of a government strategy that has educated local consumers on the benefits of consuming products grown according to public GAP standards.

These findings in Nicaragua add to our understanding of the effectiveness of certification systems, demonstrating that, at least in some cases, government-led voluntary standards can be an effective way to influence agricultural practices and improve the environmental sustainability of smallholder production in the global South. While much of the certification literature expects private certification systems to regulate agrifood production systems, paying little attention to governments, the case of Nicaragua demonstrates the importance of government involvement in including resource-poor smallholder producers in agricultural transitions. Although private standards are often viewed as making up for a lack of government capacity, my research shows that in Nicaragua, the government is filling in a gap that private certification does not address.

There is a need to contextualize global conversations about the effectiveness of public versus private certification systems in the local context. The case of Nicaragua highlights the agency and vibrancy of communities and government creativity in the global South. It suggests a need to be careful about underestimating the role of consumers in developing countries, and the resourcefulness of governments in working with NGOs. In Nicaragua, the government's efforts to transition to agroecological production are making more of a difference than private certification for smallholder farmers. That said, it is unclear whether the trend toward GAP

certification will continue in Nicaragua. Given retailers are not prioritizing farmers with public GAP, and as NGO projects end or change focus, more farmers may not get certified. On the other hand, local consumers care about their food and may continue to prioritize food they know is grown more sustainably and safely over the alternative. If local demand for food produced using GAP increases, farmers will be more likely to continue to get public GAP certified.

Chapter 6: Conclusion

This dissertation critically examined the rise of retail governance in Nicaragua and its implications for smallholder farmer livelihoods to shed light on how and why rising retail power in agrifood supply chains affects food security and agricultural sustainability in the global South? This overarching question was addressed by answering four specific research questions in Nicaragua:

- (5) Why do smallholder farmers choose to participate in multinational retail supply chains versus traditional supply chains, and how (and why) does their choice of market channel affect their household wealth, food security, and agricultural sustainability? (Chapter 2)
- (6) Is multinational retail CSR effective as a way to advance rural sustainability? Why or why not? (Chapter 3)
- (7) Are cooperatives improving the terms of farmer participation in multinational retail supply chains? Why or why not? (Chapter 4)
- (8) How and why does government policy interface with private governance to impact the sustainability of smallholder farming? (Chapter 5)

Nicaragua, the second poorest and most food insecure country (after Haiti) in Latin America and the Caribbean (World Bank 2014), provided a particularly relevant case study location since multinational retail corporations have had a presence there for over a decade. Walmart has also been piloting its Direct Farm program in Nicaragua as a way of implementing its global CSR strategy. Thus, the case of Nicaragua allowed for a comparison between multinational retail supply chains and traditional markets, which exist alongside them. It also allowed for an analysis

of the longer term impacts of their supply chains, with the opportunity to build on and extend earlier research in Nicaragua (see Michelson 2016, 2013, 2012, 2010; Michelson, Reardon and Perez 2012; Wiegel 2012, 2013).

I carried out nine months of field research in Nicaragua to answer the above questions. As summarized in the introduction chapter, I surveyed 250 smallholder farmers and conducted 65 interviews with corporate executives, traditional wholesalers, government authorities, NGO representatives, and farmers. I also spent 10.5 months in Geneva at the International Labour Organization of the United Nations drawing on this research to conduct research and policy work on global supply chains, rural development, plantation agriculture, and food security.

Each chapter of the dissertation addressed one of the specific research questions outlined above to make a contribution to the literature. Together, the arguments presented in each chapter contribute to an overarching conclusion to the study's main research question, which I address in section 6.2.

Chapter 2 used quantitative analysis of the study's survey data to address the first research question, investigating why smallholder farmers chose to participate in supermarket supply chains versus traditional supply chains, and how (and why) their choice of market channel affected their household wealth, food security, and agricultural sustainability. The statistical results demonstrated that smallholder farmers may – but do not necessarily – choose to sell to supermarkets when they have the family labour and education required to meet supermarket demands, but that they do not benefit from selling to supermarkets. In fact, those selling to

Walmart the longest are the worst off in terms of household wealth. The chapter raised questions about the view that supermarket supply chain participation is an effective path to development for smallholder farmers in the global South. The chapter suggested that, beyond farmer and farm characteristics, corporate supply chain governance, NGO involvement, and government policy all contribute to shaping outcomes for smallholder farmers.

Building on the findings of chapter 2, chapter 3 examined the effectiveness of Walmart's CSR program in Nicaragua to answer the second research question: Is CSR effective as a way to advance rural sustainability? Why or why not? Chapter 3 argued that Walmart's CSR program is failing on two fronts in Nicaragua, neither increasing Walmart's control over its supply chain nor advancing rural sustainability. The chapter highlighted the agency of smallholder farmers, and argued that the very business practices Walmart tried to use to control its suppliers caused Nicaraguan smallholder farmers to exit the Walmart supply chain and return to local markets to regain independence. The chapter confirmed Walmart's CSR as a business strategy and maintained that CSR programs like Walmart's Direct Farm program in Nicaragua are unlikely to be effective at achieving development objectives such as food security and agricultural sustainability.

Chapter 4 took a closer look at cooperative organization as a way to improve the terms on which smallholder farmers are engaged in supermarket supply chains. It examined the experience of farmer cooperatives selling to Walmart as well as domestic supermarket chain La Colonia to better understand why the cooperatives supplying Walmart had become unstable while other cooperatives maintained long-term relationships with La Colonia. The chapter supported

previous research showing that farmer and farm characteristics are important for cooperative success in selling to supermarkets, but argued that the failure of cooperatives to establish a beneficial market relationship for farmers with Walmart resulted moreover from destabilizing business practices and misguided support from development NGOs.

Chapter 5 sought to shed light on the power dynamics at play when government policy occurs in a context of increasing private standards in supermarket supply chains. It did so by answering research question four: How and why does government policy interface with private governance to impact the sustainability of smallholder farming? The chapter argued that the reason for farmer uptake of public GAP certification in Nicaragua is government policy, rather than buyer power. It suggested that despite the hype around private standards and certification systems, public standards can be an effective way to influence agricultural practices and improve the environmental sustainability of production in the global South.

6.1 Key research findings and contributions

Investigating what factors influence whether smallholder farmers decide to supply supermarkets instead of traditional buyers, the dissertation found similarly to previous research (Dolan and Humphrey 2000; Neven et al. 2009; Reardon et al. 2009) that farmers do need to be able to meet certain buyer requirements in order to participate in supermarket supply chains. This past research on smallholder market participation has focused mainly on export supply chains, yet more and more, multinational retailers are expanding operations into developing countries and sourcing from farmers in those same countries to supply local stores. This is the main driver of

their corporate expansion and is expected to remain so in the future. This dissertation fills an important empirical gap by focusing on multinational retail supply chains in the global South that both operate stores and source within the same country.

For the most part, studies focus on farmer and farm characteristics, assuming that farmers want to sell to a buyer when they are able (for exceptions see Blandon, Henson, and Islam 2009; Guo, Jolly, and Zhu 2007; Masakure and Henson 2005; Schipmann and Qaim 2011), but I argue in the dissertation that even when farmers are able to meet supply chain requirements, they do not necessarily choose to supply Walmart. I argue based on the results of the regression analyses that this is because farmers do not benefit in terms of wealth, food security, or improved agriculture from their supply chain participation. There is no correlation between selling to a specific market type and household-level sustainability outcomes, except in the case of household wealth, where farmers who sold to Walmart for an additional year were statistically more likely to have a lower level of wealth. This finding contributes a more nuanced perspective to market-based development theories.

This dissertation is one of the first studies to use quantitative analysis of household-level survey data (except Minten, Randrianarison, and Swinnen 2009) to empirically link household-level food security impacts to supply chain governance. It is unique in that it compares a multinational retail supply chain to a domestic supermarket supply chain, in contrast to the traditional market. Using an innovative methodological approach to link household level impacts with supply chain governance as a means to improve long-term sustainability of the global as well as local food systems, the dissertation was also able to delve deeper into an investigation of why it is that in

Nicaragua, retail supply chain participation does not hold the promises for farmers that are expounded by scholars, development organizations, and governments.

Chapter 3 showed that part of the explanation is that Walmart's CSR program is largely ineffective, both at reaching its business goals and at achieving its rural sustainability objectives. A key finding of chapter 3 is that Walmart is unable to control suppliers in Nicaragua; despite Walmart increasing both the number of store units in Nicaragua and the percentage of its supply that it sources from Nicaraguan farmers, farmers are steadily exiting the Walmart supply chain. Walmart uses different methods to try to gain control over farmers, such as bank credit tied to Walmart contracts, but farmers perceive the company's business practices as unfair and do not trust Walmart. They return to the local market for more independence and ability to negotiate. For now, Walmart is relying on finding new suppliers within Nicaragua to stock its stores in the country. This finding is counter to existing private governance literature which argues that multinational retailers can control their suppliers to achieve CSR goals, at least business objectives (Gereffi 1994; Gereffi, Humphrey, and Sturgeon 2005; Mayer and Gereffi 2010; Dauvergne and Lister 2012; Dauvergne and Lister 2013).

The analysis provides evidence that Walmart's CSR program in Nicaragua is above all a business strategy and not a tool for international development. More control over its supply chain would not lead to improved sustainability outcomes, as Walmart's CSR program is not designed to improve agricultural sustainability or food security. Instead, it is designed to achieve their business goal of access to secure supply of high-quality cheap product in order to gain competitive advantage and expand operations and sales (though the company still struggles to

achieve this). This dissertation contributes to understanding the politics of CSR effectiveness as a development program in the global South. It contributes theoretically to scholarship on the effectiveness of private governance, particularly as defined as effective at achieving its stated outcomes (Auld, Gulbrandsen, and McDermott 2008; Clapp and Fuchs 2009; Mayer and Gereffi 2010; Utting 2007; Vogel 2009; Auld 2014). Chapter 3 shows that Walmart's CSR program is helping it to gain a competitive advantage, grow its business, and increase its sales, by getting governments and NGOs on board with its CSR, but the company is doing little to contribute to rural development despite its claims.

The dissertation contributes empirically to (partially) filling a gap in research on the actual consequences of CSR for smallholder farmers in the global South (separating rhetoric from on-the-ground outcomes). The actual consequences of rising corporate power in the agrifood system are hotly contested in the academic literature (see Ervine and Fridell 2015; McMichael 2013; Moseley, Schnurr and Bezner Kerr 2015; Neilson and Pritchard 2016 versus Chkanikova and Lehner 2015; Hartmann 2011; Vandenbergh and Gilligan 2015). Chapter 3 fills a particular gap in understanding the effectiveness of CSR for food security and agricultural sustainability.

The dissertation paid special attention to the ways in which farmers are linked to buyers in order to enhance understanding of how and why the terms of farmer engagement in markets shape household-level outcomes. Chapter 4 looked in particular at the case of cooperatives mediating smallholder farmer market access, given that much of the development studies and market participation literature states the benefits of cooperatives for mediating market relationships for smallholder farmers (Holloway et al. 2000; Gibbon 2001; Levins 2002; Lyon 2003; Ma and

Abdulai 2016; Narrod et al. 2009; Rao and Qaim 2011; Schöll et al. 2016; Verhofstadt and Maertens 2014) but cooperatives are not in all cases improving conditions for farmers in Nicaragua. The analysis in chapter 4 confirmed that, consistent with previous research (Barham and Chitemi 2009; Fischer and Qaim 2012), farmer and farm characteristics do matter for cooperative success at maintaining market relationships. Members of cooperatives selling to La Colonia were wealthier, had more land, larger families, irrigation, and higher education than members of cooperatives selling to Walmart. However, it also highlighted the importance of unpacking the terms of farmer engagement in supply chains, and argued that farmer characteristics alone do not determine whether or not their cooperative is able to maintain a market relationship.

Chapter 4 demonstrated that there are limitations to counting solely on cooperatives to ensure benefits to farmers of supermarket supply chain participation. Whether cooperatives are able to maintain relationships with supermarkets depends on corporate practices governing the supply chain. In particular, chapter 4 highlights the importance of bringing private governance into the conversation about cooperatives' role in mediating farmers' relationship with retailers. These findings contribute to cooperative theory on whether and when cooperatives benefit smallholder farmers (Bijman, Muradian and Schuurman 2016; Latynskiy and Berger 2016; Markelova et al. 2009; Meier Zu Selhausen 2016; Hellin, Lundy, and Meijer 2009; Blandon, Henson, and Cranfield 2009). They make a theoretical contribution to the literature on market-based development, arguing that the impacts of market participation depend on the nuance of the relationship between the farmer and the buyer. The chapter contributes to filling an empirical gap in the literature on the impact of buyer-led supply chain governance on cooperative success (see

Reardon, Timmer, and Minten 2012). Chapter 4 also shows that NGOs can increase cooperative and farmer vulnerability by linking them to retailers whose business practices prioritize sourcing cheaply and market growth over collaborative relationships with their suppliers.

The dissertation looked at the interplay between private governance and government policy in promoting benefits to smallholder farmers of market participation. It found that the government of Nicaragua is driving improvements in agricultural practices of smallholder farmers more than multinational buyers, through its public GAP certification system. Chapter 5 contributes specifically to the debate in the literature over the role of public versus private standards in governing global agrifood systems (Bartley 2015; Havinga and Verbruggen 2015; Henson and Humphrey 2009). The chapter shows that government-led GAP certification can be effective at introducing good agricultural practices and benefiting smallholders (via improved quality of their product and ability to sell an increased percentage of harvest). Chapter 5 found that while current theories of certification effectiveness rely on buyer power and demand, in Nicaragua buyers are doing very little and instead the government is the motivator for farmers' improved agricultural practices and certification adoption. While governance scholars have shifted their attention from governments to private governance (Bernstein and Cashore 2007; Pattberg 2006), it seems that, at least in the case of Nicaragua, governments are still best-placed to address the needs of their population, especially the most vulnerable. These findings contribute to understanding the politics of improving the agricultural practices of smallholders in the global South.

The dissertation, in chapter 5, makes a specific contribution to understanding the effectiveness of public GAP certification in the context of increasingly mandatory private standards. It helps fill

an empirical gap in the literature on the power dynamics that drive adoption of public GAP and the effectiveness of public GAP at changing agricultural practices. It reveals that context matters for conversations about private versus public regulation, that the impact of government policy in the global South, as well as the agency of consumers and producers in these communities, should not be underestimated. Indeed, chapter 5 highlights the importance of government policy in ensuring smallholder farmers benefit from agricultural transitions by showing how the Nicaraguan government fills a gap that private certification does not address.

A central theme and key contribution of the dissertation is recognizing the importance of agency of local communities. Conversations about private governance generally negate the decision-making power of smallholder farmers and ignore domestic policy. This dissertation has demonstrated that in fact, smallholder farmers' decisions can have an impact on Walmart's ability to control production (as seen in the exit of farmers from Walmart's supply chain in Chapter 3). The Nicaraguan government is facilitating consumer action to demand food produced under better ecological conditions, and seeing some success in the uptake of public GAP standards among smallholder farmers (as Chapter 5 showed).

Extending past research (see Michelson 2016, 2013, 2012, 2010; Michelson, Reardon and Perez 2012; Wiegel 2012, 2013), this dissertation illustrates the importance of longer-term analysis of agrifood supply chain transformation, particularly as both multinational retailers and domestic supermarket chains increase their stores and sourcing in the global South. My research, conducted eight years after Walmart started operating in Nicaragua, illuminates the differences in impacts on smallholder farmers over time as compared to Michelson and Wiegel's research

conducted in 2008, three years into Walmart's investment in Nicaragua. My research suggests that while there may be short-term benefits to supplying Walmart, the welfare effects may decrease over time, making farmers even more vulnerable in the longer term. My findings also demonstrate the value of differentiating between supermarket buyers, as their different sourcing strategies have different implications for farmers. It could be that the positive results of earlier research (Michelson 2013) captured the benefits for farmers selling to La Colonia, the domestic supermarket chain, and not the impacts of selling to Walmart, by analyzing farmers selling to these markets together.

6.2 Strengths and limitations

The dissertation's strengths lie in its empirical and theoretical contributions, outlined above, that draw on extensive and detailed fieldwork. The methodological approach is innovative in its ability to link supply chain analysis with quantitative household survey data. It brings together insights from different fields – private governance, development studies, and sustainable food systems – to address the on-the-ground effectiveness of multinational retail CSR.

While the results are limited in their generalizability (Yin 2003), they still provide some insight into what one might expect to see in other places in the global South where retail is increasing its presence. Rather than extrapolating to other regions, I speculate only on potential relevancy to other developing countries in similar circumstances. The strength of the case study approach, however, is its ability to discern the details of the case, which was in this case the main interest

of the study, to understand the specific terms of smallholder farmer engagement in retail supply chains.

In 2013, a Walmart executive told me that the company was purchasing fruits and vegetables from approximately 250 farmers in Nicaragua, suggesting that Walmart's overall impact on agriculture in Nicaragua may be modest in the near future. Yet regardless of the number of farmers actually participating in Walmart's supply chains, the proposed research is relevant because of the number of policies and programs around the world that are promoting smallholder farmer participation in retail-led high-value agricultural supply chains as a way to increase and diversify agricultural production and reduce poverty and hunger in rural areas. While changes in regional poverty and growth may not yet be visible, the proposed research focuses on the household level of participant farmers, to determine farm level changes resulting from multinational retail market participation. Understanding the effects of the supply relationship with Walmart for farmers is still important as Walmart's CSR program in Nicaragua is being scaled up around the world as the retailer expands into other regions in the global South. By the end of 2015, Walmart had expanded its programs to reach more than 900,000 smallholder farmers around the world (Walmart 2016b, 100).

The time series data collected on market participation revealed some interesting findings related to the number of years a farmer sold to a particular market. However, I did not have corresponding time series data for the other study variables, and so the research could not ascertain change in wealth, food security and public GAP certification and agricultural practices use over time. With more complete time series data I could have extended the analysis to further

understanding of the direction of association and change over time of the impacts of selling to different markets. This is an interesting avenue for future research.

6.3 Policy implications

This dissertation improved understanding of the link between supply chain participation and farmer livelihoods. By paying particular attention to the ways in which smallholder farmers are linked to retailers, the results yielded an improved understanding of the role that farmer cooperatives, NGO programs and government policy may play in maximizing the benefits of supermarket and traditional supply chain participation for farmers. The dissertation contributes to the policy discourse surrounding markets and rural development, and government, NGO, and private sector strategies to help improve food security of resource-poor farmers through sustainable agricultural systems.

The dissertation project intentionally involved a range of relevant actors along the supply chain (corporate executives, distribution centre staff, cooperative leaders, farmers) as well as related actors outside the supply chain (NGO representatives, government officials) with the specific aim of conducting research that could usefully inform public policy as well as business practices and development programming. The nuanced understanding of how different value chains affected smallholder farmer poverty, environmental sustainability, and food security may be used to refine policy-making and business practices and contribute to more targeted programs in support of smallholder farmers and their communities. Potential beneficiaries of the research

include smallholder farmers, their families and their communities, along with other rural, low-income groups who rely indirectly on agriculture for their livelihoods, such as farm labourers.

The dissertation findings suggest that state and international regulation will likely be a more effective path to rural development than Walmart's CSR program. Chapter 3 illustrated how and why Walmart's CSR is not a solution to improving social and environmental conditions for smallholder farming communities, at least in the case of Nicaragua. The chapter showed that Walmart does not have the control over its suppliers that is normally used to justify CSR as a development program. Even if Walmart were able to control its suppliers, it was clear in Nicaragua that the company's CSR program was designed to meet Walmart's business objectives, not to benefit farmers and their families. Chapter 5 suggests that voluntary state regulation specifically, such as public GAP systems, could be an effective way forward for improving agricultural practices in Nicaragua.

The research findings highlight the value of long-term collaborative relationships between buyers and suppliers for managing risk, improving productivity and reducing costs for buyers, while making space for farmers and their cooperatives in decision making. Market participation can have benefits for farmers, but whether the impacts are positive depends on the details of the market relationship. I suggest that the ILO could lend its expertise in bringing together governments, employers, and workers in providing a forum for dialogue among buyers, farmer cooperatives, and governments to foster better understanding of each other's cultures and needs.

Generally, the nuanced understanding of how different supply chains affect farmer household food access and agricultural practices provided in this dissertation could help to refine policy-making and business practices and contribute to more targeted programs in support of smallholder farmers and their communities. The dissertation showed, however, that to be truly effective, development policies could focus on the wider livelihood strategies that farmers use and adapt to their changing situation rather than depend solely on market participation.

The dissertation results have had a direct impact on the ILO's research and policy work on global supply chains and rural development. During 2015, I contributed to several major ILO projects directly related to this dissertation. First, I contributed to research, brainstorming, and drafting of a report on "Decent work in global supply chains"³ for the 105th session of the International Labour Conference (ILC) in June 2016. The ILC is an annual conference bringing together government, worker, and employer representatives from the United Nation's member countries to create international labour standards and discuss labour issues of major global importance. The conference report provided the background for a general discussion among ILO constituents regarding the implications of global supply chains for employment, working conditions and labour rights, freedom of association and collective bargaining. I drew on my dissertation research both empirically and theoretically to contribute a broader development perspective to the report preparation and writing, focused not only on the economic and trade impacts, but the social impacts, of global supply chains. The report was an important vehicle for communicating

³ See ILO, 2016. *Decent Work in Global Supply Chains*, Report IV, International Labour Conference, 105th Session. Geneva: ILO.

the latest research to government officials, trade union representatives, and employer organization leaders on how participation in and governance of global supply chains affects sustainable and inclusive development. The conference discussion around the report was highly unique in its ability to bring together the world's leaders to converse and debate the development impacts of global supply chains and related policy measures.

Second, I drew on this dissertation project to contribute to the ILO's research and policy work related to rural economies, one of the organization's focal "areas of critical importance." I helped author a "Portfolio of policy guidance notes on decent work in the rural economy,"⁴ a collection of booklets providing policy makers with recommendations related to key labour issues in rural areas. I contributed specifically to the policy guidance notes on supporting agricultural growth, resilient rural livelihoods and improved food security, and on promoting better working conditions for rural workers in supply chains and in the rural informal economy. This work also informed the design of the ILO's first Rural Development Academy, a two-week training program in for policy makers from around the world at the International Training Centre in Turin, Italy. I co-organized and co-facilitated a three-day session from the 20 to 22 October 2015 on the links between decent work and food security, and the practical considerations of policy and project work in rural areas.

⁴ See ILO, 2015. *Portfolio of Policy Guidance Notes on the Promotion of Decent Work in the Rural Economy*. International Labour Office, ACI, Sectoral Policies Department. Geneva: ILO.

My rural economy work at the ILO included innovative research and policy making to improve labour conditions on plantations in the global South. Drawing on my fieldwork experience, I contributed to the design of questionnaires used to collect data on the current labour situation on plantations in select countries, and to the written reports used to communicate the key areas of success and concern to policy makers in the target countries. The reports based on that research were used to create an action plan at the country level to address areas of concern related to labour on the plantations.

6.4 Future research directions

The dissertation research has revealed four key areas of focus for future research projects. First, it indicates that traditional markets play an important but poorly understood role in rural development and farmer livelihoods, and that there is a place for further research in this vein. A good place to start would be to ask: what is the contribution of traditional markets to rural livelihoods? More specifically, future research could explore the role of contracts in the traditional market as a useful tool for development versus a myopic focus on supermarket supply chains. It may be that contractual market exchange smooths farmer incomes and improves year-round access to food, regardless of which market farmers sell to, given that chapter 2 showed some evidence that there are more written contracts with buyers in traditional supply chains in Nicaragua than a reading of the literature predicts.

Second, the dissertation results emphasize the need for research to differentiate further between types of buyers, as currently the term is used to encompass a wide variety of institutions and

actors. Specifically, I recommend that future studies seek to identify and categorize the distinguishing characteristics and governance strategies of different buyers, and understand how these play out in terms of consequences for farmers and their cooperatives. Paying particular attention to the detail of how different buyers and their strategies influence cooperative models of farmer market participation may lead to understanding why some farmers and cooperatives benefit from supply relationships and others do not. Along these lines, the research also indicates that there is much more room to explore the role of NGOs in mediating supply chain relationships between farmers and buyers, distinguishing between the various development approaches taken by different NGOs.

Third, the dissertation has shown that there remains a hole in understanding smallholder farmers' decision making, what motivates them and what drives their actions to influence local development as well as more global processes. This is particularly important given recent calls to better measure and understand the role of family farmers for food security and sustainable agriculture (Graeb et al. In Press). We know that smallholders assess risks, make decisions, and act based on their livelihood priorities (see Vorley, Del Pozo-Vergnes, and Barnett 2012 in addition to chapter 3 of this dissertation), but the way in which they do so remains for the most part a black box.

Fourth, this dissertation has revealed an important gap in research (and policy) related to the impacts on rural workers of increasing integration of plantation production systems into global supply chains driven by multinational corporations. Research is needed to broaden my inquiry from a focus on smallholder farmers to examine plantation labour in global supply chains

through integrating household-level empirical field research into global commodity chain analysis. Besky and Brown (2015) call for empirical field research that complements commodity chain analysis to examine the role of waged labour in food systems. Future research could help close this gap by examining how and why recent changes in governance of the global agriculture and food system impact the terms of worker engagement in supply chains and create or constrain space for workers to make decisions and manage household access to adequate and nutritious food.

There is a need to understand how governance arrangements and power relations in global supply chains form new terms of worker engagement in plantation production and influence the effectiveness of labour standards as experienced and perceived by workers and contracted smallholders. Future research could unpack the different types of employment generated, how this affects workers' rights and working conditions and the implications for workers' ability to access adequate and nutritious food for their households. Given the rising policy interest in how to govern supply chains to ensure labour rights and decent working conditions in increasingly globalized and complex supply chains (see, for example, ILO 2014), filling this gap is particularly important, and essential for designing more effective policy in a changing global environment.

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Appendices

Appendix A Farmer interview guide

ENTREVISTA A PRODUCTORES

Senor/Senora: Buenos días/tardes. Puede usted atenderme unos minutos? Mi nombre es Sara Elder. Soy estudiante haciendo un estudio para ver cómo están los pequeños productores haciendo para vender sus productos en los mercados de su país y de la región.

CONTROL 1: He venido a platicar con usted porque me informaron CRS que usted es un productor de hortalizas. Es correcto? SI_____ NO_____
(Es necesario que haya producido hortalizas durante el año agrícola anterior, 2012, no necesariamente al momento de la entrevista)

CONTROL 2: También me informaron que usted vende su hortalizas a (nombre del mercado) es correcto?
SI_____ NO_____

Si la respuesta a control 1 y/o a control 2 es “no,” debe concluir la entrevista.

El estudio es realizado por mi tesis al Universidad de British Columbia de Canadá. Aquí está la información sobre el estudio y un contacto (*entregue Consent Form*). Los resultados del estudio serán utilizados para entender mejor la comercialización de los productos y los impactos por los pequeños productores. SU PARTICIPACION ES TOTALMENTE VOLUNTARIA Y USTED NO ESTA OBLIGADO A PARTICIPAR. La información que usted me brinda será totalmente confidencial y será protegida. Quiere usted participar en la entrevista? Tiene usted tiempo ahorita? La entrevista demora aproximadamente una hora. Y si usted permite, voy a hacer una grabación de la entrevista que solo los investigadores podra escouchar. Muchas gracias. (*Have them sign Consent Form & share phone number and directions*).

BACKGROUND

Para empezar, cuéntame un poco sobre su finca...

Cuando lo adquirió usted? Como lo adquirió?

Como era la finca cuando usted lo adquirió, que tamaño, que se cultivaba, cual era el producto mas importante de la finca?

Que cambios ha hecho en su finca en el tiempo en cuanto a los cultivos que siembra? Ha dejado de sembrar algunos o introducido otros? Cambios en el tipo o numero de animales que cria? Cambios en los productos que vende? Ha comprado o perdido maquinaria o otros equipos de trabajo? Ha comprado o vendido terreno? Ha alquilado o trabajado a media tierra con otras personas?

Como es la finca ahora? Que cultivos siembra o que animales cria?

Que cultivo o animal le genera la mayor cantidad de ingresos?

Cuantas manzanas tiene usted?

Cuantas manzanas cultiva?

(Si esas dos no coincidan, entonces pregunte)

Que hace con el resto de su tierra, o donde consigue el resto de la tierra que cultiva?

Usted contrata mano de obra para trabajar en la finca? Cuantas personas?

Que productos de la finca vende ahora?

Como los vende? (A quien, donde?)

EXPERIENCE WITH HORTALIZAS

Ahora cuéntame un poco sobre su experiencia con el cultivo de hortalizas.

Desde cuando empezó a sembrar hortalizas?

Cuales hortalizas sembraba?

Que area sembraba, en que épocas?

Como era los cultivos es ese entonces? Que variedades? Riego? Rendimientos?

Donde y como vendía la cosecha? Que tan rentable era las hortalizas?

Desde ese entonces para acá, que cambios ha habido en su producción de hortalizas? (en el area de siembra, en la variedad, en las practicas de manejo o tecnología utilizada, en las épocas de siembra, los insumos, los rendimientos? La rentabilidad?) Y por que?

En algún momento dejo de sembrar? Cuando? Por que? Cuando y por que inicio de nuevo?

Que cambios ha habido en la forma de comercializar las hortalizas? (A quien vende, donde, forma de cosechar, manejo post cosecha, calidades? La rentabilidad?)

Alguna vez ha vendido a Hortifruti? Cuando y cuantas veces?

Alguna vez ha vendido a La Colonia? Cuando y cuantas veces?

Alguna vez has vendido a otro supermercado o empresa? Cual, cuando, y cuantas veces?

Alguna vez ha vendido a través de una cooperativa o en forma colectivo con otros productores?
Cual, cuando, y cuantas veces?

A quien ha vendido mas hortalizas?

Ahora como es su producción de hortalizas?

LA FAMILIA

Ahora cuéntame sobre su familia.

Cuando adquirió esta finca cuantas personas había en su hogar? Quienes eran?

Cuantos hijos tienen ahora? Cuantos años tienen?

Quienes viven en el hogar ahora? Y los otros, que se hicieron? Cuando se fueron?

Alguien en su hogar ha vendido su mano de obra? Quien, cuando, y haciendo que? Era temporal o permanente?

Alguien en su hogar ha migrado para buscar trabajo? Donde y cuando?

Alguien en el hogar ha tenido algún negocio propio o trabajo por cuenta propia u otro ingreso que no provenía de la finca? Quien y cuando? Que hacían?

De todas las fuentes de ingreso del hogar, incluyendo la finca, empleo, negocio y remesas, cual es la mas importante para la familia? Por que?

LA FINCA

Ahora que conozco un poco mas sobre la historia de su finca y su familia, quisiera saber mas sobre la finca.

Que cultivos sembro el ano pasado (2012)?

Cultivo	Epoca	Area	Destino de la producción? Consumo o venta?	Donde o a quien vende este producto?	Cuales 3 generaron mas ingresos el ano pasado?

Usted recibe asistencia técnica?

De quien?	Para cuales cultivos o animales?	Se paga por el servicio? Cuanto?

Ha recibido algún crédito o préstamo en el ultimo ano, 2012?

De quien?	Para que era?	Cuanto fue el monto que presto?	En cuanto tiempo lo tiene que pagar?	Cuanto es el total que va pagar?

Quien es mas a cargo de dirigir el trabajo en la finca?

Cuales son las principales labores que se realizan en el finca por cultivo? Quien las realiza?

Cultivo?	Principales labores?	Quien las realiza?	Cuantos tiempo de la semana trabaja?	Familiar o contratado?	Mujer o hombre?

Como decidió sembrar hortalizas?

Cuales son los principales insumos y equipos que usa en el cultivo de hortalizas? Donde las compra? Las consigue al crédito o al contado?

Insumo o equipo?	Nombre del producto especifico	Cantidad que usaba?	Por que esto producto especifico?	Donde consigue o de quien?	Al crédito o al contado?

Tiene alguna certificación para las hortalizas? Para la finca? Cual? Cuando lo saco? Como lo saco? Por que lo saco?

Usted o algún miembro de su familia es miembro de alguna organización?

Nombre de la organización	Tipo de organización	Que beneficios obtiene? (asistencia técnica, insumos, capacitación, maquinaria, equipos de riego, crédito, comercialization, transporte)	Desde cuando es miembro?

Como funciona?

¿Puede cualquier persona participar en la cooperativa? ¿Cuáles son los requisitos para participar en la cooperativa? ¿Alguien ha tenido que retirarse de la cooperativa? ¿Por qué no todos los agricultores organizados en cooperativas?

A quien vende sus hortalizas?

Ahora hablamos del comprador "tal"

Nombre del comprador		
Desde hace cuanto tiempo venden a este comprador?		
Como se hizo el contacto inicial con este comprador?		
Que productos le vende a este comprador?		
Cual de esos le vende mas?		
Donde el comprador recibe el producto? (campo, mercado?)		
Como le paga? Por caja, calidad, efectivo, de inmediato?		
Quien paga el transporte de su finca hasta donde esta el mercado o centro de acopio?		
Cual fue el precio mas alto y el precio mas bajo durante 2012 para la mejor calidad? (sobre la medida e.g. # libras)		

Este comprador exige ciertas practicas en la producción?		
Que labores tiene que realizar al momento de la cosecha o después de cosechar para entregar a este comprador?		
Este comprador le da algún servicio a usted? (asistencia técnica, crédito, insumos?)		
Como es el la relación con el personnel del “tal”?		
Que es lo mas le gusta de este comprador?		
Que es lo que no le gusta de este comprador?		

Como se coordina con Hortifruti para la producción o las entregas? Por escrito o verbal? Si tiene algo escrito, me lo puede mostrar?

Desde que usted empezó a trabajar con Hortifruti, ha cambiado la relación con ellos? Como?

Qué pasa si usted no cumple con su parte del contrato? ¿Qué pasa si el comprador no cumple su fin?

¿Por qué nunca se vende a la HC?

¿Por qué usted vende regularmente para HF?

¿Por qué dejó de vender a la IC?

¿Por qué a veces se vende a HF y otras no?

Después de parar de vender a HF ¿qué producir y quién lo vendió a? ¿Qué hizo usted en su lugar?

¿Es fácil cambiar los compradores?

Ha cambiado las labores que realiza en los cultivos hortalizas a partir de que vende a Hortifruti? Como?

Usan insumos diferentes ahora que produce para Hortifruti? Cuales?

Por que ha cambiado los insumos que usa?

Han cambiado las cantidades de insumos? De ejemplos.

Como ha cambiado los costos, rendimientos y la rentabilidad de los hortalizas desde que vende a Hortifruti?

Alguna vez ha perdido en una siembra para Hortifruti? De que area fue? Cuando fue? Por que fue?

Como ha cambiado los cultivos o ganado que produce en la finca desde que empezó a vender a Hortifruti?

Antes		Ahora	
Cultivo o animal	Mzs o #	Cultivo o animal	Mzs o #

Cuales son los cambios que usted ha observado desde que empezó a vender a Hortifruti?

Cambio	Como cambio?	A causa de Hortifruti o algo otro?
Ingresos de la familia		
Su propiedad		
Alimentación y nutrición de la familia (más o menos, comen mejor o peor?)		
Educación de los niños		
Situación de las mujeres		
Empleo en la comunidad		

EL FUTURO

Piensan seguir con Hortifruti/el Mercado local? Por que o por que no?

Piensan ampliar o reducir su producción para HF?

Si no están asociados, les gustaría formar una organización de productores? Por que?

Si están asociados, piensa seguir perteneciendo a la cooperativa? Por que?

Como le afectaría a su familia si Hortifruti dejara de comprarles? Que harian?

COMPARACION CON OTROS MIEMBROS DE LA COMUNIDAD

La experiencia suya es parecida a la de los demás miembros de la comunidad que entregan a Hortifruti? Por que o por que no?

Usted conoce a alguien a quien le fue mal con Hortifruti? Por que? Que paso?

Usted conoce a alguien a quien le fue super bien con Hortifruti? Por que? Que paso?

Los que venden a Hortifruti están mejor o peor económicamente que el resto de la comunidad? Por que? (están mejor o peor antes de HF o como resultado de la relación con HF)

Appendix B Household questionnaire

Encuesta de Pequeños Productores y Mercados, Nicaragua, Diciembre 2013

Sara Elder, Universidad de la Columbia Britanica

MÓDULO A. IDENTIFICACIÓN DEL HOGAR

CRITERIOS PARA GRUPO CONTROL		Consentimiento Informado	
PREGUNTE ESTAS PREGUNTAS SOLAMENTE AL GRUPO CONTROL PARA CONFIRMAR QUE EL PRODUCTOR CUMPLE LOS CRITERIOS DEL GRUPO CONTROL		LEA LA DECLARACION DE CONSENTIMIENTO INFORMADO AL PARTICIPANTE. ASEGURESE DE QUE LE QUEDE CLARO QUE SU PARTICIPACION EN LA ENCUESTA ES VOLUNTARIA.	El participante está de acuerdo en participar en el estudio? 1. Si 2. No >> DETENGA ENTREVISTA
¿Vive desde al año 2006 en esta comunidad? 1. Si 2. No		Identificación del Hogar	
SI ES NO, DETENGA ENTREVISTA		A01. ID Hogar:	A11. Hora de inicio de la entrevista (hh:mm)
¿En 2006- 2007, cuantas manzana de tierra manejo usted?		A02. Comunidad:	A12. Hora de finalización de la entrevista (hh:mm)
SI TENIA MAS DE 14.25 MZ o 10 Ha, DETENGA ENTREVISTA		A03. Comarca:	A13. Fecha de la visita (dd/mm/aaaa):
¿En 2006- 2007, sembro usted cultivos hortalizas? 1. Si 2. No		A04. Municipio:	A14. Nombre/código del (de la) enumerador(a):
SI ES NO SEMBRO NINGUN CULTIVO HORTALIZA EN 2006-2007, DETENGA ENTREVISTA		A05. Departamento:	A15. Resultado final de la entrevista: 1. Completa 2. Incompleta 3. Ausente 4. Rechazada 5. No pudo localizarse
¿Alguna vez, ha vendido a HORTIFRUTI o al Supermercado La Colonia? 1. Si 2. No		A06. Nombres y apellidos del jefe(a) del hogar:	xx. Firma del (de la) supervisor(a):
SI LA RESPUESTA ES POSITIVA, DETENGA ENTREVISTA		A07. Nombres y apellidos del encuestado(a)	A16. Nombre/codigo del (de la) digitador(a):
		A08. Direccion del jefe(a) del hogar:	A17. Fecha de digitacion:
		A09. Número de teléfono: 888. No aplica/ no tiene/no quiere compartir	
		A10. Canal de mercado al que entrega el productor: 1. HORTIFRUTI (muestra) 2. La Colonia (muestra) 3. Grupo control	

MÓDULO B. LISTADO DEL HOGAR Y DEMOGRAFÍA

B01. Por favor, diga los nombres de quienes considera miembros de este hogar, que compartan los alimentos de este hogar, empezando por el jefe del hogar. HOGAR: Es la persona o grupo de personas, parientes o no, que viven bajo un mismo techo y preparan en común sus alimentos (Olla en Común).

C1 CF*	C2 Nombres y apellidos	C3 Parentesco con relación al jefe (a) del hogar	C4 Edad	C5 Sexo	Para personas de 6 o más años de edad		
					C6 Sabe leer?	C7 ¿Cuál es el nivel de educación formal alcanzado?	C8 ¿A qué se dedica principalmente?
	Identifique a los miembros del hogar en el siguiente orden: jefe o jefa, cónyugue, hijos o hijas, otros parientes del jefe ó jefa, no parientes	1. Jefe(a) 2. Esposo(a)/Compañero(a) 3. Hijo(a)/Hijastro(a) 4. Padre/madre 5. Abuelo(a) 6. Hermano(a) 8. Otro familiar 9. No familiar	Años cumplidos (menos de un año = 0)	1.M 2. F	1. Si 2. No	1. Ninguno 2. Primaria Incompleta 3. Primaria Completa 4. Secundaria Incompleta 5. Secundaria Completa 6. Universidad Incompleta. 7. Universidad Completa 8. Técnico Medio 9. Tecnico Superior 10. Post-grado/Maestria/Doctorado 11. Alfabetizado	1. Trabaja en su finca 2. Obrero agrícola 3. Obrero no agrícola 4. Profesional 5. Negocio propio 6. Estudia 7. Ama de casa 99. Otro, especificar _____
1		1					
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

*CF: Código de familiar. Este código será utilizado a lo largo de la encuesta

MÓDULO C. EMPRENDEDURISMO E INGRESOS

C01. En el presente año escolar, ¿se matricularon en el sistema de educación formal todos miembros del hogar de las edades 7 a 18?	1. Si 2. No 888. No hay miembros de 7-18
C02. En su ocupación principal en los últimos siete días, ¿Cuántos miembros del hogar trabajaron como empleados/obreros?	#
C03. ¿Cuántos años tiene de experiencia como productor?	#

C04. ¿En los últimos 12 meses, obtuvo algún miembro de su hogar algún ingreso de las siguientes actividades: [SI NO TUVE INGRESO, ESCRIBE 0.] [ESPECIFICAR CUANDO ES DOLARES AMERICANOS Y NO CORDOBAS]			C05. ¿Quién controla los ingresos de esta fuente? 1. Únicamente los hombres 2. Únicamente las mujeres 3. Ambos
1	Venta de cultivos granos básicos	C\$	
2	Venta de cultivos no granos básicos:	C\$	
3	Comercio:	C\$	
4	Artesanía:	C\$	
5	Venta de servicios:	C\$	
6	Empleo no agrícola:	C\$	
7	Empleo agrícola:	C\$	
8	Ingresos por remesas (dentro y fuera de Nicaragua):	C\$	
9	Otro, especificar _____:	C\$	

C06. ¿Algún miembro del hogar hizo otro tipo de trabajo en el transcurso de su vida aparte de los que menciono?

C1 1. Si 2. No >> C07	C2 ¿Quién? (Lista todos) CF	C3 Tipo de trabajo (especificar)	C4 ¿Cuántos años? Años

C07. De una escala de 1 al 10, donde 1 significa "indispuesto a tomar riesgos" y 10 significa "completamente preparado y dispuesto a tomar riesgos"; ¿cómo se evalúa? _____

C08. En el último año agrícola (Mayo 2012-Abril 2013) ¿Ha recibido usted o algún miembro de su familia servicios de crédito para sembrar hortalizas? 1.Sí ___ 2.No ___ >> D01

C1 Miembro de la familia que recibió CF	C2 Año que recibió	C3 Fuente de crédito Codigo 1	C4 Monto C\$ [Especificar cuando USD]	C5 Plazo meses	C6 Interes %

Codigo 1
1. Banco
2. Microfinanciera
3. Banco con contrato de Hortifruti
4. La Colonia
5. Asociación, cooperativa o grupo
6. ONG o institución internacional
7. Casas comerciales
9. Intermediarios (Comprador)
99. Otro, especificar _____

MÓDULO D. CARACTERÍSTICAS DE LA VIVIENDA

D01. ¿Qué material predomina en las paredes de su vivienda?	D02. ¿Qué material predomina en el piso de su vivienda?	D03. ¿De cuántos cuartos dispone el hogar (no incluya cocina, baños, pasillos ni garaje)?	D04. Esta vivienda es: [LEA LAS RESPUESTAS]:	D05. ¿Cuál es el tipo principal de servicio higiénico que usa su hogar?
1. Ladrillo o bloque de barro 2. Bloque de cemento 3. Adobe o taquezal 4. Madera 5. Ripio o desecho 6. Minifalda (madera y bloque o ladrillo) 99. Otro, especificar _____	1. Tierra u otro 2. Madera (tambo), ladrillo de barro, o embaldosado o concreto 3. Ladrillo de cemento, mosaico, terrazo o cerámica	#	1. Alquilada 2. Propia 3. Cedida/Prestada 99. Otro, especificar _____	1. Inodoro 2. Letrina, con tratamiento 3. Letrina, sin tratamiento 4. Letrina comunitario 5. No tiene 99. Otro, especificar _____
D06. ¿Cuál es la principal fuente de agua para uso general del hogar?	D07. ¿Mediante qué proceso prepara el agua que usan para beber?	D08. ¿Qué tipo de alumbrado tiene?	D09. ¿Cuál es la principal fuente de combustible para cocinar en este hogar?	D10. ¿Cuántos kms de su hogar al camino más cercano pavimentado/adoquinado?
1. Río, Ojo de agua, quebrada 2. Tubería dentro de casa 3. Tubería fuera de casa 4. Pozo público 5. Pozo privado 99. Otro, especificar _____	1. Filtrada 2. Hervida 3. Filtrada y hervida 4. Cloro 5. Ningún tratamiento 99. Otro, especificar _____	1. Servicio eléctrico 2. Candil/gas 3. Planta eléctrica 4. Ninguno 99. Otro, especificar _____	1. Leña no comprada 2. Leña comprada, carbón, o no cocinan 3. Gas butano o propano, gas kerosén, electricidad 99. Otro, especificar _____	Kms.
D11. Distancia del hogar al mercado más cercano (kms)	D12. Distancia del hogar al mercado regional (municipal / departamental) más cercano (kms)	D13. Distancia del hogar a Managua (kms)	D14. Distancia del hogar al supermercado Pali, La Unión o La Colonia más cercano (kms)	D15. Cuántos años ha vivido en esta comunidad?
		77. No sabe	77. No sabe	

D16. Bienes del hogar		C1 ¿Que cantidad de [.....] tiene actualmente?	C2 ¿Que cantidad de [.....] tenía en 2007?
1	Radio		
2	Televisor		
3	Refrigerador		
4	Cocina		
5	Plancha		
6	Maquina de moler		
7	Equipo de sonido/mini componente		
8	Abanico		
9	Licuada		
10	Tostadora		
11	Horno		
12	Horno de microonda		
13	Lavadora		
14	Maquina de coser		
15	Maquina de escribir		
16	Computadora		
17	DVD		
18	Teléfono convencional		

MÓDULO E. USOS DE LA TIERRA Y PRACTICAS AGRICOLAS

E01.A continuación, hablaremos de todas las parcelas que manejo en el ciclo agrícola pasado (Mayo 2012 - Abril 2013), no importa si es propia o no.

C1 No	C2 Nombre de la parcela	C3 Área total de la parcela		C4. Area total de la parcela con riego		C5 ¿Cuál es el tipo de tenencia de esta parcela?	C6 ¿Cuál es la situación legal de su tierra propia?	C7 ¿Uso principal de la parcela durante el año agrícola 2012-2013?	C8 ¿Esta parcela esta certificada por Buenas Practicas Agrícolas (BPA)?	C9 ¿Por que tiene o esta trabajando para tener certificación BPA? [respuesta multiple]
		a. #	b. UM <i>Codigo 1</i>	a. #	b. UM <i>Codigo 1</i>					
						1. Propio 2. Propio y dio a medias 3. Propio y dio en alquiler 4. Recibio en alquiler 5. Recibio a medias 6. Cedida/Prestada [Codigos 4-6 >> C7]	1. No tiene documento 2. Escritura 3. Título de Reforma Agraria o de propiedad 4. Promesa de Venta 5. Documento por Comunidad Indígena 99. Otro, especificar _____ 888. No aplica	1. granos basicos 2. hortalizas 3. otros cultivos 4. pastos 5. bosques 6. descanso 7. vivienda 99. Otro, especificar _____	1. Si 2. No >> Siguiente parcela 3. En proceso de estar certificada	1. Es una exigencia actual de un comprador, especificar nombre _____ 2. MAGFOR dice que va a ser una exigencia para vender en el futuro 3. Una ONG me aconsejó 4. Para la salud del consumidor 99. Otro, especificar _____
1										
2										
3										
4										
5										
6										
7										
<i>Codigo 1:</i> 1. Manzana 2. Hectarea 3. Tarea 4. Vara 99. Otro, especificar _____										

E02. Ahora, quisera hablar sobre las HORTALIZAS que sembró en el año agrícola pasado (de May-12 a Abr-13).

¿Cuales cultivos hortalizas sembró? <i>Codigo 1</i> C1	Variedad C2	¿Cuantas veces en el año agrícola sembró este cultivo? C3	Área sembrada promedia # C4	Área sembrada promedia UM <i>Codigo 2</i> C5	Producción total anual? # C6	Producción total anual? UM <i>Codigo 3</i> C7	Qué tipo de riego utilizó en esta área? <i>Codigo 4</i> C8	¿Desde la siembra hasta la cosecha, cuantas veces aplicó fertilizantes minerales (N, P, K) completo? # C9	¿Desde la siembra hasta la cosecha, cuantas veces aplicó plaguicidas químicas? # C10

Codigo 1: 1. Tomate 2. Chiltoma 3. Chile 4. Ayote 5. Apio 6. Pepino 7. Lechuga 8. Repollo 9. Brocoli 10. Coliflor 11. Chayote 12. Remolacha 99. Otro, especificar _____

Codigo 2: 1. Manzana 2. Hectarea 3. Tarea 4. Vara 99. Otro, especificar _____

Codigo 3: 1. QQ 2. Unidad 3. Canasta 4. Docenas 5. Miles 6. Arroba 7. Medios de 14 Lbs. 8. Medio de 25 Lbs. 9. Caja de 25 Lbs. 10. Caja de 60-70 Lbs. 11. Libras 12. Racimos 13. Sacos 14. Latas 16. Flete 99. Otro, especificar _____

Codigo 4: 1. Riego de gravedad 2. Riego de cubeta/barril 3. Riego goteo 99. Otro, especificar _____

E03. Sembró algún tipo de hortaliza en el ciclo agrícola 2006-2007? 1. Si 2. No _____

E04. ¿En el ciclo agrícola pasado (de May-12 a Abr-13) sembró **GRANOS BASICOS**? 1. Si ____ 2. No ____ >> E05

C1 Cultivo	Producción			C5 ¿Cuál fue la producción obtenida?	C6 Destino para auto-consumo (humano)		C7 De la cantidad destinada para auto-consumo, fue suficiente para la alimentación anual de su hogar	
	C2 Epoca	C3 Área	C4 Variedad					
Código 1	1. Primera 2. Postrera 3. Apante	a. #	b. UM Código 2	a. #	b. UM Código 3	a. #	b. UM Código 3	1. Si 2. No 888. No aplica

Código 1: 1. Maiz 2. Frijol 3. Arroz 4. Sorgo 99. Otro, especificar _____
Código 2: 1. Manzana 2. Hectarea 3. Tarea 4. Vara 99. Otro, especificar _____
Código 3: 1. QQ 2. Unidad 3. Canasta 4. Docenas 5. Miles 6. Arroba 7. Medios de 14 Lbs. 8. Medio de 25 Lbs. 9. Caja de 25 Lbs. 10. Caja de 60-70 Lbs. 11. Libras 12. Racimos 13. Sacos 14. Latas 16. Flete 99. Otro, especificar _____

E05. ¿Sembró algún tipo de grano básico en el ciclo agrícola 2006-2007? 1. Si 2. No _____

E06. ¿En comparación con el ciclo agrícola 2006-2007, en el ciclo agrícola 2012-2013 manejó una cantidad de cultivos diferentes que no sean hortalizas ni granos básicos mayor, menor o igual en sus parcelas?
 1. Mayor 2. Menor 3. Igual _____

Practicas Agricolas

C1	C2 1. Si 2. No >> siguiente practica	C3 ¿A cuales cultivos aplico este insumo ó práctica agrícola? <i>Codigo 1 [respuesta multiple]</i>	C4 ¿En que año introdujo este insumo o practica agrícola? Año	C5 ¿Dónde obtiene información sobre el uso de este insumo o practica? 1. ONG/ Proyecto, especificar _____ 2. Hortifruti 3. La Colonia 4. Casa comercial 5. Gobierno 6. Medios (radio, periodico) 7. Miembro de la comunidad o cooperativa 99. Otro especificar _____
E07. ¿En el ciclo agrícola pasado cuáles de los siguientes métodos utilizó para preparar el suelo?				
a. Cero labranza				
b. A mano/ azadón				
c. Arado con bueyes				
d. Mecanizado				
E08. ¿Cuáles de los siguientes metodos de riego utilizó?				
a. Riego por gravedad				
b. Riego por cubeta/barril				
c. Riego por goteo				
d. Fertirriego				
e. Plastico mulch				
E09. ¿En el ciclo agrícola pasado cuales de las siguientes practicas utilizó para manejar la fertilidad de suelo?				
a. Residuos de cultivos				
b. Estiércol animal				
c. Fertilizante Urea				
d. Fertilizante Completo				
e. Barbecho natural				
f. Barbecho mejorado				
g. Cultivos de cobertura de leguminosas				
h. Transferencia de biomasa				
i. Compost				
E10. ¿En el ciclo agrícola pasado cuales de las siguientes practicas utilizó para conservación de suelo?				
a. Vegetativo (siembras en curvas de nivel, Incorporación de rastrojos, Uso de abonos verdes, Cultivos de cobertura, etc.)				
b. Estructural (Barreras de piedra, Acequias, Terrazas, etc.)				
E11. ¿En el ciclo agrícola pasado cuales de las siguientes practicas utilizó para manejar plagas?				
a. Plaguacida o insecticida orgánico				
b. Practicas MIP				
c. Plaguacidas y insecticidas con label verde o azul				
d. Plaguacidas y insecticidas con label amarillo y rojo				
e. Herbicida				
f. Fungicida				
<i>Codigo 1: 1. Hortalizas 2. Granos basicos 3. Hortalizas y Granos basicos 99. Otro, especificar _____</i>				

E13. Equipos e infraestructura de la finca		C1 ¿Que cantidad de [.....] tiene actualmente?	C2 ¿Que cantidad de [.....] tenia en 2007?
1	Teléfono celular		
2	Bicicleta		
3	Motocicleta		
4	Camioneta		
5	Camión		
6	Vehículo (que no sea camioneta ni camión)		
7	Tractor		
8	Arado de tractor		
9	Arado de bueyes		
10	Carreta de bueyes		
11	Bomba mochila		
12	Fumigadora de motor (Motobomba)		
13	Motosierra		
14	Generador eléctrico		
15	Pilas		
16	Bodegas		
17	Corral para ganado		
18	Silos para granos		
19	Represas		
E14. Animales		C1 ¿Que cantidad de [.....] tiene actualmente?	C2 ¿Que cantidad de [.....] tenia en 2007?
1	Ganado mayor (bueyes, reses)		
2	Ganado menor (cerdos, ovejas)		
3	Gallinas y otros aves		
4	Estanque de peces o equipo de pesca		
5	Caballo, burro o mulo		

E15. ¿Cuántas personas contrato de manera permanente durante el ciclo agrícola pasado (Mayo 2012 – Abril 2013) para labores de cultivo en:		C1 Granos basicos	C2 Hortalizas
a. Hombres:			
b. Mujeres:			
E17. ¿Cuántas personas contrato de manera temporal durante el ciclo agrícola pasado (Mayo 2012 – Abril 2013) para labores de cultivo en:		C1 Granos basicos	C2 Hortalizas
a. Hombres:			
b. Mujeres:			
E19.¿Cómo divide el trabajo de finca entre los hombres y las mujeres?		Granos basicos <i>Codigo 1</i>	Hortalizas <i>Codigo 1</i>
A	Limpia del terreno		
B	Preparacion del suelo para la siembra		
C	Siembra o transplante		
D	Fertilizaciones		
E	Riegos		
F	Fumigaciones (incluye fungicidas, insecticidas, foliares, herbicidas)		
G	Deshierbes manuales o con maquinaria		
H	Tutorio amarre y podas		
I	Cosecha		
J	Clasificacion y empaque		
K	Transporte y comercializacion		
Codigo 1: 1. Unicamente los hombres 2. Unicamente las mujeres 3. Ambos 888. No aplica			

MODULO F. COMERCIALIZACION

F01. ¿Alguna vez desde 2006, ha vendido usted **HORTALIZAS** a algunos de los siguientes mercados?

C1 Mercado	C2 ¿Alguna vez desde 2006, ha vendido a: 1. Si 2. No >> siguiente mercado	C3 ¿Cuales son los tres cultivos que le han generado mas ingresos para usted en sus entregas a este mercado desde 2006? <i>Codigo 1</i>			C4 ¿Vendio a 1. Empresa 2. Mayorista 3. Minorista 4. Detalle/ a varios compradores 5. Intermediario local 6. Intermediario de fuera	C5 ¿A cuantos compradores fijos se vende en este mercado? <i>[Si no tiene compradores fijos, escribe 0]</i> #	C6 En que años desde 2006 ha vendido a este mercado? Por los años en que ha vendido, pregunte: ¿cuantos veces ha vendido a este mercado en [año]? <i>(Si no ha vendido en un año escribe 0)</i>								C7 En que año empezó a vender a este mercado? Año	C8 ¿Cómo fue que contactó a este mercado/ comprador por la primera vez? LEA LAS RESPUESTAS Y SELECCIONE UNA: 1. por ONG 2. Cooperativa 3. Otro productor 4. Comprador vino a la finca 5. Yo busqué comprador/voy al mercado 6. Mi familia siempre ha vendido a ese comprador 99. Otro, especificar _____	C9 ¿Por qué no ha vendido todos los años? 1. Precio 2. Se deshizo organización de productores 3. Cultivo nuevo 4. Independencia 5. Relacion personal con otro comprador 6. clasificación/rechaza no transparente 7. Problema de transportation 99. Otro, especificar 888. No aplica/ vendido todos los años	C10 Distancia del hogar al lugar de venta Kms.
		a. 2006	b. 2007	c. 2008			d. 2009	e. 2010	f. 2011	g. 2012	h. 2013							
1. HORTIFRUTI																		
2. Supermercado La Colonia																		
3. Exportador o procesador																		
4. Comprador en finca																		
5. Mercado regional (local o departamental)																		
6. Mercado de Managua																		

Codigo 1: 1. Tomate 2. Chiltoma 3. Chile 4. Ayote 5. Apio 6. Pepino 7. Lechuga 8. Repollo 9. Brocoli 10. Coliflor 11. Chayote 12. Remolacha 99. Otro, especificar _____

F02. Ahora hablemos de su relación con estos mercados en sólo el último ciclo agrícola (May 2012- Abr 2013). En el caso de que usted vende a varios compradores en un mercado, por favor habla del comprador a cual usted vendió la mayor cantidad de veces en este periodo.

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
	¿Tiene usted un acuerdo actualmente con un comprador en este mercado? 1. Acuerdo escrito 2. Acuerdo Verbal 3. No tiene acuerdo >> C6 99. Otro, especificar	¿Sobre qué es el acuerdo (escrito o verbal)? [LEA] [respuesta multiple] 1.Volumen 2.Calidad 3.Modos de pago 4.Precio 5.Frecuencia de entrega 6.Transporte 7.Crédito 8. BPA 9. A quien se puede vender 10. Ninguno 99. Otro, especificar	¿Se hizo el acuerdo... 1. antes de la siembra 2. después de la siembra y antes de la cosecha 3. durante la cosecha 99. Otro, especificar	¿Cuál es la duración del contrato? <i>Días</i>	¿Le pagaron a usted en 1. efectivo 2. cheque 3. insumos 99. Otro especificar	¿Cuántos días tarda en pagar le el producto (promedio por año)? [Si paga el mismo día de la entrega, escribe 0] <i>días</i>	¿Qué servicios realiza para este comprador? [LEA] [respuesta multiple] 1.Entrega en punto de distribución 2.Clasificación 3.Venta al crédito 4.Empaque 5.Fumigación 6. Ninguno 99. Otro, especificar	¿Qué servicios recibe de este comprador? [LEA] [respuesta multiple] 1. Adelanto de dinero 2.Insumos 3.Cosecha 4.Transporte 5. Arreglos de transporte 6. capacitación 7. asistencia técnica 8. Acceso al crédito 9. Ninguno 99. Otro, especificar	¿Cuáles son las ventajas de vender a este mercado en comparación con los otros mercados? [LEA LA LISTA] [respuesta multiple] 1. Independencia en decisiones sobre producción y venta 2. Precio 3. Oportunidad de discutir/negociar con el comprador 4. Relación personal con el comprador/comprador conocido 5. Transporte 6. Provisión de insumos 7. Acceso al mercado 8. Acceso a capacitación/ asistencia técnica 9. Ninguno 99. Otro, especifica _____	¿Ha cambiado su relación con este comprador desde el año en que empezó a venderle? 1. Si >> Describir cuales años y como? 2. No
1. HORTIFRUTI										
2. Supermercado La Colonia										
3. Exportador o procesador										
4. Comprador en finca										
5. Mercado regional (local o departamental)										
6. Mercado de Managua										

F03. Ahora hablemos de su relación con estos mercados en sólo el último ciclo agrícola (May 2012- Abr 2013). En el caso de que usted vende a varios compradores en un mercado, por favor habla del comprador a cual usted vendió la mayor cantidad de veces en este periodo.

C1	C2	C3	C4	C5	C6	C7	C8
	¿Usted confía en un comprador de este mercado? 1. Si 2. No	¿Cuántas veces en el año pasado (2012-2013) un comprador es este mercado no compró la cantidad que habían acordado? # de veces 888. No aplica	¿Cuántas veces en el año pasado no pagó la cuenta en el tiempo acordado? # de veces 888. No aplica	¿Qué porcentaje de sus productos entregados son rechazados por el comprador el año pasado (promedio)? [Si el comprador(es) compran todo, escribe 0] %	¿Está ahí cuando se selecciona el producto y rechazada? [Si el productor selecciona antes de ir al mercado, escribe 1] 1. Si 2. No	¿Cree Ud. que es justo que el comprador rechaza esta cantidad? 1. Si 2. No 888. No aplica	¿Puede vender los rechazos? 1. Si 2. No 888. No aplica
1. HORTIFRUTI							
2. Supermercado La Colonia							
3. Exportador o procesador							
4. Comprador en finca							
5. Mercado regional (local o departamental)							
6. Mercado de Managua							
F04.	C1 Vendió a este mercado: [LEA] 1. como individual 2. a través de un otro productor 3. a través de una cooperativa 99. Otro, especificar	C2 Entrego los productos: 1. a la cooperativa 2. directamente al comprador (e.j. al mercado, a su centro de acopio) 3. a un lugar en la comunidad donde viene el comprador 4. a la finca de otro productor 99. Otro, especificar	C3 ¿Si <u>no</u> vendió a través de una cooperativa, ¿Por qué? 1. No existe una cooperativa 2. No puedo pagar monto de ingreso para ser miembro de la cooperativa 3. No puedo pagar otros gastos recurrentes de miembros 4. La ubicación de la coop. no es conveniente 5. Por disputa familiar no puedo entrar 6. No puedo entrar por mi sexo 99. Otro, especificar	C4 <u>Si vendió</u> a través de una cooperativa, ¿todos los miembros de la cooperativa también vendieron a este comprador? 1. Si 2. No 77. No se 888. No aplica	C5 ¿Por qué no todos los miembros de la cooperativa vendieron a este comprador? 1. Algunos no pueden cumplir las exigencias del comprador 2. Algunos no producen el cultivo que el comprador compra 3. no es suficiente la demanda del comprador 99. Otro, especificar		
1. HORTIFRUTI							
2. Supermercado La Colonia							
3. Exportador o procesador							
4. Comprador en finca							
5. Mercado regional (local/departamental)							
6. Mercado de Managua							

F05. ¿Alguna ONG le ha ayudado a comercializar sus productos hortalizas? [respuesta multiple] _____

- 1. Winrock International
- 2. Technoserve
- 3 PCI
- 4. ADRA
- 5. CRS/Caritas
- 6 Save the Children
- 7. Ninguno
- 99. Otro especificar: _____

MÓDULO G. CAPITAL SOCIAL Y RELACIONES EXTERNAS

G01. Es usted o algún miembro de su hogar miembro o socio de alguna asociación, grupo de productores, cooperativa, comité comunitario, iglesia, grupo deportivo, u otro grupo? 1.Sí _____ 2.No _____ >> H01

¿Quién participa? <i>CF</i> C1	Nombre de la organización C2	¿Desde que año participa? <i>año</i> C3	Ocupa algún cargo directivo 1.Si 2.No C4	¿Bajo que condición inicio a trabajar este grupo? <i>Codigo 1</i> C5	¿Qué servicios recibe de esta organización? <i>Codigo 2</i> C6	¿Qué tanto aporte brinda usted a las decisiones del grupo? <i>Codigo 3</i> C7
<i>Codigo 1</i> 1. Iniciativa de los miembros de la comunidad 2. por ONG/Proyecto 3. por gobierno 99. Otro, especificar _____		<i>Codigo 2</i> 1. Comercialización de productos hortalizas 2. Comercialización de otros productos agrícolas 3. Asistencia técnica en cultivos 4. Capacitaciones 5. Acceso a insumos agrícolas (plántulas, pesticidas, fertilizantes) 6. Acceso a equipos agrícolas (mangueras, túneles, alambre) 7. Acceso a crédito 8. Ninguno 99. Otro, especificar _____ 888. No aplica			<i>Codigo 3</i> 1. Ningún aporte 2. Aporte en algunas decisiones 3. Aporte en todas las decisiones	

MODULO H: CONSUMO

PREGUNTA AL MIEMBRO DEL HOGAR RESPONSABLE DE LA PREPARACION DE LOS ALIMENTOS.

H01.	Ahora quisiera preguntarle sobre los tipos de alimentos que usted o cualquiera de los miembros de su hogar comieron durante los últimos 7 días. ¿Durante los últimos 7 días, comió en este hogar:	1. Si 2. No
A	¿Algún tortilla, pan, pastas, galletas o cualquier otro alimento hecho de sorgo, maíz, arroz, trigo?	
B	¿Papas, yuca, quiquisque o cualquier otro alimento proveniente de raíces o tubérculos?	
C	¿Verduras?	
D	¿Frutas?	
E	¿Carne de vaca, de cerdo, de pelibuey, de conejo, de pollo, de otras aves, hígado, riñón, corazón u otras carnes de órganos?	
F	¿Huevos?	
G	¿Pescado o mariscos frescos o secos?	
H	¿Alimentos a base de frijoles, arvejas, lentejas o frutos secos?	
I	¿Queso, yogurt, leche u otros productos lácteos?	
J	¿Alimentos a base de aceite, grasa o mantequilla?	
K	¿Azúcar o miel?	
L	¿Otros alimentos, como condimentos, café, té?	

H02. En las últimas cuatro semanas, ¿le preocupó que en su hogar no hubiera suficientes alimentos?	1 = Si 2 = No >>H04	
H03. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	
H04. En las últimas cuatro semanas, ¿usted o algún miembro de la familia no pudo comer los tipos de alimentos preferidos, cómo queso/cuajada, por que no pudo comprar ni cultivar estos alimentos?	1 = Si 2 = No >>H06	
H05. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	
H06. En las últimas cuatro semanas, ¿usted o algún miembro de la familia tuvo que comer una variedad limitada de alimentos, <i>por ejemplo solamente tortillas con sal</i> , por que no pudo comprar ni cultivar estos alimentos?	1 = Si 2 = No >>H08	
H07. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	
H08. En las últimas cuatro semanas, ¿usted o algún miembro de la familia tuvo que comer alimentos que realmente no deseaba por que no pudo comprar ni cultivar los otros alimentos?	1 = Si 2 = No >>H10	
H09. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	
H10. En las últimas cuatro semanas, ¿usted o algún miembro de la familia tuvo que comer menos de lo que sentía que necesitaba porque no había suficientes alimentos?	1 = Si 2 = No >>H12	
H11. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	

H12. En las últimas cuatro semanas, ¿usted o algún miembro de la familia tuvo que comer menos comidas diarias (menos de 3 veces) porque no había suficientes alimentos?	1 = Si 2 = No >>H14	
H13. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	
H14. En las últimas cuatro semanas, ¿alguna vez no hubo absolutamente ningún alimento que comer en su hogar por que no pudo comprar ni cultivar estos alimentos?	1 = Si 2 = No >>H16	
H15. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	
H16. En las últimas cuatro semanas, ¿usted o algún miembro de la familia se fue a dormir por la noche con hambre porque no había suficientes alimentos?	1 = Si 2 = No >>H18	
H17. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	
H18. En las últimas cuatro semanas, ¿usted o algún miembro de la familia se pasó todo el día y noche sin comer nada debido a que no había suficientes alimentos?	1 = Si 2 = No >>H20	
H19. ¿Con qué frecuencia sucedió esto?	1 = Pocas veces (1-2 veces) 2 = A veces (3-10 veces) 3 = Con frecuencia (> 10 veces)	

H20. ¿Hubo algún mes dentro de los últimos 12 en los que no tuvieron suficientes alimentos para satisfacer las necesidades de la familia?	1. Si 2. No >> Finalice entrevista										
<p>Si la respuesta es afirmativa, ¿cuáles fueron los meses (en los últimos 12 meses) en los que no hubo suficientes alimentos para satisfacer las necesidades de la familia?</p> <p>COLOQUE 1 EN LA CASILLA SI LA ENTREVISTADA IDENTIFICA DICHO MES COMO EL PERÍODO DURANTE EL CUAL EL HOGAR NO DISPUSO DE SUFICIENTES ALIMENTOS PARA SATISFACER SUS NECESIDADES. SI EL ENTREVISTADO NO IDENTIFICA DICHO MES, COLOQUE 2 EN LA CASILLA</p>											
Nov	Dic	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Sep	Oct