

The Food Retail Hierarchy and Food Import Dependency in a Dominican Town

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ABSTRACT

This study supplements existing literature on food import dependency, food retailing, and economic geography. An unexplored aspect of food import dependency is the role of food retailing in developing countries. Furthermore, the function of retail geography in the context of the development process has yet to be fully investigated. This study addresses these limitations by examining the relationship between the retail hierarchy and food import dependency.

This research examines the percentage of imported foods sold in stores at three levels of the food retail hierarchy—small-sized retail food stores, known locally as *colmados*; medium-sized food retail stores, or *super-ccolmados*; and the large supermarkets, or *supermercados*—in the Dominican Republic. It also considers variations in sources of imported foods for the three types of stores. Data were collected during fieldwork conducted in Verón—a small town located in the province of La Altagracia on the eastern end of the Dominican Republic—over a three-week period from August 15 to September 9, 2009. A stratified random sample was selected along the primary highway in Verón consisting of 15 stores. At these stores, the principal investigator collected inventory data and conducted interviews with storeowners and employees. The findings suggest that food import dependency increases as the level in the food retail hierarchy, or store size, increases.

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Chapter 1: Introduction and Statement of Purpose

1.1 Introduction

The food and fuel crisis of 2006-2008 threatened the food security of people living in developing countries, particularly the urban poor who spend a disproportionate amount of their income on food (FAO 2009). The sources of the crisis included higher petroleum prices and an increase in agricultural production of biofuels due to heavy subsidization of the biofuel industry (Rosenthal 2008; FAO 2009). As a result, poor people of developing countries suffered from increasing hunger and therefore higher levels of social and political unrest (Lacey 2008; Moseley, Carney, and Becker 2010). The food and fuel crisis posed a particular problem for food import dependent countries, such as the Dominican Republic where “foodstuffs”¹ are the number one imported good (CIA 2009). For example, from 2007 to 2008 the dollar value of wheat exports from the United States to the Dominican Republic grew 38%, and nearly tripled from 2004 to 2008 (U.S. Census Bureau 2009). Domestic food prices for staples such as legumes, tubers, maize, rice and wheat remain higher than before the crisis (FAO 2009). A lack of food availability and high prices are also a serious problem in other Caribbean countries (Trotman et al. 2009).

Agriculture formed a major component of the Dominican economy until the 1970s (Haggerty 1989). Since the 1970s, the agricultural sector of the economy has gradually declined and only accounted for an estimated 10.5% of the state GDP in 2009 (CIA 2009). The agricultural trade balance declined more than USD \$600 million from 1979-2004, reaching negative growth exceeding USD \$150 million in 2002, meaning that the Dominican Republic’s imports far outweighed exports (ESSGA 2006).

¹ “Foodstuffs” is a legal term used for food, defined by the WHO/FAO Codex Alimentarius Commission as “a substance, whether processed, semi-processed, or raw, which is intended for human consumption” (Bender 2009).

Food import dependency has been assessed in the context of its nutritional impact on children, domestic inflation, and environmental impacts in the Caribbean and in other island nations (Trotman et al. 2009); however, it has not been empirically examined at multiple scales of food retailing. The procurement of specific, empirical data on the types of foodstuffs imported and their origins at three levels of the food retail hierarchy can help to reveal the complexities of food import dependency and vulnerabilities of food availability in the Dominican Republic.

1.2 Statement of Purpose

Since the 1980s, the Dominican Republic and developing countries around the world have sought economic development and growth through structural adjustments programs (SAPs) promoted by the World Bank and the International Monetary Fund (IMF). As a result, government services have been continually reduced, and policies increasingly encourage export economies based on comparative advantage. The most recent example of this shift is the ratification the Central American Free Trade Agreement (CAFTA) by the Dominican Republic in 2004. This shift toward a more open economy may be viewed in a positive light due to the continuous, rapid growth of the GDP in the Dominican Republic in the past decade. However, I posit that increasing unemployment and income inequality emphasize the need for a more astute understanding of the repercussions of such global economic integration. DR-CAFTA may reduce poverty in participating countries; however, poverty reduction is not uniform across all sectors of the economy and puts agricultural workers at the highest risk for price shocks (Bussolo and Niimi 2009). This study seeks to understand how political economic shifts like DR-CAFTA impact the link between food producers and consumers through an empirical analysis of food import dependency in various sizes of food retail stores.

This research examines the percentage of foods sold that were imported in stores at three levels of the food retail hierarchy— (1) small-sized retail food stores, known locally as

colmados; (2) medium-sized food retail stores, or *super-colmados*; and (3) large supermarkets, or *supermercados*—in the Dominican Republic. The presence of imported versus domestic food is analyzed by food variety, shelf space, and volume, as well as variations in sources of imported foods for the three types of stores at two scales: the region and country. Lastly, food import dependency is explored in the context of food type category at all three levels of the food retail hierarchy.

Data were collected via fieldwork conducted in Verón—a shantytown located in the province of La Altagracia on the eastern end of the Dominican Republic—over a three-week period from August 15 to September 9, 2009. Verón began to form as a squatter settlement in the 1990s, establishing legality in 2007 as a shantytown. Verón has grown very rapidly in response to an increase in the size and expanse of resort hotels in Punta Cana and Bávaro, as migrants come from all over the country and neighboring Haiti to work service jobs such as maintenance and housekeeping (Kolivras and Scarpaci 2009). The constant flow of people from around the world through the eastern Dominican Republic, coupled with high levels of foreign capital investment, make Verón an interesting location for a study of food import dependency. Furthermore, the province of La Altagracia has poor soils and low levels of rainfall, leading to an agricultural focus on livestock grazing rather than legume, vegetable, or tuber production. Consequently, the residents of Verón are more dependent on food retail stores to purchase these types of food because it is difficult to grow such food products for themselves. While Verón may be comparable to other tourist locations in developing countries, the patterns here should not be generalized to more agricultural, industrial, or urbanized settings in developing countries.

This study supplements existing literature on food import dependency, food retailing, and economic geography. Food import dependency and agro-food networks in the Caribbean have been examined in the context of household level consumption, agrarian change, and

undernourishment for women and children. However, the supply side of food import dependency has yet to be examined. An unexplored aspect of food import dependency is the role of food retailing in developing countries. Small trade stores, such as *colmados*, have been praised for their social and economic benefits (Grossman 1986; Curry 1999; Bonnin 2006; Coen, Ross, and Turner 2008); however, their resilience to price shocks of imported food is not yet understood. Furthermore, supermarkets have been on the rise in Latin America, although the relationship between the growth of supermarkets and the rise in food import dependency has not been studied. Additionally, this research contributes to existing literature on food retail stores by providing a comparative analysis of kinship and gender roles among store employees. Retail geography in developed countries has explored phenomena such as the urban hierarchy and central place theory; however, the function of retail geography in the context of the development process has yet to be fully investigated. Contributions are also made to “new retail geography” in developing countries, where consumption practices are closely tied to identity, bridging studies of both economic and cultural geography (Wrigley and Lowe 2002). Lastly, this study contributes to the spatial tradition of geography and addresses concerns over the sustainability of existing agro-food networks.

This research provides empirical data that can guide food policy at multiple levels of governance. There is a current lack of empirical data regarding the impact of bilateral trade agreements, such as DR-CAFTA, on local food networks and poverty reduction in developing countries (Bussolo and Niimi 2009). Furthermore, these data can help the Food and Agriculture Organization (FAO) meet its goal of improving governance and food security policies by providing an empirically based analysis of food retailing (FAO 2009). Dominican policy makers at multiple levels of governance currently have sufficient data to understand the sources and volume of imported foods; however, there is a lack of data regarding how imported foods are

distributed among various levels of the food retail hierarchy. Therefore, the data from this research will help Dominican policy makers better understand the retail distribution of imported food within the country, facilitating the development of more sustainable food retail policies for the future.

The research questions are threefold: (1) Does food import dependency vary among different levels of the food retail hierarchy?; (2) Do the sources of imported food vary among different levels of the food retail hierarchy?; and (3) Does store size impact the importance of kinship and gender roles for those who work in the store and with neighborhood residents?

Chapter 2: Literature Review

2.1 Introduction

This research is situated within the theoretical framework of economic geography and international development. It focuses on the role of global food networks and the retail distribution of food resources among people living in a small, yet rapidly growing town in the Dominican Republic. First, this literature review will examine the political economic roots of the current global agro-food system. The food system will then be critically examined in the context of food import dependency. Second, I discuss contemporary literature on small and large food retail stores and the gaps that this study plans to address. Third, I will frame this study in the context of geography.

2.2 Food Import Dependency: Institutional Change, Local Impacts

The rise of food import dependency is partially due to the structural shift toward neoliberal economic theory as a strategy for economic growth in the wake of the Third World Debt Crisis of the 1970s. The World Bank and International Monetary Fund (IMF) helped fund structural adjustment programs (SAPs), a product of neoliberal economic theory, in the 1980s and 1990s. SAPs are characterized by a declining role of the state and increasing role of the market.

The processes of political and economic restructuring since the 1970s are evident in the Caribbean, where there is a deterritorialization of the state and a focus on regional agglomeration (Newstead 2005). Signed in 1973 and including 15 member states as of 2002, the Caribbean Community and Common Market (CARICOM) represents an “economic and geopolitical strategy to secure the region’s interests in negotiations with the outside world” (Newstead 2005, 50). However, despite its geographic location in the Caribbean basin, the Dominican Republic

has more often been included in regions such as Latin America and, more specifically, Central America. Therefore, as structural adjustment manifested itself in the form of regional and bilateral trade in the first decade of the twenty-first century, the Dominican Republic opted to sign the Dominican Republic-Central American Free Trade Act (DR-CAFTA) rather than CARICOM. Trade agreements such as DR-CAFTA focus on eliminating barriers to trade within certain geographic regions. The data presented here can help fill two gaps in the literature related to trade agreements and imported food: (1) Will regional trade agreements take precedence over geographic location in the availability of imported food?; and (2) Will the prevalence of DR-CAFTA manifest itself differently at different levels of the food retail hierarchy?

While SAPs and trade agreements have been found to alleviate poverty for some, farmers in developing countries were competing on an uneven playing field with farmers of developed countries (Bussulo and Niimi 2009; Bassett 2010; Moseley, Carney, and Becker 2010). As social safety nets vanished and agricultural subsidies were reduced, foodstuffs produced cheaper elsewhere flooded domestic markets. One result is increasing migration from rural to urban areas (Davis 2006). The sustained pace of rural-to-urban migration in many Latin American countries, including the Dominican Republic, poses a separate but complementary challenge to the domestic food system. The infrastructure and economy of urban centers are unable to cope with rapid population growth (Davis 2006; UNFPA 2007). Despite continued population growth, the agricultural labor force in the Dominican Republic has declined since the 1990s and reached negative 1.8% between 2000-2004 (ESSGA 2006). Meanwhile, unemployment in the Dominican Republic increased by 4% between 2000-2006 (UNStats 2007). Farmers' inability to make a living on small plots of land has also been coupled with rural social unrest in many places around the world due to the disintegration of communities and rapid rates of rural

emigration (Ross 2007). Furthermore, cultural diversity is often vibrant in rural areas. Rural areas encounter not only the abandonment of farmland, but also the loss of cultural knowledge of appropriate farming techniques in rural areas (Ross 2007).

A proposed solution to counteract rapid urbanization is to encourage economic vitalization of rural areas by funding agricultural initiatives (Epstein and Jezeph 2001). In a comparative study of three countries in West Africa after the food and fuel crisis of 2006-2008, Mali was found to have the most resiliencies to severe food shortages and social unrest due to its high level of food self-sufficiency (Moseley, Carney, and Becker 2010). The empirical data on food import dependency gathered as part of this study may also help support agricultural initiatives to help curb the rates of internal migration and reduce the risk of price shocks.

Food import dependency and agro-food networks in the Caribbean have been examined in the context of household-level consumption, agrarian change, and undernourishment for women and children. Grossman (1998b) found that the consumption of food imports in St. Vincent was not related to the growth in the banana export industry as posited in the literature. More important was the amount of income controlled by women, as they tend to spend a higher proportion of their income on food (Grossman 1998b). Trotman et al. (2009) highlighted increasing vulnerability and food insecurity in the CARICOM states due to high levels of food import dependency and the threat of increased storm activity due to global environmental change. More specifically, they highlighted the disproportionate problem of undernourishment for women and children as it relates food import dependency (Trotman et al. 2009). However, as noted above, studies of CARICOM states exclude the Dominican Republic.

Literature on the role of food import dependency in the Dominican Republic is limited. In the Dominican Republic, the impact of agro-food networks has largely been examined in the context of agrarian change (Raynolds 1997). Absent from the literature is the manner in which

the restructuring of agro-food networks and the rise of food import dependency impacts the supply side of food availability at the level of food retailing. Food insecurity is prevalent among the urban poor who do not have access to homegrown food items, therefore making them more reliant on food retail shops. As a result, understanding the relationship between food import dependency and food retailing in a shantytown is an imperative contribution to studies of food import dependency and food insecurity in the Caribbean.

A second set of critiques of the export oriented global agro-food system is its negative effect on the natural environment and its contribution to climate change. The global agro-food system consumes a large amount of resources, such as water and oil (Khan and Hanjra 2008). Curtis (2007) postulates that reaching peak oil in the near future may alter the global food system, leading to comparatively lower prices for locally or domestically produced goods. High oil prices can particularly threaten the economies of developing countries that rely heavily on imports for basic food staples, more specifically small island nations such as the Dominican Republic. These critiques are not new, and are not unique to developing areas. Industrial agriculture in the United States was quickly condemned for its social injustices, cultural disintegration, and environmental externalities (Carson, Darling, and Darling 1962; Berry 1977).

Resistance movements to such pressures have been classified as “alternative food networks” in which locally produced foods are consumed in order to promote environmental and social stewardship and community sustainability (Whatmore and Thorne 1997; Hendrickson and Heffernan 2002; Weatherell, Tregear and Allinson 2003). These movements have led to the increasing commonality of terms such as “food miles,” the “100 mile diet,” and “locavore” in the media and dialogue among developed countries. The effectiveness of local food consumption as a mechanism for achieving sustainability and combating climate change has been met with scrutiny. There has been a call for “fair miles” as opposed to “food miles,” involving the

economic and social impacts on farmers in developing countries when consumers in developed countries decrease their consumption of imported food items (Chi, MacGregor, and King 2009). In fact, greenhouse gas emissions (GHG) from food transport are negligible when compared to the level of GHG emitted during food production processes (Weber and Matthews 2008). Therefore, a dietary reduction in meat consumption reduces GHG emissions more so than local food consumption (Weber and Matthews 2008). As a result, there has been a call for more regenerative agronomic systems that re-integrate human labor and reduced mechanized agriculture (Pearson 2007). Furthermore, recent literature on the state of global food insecurity calls for “alternative development paths,” through price support (Moseley, Carney, and Becker 2010) and smallholder agro-ecosystems (Chowdhury 2010).

An empirical analysis of the supply side of food import dependency in a developing country can lead to support of regenerative agronomic systems thereby enhancing rural social capital. Furthermore, while the energy input for transport may not impact consumers in developed countries, the cost of food transport is more significant in developing countries where poor people spend a significant proportion of their income on food. Therefore, there is a need for an alternative lens for examining the relationship between food miles and food import dependency as it pertains to developing countries.

Examining the role of different levels of the food retail hierarchy in developing countries, such as the Dominican Republic, may help us better understand the issue of food import dependency. Consequently, this study can assist in the development of policy that encourages more equitable market access for domestic farmers producing staples, such as rice and beans, fruits, and fresh vegetables. Such policies can also help curb the rate of internal migration to cities, allowing time for infrastructure to adjust to the current number of urban residents.

2.3 Food Retail Stores in Developing Countries

The study of food import dependency has largely ignored the role of food retailing in developing countries. This study will contribute to the limited amount of literature on the nature and characteristics of small retail food shops, known as trade stores or *tiendas* in many Latin American countries (Grossman 1986; Curry 1999; Bonnin 2006; Coen, Ross, and Turner 2008), and known locally as *colmados* in the Dominican Republic. Previous studies have focused on the role of kinship and social networks in village patronage of small shops (Grossman 1986; Curry 1999), while others have focused on *tiendas* as private sphere public spaces in which a sense of community is developed through informal networks (Coen, Ross, and Turner 2008). In a study of small food retail shops in the Phillipines, the shops were found to be particularly beneficial for marginalized groups, such as women (Bonnin 2006). Although small food retail stores have social and economic benefits, the literature also suggests that small shops tend to be found in poor areas and sell a higher percentage of imported foods than do larger stores (Grossman 1998a,b).

Supermarkets in developing countries have been largely studied in the context of institutional economic policy and nutritional benefit, rather than smaller-scale socioeconomic implications (Cacho 2003; Reardon et al. 2003; Asfaw 2008). The growth of supermarkets has been associated with an increase in the sale of packaged and processed foods relative to fresh foods (Reardon et al. 2003). As a result, there are higher levels of obesity among supermarket shoppers and a statistically significant increase in the consumption of processed foods and sugars and a decrease in the consumption of staples, such as maize (Asfaw 2008).

Research has yet to examine the impact of retail food shop size on the percentage of imported food sold. This study contributes to existing literature by providing a comparative analysis of three hierarchical levels of food retailing, rather than focusing on one type of store.

Furthermore, it provides insight into the supply side of food retail stores—the impact of retail space on the source of food sold. More specifically, this study seeks to understand the extent to which food import dependency varies between smaller and larger stores.

2.4 Geography: Space, Sustainability, and Identity

This study also contributes to the field of geography by situating itself within the spatial tradition of geography (Robinson 1976). First, this research is based on an analytical comparison of three scales of store size. The results demonstrate that retail space is a variable by which food import dependency changes. Second, the source of imported food changes between different levels of the food retail hierarchy. My analysis provides insight into these different sources at both the state and regional level; therefore it draws a connection between retail store size and the distances over the spaces that food travels.

In addition, this study also situates itself within the spatial tradition of geography by developing an understanding of hierarchies. The analysis of urban hierarchies has its root in central place theory and has typically focused on urban centers of developed countries where retailers and consumers act as utility-maximizers (Christaller 1933; Berry 1967; Kolars and Nystuen 1974). Research on urban hierarchy has focused on the factors that lead to population concentrations and how services change within different levels of the urban hierarchy. Additionally, urban hierarchy research addresses topics such as connectedness and hierarchical diffusion. This study adds to the understanding of connectedness by questioning the relationship of various levels of the retail hierarchy to food export areas around the world. Furthermore, this study expands upon the notion of hierarchies by examining the retail hierarchy, or store size, in the context of food import dependency.

While the spatial tradition of geography provides a context for this study, two “big questions” in geography provide purpose. First Cutter, Golledge and Graf (2002, 309-310) ask,

“why do people, resources, and ideas move?” More specifically, this study asks why food resources move across international boundaries at variable quantities. Moreover, food represents culture. Therefore, why are imported foods more common in one space than another and what are the “sociocultural consequences” of this distribution (Cutter, Golledge and Graf 2002, 310)?

The second “big question” significant to this study states: “How and why do sustainability and vulnerability change from place to place and over time?” (Cutter, Golledge and Graf 2002, 314-315). The current global food system of production and exchange has severe environmental consequences—such as soil degradation and high water and energy consumption—that will only be exacerbated by the rapidly growing global population in the coming decades (Khan and Hanjra 2008). Undoubtedly this is problematic for people across the globe; however, the degree of impact will invariably be unequally distributed. By comparatively examining empirical data on food import dependency at three scales of food retail stores, we can assess food insecurity in the Dominican Republic. Additionally, it is imperative to address the issue of farmer emigration from rural areas in developing countries in order to prevent vulnerability to economic shocks such as the recent food and fuel crisis (Moseley, Carney, and Becker 2010). Therefore, the global agro-food system, food import dependency, and “the food-price protests of 2008 [reveal] that hunger is linked to multi-scale processes that make poor people vulnerable to exacerbating conditions” (Bassett 2010, 5698). Empirical analyses, such as the data presented in this study, can emphasize the urgency of addressing issues of vulnerability to food insecurity so as to promote more sustainable policies in the Dominican Republic, other Caribbean states, and developing countries elsewhere.

Lastly, this study contributes to the field of “new retail geography,” a sub-field that embraces aspects of economic and cultural geography (Wrigley and Lowe 2002). Traditional retail geography emphasizes the importance of retail location to consumption patterns. New

retail geography, instead, highlights the importance of identity and culture in the role of consumption (Wrigley and Lowe 2002). Studies in new retail geography often focus on consumers in developed, rather than developing countries. Therefore, this study makes an important contribution to the field by examining retail geography in a developing country. Through the processes of globalization, there is increasing Westernization of culture as middle classes expand. Through an examination of imports at various levels of the food retail hierarchy, this study will indicate where middle class patrons tend to shop. In addition, it enhances understanding and applicability of the principles of new retail geography in developing countries.

Chapter 3: Manuscript

The Food Retail Hierarchy and Food Import Dependency in a Dominican Town*

*This chapter is a manuscript in preparation for submission to *The Southeastern Geographer*.

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Abstract

This research examines the percentage of imported foods sold in stores at three levels of the food retail hierarchy—small-sized retail food stores, known locally as *colmados*; medium-sized food retail stores, or *super-ccolmados*; and the large supermarkets, or *supermercados*—in the Dominican Republic. It also considers variations in sources of imported foods for the three types of stores. Data were collected during fieldwork conducted in Verón—a small town located in the province of La Altagracia on the eastern end of the Dominican Republic—over a three-week period from August 15 to September 9, 2009. A stratified random sample was selected along the primary highway in Verón consisting of 15 stores. At these stores, the principal investigator collected inventory data and conducted interviews with storeowners and employees. The findings suggest that food import dependency increases as the level in the food retail hierarchy, or store size, increases.

Keywords: food import dependency, food retail hierarchy, Dominican Republic

3.1 Introduction

The food and fuel crisis of 2006-2008 threatened the food security of people living in developing countries, particularly the urban poor who spend a disproportionate amount of their income on food (FAO 2009). The sources of the crisis included higher petroleum prices and an increase in agricultural production of biofuels due to heavy subsidization of the biofuel industry (Rosenthal 2008; FAO 2009). As a result, poor people of developing countries suffered from increasing hunger and therefore higher levels of social and political unrest (Lacey 2008; Moseley, Carney, and Becker 2010). In response, there has been a call for increasing food self-sufficiency, thereby reducing food import dependency, in developing countries (Moseley, Carney, and Becker 2010). The food and fuel crisis posed a particular problem for food import dependent countries, such as the Dominican Republic where “foodstuffs” are the number one imported good (CIA 2009). “Foodstuffs” is a legal term used for food, defined by the WHO/FAO Codex Alimentarius Commission as “a substance, whether processed, semi-processed, or raw, which is intended for human consumption” (Bender 2009). A lack of food availability and high prices are already serious problems in other Caribbean countries (Trotman et al. 2009).

Agriculture was a major component of the Dominican economy until 1970s (Haggerty 1989). Since then, it has been in gradual decline and in 2009 accounted for an estimated 10.5% of the state GDP (CIA 2009). The agricultural trade balance declined more than USD \$600 million from 1979-2004, reaching negative growth exceeding USD \$150 million in 2002, indicating that the Dominican Republic’s imports far outweighed exports (ESSGA 2006). Food import dependency has been assessed in the context of its nutritional impact on children, domestic inflation, and environmental impacts in the Caribbean and in other island nations

(Trotman et al. 2008); however, it has not been empirically examined at multiple scales of food retailing.

The economy of Dominican Republic is a laissez-faire approach to corporatism (Kolivras and Scarpaci 2009), shown by the recent signing of the Central American Free Trade Agreement (CAFTA) by the Dominican government in 2004. This shift toward a more open economy may be viewed in a positive light due to the continuous, rapid growth of the GDP in the Dominican Republic in the past decade. However, we posit that rapidly increasing unemployment and income inequality emphasize the need for a more astute understanding of the repercussions of such global economic integration. This study contributes to this understanding by analyzing the relationship between the food retail hierarchy and food import dependency in the Dominican Republic.

This research supplements the existing literature on food import dependency, food retailing, and economic geography. Studies of retail geography have largely focused on issues in developed countries, such as retail location (Berry 1974) and the link between consumer tendencies and identity (Wrigley and Lowe 2002). This research will examine the role of retail geography in the context of the development process. Additionally, this research contributes to the need for more empirical data on the impact of bilateral trade agreements, such as DR-CAFTA, on local food networks and poverty reduction in developing countries (Bussolo and Niimi 2009). Likewise, Dominican policy makers have sufficient data to understand the sources and volume of imported foods; however, there is a lack of data regarding how imported foods are distributed among various levels of the food retail hierarchy. Therefore, the data from this research will improve Dominican policy makers' understanding of the retail distribution of imported food within the country, thereby facilitating the development of more sustainable food retail policies for the future.

The research questions to address these gaps in the literature are threefold: (1) Does food import dependency vary among different levels of the food retail hierarchy?; (2) Do the sources of imported food vary among different levels of the food retail hierarchy?; and (3) How do kinship, gender roles, and sense of community vary among different levels of the food retail hierarchy?

3.2 Literature Review

3.2.1 Food Import Dependency

The rise of food import dependency is partially due to the implementation of structural adjustment programs (SAPs), a product of neoliberal economic theory, in the 1980s and 1990s. SAPs were heralded as a mechanism for economic growth in the wake of the Third World Debt Crisis of the 1970s. Characteristics of SAPs include de-emphasizing the state and increasing role of the markets.

The processes of political and economic restructuring since the 1970s are evident in the Caribbean, where there is a deterritorialization of the state and a focus on regional agglomeration such as the Caribbean Community and Common Market (CARICOM), which does not include the Dominican Republic (Newstead 2005). As structural adjustment manifested itself in the form of regional and bi-lateral trade agreements in the first decade of the twenty-first century, the Dominican Republic opted to sign the Dominican Republic-Central American Free Trade Act (DR-CAFTA) rather than CARICOM. Trade agreements such as DR-CAFTA focus on eliminating barriers to trade within certain geographic regions. This research can help understand the relationship between these trade agreements and the availability of imported food at different levels of the food retail hierarchy.

While SAPs and trade agreements have been found to alleviate poverty for some, farmers in developing countries are competing on an uneven playing field against farmers in developed

countries (Bussulo and Niimi 2009; Moseley, Carney, and Becker 2010). As social safety nets vanished and agricultural subsidies were reduced in developing countries, foodstuffs produced cheaper elsewhere flooded domestic markets. One result is increasing migration from rural to urban areas (Davis 2006). The infrastructure and economy of urban centers are unable to cope with rapid population growth (Davis 2006; UNFPA 2007). Despite continued population growth, the agricultural labor force in the Dominican Republic has gradually declined since the 1990s (ESSGA 2006). The inability to make a living on small plots of land has also been coupled with rural social unrest in many places around the world due to the disintegration of communities as people leave for urban areas in search of employment (Ross 2007).

A proposed solution to counteract rapid urbanization is the promotion of economic vitalization of rural areas by funding agricultural initiatives (Epstein and Jezeph 2001). In a comparative study of three countries in West Africa after the food and fuel crisis of 2006-2008, Mali was found to have the most resiliencies to severe food shortages and social unrest due to its high level of food self-sufficiency (Moseley, Carney, and Becker 2010). Empirical data on food import dependency gathered as part of this study may also help support agricultural initiatives to help curb the rates of internal migration and reduce the risk of price shocks.

Food import dependency and agro-food networks in the Caribbean have been examined in the context of household-level consumption, agrarian change, and undernourishment for women and children (Raynolds 1997, Grossman 1998b, Trotman et al. 2009). However, comprehensive studies of food import dependency in Caribbean typically include CARICOM states (Trotman et al. 2009), and therefore there is a gap in the literature regarding food research in the Dominican Republic. Also absent from the literature is the manner in which the restructuring of agro-food networks and the rise of food import dependency impacts the supply side of food availability at the level of food retailing. Food insecurity is prevalent among the

urban poor who do not have access to homegrown food items, therefore making them more reliant on food retail shops. As a result, understanding the relationship between food import dependency and food retailing in a shantytown is an imperative contribution to studies of food import dependency and food insecurity in the Caribbean.

A second set of critiques of the export oriented global agro-food system focus on its negative effect on the natural environment and its contribution to climate change. The global agro-food system consumes a large amount of resource, such as water and oil (Khan and Hanjra 2008). Resistance movements to such pressures have been classified as “alternative food networks” in which locally produced foods are consumed in order to promote environmental and social stewardship and community sustainability (Whatmore and Thorne 1997; Hendrickson and Heffernan 2002; Weatherell, Tregear and Allinson 2003). These movements have led to the increasing commonality of terms such as “food miles,” the “100 mile diet,” and “locavore” in the media and dialogue among developed countries. An empirical analysis of the supply side of food import dependency in a developing country can lead to the support of regenerative agronomic systems, thereby enhancing rural social capital and reducing rural emigration (Pearson 2007).

3.2.2 Food Retail Stores

The study of food import dependency has largely ignored the role of food retailing in developing countries. This study will contribute to the limited literature on the nature and characteristics of small retail food shops, known as trade stores or *tiendas* in many Latin American countries (Grossman 1986; Curry 1999; Bonnin 2006; Coen, Ross, and Turner 2008), and known locally as *colmados* in the Dominican Republic. Previous studies have focused on the role of kinship and social networks in village patronage of small shops (Grossman 1986; Curry 1999), while others have focused on *tiendas* as private sphere public spaces in which a sense of community is developed through informal networks (Coen, Ross, and Turner 2008). In

a study of small food retail shops in the Philippines, the shops were found to be particularly beneficial for marginalized groups, such as women (Bonnin 2006). Although small food retail stores have social and economic benefits, the literature also suggests that small shops tend to be found in poor areas and sell a higher percentage of imported foods than do larger stores (Grossman 1998a,b).

Supermarkets in developing countries have been largely studied in the context of institutional economic policy and nutritional benefit, rather than smaller-scale socioeconomic implications (Cacho 2003; Reardon et al. 2003; Asfaw 2008). The growth of supermarkets has been associated with increases in the sale of packaged and processed foods relative to fresh foods (Reardon et al. 2003). This pattern has led to higher levels of obesity among supermarket shoppers and a statistically significant increase in the consumption of processed foods and sugars and a decrease in the consumption of staples, such as maize (Asfaw 2008). Additionally, as incomes increase, people are more inclined to shop at supermarkets.

In addition, this study also situates itself within the spatial tradition of geography by developing an understanding of hierarchies. The analysis of urban hierarchies has its root in central place theory and has typically focused on urban centers of developed countries where retailers and consumers act as utility-maximizers (Christaller 1933; Berry 1967; Kolars and Nystuen 1974). Research on urban hierarchy has focused on the factors that lead to population concentrations and how services change within different levels of the urban hierarchy. Additionally, urban hierarchy research addresses topics such as connectedness and hierarchical diffusion. This study adds to the understanding of connectedness by questioning the relationship of various levels of the retail hierarchy to food export areas around the world. Furthermore, this study expands upon the notion of hierarchies by examining the retail hierarchy, or store size, in

the context of food import dependency. Because changes in economic prosperity tend to modify the store types in which people shop, food import dependency may change as well.

Research has yet to examine the impact of retail food shop size on the percentage of imported foods sold. This study contributes to the existing literature by providing a comparative analysis of three hierarchical levels of food retailing, rather than focusing on one type of store. Furthermore, it provides insight into the supply side of food retail stores—the impact of retail space on the source of foods sold. More specifically, this study seeks to understand the extent to which food import dependency varies between smaller and larger stores.

3.3 Methodology

3.3.1 Study Site

The principal investigator (PI) conducted fieldwork in Verón (Fig. 1)—a small town located in the province of La Altagracia on the eastern end of the Dominican Republic. Verón began as a squatter settlement in the 1990s, establishing legality as a shantytown in 2007. Verón has grown very rapidly in response to an increase in the size and expanse of resort hotels in Punta Cana and Bávaro, as migrants come from all over the country and neighboring Haiti to work service jobs such as maintenance and housekeeping (Kolivras and Scarpaci 2009). The constant flow of people from around the world through the eastern Dominican Republic and high levels of foreign capital make Verón an interesting location for a study of food import dependency. Furthermore, the province of La Altagracia has poor soils and low levels of rainfall, leading to an agricultural focus on livestock grazing rather than legume, vegetable, or tuber production. Consequently, the residents of Verón are more dependent on food retail stores to purchase these types of food because they are unable to grow them for themselves. While Verón may be comparable to other tourist locations in developing countries, the patterns here

should not be generalized to more agricultural, industrial, or urbanized settings in developing countries.

3.3.2 Data Collection

Data were collected in Verón over a three-week period from August 15 to September 9, 2009. The sampling frame consisted of 30 food shops along the primary highway in Verón. For time and safety reasons, the food shops located off side streets and specialized fruit or meat vendors were excluded. The sampling frame was established through personal observation and snowballing techniques.

The PI stratified the sampling frame based on estimations of retail space in square feet. Store size was estimated by pacing the perimeter of each building's exterior. *Colmados* were classified as all stores between 100 (9m²) and 399 (37m²) square feet, where n=14. *Super-colmados* were classified as all stores between 400 (37m²) and 999 (93m²) square feet, where n=12. *Supermercados* were classified as all stores between 1000 (93m²) and 2500 (232m²) square feet, where n=4. Each store was then assigned a number. Stores within each stratum were chosen for inclusion in the sample using a table of random numbers. The PI selected a sample proportion from each category: 7 *colmados*, 5 *super-colmados*, and 2 *supermercados*. For each of these stores, the PI recorded food type, brand name, and source country for all food items². For example, one item would be a can of Goya® black beans, while a second item would be Famosa® black beans. Also, 1 can of beans, 1 bulk bag of rice, or 1 plantain were operationalized as 1 item each; regardless of the volume of goods sold, each item was represented as 1 in the calculation of food import dependency by variety. Source country was

² For one *supermercado*, the PI was initially given permission by the store manager; however, the next day I was asked to leave by the storeowner before completing a full inventory. Therefore, the PI only collected subset data for the middle two shelves in all aisles of the store.

determined by reading the product label. For products that did not have a label, such as some fresh fruits and vegetables, the PI asked the storeowner where those items were grown.

Therefore, the information in the research typically indicates where the food is processed or packaged, but not necessarily where it was produced. Additionally, a domestic product may be sourced by a transnational corporation operating within the Dominican Republic but owned in another country, such as by Coca-Cola.

The PI also collected supplementary data from randomly selected stores within each stratum of the sample. The subset consisted of 4 *colmados*, 2 *super-colmados* and 2 *supermercados* using a table of random numbers. For the subset, the PI collected inventory data that included food type, brand, country of origin, number of items, shelf space and height, and shelf tier. The PI collected this data for all items in the store in the *colmados* and *super-colmados* of the subset; however, the PI collected these supplementary data for only the middle two shelves in each of the *supermercados* due to time constraints.

Supplementary qualitative information was obtained through observation and personal interviews with vendors and storeowners. The PI conducted interviews with the owner or employee in 7 of the stores I surveyed—5 *colmados*, 1 *super-colmado*, 1 *supermercado*. These numbers are disproportionate, because interviews were only conducted with permission by the storeowner. Storeowners were asked questions regarding store hours, kinship between employees and patrons, patron characteristics, and duration of ownership. Kinship was broadly defined as family members or close friends, and storeowners were asked to define their relationship to the employees. Patron interviews were not conducted because nearly all of the storeowners were concerned that it would negatively impact their sales. However, I was able to observe external appearances of patrons including gender, race, age, and socioeconomic

indicators, such as clothing and mode of transportation. Further information was gathered through casual conversation with local residents.

3.3.3 Data Analysis

The PI calculated the total variety of items per source country for each store, using information derived from the larger sample of 7 *colmados*, 5 *super-colmados*, and 2 *supermercados*. The data therefore show the variety of imported versus domestic food items sold. The number of domestic versus imported goods was determined by summing the total number of items for every source country for each store in all three strata. All imported items were then summed for each store, then divided by the total number of items in the store in order to determine the percentage of imported food sold for each stratum. The same was done for domestic food items for each store.

The source country for all imports were then coded into seven regions: United States and Canada, Mexico and Central America, South America, Europe, Asia, Caribbean, and Other (See Table 1). Data from the large sample were used to determine the percentage of all imported goods for each region sold in each level of the food retail hierarchy.

The data from the full sample were disaggregated into 14 categories of food type: cereals, starchy roots, legumes, fruits, vegetables, meat and eggs, fish and seafood, dairy, oil and butter, sugar, sweets and stimulants, spices/sauces and condiments, alcoholic beverages, potable water, and baby food and infant formula. For each stratum, I calculated the number of food items in each category by country. These numbers were then aggregated into imported and domestic and calculated as percentages of a whole.

The data from the subset sample were used to calculate the percentage shelf space and percentage of total volume devoted to imported versus domestic food items. Shelf space was measured two-dimensionally by calculating length multiplied by depth. Volume of food items is

operationalized as the number of items sold in each store. For example, in this part of the analysis, plantains are not counted as 1, but the total number sold in that store. The shelf space and volume were then summed for each store of the subset, then divided by the total number of items in the store, in order to determine the percentage of imported food sold for each stratum. The same was done for domestic food items for each store.

3.4 Results

3.4.1 Comprehensive Food Import Dependency by Item

Our results provide a comparative analysis of food import dependency in the food retail hierarchy by individual item, shown in Figure 2. This indicates the variety of sources from which each level of food retail hierarchy purchases food items. *Colmados* had the lowest percentage dependence on imported food items, while *supermercados* had the highest. Both *colmados* and *super-colmados* are relatively similar in their level of dependence on imported food. Only *supermercados* sell a higher percentage of imported food items than domestically produced food items. Therefore, food import dependency increases as the level of the food retail hierarchy increases.

3.4.2 Comparative Study of Regional Source of Food Items

Imported items were also divided into seven regions. Table 2 shows the percentage of imported food items by region for each strata. Dependence on food from the U.S. and Canada increases with store size. Dependence on food imported from Asia decreases with store size. For all levels of the food retail hierarchy, very little food sold was imported from neighboring Caribbean countries. Dependence on food from Europe is high throughout, with a particularly high number of European food items sold in *super-colmados*.

Of particular interest are the top source countries for each of the strata, shown in Table 3. The top four sources for *supermercados*, in descending order, are: the United States (39%),

Spain (18%), Italy (7%), and Mexico (5%). The rest of the countries each represent less than 3% of imported food items in *supermercados*, with half of them representing less than 1%. For both *colmados* and *super-colmados* the top three sources of imported items were the United Kingdom, the United States, and Thailand. Therefore, the United States was a significant source of imported goods for all levels of the food retail hierarchy. However, the number of goods sold from the U.S. is drastically lower for *colmados* and *super-colmados*. Unlike the *supermercados*, the *super-colmados* and *colmados* do not rely on a significant number of goods from Spain or Italy. Spain represents less than 6% of imported goods in *super-colmados*, and less than 4% in *colmados*. Italy represents 1.1% and 0% respectively.

3.4.3 Comparison of Imported Food by Food Type Category

Supermercados sold more imported than domestic items for most food type categories, whereas *colmados* and *super-colmados* sold more domestic than imported food items (see Fig. 3). For *supermercados*, cereals and meat and eggs were the only two categories for which less than 50% of items sold were imported. For *colmados* and *super-colmados*, baby food/formula and fish and seafood were the only two categories for which more than 50% of items sold were imported.

Colmados did not sell any imported items in four categories: starchy roots, legumes, meat and eggs, and potable water. *Super-colmados* did not sell any imported items in two categories: legumes and meat and eggs. *Supermercados* sold a percentage of imported items for all categories

Baby food/formula was the only category for which *colmados* exceeded the other two store sizes in percentage of imported items sold. For all but four other categories, *colmados* sold a smaller percentage of imported goods per category. Therefore, food import dependency by food category also increases as store size increases.

All stores had a high level (>70%) of food import dependency for baby food/formula and fish and seafood. Less than 20% of staple foods (cereals, starchy roots, legumes) and fruits and vegetables were imported for *colmados* and *super-colmados*, whereas *supermercados* exceeded 40% for all of these food categories. In addition, *supermercados* doubled food import dependency for dairy products when compared to *colmados* and *supermercados*.

3.4.4 Food Import Dependency by Shelf Space

Food import dependency was further analyzed by aggregating the total amount of two-dimensional shelf space used for imported and domestic items in each level of the food retail hierarchy (see Fig. 4). The data were derived from the subset sample. For all levels of the food retail hierarchy, food import dependency, when measured by shelf space, decreased compared to the analysis of food import dependency by variety. However, *supermercados* were the only stores to have more shelf space covered by imported food items than by domestic food items. *Supermercados* devoted more than eight times the amount of shelf space than the next highest stratum, *super-colmados*. For both *colmados* and *super-colmados*, imported food items occupied less than 10% of shelf space. Overall, shelf space of imported food items increased with store size.

3.4.5 Food Import Dependency by Volume

Lastly, food import dependency was analyzed by percentage of total volume of goods sold (see Fig. 5). The data were derived from the subset sample. Volume was the only variable that revealed that all stores had a lower percentage of imported than domestic food for sale. For *supermercados*, the volume of imported goods represented a smaller percentage of all food items in comparison to shelf space. For *colmados* and *super-colmados*, the volume of imported goods represented a significant increase from the percentage of space devoted to imported food items. Overall, the volume of imported food items increased with store size.

3.4.6 Interview and Observation Results³

Most *colmados* were operated by the owner; those not operated by the owner were operated by family members, typically wives and/or children. Both the *super-colmado* and *supermercado* had at least 5 employees. These employees were either family or good friends of the owner. All food retail stores, with the exception of two *colmados*, offered credit, known locally as *fiado*, to at least some of their customers. Only the *supermercado* offered credit to all customers. The two *colmados* that did not offer credit represented the two extremes in duration of ownership—one was owned for 3 months, and the other was owned for more than 10 years. Therefore, in all cases kinship was important; however, the role of family was most significant for *colmados*.

Wealthier people tended to shop at the larger stores, particularly the *supermercados*. These stores provided parking spaces off the main highway, therefore welcoming the portion of the population who own vehicles. *Colmados* and *super-colmados* also offered bulk purchase options, while the *supermercados* did not. Bulk options often included large (≈ 100 lbs or 45 kgs) bags of rice, dried beans, sugar, and flour. Patrons at *colmados* and *super-colmados* could therefore buy a portion of those items, such a quarter of a kilo, or whatever they needed or may be able to afford that particular day.

Colmados and *super-colmados* tended to have stronger ties with their local neighborhood and economy. They served as a meeting place for people—almost exclusively male—to relax and share stories, and the owner often recognized many of the people who shop there. Local residents, typically female, also prepared baked goods and other foods in their home to market in the smaller stores. Smaller stores sometimes bought produce “on demand” from trucks driving

³ General comparisons were difficult to draw due to the limited number of interviews with storeowners of both *supermercados* and *super-colmados*.

down the highway advertising available food items over a loudspeaker, whereas large stores developed written inventories to give to delivery truck drivers.

There were obvious gender divisions in employment tasks at all levels of food retail stores. Most employees are male, and males always hold positions of power, whether as owner or manager. Males, typically younger men, are also responsible for duties such as bagging, stocking shelves, and butchering. On the other hand, females are responsible for working with customers at the register and cleaning the inside of the store.

3.5 Discussion

This study makes a significant contribution to the existing literature on food retailing in developing countries. First, contrary to the literature (Grossman 1998a,b), this study finds a positive correlation between store size and food import dependency; small neighborhood stores are the least dependent on imported food. The positive relationship was true for all forms of analysis, including food item variety, food type category, shelf space, and total volume. These findings are significant, because as incomes increase, people will shop more at supermarkets where food import dependency is highest. As a result, development may lead to greater food import dependency.

Second, this study shows that the distance of the source of the imported item is less important than political-economic ties and dietary preferences. For example, despite distance, a number of goods from Thailand were sold in each store due to the popularity of sardines in the Dominican diet. On the other hand, the Caribbean represented the second smallest percentage of food imports of all seven regions, while Spain was among the top three sources for *supermercados* and Thailand was among the top three for *colmados* and *super-colmados*. Spanish items sold in *supermercados* were primarily olive oil, olives, and various canned vegetables. All strata of stores sold a high proportion of imported items from the United States.

Close links to the U.S. are most likely due to political-economic ties, such as DR-CAFTA. Therefore, economic ties are more founded upon regional trade agreements than geographic location.

Third, this study demonstrates that the retail distribution of imported food is not uniform in all areas of the Caribbean. Contrary to Grossman's (1998a,b) findings, small stores here sold the lowest percentage of imported foods. Grossman's study site was a small village in an agricultural area of St. Vincent. The higher percentage of imported food found in small stores in Grossman's study than revealed in this study is likely due to the ability of the people in the village on St. Vincent to grow their own fruits, vegetables, legumes, and meat. Therefore, the results here cannot be generalized to cover all developing areas and points to the high number of variables that contribute to differences in the level of food import dependency.

Fourth, the results contribute to nutrition studies in the Caribbean. *Colmados* and *super-colmados* were significantly less dependent on imported staple foods, fruits, and vegetables in comparison to *supermercados*. One concern is the reliance on imported baby food/formula among all levels of the food retail hierarchy. Undernourishment in children is already a concern in other Caribbean countries (Trotman et al. 2009), which may be an important area for further study and policy change in the future. Although higher levels of food import dependency may increase the threat of sudden food shortages, it is important to note that the presence of imported food in many developing countries—particularly small island countries—has led to more diverse diets, which can have important implications for nutrition (see Grossman 1998b).

Fifth, the interview results show that kinship and social ties are an important aspect of *colmados* and *super-colmados*. As in previous studies (Grossman 1986; Curry 1999; Coen, Ross, and Turner 2008), *colmados* provide an important space for informal social networking in poor communities. *Colmados* serve a higher proportion of alcoholic beverages because of this

social function. Consequently, the highest percentage of imported goods sold in *colmados* and *super-colmados* was from the United Kingdom, where scotch-whiskey is produced.

This study also has policy implications that are significant for the livelihood of the people living in Verón and similar communities. The rapid growth of supermarkets in Latin America combined with high levels of food import dependency leads to higher levels of vulnerability for those who shop there. The wealthier population that tends to shop at *supermercados* may not be as affected by food price fluctuations as the poor; however, this research demonstrates the importance of maintaining a significant number of *colmados* and *super-colmados* in order to reduce food import dependency, contribute to the social and economic capital of the local community, and provide a place for the poor to both purchase and market food items. As a result, policies should curb the growth rate of *supermercados* in poor areas to help prevent *supermercados* from out-competing smaller stores due to economies of scale. However, *supermercados* can be beneficial for poorer people as well because they offer credit to all of their clients. Therefore, policy should also help to reduce the amount of imported food sold in *supermercados* through initiatives such as taxes and tariffs. Overall, *super-colmados* are best suited to cope with challenges posed by food import dependency because they serve poorer members of the population, have a relatively low level of food import dependency, and carry a high volume of goods to help alleviate the threat of a sudden shortage of food.

3.6 Conclusion

This study is useful for guiding food policy in areas of developing countries where the people do not have access to homegrown food, because the results show that food import dependency is positively correlated with store size. However, limitations of this study point to potential areas of future research. First, this study is founded upon a small sample size in only one town. A comparison of stores in other towns and cities would help validate the findings. A

similar study should be conducted comparing food import dependency in different economic contexts, such as agricultural or manufacturing, in order to demonstrate or eliminate the possibility of variability across economic sectors. Second, this study did not collect price information of food items sold at various levels of the food retail hierarchy, nor did it include patron interviews. Price data and patron interviews would be useful for a more in-depth socioeconomic study regarding vulnerability to food insecurity. Third, because the data are derived from labels, the results primarily represent where these goods are processed and do not take into account the role of transnational corporations or where the food was actually grown. Therefore, analyses of specific food types at the commodity chain level need to be conducted to better understand the complexities of agro-food networks as they relate to food (in)security.

This research and existing literature demonstrate the variable nature of food retail shops, food import dependency, and the importance of the relationship between these two factors to communities and economies of developing countries. Empirical analysis of food import dependency in relation to food retailing leads to a more astute understanding food insecurity that can inform food policy. This study shows the importance of food retailing as an important variable in examinations of food security and food import dependency. Furthermore, it establishes retail geography as an invaluable lens through which food shortages in developing countries, such as the food and fuel crisis of 2006-2008, can be better understood.

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Captions for Figures and Tables

Figure 1: Map of the Dominican Republic with a subset showing Verón. (Source: Korine Kolivras, *Department of Geography, Virginia Tech*).

Figure 2: Percentage of food items sold that were imported or domestic by store size. (Source: fieldwork).

Table 1: Countries with recorded data for each region, listed alphabetically. (Source: fieldwork).

Table 2: The total percentage of imported food items by region. (Source: fieldwork).

Table 3: The top three source countries of imported items sold for each level of the food retail hierarchy by percentage of total imports and percentage of total food items. (Source: fieldwork).

Figure 3: Percentage of imported food items sold by food type category for each level of the food retail hierarchy. (Source: fieldwork).

Figure 4: Percentage of total shelf space devoted to imported and domestic food items for each level of the food retail hierarchy. (Source: fieldwork).

Figure 5: Percentage of total volume of imported and domestic food items for each level of the food retail hierarchy. (Source: fieldwork).

Appendix A: Figures and Tables for Manuscript⁴

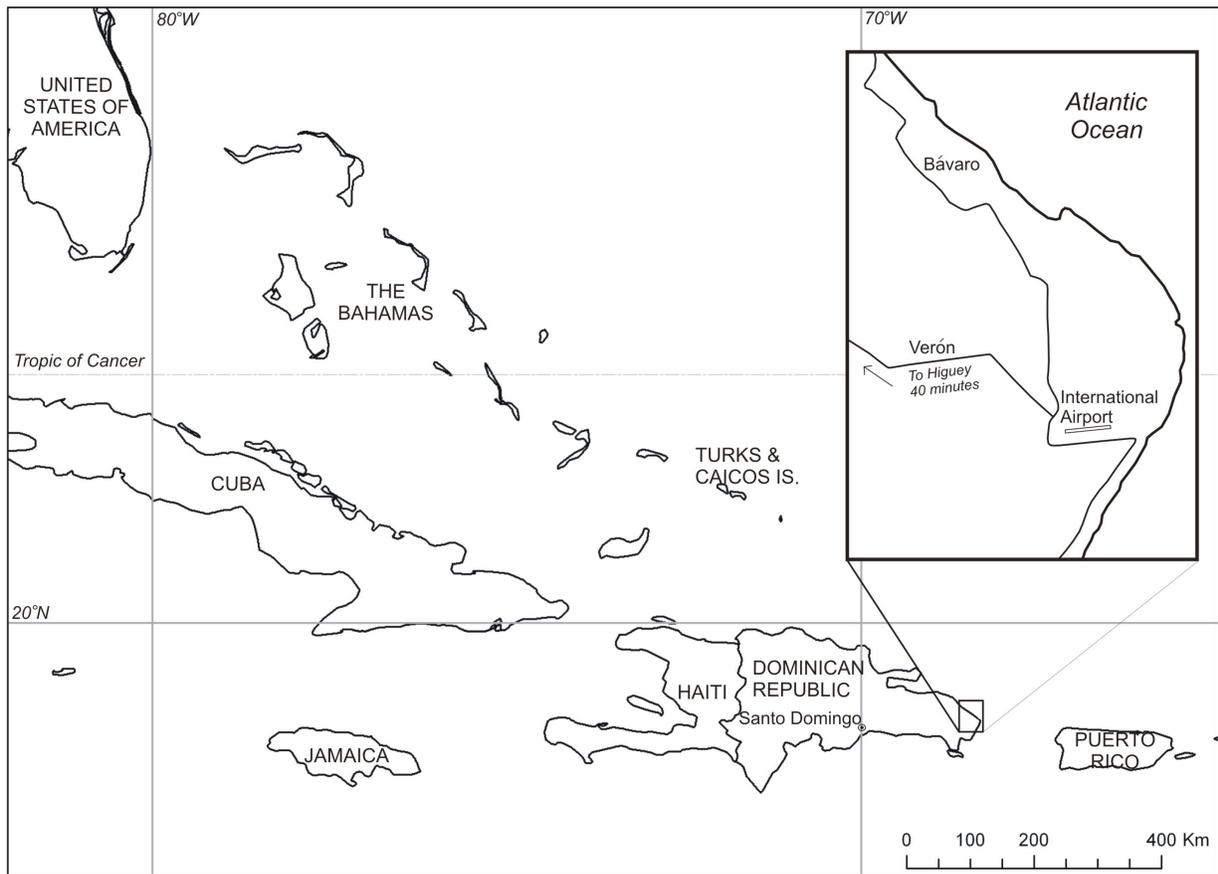


Figure 1

⁴ Ordered as they appear in the manuscript. The *Southeastern Geographer* asks for tables and figures to be at the end with captions on a separate page.

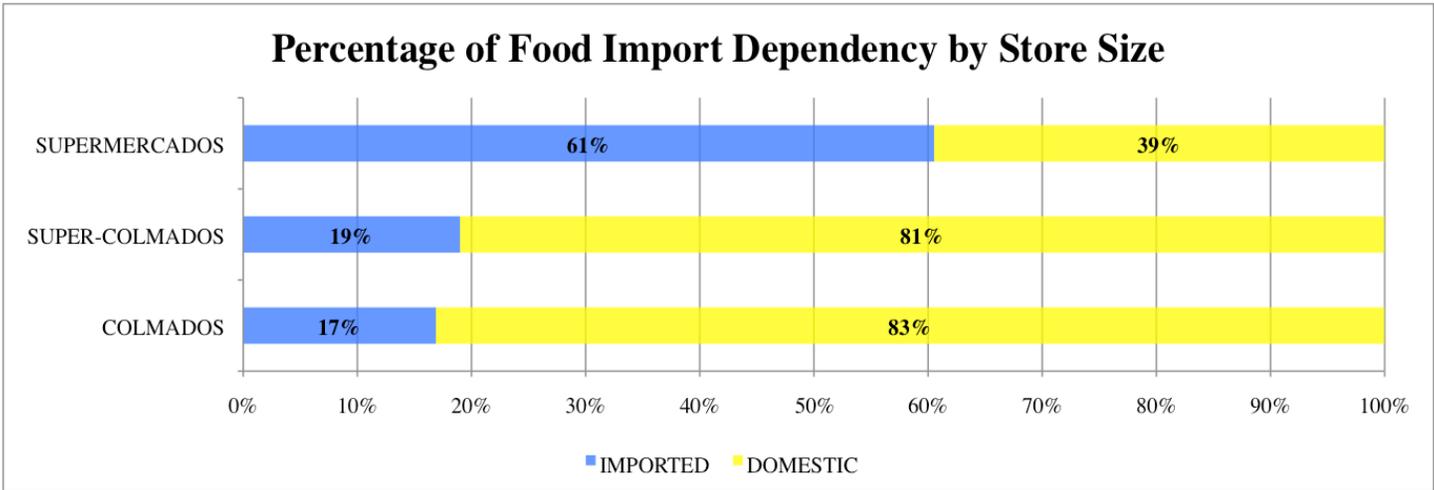


Figure 2

<i>Region Code</i>	<i>Countries Recorded</i>
1	Canada; United States
2	Costa Rica; El Salvador; Guatemala; Mexico; Nicaragua
3	Argentina; Brazil; Chile; Colombia; Ecuador; Peru; Venezuela
4	Austria; Denmark; France; Germany; Ireland; Italy; Portugal; Netherlands; Russia; Spain; Sweden; United Kingdom
5	Indonesia; Japan; Korea; Philippines; Thailand
6	Jamaica; Puerto Rico; Trinidad & Tobago
7	Fiji; Morocco; New Zealand

Table 1

<i>Region (Code)</i>	<i>Colmados</i>	<i>Super-Colmados</i>	<i>Supermercados</i>
U.S & Canada (1)	13.92%	17.58%	40.07%
Mexico & Central America (2)	25.32%	10.99%	11.95%
South America (3)	11.39%	21.98%	8.08%
Europe (4)	32.91%	40.66%	31.99%
Asia (5)	13.92%	8.79%	4.57%
Caribbean (6)	2.53%	N/A	2.64%
Other (7)	N/A	N/A	0.70%

Table 2

Colmados	<i>Country</i>	<i>% of Imports</i>	<i>% of Total</i>
	United Kingdom	13.9%	2.4%
	Thailand	13.9%	2.4%
	United States	11.3%	1.9%
Super-colmados	<i>Country</i>	<i>% of Imports</i>	<i>% of Total</i>
	United Kingdom	15.4%	2.9%
	United States	15.4%	2.9%
	Thailand	8.8%	1.7%
Supermercados	<i>Country</i>	<i>% of Imports</i>	<i>% of Total</i>
	United States	39.2%	23.7%
	Spain	17.8%	10.7%
	Italy	7.2%	4.4%

Table 3

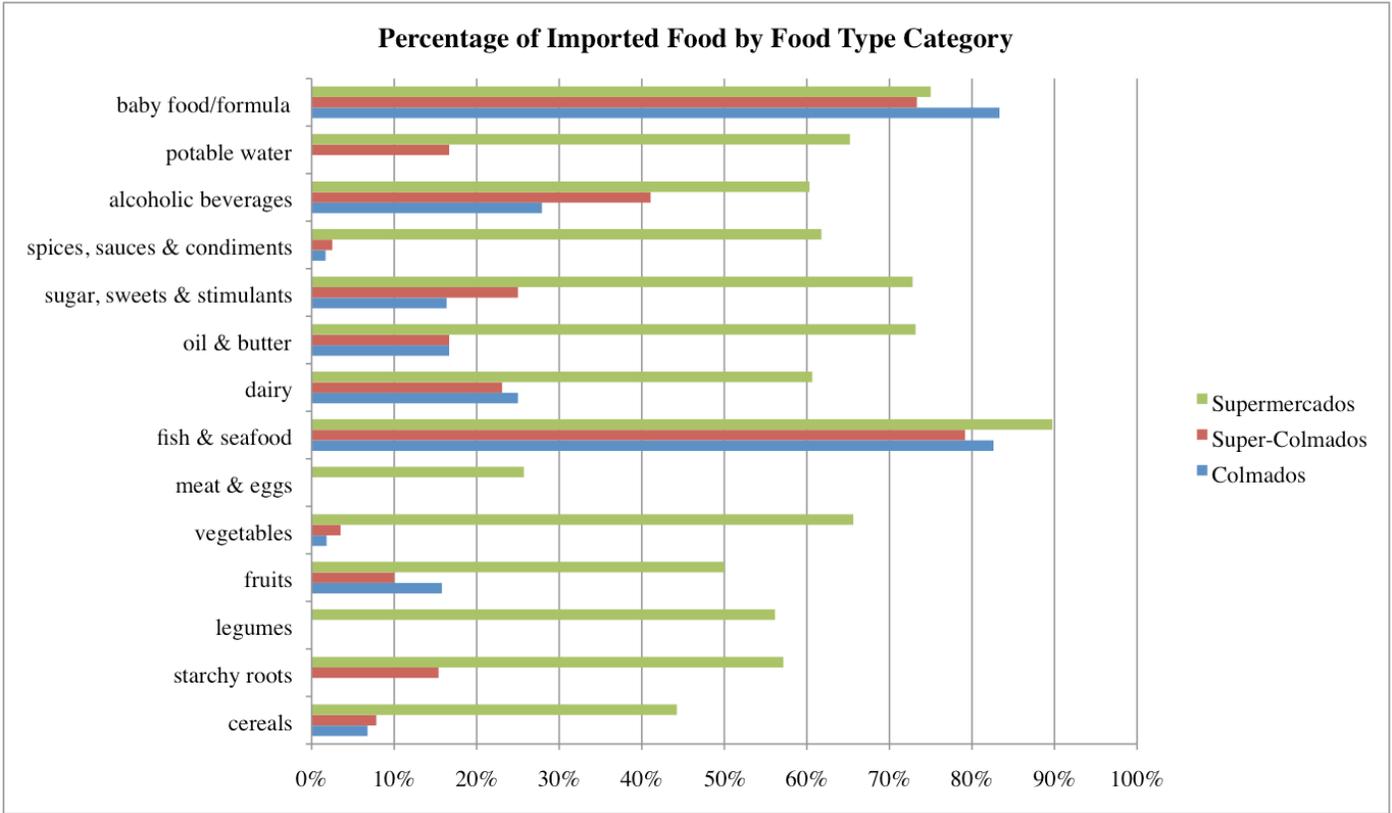


Figure 3

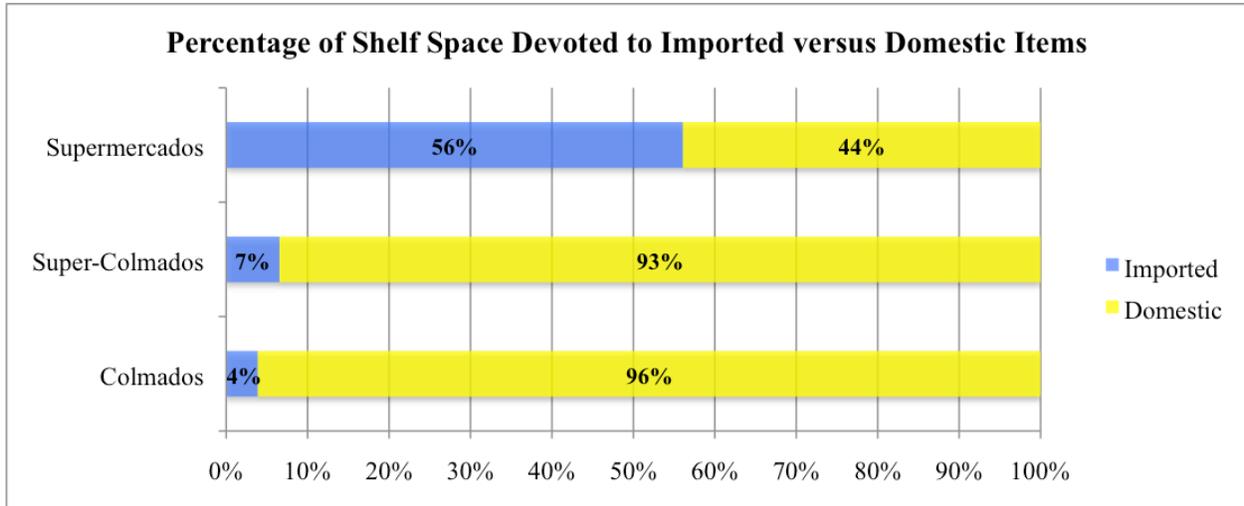


Figure 4

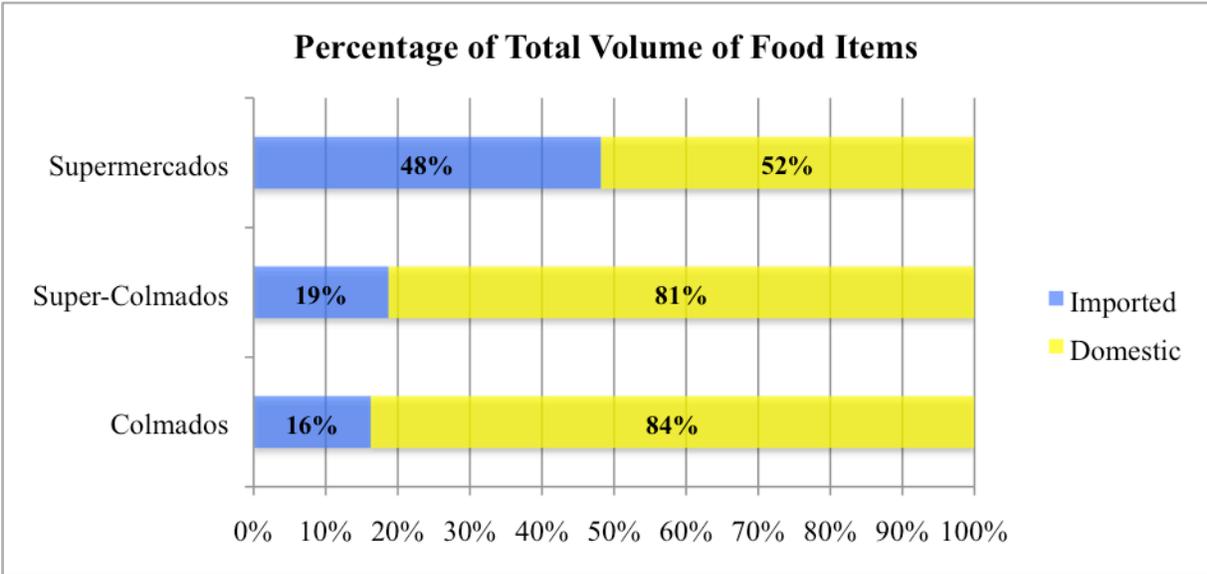


Figure 5

Appendix B: IRB Approval Form



VirginiaTech

Office of Research Compliance
Institutional Review Board
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24061
540/231-4991 Fax 540/231-0959
e-mail moored@vt.edu
www.irb.vt.edu

FWA00000572(expires 1/20/2010)
IRB # is IR00000067

DATE: August 4, 2009

MEMORANDUM

TO: Lawrence S. Grossman
Heather Lee

FROM: David M. Moore 

Approval date: 8/4/2009
Continuing Review Due Date: 7/20/2010
Expiration Date: 8/3/2010

SUBJECT: **IRB Expedited Approval:** "Food Retail Shops and Food Import Dependency in the Dominican Republic", IRB # 09-466

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective August 4, 2009.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

Important:

If you are conducting federally funded non-exempt research, please send the applicable OSP/grant proposal to the IRB office, once available. OSP funds may not be released until the IRB has compared and found consistent the proposal and related IRB application.

cc: File

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