



BACKGROUND PAPER

Systematic Country Diagnostic

Haiti: Toward a New Narrative

Haiti—Let's Talk Competition

A Brief Review of Market Conditions

Georgiana Pop



WORLD BANK GROUP

Trade and Competitiveness Global Practice

Haiti—Let's Talk Competition

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Abbreviations

ACT	Australian Capital Territory Branch of the Economic Society of Australia
BEEPS	Business Environment and Enterprise Performance Survey
CEPR	Centre for Economic Policy Research
CIA	Central Intelligence Agency
CPI	Consumer price index
DFID	Department for International Development
FAO	Food and Agriculture Organization (UN)
GDP	Gross domestic product
GIEWS	Global Information and Early Warning System (on Food and Agriculture)
HELP	Haitian Economic Lift Program
HHI	Herfindahl-Hirschman Index
HOPE II	Haitian Hemispheric Opportunity through Partnership Encouragement Act of 2008 US Law
HS	Harmonized Coding System
HTG	Haitian Gourde (National currency)
ICT	Information and communication technology
IFC	International Finances Corporation
IIP	Infant industry protection
LAC	Latin American and Caribbean Countries
MEF	Ministry of Economy and Finance
OECD	Organisation for Economic Cooperation and Development
PPP	Purchasing power parity
PSD	Private Sector Development
TEU	Twenty-Foot Equivalent Unit
UNCTAD	United Nations Conference on Trade and Development
WCO	World Customs Organization
WEF	World Economic Forum

Executive Summary

This report presents an analysis of market conditions and market concentration in Haiti. Based on available import data (Ministry of Economy and Finance 2014) and available information on economic group¹ connections, it also presents a limited analysis of the economic groups and companies that operate in Haiti, with a focus on highly concentrated markets. This analysis found that Haitian markets are constrained by a mix of factors, including operational business risks related to weak competitive conditions; highly concentrated markets which likely result in higher consumer prices; and a concentration of ownership in the most powerful firms, which seem to benefit from preferential treatment such as reduced customs duties.

This report does not provide a comprehensive competition assessment of the Haitian markets, which would include analysis of other market structure elements such as barriers to entry, capacity constraints, vertical structure, and product differentiation. In particular, two elements of a comprehensive analysis are lacking: information regarding consumer welfare losses due to concentrated markets; and data describing the extent to which a small group of elites hold a significant share of Haiti's wealth. Furthermore, the lack of detailed information about the persons and economic groups in Haiti receiving certain economic incentives or benefits; the tax instruments that provide reductions/exemptions; and yearly data on the tax revenue of the largest tax payers does not allow for a more comprehensive analysis of the main beneficiaries of preferential tax treatment, including an analysis of revenues, profits and net margins for the connected groups and firms. More detailed information about the groups' and firms' ownership beyond the data included in this paper would enrich the analysis herein and reveal whether a small number of powerful firms and individuals hold a disproportionate share of the country's wealth.

Effective competition is a key part of the development agenda: it encourages businesses to operate efficiently, ensures that firms can interact on a level playing field and fosters entrepreneurship activity. Reforms that open markets and remove anticompetitive regulation, such as the elimination of restrictions to the number of firms, statutory monopolies, price controls and discriminatory treatment against certain firms, lead to significant productivity gains.

Weak competitive conditions and competition policies are perceived to contribute to a high degree of operational business risk for firms in Haiti. According to the Economist Intelligence Unit (2015), investors in Haiti perceive that they face one of the highest risks in doing business among other countries from the Caribbean region. These perceived risks are mainly related to a weak competitive environment, particularly: a) price controls and the control of other market variables that limit the benefits that firms could obtain by competing effectively; and b) vested interests and discrimination against foreign firms that hinder innovation and preclude more efficient firms from gaining market share. According to other competition perception indicators, such as the Global Competitiveness Report of 2015–2016, countries with comparable gross domestic product (GDP) per capita also rank better in terms of competition—even countries such as Sierra Leone and Myanmar.

Based on available import data, the value of imported goods in highly and moderately concentrated markets represent roughly 70 percent of total imports. While highly

concentrated markets² are not unusual, given the size of Haiti's economy, high market shares (above 40–50 percent of the market) may create risks of firm abusive behavior with a negative impact on consumers. Highly concentrated product markets (representing around 40 percent of the imports and with an Herfindahl-Hirschman Index (HHI) exceeding 2,500) include petroleum, food and consumer goods markets (telephone sets, motorcycles). The share of imported goods in moderately concentrated markets (with an HHI between 1,500 and 2,500) in the total imports, including food, consumer goods (electric generating sets, motor vehicles) and cement markets is also non negligible, reaching about 30 percent of total imports. Given that food and beverages represent around 50 percent of the consumption basket in Haiti, it is essential to closely monitor the effects that highly concentrated markets and associated challenges may have on consumer welfare. An analysis over time of prices for several food products in highly concentrated market suggests average prices in Haiti are approximately 35–77 percent higher than in other countries from the Latin American and Caribbean Countries (LAC) region, even taking into account differences in income levels, the cost to import containers, and import tariff levels.³ When some African countries⁴ are also included, prices for selected food products in Haiti are 35–50 percent higher than in other countries.

Few groups and businessmen appear to operate in the highly concentrated markets with significant market shares. According to a preliminary analysis, out of the 100 largest tax payers, 23 companies pertaining to the large Haitian groups operate in the financial sector—11 banks, 7 insurance companies and 4 micro finance institutions. It also appears that there may be a tacit agreement among families/groups to allocate markets among themselves. From a competition standpoint, these types of arrangements likely harm productivity and incentives to innovate, given the lack of competitive pressure, while raising barriers for other firms to enter.

In addition, estimations based on import data suggest that some groups benefit from reduced customs duty treatment for a large number of imported products. While many governments often provide a variety of subsidies and direct support to both public and private firms, specific measures that recurrently target certain firms may result in significant distortions to market competition. In Haiti, five economic groups operating in highly concentrated markets benefited from 13 percent lower custom duties on average, with reductions ranging from 5 up to 22 percent (2011–2012). Companies that operate in highly concentrated markets and pay lower customs duties have on average 45.2 family links against an average for the elite families of 23.7 (Naidu, Robinson, and Young 2015). These companies belong to some of the most important Haitian economic groups.⁵

It is worth stressing that privileges for specific types of firms can damage long-term private sector development (PSD). They grant a comparative advantage only to certain firms, which is not necessarily associated with their efficiency. Additional research is warranted to complete the overview of market concentration and help understand the factors underlying existing market competition.

Notes

1. In this paper, a group is understood as a group of companies with parent and subsidiary corporations that function as a single economic entity through a common source of control. Due to limited information, a formal definition of the group cannot be provided in such a way to include information on actual ownership and direct or indirect control over these groups. In addition, the connection among groups through family links is not readily available for the purpose of this note.
2. The Herfindahl-Hirschman Index (HHI) is calculated based on the imports data provided by the Ministry of Economy and Finance of Haiti. In order to group the goods with similar characteristics, the headings (4 digits) of the Harmonized Coding System were used. Based on the HHI, the concentration levels are classified as follows: 1) Unconcentrated Markets: HHI below 1,500, 2) Moderately Concentrated Markets: HHI between 1,500 and 2,500, 3) Highly Concentrated Markets: HHI above 2,500 (Horizontal Merger Guidelines 2010; U.S. Department of Justice and Federal Trade Commission).
3. Different methods and data sources were used in the analysis. The following products were selected for the cross section empirical analysis: chicken, eggs, bread, cheese, orange, potato, rice, apple, water, lettuce. Comparator countries from the LAC region where price data were available for the same products include: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. In the panel data analysis, a subset of products were used as follows: chicken, eggs, bread, cheese, orange, potato, rice. These were the products that were available in Numbeo database and in the Ministry of Economy database. Comparator countries from the LAC region where price data were available for the same products include: Brazil, Chile, Colombia, the Dominican Republic, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, República Bolivariana de Venezuela.
4. Comparator countries from the Africa region where price data were available for the same products include: Kenya and Mauritius.
5. The links from families to firms were made based on: a commercial dataset called Orbis produced by the Bureau van Dijk corporation (<https://orbis.bvdinfo.com/version-2014812/home.serv?product=orbisneo>); a database of Haitian firms assembled by a nonprofit organization called Haiti Building Markets after the 2010 earthquake (http://haiti.buildingmarkets.org/en_af/supplier-search); and an online database of firms registered with the Haitian Minister of Commerce and Industry (<http://registre.mci.gouv.ht/>).

1. Introduction

Haiti is the poorest country in Latin America and one of the poorest countries in the world. After the earthquake in 2010, the GDP per capita rose from US\$669 in 2010 to US\$820 in 2013. However, the country still has the lowest GDP per capita in Latin America and Caribbean region, far from Nicaragua who had more than twice Haiti's GDP per capita (US\$1851) in 2013. In Haiti, half of its population (roughly 5 million) lives on less than US\$1 per day, and approximately 80 percent live on less than US\$2 per day. In addition, less than 30 percent of the households have access to electricity overall and only about 5 percent in the rural areas (World Bank Indicators 2014).

More than half of the Haitian economy is based on the services sectors. In 2013, the service sector represented roughly 56 percent of the GDP (banking, electricity, telecom), agriculture (coffee, mangoes, cocoa, sugarcane, rice, corn, sorghum, wood, vetiver) represented 24.1 percent, and the industrial sector (textiles, sugar refining, flour milling, cement, light assembly using imported parts) represented 20 percent (2013 CIA World Factbook).

The growth of agricultural production has been stagnant. Production of rice, maize, and chickens has remained constant over the past 50 years despite population growth, leading to large imports of these three products. On the other hand, Haiti's exports of cocoa beans have registered consistent growth—compounded annual growth rate of 9 percent between 2003 and 2009. Mango, mangosteen, and guava exports occupied third place in the exports commodity rank. Rice production (80 percent of rice consumed is imported) has been compromised by production difficulties and poor trade policies. Many factors have contributed to the decline of the agricultural sector, including continuing fragmentation of landholdings, low levels of agricultural technology, migration out of rural areas, insecure land tenure, a lack of capital investment, high commodity taxes, low productivity of undernourished farmers, animal and plant diseases, and inadequate infrastructure (Malik 1989).

The manufacturing sector, primarily based on textiles, plays a key role as the country's single largest economic sector. Haiti has over 30 textile factories and employs over 30,000 workers. Haiti benefits from privileged access to the U.S. market through the HOPE and HELP laws. These laws allow Haiti to assemble textiles, whatever the origin of the imported fabrics, and to export them to the United States duty free and tax free. In 2012, the HOPE II/HELP Acts-related exports constituted 42 percent of all Haitian exports (US\$ 303 million). There has also been an increase in the assembly of electronic products (Center for Facilitation of Investments 2013; World Bank Group 2013).

The markets in the service sector have been developing at different paces. The Haitian *banking system* is still vulnerable to systemic credit risk as well as restrictions on the availability of capital. According to the US Department of State, three major banking institutions hold 83 percent of the total banking sector assets, valued at HTG 170 billion in September 2012 (nearly US\$4 billion—more than one third of the GDP). In the *telecom sector*, the launch of services by Natcom in late 2011 introduced a competitive boost, though this has been set back to some degree by the Digicel Group's acquisition of the number two player Voilà, and the integration of the latter's mobile network in late 2012. The collapse of the third operator HaiTel

in mid-2013 left Digicel with about 85 percent market share of subscribers. Haiti's structure of cost of *transport by sea* is not competitive compared to similar services in the Caribbean region—the costs of loading and unloading a standard container at Port-au-Prince are by far the highest of the Caribbean ports. According to TranSystem, the total cost by TEU was US\$595 by Haitian private operators at Public Berths, and US\$445 in Haiti Terminal Varreux, compared to US\$121 in Puerto Rico, US\$109 in the Dominican Republic, US\$109 in Port the Point Lisas in Trinidad and Tobago, US\$156 in port of Spain in Trinidad and Tobago, and US\$154 in Miami (World Bank 2013). At the same time, *high airport taxes* are levied with the aim of obtaining resources for developing air transport infrastructures. The *roads network* is in poor condition—the density of Haiti's road network (4,000 km in 2000) and the small percentage of asphalted roads (24 percent of the network) are among the lowest of the region. Haiti suffers from a *lack of services and infrastructure in the field of information and communication technologies* (ICTs). There are 60 telephone subscribers per 100 inhabitants, a much lower rate than the average figure of 106 percent for Latin America and the Caribbean. Internet users represent only about 8.5 percent of the population (World Bank 2013). Finally, *the cost of electricity* is among the highest in the region—US\$ 0.32/KwH in 2011 compared to US\$0.18 in Nicaragua, US\$0.17 in the Dominican Republic and US\$0.06 in Bangladesh (IFC 2011), and the supply of electricity covers only a small proportion of the country, with rural areas particularly underserved (World Bank 2013).

2. Snapshot of Haiti's Competition Conditions

Effective competition is a key part of the development agenda: it encourages businesses to operate efficiently, ensures that firms can interact on a level playing field, and fosters entrepreneurship activity (World Bank Group 2012).

Effects of opening markets to competition are positive. Although government intervention is warranted in some industries that exhibit substantial market failures, experiences from many developing countries show that the benefits of competition, at a national level, are significant and overwhelming in terms of economic efficiency and productivity gains. Firms typically acquire many of their inputs—transport, energy, telecommunications, financial services—in local markets. If these upstream markets lack competition, goods and services needed for production are not priced competitively. As a result, firms in countries that lack competition may be less competitive than their foreign rivals and domestic GDP growth may suffer. Reforms that open markets and remove anticompetitive regulations, such as the elimination of restrictions on the number of firms, statutory monopolies, price controls and discriminatory treatment against certain firms, lead to significant productivity gains (see box 2.1).

BOX 2.1 The Impact of Competition on Growth, Productivity, and Job Creation

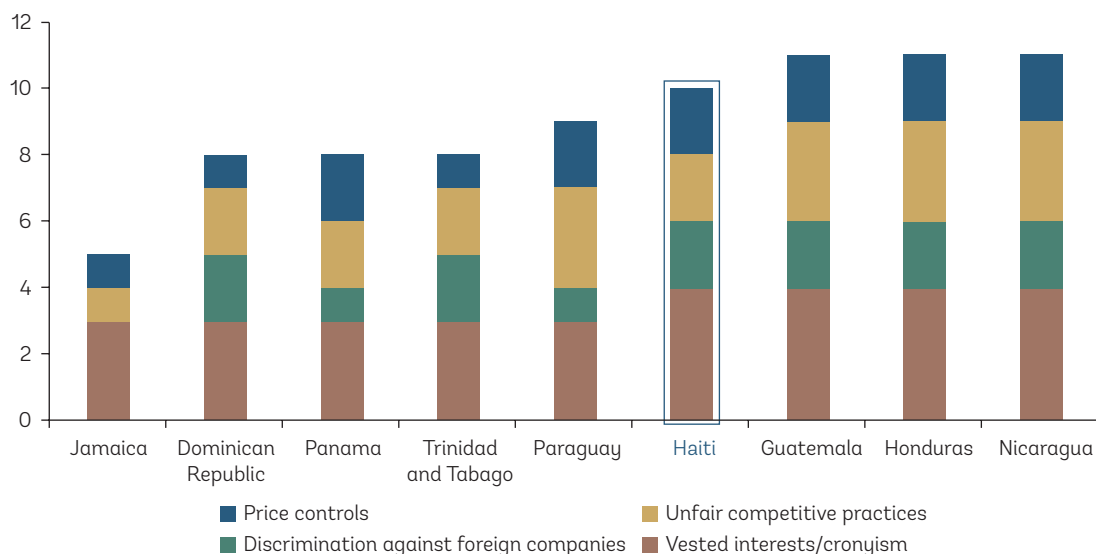
The economic benefits from competition are well documented. Firms operating in a competitive environment are more likely to innovate (Bassanini and Ernst 2002; Bloom et al. 2011) and to increase their productivity (Aghion and Griffith 2005 or Acemoglu et al. 2006). Competition boosts investment (Alesina et al. 2005), generates employment and ultimately speeds up economic growth and improves overall welfare. Competition in input (upstream) markets, such as transportation, financial services, energy, telecommunication and construction services, is a key driver of efficiency and productivity growth in downstream sectors—the users of these inputs. Empirical evidence strongly supports the positive effects of competition policy enforcement on productivity growth (Buccirossi et al. 2009 or Voigt 2009). Tough enforcement against the practices of cartels, based on well-designed anti-cartel laws, for example, constitutes an effective tool to reduce negative impact of anticompetitive behavior (Alexander 1994; Symeonidis 2008). Increased international competitiveness—and therefore more favorable terms of trade—is another important and positive effect associated with increased competition in domestic markets. Finally, consumers benefit from lower prices, direct savings and improvements in the variety and quality of goods and services. Consumers also find enhanced job opportunities and additional income as investors.

Anti-competitive practices also result in welfare losses for the economy as a whole. Price-fixing agreements among competitors impose significant costs on society. Connor (2010) examines studies and judicial decisions on 381 cartelized markets worldwide and estimates a long-run median overcharge of 23.3 percent of prices above competitive levels. Estimations from the European Commission (2008) suggest that average productivity would fall by 13 percent in the presence of market sharing cartel agreements among member states. A recent study of the

BOX 2.1 The Impact of Competition on Growth, Productivity and Job Creation (continued)

international market for coffee beans finds that the cartel's breakdown explains 49 percentage points of the 75 percent drop in the real coffee price between 1988 and 2001 (Igami 2015). Apart from increasing the cost of goods and services to conduct business, cartels are also associated with low labor productivity and reduced incentives to innovate (Broadberry and Crafts 2001; Evenett, Levenstein, and Suslow 2001; Symeonidis 2003). International experience shows that the introduction of comprehensive national competition policies can bring substantial economic gains. Estimates suggest that competition policy reforms boosted Australia's GDP by at least 2.5 percent or \$20 billion due to their effect on increased productivity and lower prices during the 1990s.

FIGURE 2.1 Business Risks Related to Weak Competition Policies (by Component)



Source: Economist Intelligence Unit 2015.

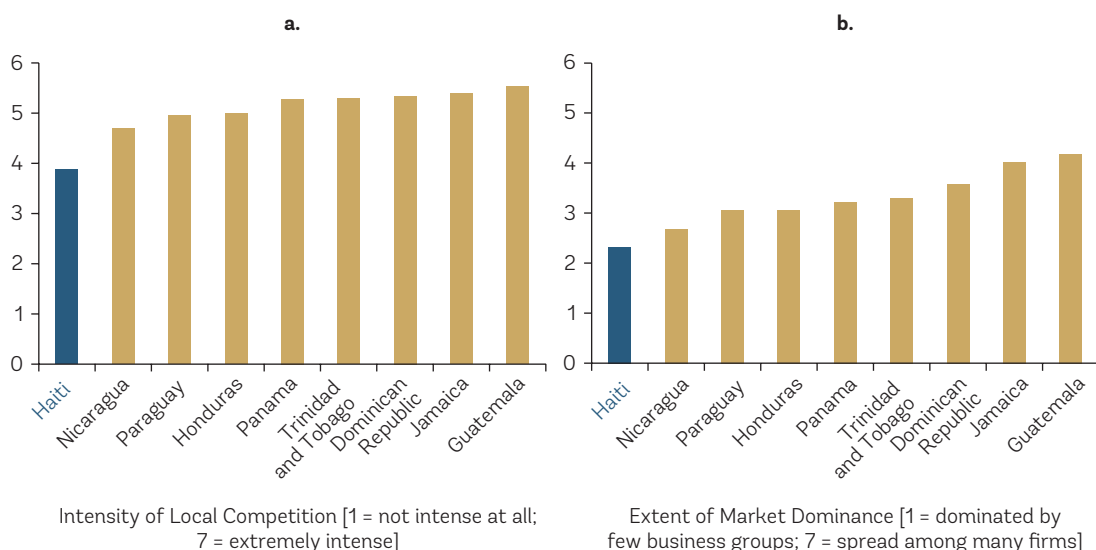
The Haitian markets remain constrained by a mix of factors that limit private sector expansion and competitiveness, including the emergence of quasi monopolies (World Bank 2013).¹

Weak competitive conditions may contribute to a high degree of operational business risk for firms in Haiti. This is likely detrimental to the Haitian economy. According to the Economist Intelligence Unit's operational risk model 2015, investors in Haiti perceive that the risks in doing business related to competitive conditions and competition policies are higher than the risks in other countries from the Caribbean region and only comparable to those in Guatemala, Honduras, and Nicaragua (figure 2.1). These risks are mainly related to: a) price control and the control of other market variables that both limit the benefits that firms could obtain by competing effectively and harm the incentives to invest; and b) vested interests and discrimination against foreign firms that hinder innovation and preclude more efficient firms from gaining market share.

Other competition perception indicators also rank Haiti below a group of countries with a similar GDP per capita. For instance, according to the Global Competitiveness Report of 2015–2016,² when compared with other countries, Haiti ranks low in terms of competition: Haiti ranks 137th out of 148 countries in terms of intensity of local competition, ranks 139th in terms of extent of market dominance (figure 2.2), and ranks 139th in terms of effectiveness of competition policy (a high rank indicates poor performance).

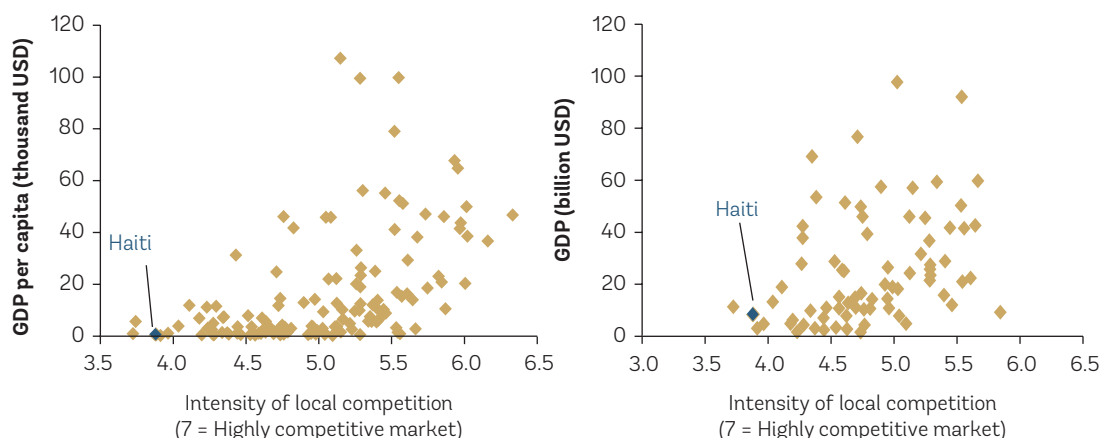
In addition, there is a high correlation between the intensity of local competition and the level of income. For example, countries such as Sierra Leone or Myanmar have better competition indicators in terms of intensity of local competition than Haiti. (figure 2.3).

FIGURE 2.2 Competition Intensity and Extent of Market Dominance



Source: WEF, Global Competitiveness Report 2015–2016.

FIGURE 2.3 GDP and Intensity of Local Competition



Source: WEF, Global Competitiveness Report 2015–2016.

Notes

1. An analysis by the IFC (“Economic Integrated Zone, Market Analysis”, 2011) lists other factors having a negative impact on Haiti’s business climate: (a) Cumbersome procedures for setting up and registering firms; (b) The lack of a formal system of land titles and property registration; (c) Over-complex customs administration; (d) The prohibitive cost and limited availability of serviced land, and lack of public infrastructure and services; (e) Absence of a modern construction code; (f) Lack of efficient mechanisms for international arbitration and mediation; (g) Insufficient guarantees for the protection of investors’ private property rights; and (h) Fragmented and dysfunctional legal, regulatory and institutional frameworks for free zones, industrial parks and investment in Haiti.
2. <http://www.weforum.org/reports/global-competitiveness-report-2015-2016>. The ranking is based on surveys of investors’ perceptions of business environment features.

3. Analyzing Market Structure

The market analysis aims at detecting market characteristics that favor the existence of market power and its potential risks in terms of abusive practices. As such, the market concentration analysis provides a first screening to detect the existence of market power. For example, if the market is not concentrated, the existence of market power is less likely. However, highly concentrated markets do not necessarily imply the existence of market power. This is true especially in the case of small economies, although there may be several challenges that need to be taken into account. Therefore, the market concentration analysis should be complemented with an analysis of market characteristics and market dynamics (such as barriers to entry, capacity constraints, vertical structure, demand elasticity, switching costs, product differentiation) that establish whether firms can or cannot exercise market power in a specific market. Due to limited availability of data and considering the limited time frame available, this report focuses only on analyzing market concentration. It is complemented by an analysis of the role of economic elites in the relevant markets.

Method

The analysis of product market concentration is conducted using the Herfindahl-Hirschman index (HHI). The HHI is a commonly accepted measure of market concentration and requires market share estimates for each firm in the market. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. The HHI is preferred to other concentration measures (such as concentration ratio) because it accounts for the heterogeneity in the size of the firms in the market, giving more weight to larger firms (box 3.1).

The HHI is calculated using the import data from the Harmonized System (HS) provided by the Ministry of Economy and Finance of Haiti. The HHI calculations are based on headings that group imports of related products under the Harmonized Coding System (HS), disaggregated at four-digit level.¹ The HS is a multipurpose international product nomenclature developed by the World Customs Organization (WCO). The system is used by more than 200 countries and economies as a basis for their Customs tariffs and for the collection of international trade statistics. It comprises about 5,000 commodity groups, each identified by a six digit code, arranged in a legal and logical structure, and supported by well-defined rules to achieve uniform classification. In order to focus on the most important product markets, goods are grouped by HS headings, taking into account their share of total customs value. In addition, the HHI was estimated for roughly 70 percent of the food products included in the consumption basket (as presented in the 2004 CPI), selected based on their share (more than 1 percent) in the basket, and data availability. This provides a more detailed overview of which product markets are highly concentrated in order to demonstrate the potential welfare implications for consumers, especially the poorest ones.

Further, a mapping of the economic groups² operating in the highly concentrated markets is based on an analysis of the owners of the hundred largest firms.³ The analysis of the links from families to firms was made using three databases of contemporary firm ownership provided by

BOX 3.1 Herfindahl-Hirschman Index

The Herfindahl-Hirschman index (HHI) is calculated as follows:

$$\text{HHI} = s_1^2 + s_2^2 + s_3^2 + \dots + s_n^2 \text{ (where } s_i \text{ is the market share of firm } i, \text{ and } i \text{ ranges from } 1 \text{ to } n\text{).}$$

The HHI index can range from close to zero to 10,000. The closer a market is to being a monopoly the higher the HHI index. If, for example, there was only one firm in an industry (a monopolist), that firm would have 100 percent market share, and the HHI index would be equal to 10,000 (100^2). Conversely, if there were thousands of firms competing in an industry, each firm would have nearly 0 percent market share, and the HH index would be close to zero. Thus, a near to zero HHI index indicates nearly perfect competition.

For the purpose of this analysis, the concentration levels based on the Horizontal Merger Guidelines (U.S. Department of Justice and Federal Trade Commission) were used. As such, three HHI levels help identify the characteristics of product market concentration, as follows:

- Unconcentrated Markets: HHI below 1,500.
- Moderately Concentrated Markets: HHI between 1,500 and 2,500.
- Highly Concentrated Markets: HHI above 2,500.

Source: Horizontal Merger Guidelines 2010. U.S. Department of Justice and Federal Trade Commission.

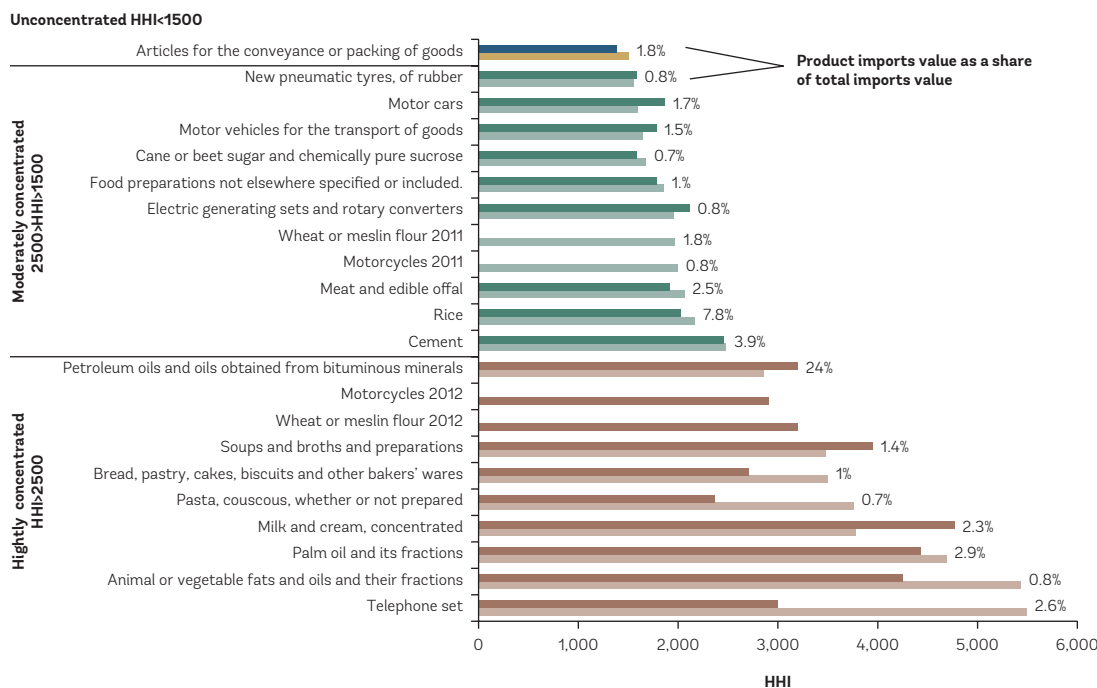
a team of researchers from the Columbia and Harvard Universities. The first, a commercial dataset—Orbis, produced by the Bureau van Dijk corporation—has information on 626 unique families that own 345 Haitian corporations; however, the majority of these corporations are not importing firms.⁴ The second is a database of Haitian firms assembled by a nonprofit organization called Haiti Building Markets after the 2010 earthquake to encourage aid agencies to buy goods and services from local firms.⁵ This data includes information on more than 3,400 firms owned by 1,951 unique families. The third database is an online database of firms registered with the Haitian Minister of Commerce and Industry.⁶

Analytical Findings

According to available information, Haiti imports more than 70 percent of all the goods sold in the domestic market (U.S. Department of State 2013).⁷ Haiti's imports mainly include petroleum, cereals, telecommunications equipment and electrical machinery, sound recorders, television recorders, motor vehicles, cement, iron and steel, oils and waxes, computers, plastic products, edible preparations, dairy, eggs, honey, sugars and sugar confectionery, wood and articles of wood, beverages, and preparations of cereals, flour, starch, milk, etc.

Based on available import data, the value of imported goods in highly and moderately concentrated markets represents roughly 70 percent of total imports. Considering the most important product markets based on their share of total import value, highly concentrated product markets (representing around 38 percent of the import value and with an HHI exceeding

FIGURE 3.1 Concentration Levels (HHI) in the 20 Most Important Haitian Product Markets (Based on Their Share of Total Import Value), 2011–2012



Source: Ministry of Economy and Finance 2014, Haiti's Import Database.

Note: Each product is identified by a four-digit Harmonized System (HS); darker shade is 2011 and lighter shade is 2012.

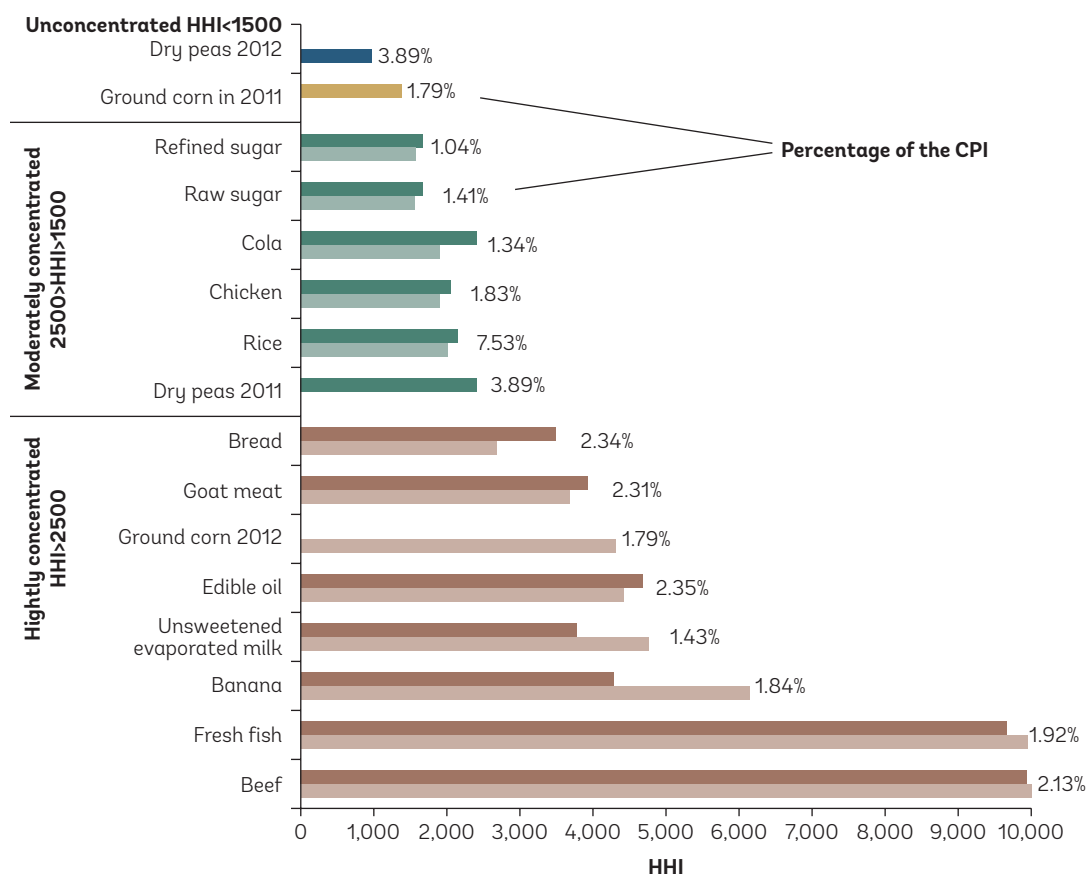
2,500) include petroleum, food and consumer goods markets (telephone sets, motorcycles). The share of imported goods in moderately concentrated markets (with an HHI between 1,500 and 2,500), including food, consumer goods (electric generating sets, motor vehicles) and cement markets, represents about 28 percent of the total import value (figure 3.1).

While the concentrated nature of the Haitian domestic market may not appear problematic per se, it nevertheless creates several challenges. Apart from difficulties in competing internationally with buyers and investors due to limited opportunities for economies of scale, powerful firms and Government regulations could distort market development and generate barriers to entry. Typically, the existence of a dominant player with market share close to a monopoly position (100 percent of the market) entails a risk of abusive behavior, such as exclusionary business practices, particularly in markets where the possibility of entry is limited either by structural or regulatory barriers.⁸ For example, a strengthened dominant position in the market, through increased market share above 40–50 percent of market over several years combined with increased financial power could allow a dominant firm to block entry of another company, prevent or delay the development of products/services over a period of time, and/or drive efficient competitors out of the market through anticompetitive business practices. On the other hand, in the absence of regulatory or legislative barriers, the threat of entry is likely to be real and constant. It is also likely to be effective in disciplining abusive market behavior. This is because the stakes for the incumbent operators are very high. One consequence of concentration is that successful new entry may not mean that incumbents simply lose market share; it may mean they are forced to abandon the market altogether, if they do not become

more efficient and adjust their services or products. This is particularly relevant in Haiti, where the groups belonging to the economic elite seem to have preferred to invest in markets that offered opportunities for gaining monopoly positions. These, together with difficulties related to company registration, created delays for some companies to enter the Haitian market—for example, it took Digicel almost a year to become fully operational.

Given that food and beverages represent around 50 percent of the consumption basket,² it is important to closely monitor the effects that highly concentrated product markets may have on consumer welfare. The risk of potential anticompetitive behavior given high market concentration may translate into high prices for consumers, which may be particularly damaging for the half of the Haitian population that lives on less than US\$2 per day. An alternative estimation of the HHI based on the most important food and beverages basket included in the 2004 consumption basket indicates that 45.5 percent of the most important food product markets included therein are highly concentrated (edible oil, bread, goat meat, beef, fresh fish, banana, corn, milk), 45.5 percent are moderately concentrated (rice, chicken, refined and raw sugar, cola), and 9 percent are not concentrated (dry peas, corn) (figure 3.2).

FIGURE 3.2 Concentration Levels (HHI) of the Most Important Food Products in the Consumption Basket (Based on Their Share of Consumption Basket and Available Import Data¹⁰), 2011–2012



Source: Ministry of Economy and Finance 2014, Haiti's Import Database and Haiti's CPI 2004.

Note: Each product is identified by a four-digit Harmonized System (HS); darker shade is 2011 and lighter shade is 2012.

Analysis suggests that the concentrated nature of the Haitian market is leading to higher consumer prices. An analysis over time of prices for several food products in highly concentrated market seems to suggest that on average, prices in Haiti are approximately 35–77 percent higher than in other countries from the LAC region, even taking into account differences in income levels and purchasing power of the population, as well as the cost to import containers and import tariff levels (see box 3.2). When some African countries¹¹ are also included, prices in Haiti are approximately 35–50 percent higher than in other countries (see the appendix for the detailed empirical analysis).

BOX 3.2 Price Comparison Analysis: Are Prices Higher in Haiti?

The price comparison analysis uses three data sources to explore whether food prices in Haiti are higher than other countries from Latin America and the Caribbean region (as well as North America): (a) “Numbeo,” an online database of user contributed data on cost of living, (b) Ministry of Economy and Finance of Haiti and (c) FAO GIEWS Food Price Data.

The first database applies a common methodology in gathering price data across countries, thus strengthening the comparability of price information used in this analysis. However, since price data for Haiti is only available for 2014 at “Numbeo,” this only allows for cross-section analysis.^a Data provided by the Haitian Ministry of Economy and Haiti on Haitian prices for 2010–2013 is combined with “Numbeo” data for the panel data analysis.^b Finally, for additional robustness, the analysis is replicated with prices from the FAO GIEWS database for the available food product (rice).

The baseline empirical specification for the price comparison analysis follows the equation:

$$\ln(\text{Price}_{ijt}) = \beta_1 \text{GDP}_{it} + \beta_2 \ln(X_{it}) + \beta_3 \text{Haiti} + \eta_j + \delta_t + \varepsilon_{ijt}$$

where: i = country; j = product; t = year; X_{it} = GDP per capita, cost of imports, and duties imports (as control variables); and η_j = product fixed effects. The *Haiti* dummy variable captures the relative price levels in Haiti compared to the average across other countries after adjusting for the differences in per capita GDP PPP, import costs, customs duties, and product type as well as time-specific effects.

The food products were selected based on availability across databases, the relevance in the Haitians consumption basket and product characteristics. For example, products were selected that are relatively similar (or homogeneous) across countries in order to minimize the differences associated with product differentiation.

a. The analysis used the following products: chicken, eggs, bread, cheese, orange, potato, rice, apple, water, lettuce. Comparator countries from the LAC region where price data were available for the same products include: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay. Comparator countries from the Africa region where price data were available for the same products include: Kenya and Mauritius.

b. The following products were selected for the panel data analysis: chicken, eggs, bread, cheese, orange, potato, rice. These are the products that are available in Numbeo database and in the Ministry of Economy database. Comparator countries from the LAC region where price data were available for the same products include: Brazil, Chile, Colombia, the Dominican Republic, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, República Bolivariana de Venezuela. Comparator countries from the Africa region where price data were available for the same products include: Kenya and Mauritius.

Zooming in on the highly concentrated markets, it appears that only a few groups and businessmen tend to operate in these markets with significant market shares. However, reviewing the relation between ownership concentration and economic development is a much more complex exercise. While the firms of a handful of powerful owners contribute to overall growth, they can hinder broad-based development by stifling competition, creating barriers to entry, and using the state apparatus to extract unfair advantages such as selective enforcement of revenue policy, skewed privatization, preferential concessions, and rigged auctions (box 3.3).

BOX 3.3 Empirical Analysis of the Links between Ownership Concentration and Economic Growth

From the point of view of comparative economic history, concentration of wealth and political power is not unusual. The “robber barons” in the United States (DeLong 1998), Korean chaebols (Graham 2003), Japanese zaibatsu (Morikawa 1992; Miwa and Ramseyer 2003), and Swedish and Italian large family-controlled firms (Hogfeldt 2003; Aganin and Volpin 2005) all possessed substantial economic and political power. In most of these cases, the “oligarchs” received significant support from the state (including through direct subsidies, tax breaks, land grants, and subsidized credit), which was resented by the general population.

Although some assert that the interconnection of wealth and political influence is a normal stage in development, and that oligarchic economies experience growth for a long time (Treisman and Shleifer 2005), others argue that an oligarchic structure is inherently inflexible, subject to crisis following a generational change in ownership, and incompatible with sustainable growth (Acemoglu 2003, 2012). North et al. (2007) argue, for instance, that many middle-income countries fall into an equilibrium in which political elites work together to limit access to the valuable resources they control in order to maintain the status quo, thus holding back the country’s transition to a more open and competitive social order.

Using survey data from the 1999 Business Environment and Enterprise Performance Survey (BEEPS) of post-communist countries, Hellman et al. (2003) find that, despite the private gains to captor firms (for example, protected property rights or better performance), state capture is associated with weaker economy-wide firm performance. This is consistent with Guriev and Rachinsky (2005), who find that oligarchs’ firms in the Russian Federation are more productive on average than those of other owners, but that their huge market shares stifle competition and increase barriers to entry. This is echoed by Treisman and Shleifer (2005), who argue that Russian oligarchs who sought to make their companies more productive through privatization still had a negative effect overall. The reason for this was that these oligarchs benefited from sweetheart deals with the state, created barriers to entry, stifled competition, expropriated minority shareholders, and so on, thus impeding inclusive development. Slinko, Yakovlev, and Zhuravskaya (2005) use micro-level data on the preferential treatment of firms through regional laws and regulations in Russia during 1992–2000 to determine the following: (a) politically powerful firms perform better on average; (b) capture hurts the performance of firms that have no political connections and boosts the performance of politically connected firms; and (c) capture adversely affects small business growth and state tax capacity. However, they find no evidence that capture affects aggregate growth.

box continues next page

BOX 3.3 Empirical Analysis of the Links between Ownership Concentration and Economic Growth (continued)

Rijkers et al. (2014) make a compelling case that connected firms in Tunisia were able to earn excess profits due to regulatory capture during the Ben Ali regime. They show that connected firms earn excess profits, as they account for 3 percent of private output but 21 percent of net private sector profits. Furthermore, they connect this excess performance to mechanisms through which advantages are provided, primarily protection and regulatory barriers to entry.

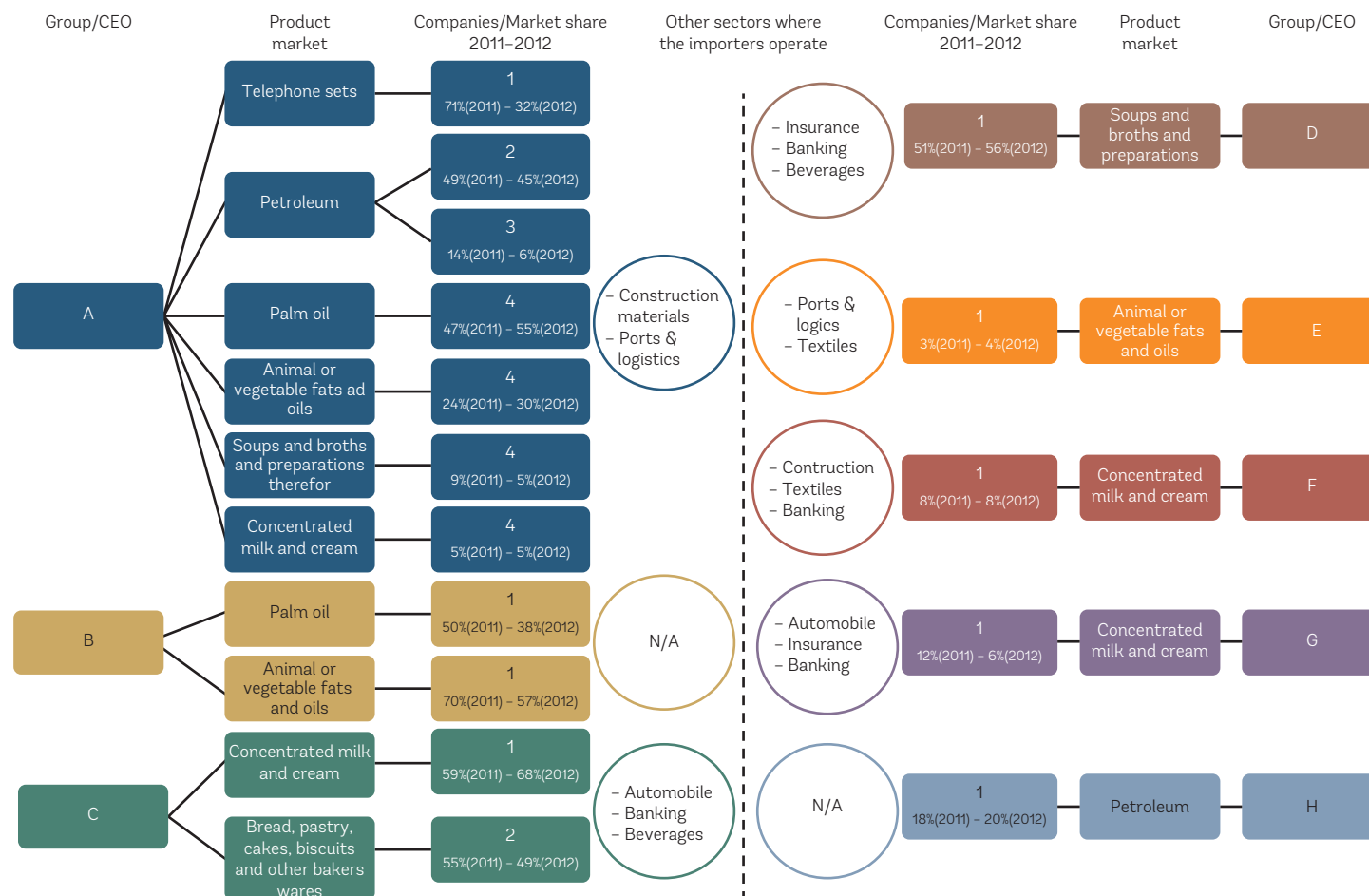
In Haiti, an economic elite has historically built alliances with the political class in order to consolidate their position in the market, including through direct participation in politics (World Bank 2015). Based on available import data, one particular group related to the economic elite may account for around 60 percent of operations in the highly concentrated markets, with market shares varying between 5 percent of the import market of concentrated milk to 51 percent in the telephone set market (2011–2012 average) (figure 3.3). This is not uncommon for other groups operating in the highly concentrated markets. In addition, out of the 100 largest tax payers, 23 companies related to the large Haitian economic groups operate in the financial sector—11 banks, 7 insurance companies and 4 micro finance institutions. At the same time, it appears that there may also be a tacit agreement among groups to allocate markets among themselves. From a competition standpoint, these types of arrangements may harm productivity and incentives for those firms to innovate, given the lack of competitive pressure, while raising barriers for other firms to enter.

In addition, according to estimations based on the import data, some economic groups and firms seem to benefit from reduced customs duty treatment for a large number of imported products. For example, in the highly concentrated markets, 5 groups benefited from 13 percent lower custom duties on average, with reductions ranging from 5 up to 22 percent (2011–2012) (table 3.1). Some of the companies belonging to the groups were also “rotated” in terms of operations in certain product markets in order for the group to benefit from recurrent “infant industry” protection (IIP) for a prolonged period of time. Once that company ceased to qualify for IIP, it was dissolved and another company was created.

Further, the companies that operate in highly concentrated markets and that benefit from lower customs duties seem to be more connected through family links. Some companies that operate in highly concentrated markets (such as bread, pastry, cakes, biscuits and other bakers’ wares, animal or vegetable fats and oils and their fractions, concentrated milk and cream, palm oil) have on average 28.5 family links¹² while the average of the elites families is 23.7. Similarly, those companies that operate in the highly concentrated market and pay lower customs duties have on average 45.2 family links against an average for the elite families of 23.7. These companies belong to some of the most important economic groups of Haiti.¹³

While governments in many countries often provide a variety of subsidies and direct support to public or private firms, specific measures that recurrently target certain firms may result in significant distortions to market competition. State support measures and subsidies can be

FIGURE 3.3 Distribution of Groups and Associated Companies in the Highly Concentrated Markets, 2011–2012



Source: Ministry of Economy and Finance 2014, Haiti's Import Database.

TABLE 3.1 Customs Duty Treatment of Main Importing Groups

Market	Group/ owner	Company	Year	Number of additional products imported by the same company (with reduced customs duties)	Customs duty paid (%)	Average customs duty that other companies in the same market paid (%)	Difference (%)
Petroleum	E	C2	2011	24	5	10	5
Palm oil and its fractions	B	C1	2011	60	5	16	11
		C1	2011	21	5	16	11
		C2	2012	15	5	16	11
		C1	2012	22	5	16	11
Milk and cream, concentrated	E	C2	2012	24	5	19	14
Soups and broths and other preparations	E	C1	2011	27	5	27	22
		C1	2012	25	5	27	22
	J	C1	2011	6	5	27	22
Animal or vegetable fats and oils and their fractions	A	C4	2011	15	5	16	11
		C4	2012	16	5	16	11
	I	C2	2011	3	5	16	11
	B	C1	2011	60	5	16	11
		C1	2012	44	5	16	11
	E	C1	2011	27	5	16	11
		C1	2012	25	5	16	11

Source: Ministry of Economy and Finance 2014, Haiti's Import Database.

implemented to address market failures, support education, foster innovation and promote green technologies to preserve the environment and other policy objectives. Such measures may include exemptions, reductions, or deferrals of fee and tax payments, guarantees, and preferential granting of loans, subsidies, debt write-offs, etc. However, state support measures need to be controlled to limit the negative effects on competition and market conditions, and to avoid providing preferential treatment to certain firms over others. Control of state support measures and subsidies typically includes: (a) relevant criteria for identifying support measures; (b) application of exemption rules in specific sectors; (c) assessment of prohibited measures and their potential impact on competition; and (d) definition of characteristics of the enforcement procedure.

Overall, privileges for specific types of firms can damage long-term PSD, because they bestow certain firms with a comparative advantage over their competitors, which is not necessarily associated with their efficiency. For example, political connections played an important role to determine the target for state support measures in the Middle East and North Africa region. Selective treatment in granting state support and subsidies is widespread; cautious estimates suggest that state support may account for up to 12 percent of GDP in these economies (World Bank 2009).

Finally, additional research is warranted to complete the overview of market concentration and to help understand the factors underlying existing competition conditions, including the role of

the economic elites. This note currently covers an analysis of market concentration based on available import data and presents a limited analysis of the groups and companies that operate in Haiti, with focus on highly concentrated markets. However, a comprehensive competition assessment of the Haitian markets would help complement the market concentration analysis (a first step in any competition assessment) with other market structure elements (barriers to entry, capacity constraints, vertical structure, product differentiation, etc.), especially in those domestic sectors (e.g., agriculture inputs and products, construction, services) that are not captured in the import database. Provided that detailed information on the persons/groups that receive certain incentives or benefits, the tax instruments that provide reductions/exemptions, and yearly data on tax revenue of the largest tax payers is available, a more comprehensive analysis of the main beneficiaries of preferential tax treatment—including an analysis of revenues, profits and net margins for the connected groups/firms—could provide additional elements and also help an analysis of perceived ownership concentration among large taxpayers. More detailed information about the groups' and firms' ownership beyond data included in this paper would enrich the analysis herein and reveal whether a small number of powerful firms and individuals hold a disproportionate share of the country's wealth and political influence.

Notes

1. The HS System is structured in 21 Sections, 99 Chapters, 1,244 Headings, and 5,224 Subheadings. Headings covering related products are clustered into chapters.
2. In this paper, a group is understood as a group of companies with parent and subsidiary corporations that function as a single economic entity through a common source of control. Due to limited information, a formal definition of the group cannot be provided in such a way to include information on actual ownership and direct or indirect control over these groups. In addition, the connection among groups through family links is not readily available for the purpose of this note.
3. Sources of information include the Building Markets database of Haitian firms and public sources from the internet (company web-sites, Ministry of Commerce and Industry's on-line registry, LinkedIn, etc.). This information is further complemented by pre-existing information and biographies, including information on company board members whenever available. Due to the limited sources of information, the report does not include an exhaustive review. Finally, given an asymmetry of information available from sector to sector, the amount of supplemental information for each sector varies.
4. <https://orbis.bvdinfo.com/version-2014812/home.serv?product=orbisneo>.
5. http://haiti.buildingmarkets.org/en_af/supplier-search.
6. <http://registre.mci.gouv.ht/>.
7. U.S. Department of State <http://photos.state.gov/libraries/haiti/231771/PDFs/ccgfinalcopy.pdf>. Imports from the US represented more than 40 percent of total imports.
8. Abuses of dominant position, especially the exploitative abuses can harm directly consumers through the imposition of unfair trading conditions. The main exploitative abuses are the imposition of excessive prices and discriminatory trading conditions.
9. Based on the 2004 Consumer Price Index (CPI).
10. Information on the turnover of firms operating in the domestic market that could have been used to provide a comprehensive calculation of HHI in various product markets is not available at the time of the writing of this note.
11. Kenya and Mauritius, where similar data is available.
12. This includes linkages between families, the firms they own, and the products that they import into Haiti. See Naidu, S., Robinson J., and Young L. (2015), Social origins of Dictatorships: Elite Networks and Political Transitions in Haiti.

13. The links from families to firms were made with three databases of contemporary firm ownership. The first, a commercial dataset called Orbis produced by the Bureau van Dijk corporation, has information on 626 unique families that own 345 Haitian corporations; however, the majority of these are not importing firms (<https://orbis.bvdinfo.com/version-2014812/home.serv?product=orbisneo>). The second is a database of Haitian firms assembled by a nonprofit organization called Haiti Building Markets after the 2010 earthquake to encourage aid agencies to buy goods and services from local firms (http://haiti.buildingmarkets.org/en_af/supplier-search). This data includes information on more than 3,400 firms owned by 1,951 unique families. The third data source is based on an online database of firms registered with the Haitian Minister of Commerce and Industry (<http://registre.mci.gouv.ht/>).

APPENDIX: Price Comparison Analysis

The objective of this section is to examine food prices in Haiti. We have found that imports in Haiti represent a large share of the aggregate market (approximately 70 percent), and that these markets exhibit high levels of concentration.¹ We conduct an empirical and econometric analysis to explore whether food prices in Haiti are in fact higher than in comparable countries as could have been predicted from the high concentration found in prior studies. We base our examination on yearly information at the country level that we have collected from various sources, and our data allows us to control for factors such as cross country-level differences in GDP per-capita, imports costs, product types, and time trends.

Our analysis focuses on the food sector for two reasons: (a) claims about high prices center mostly around food products²; (b) food products are important for the average Haitian consumer, accounting for nearly half of the consumption basket.

Selection of Products

Food products were selected on the basis of their importance in the consumption basket, the existence of prior public concerns about high prices in that market, data availability, ease of comparability among different markets, and the variability of market conditions. The products included in the cross-country sample (table A1) represent around 28 percent of the food consumption basket in Haiti. Product samples are restricted to those with yearly data available in Numbeo Cost of living and in the Ministry of Economy of Haiti databases. The analysis assumes that average calculated prices refer to a similar product, thus focusing on products that are relatively homogenous in order to reduce differences associated with price discrimination and product characteristics.

Most of the food product prices in Haiti are higher than in the Dominican Republic (table A1). The exception is cheese which according to the market concentration analysis shows an unconcentrated market.

TABLE A1 Products Included in Cross-Country Price Analysis

Product group	Product	Percentage in food consumer basket (%)	Haitian prices vs. Dominican Republic ^a
Rice	Rice	15.00	Higher
Bread	White bread	4.64	Higher
Poultry	Chicken	3.63	Higher
Milk and cream	Milk	1.05	Higher
Citrus fruit	Oranges	0.94	Higher
Tomato	Tomato	0.83	Lower/equal
Eggs	Eggs	0.76	Higher
Potato	Potato	0.45	Higher
Cheese and curd	Cheese	0.38	Lower

Source: Based on data from the Ministry of Economy of Haiti.

a. According to Numbeo Price in 2014.

Data

In this analysis we use data at the country-level in order to measure whether price levels in the food sector in Haiti are higher than prices for the same products in other countries. By combining information from various global organizations publishing country-level data and by further deriving variables from the original data, we put together a dataset that allows us to examine price levels across countries.

We acquired food price data from different sources. First, from the Ministry of Economy of Haiti, we obtained data on all the items in the Haitian basic food basket for the years 2005 through 2013. Second, from Numbeo, we acquired panel data for most of the countries in America for the years 2010 through 2014 on various items included in the basic food basket (Bread, Cheese, Chicken, Eggs, Milk, Orange, Potato, Rice, and Tomato). However, this panel is unbalanced and the price data for Haiti is only available for 2014. Finally, from the Food and Agriculture Organization of the United Nations (FAO), we have a panel with retail prices from 2005 to 2014 for Rice (the main product in Haitian basic food basket) for a group of countries (Costa Rica, Colombia, the Dominican Republic, El Salvador, Guatemala, Nicaragua, and Brazil). Two African countries (Kenya and Mauritius) were also included (based on data availability).

Empirical Strategy

The empirical and econometric analysis uses yearly information for 2010–2014³ to explore whether food prices in Haiti are higher than comparable countries.

$$\text{Log}(\text{Price}_{ijt}) = \beta_1 \text{GDP}_{it} + \beta_2 \text{Log}(\text{Tariff}_{it}) + \beta_3 \text{Log}(\text{Transportation}_{it}) + \beta_4 \text{Haiti} + \eta_j + \delta_t + \varepsilon_{ijt}$$

where i represents the country, j represents the different products (i.e., eggs, rice), and t represents the year. The dependent variable $\text{Log}(\text{Price}_{ijt})$ represents the logarithm of the price of the product j in country i and in year t , measured in US\$. Model (1) includes as control variables the logarithm of the GDP per capita purchasing power parity (PPP), the cost to import, and the tariff rate (definition are below). The “Haiti Dummy” variable captures price levels in Haiti relative to other countries after adjusting for per-capita GDP, cost of imports, product variables, and time control variables. Model (1) includes product-level fixed effects (η_j), and allows these fixed effects to be different for different products (specifically we run separate regressions by product and the fixed effects in these regressions for each product j are not constrained as equal). Product-level fixed effects capture factors that are idiosyncratic to each product, such as the size of the market, and other specific factors that are either time-invariant or can be considered to experience small changes during our study period. Model (1) also includes year fixed effects δ_t these time effects seek to absorb temporal trends for the different product prices.⁴ Finally, ε_{ijt} represents the error term.

Fixed Effect Regression Results

In tables A2 and A3 we present estimates for our regression model presented in the previous section. We examine whether food prices in Haiti are higher than comparable countries (column 1–4). Because our interest is in gauging the extent to which prices in Haiti are higher

TABLE A2 Fixed Effect Regression Results

Variables	Column 1	Column 2	Column 3	Column 4
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.374*** (0.0524)	0.372*** (0.0556)	0.374*** (0.0538)	0.430*** (0.0484)
Cost to import (US\$ per container)		-2.63e-05 (4.86e-05)		
Haiti	0.616*** (0.136)	0.612*** (0.143)	0.618*** (0.137)	0.773*** (0.127)
Cost to import (US\$ per container, in logarithm)			-0.0229 (0.0813)	0.0139 (0.0692)
Tariff rate, applied, weighted mean, all products				0.00926 (0.0186)
Constant	-3.139*** (0.508)	-3.083*** (0.560)	-2.976*** (0.838)	-3.883*** (0.821)
Observations	287	287	287	120
R-squared	0.870	0.871	0.871	0.880

Note: Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Products: chicken, eggs, bread, cheese, orange, potato, rice.

Countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay.

TABLE A3 Regression Results Using Numbeo Data for 2010–2013, Including Two African Countries

Variables	Column (1)	Column (2)	Column (3)	Column (4)
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.250** (0.0913)	0.260*** (0.0860)	0.260*** (0.0823)	0.334** (0.115)
Cost to import (US\$ per container)		4.60e-05 (6.86e-05)		
Haiti	0.304 (0.223)	0.328 (0.211)	0.322 (0.202)	0.519* (0.275)
Cost to import (US\$ per container, in logarithm)			0.101 (0.104)	0.159 (0.178)
Tariff rate, applied, weighted mean, all products				0.0207 (0.0318)
Constant	-1.893* (0.886)	-2.066** (0.844)	-2.733** (1.098)	-4.022** (1.620)
Observations	308	308	308	134
R-squared	0.846	0.847	0.848	0.850

Note: Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Products: chicken, eggs, bread, cheese, orange, potato, rice.

Countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Kenya, Mauritius.

than in comparable countries, Haiti is our main independent variable of interest in tables A2 and A3. The regressions in tables A2 and A3 also include the logarithm of the GDP per capita in order to control for the evolution of wealth within each country, the cost to import a container in US\$ to control for the evolution of food transportation, and country's weighted mean tariff rates to control for other costs that affect prices. Although not reported, the regressions in table A2 also include fixed effects by product and year in order to control for time invariant factors within each product market and for aggregate time trends in prices respectively.

The regression results of table A2 show that prices in Haiti are higher than in other comparable countries. Since the dependent variable is measured in logarithms, the size of the estimated coefficient on the Haiti variable indicates that prices in Haiti are more than 60 percent higher than in other countries and are statistically significant. We control by the evolution of wealth in logarithm (column 1), evolution of wealth in logarithms and the cost to import (column 2), evolution of wealth and cost to import in logarithms (column 3), and evolution of wealth, cost to import in logarithms, and tariff rate (column 4). When adding two African countries (Kenya and Mauritius) for which data was available, the size of the estimated coefficient on the Haiti variable (column 4) indicates that prices in Haiti are more than 50 percent higher than in other countries and are statistically significant (table A3).

Cross-Section Results Using Numbeo Data

In tables A4 and A5 we present estimates for the following model:

$$\text{Log}(\text{Price}_{ij}) = \beta_1 \text{GDP}_i + \beta_2 \text{Log}(\text{Tariff}_i) + \beta_3 \text{Log}(\text{Transportation}_i) + \beta_4 \text{Haiti}_i + \eta_j + \varepsilon_{ij}$$

where i represents the country, j represents the different products (i.e., eggs, rice), and t is equal to 1 since there is only one year. The dependent variable $\text{Log}(\text{Price}_{ij})$ represents the logarithm of the price of the product j in the country i measured in US\$. Similarly to model (1) model (2) includes as control variables the logarithm of the GDP per capita PPP, the cost to import, and the tariff rate (definition are below). The “Haiti Dummy” variable captures price levels in Haiti relative to other countries after adjusting for per-capita GDP, cost of imports, product variables, and time control variables. Model (2) also includes product-level fixed effects (η_j), and allows these fixed effects to be different for different products (specifically we run separate regressions by product and the fixed effects in these regressions for each product j are not constrained as equal). Product-level fixed effects capture factors that are idiosyncratic to each product, such as the size of the market, and other specific factors that are either time-invariant or can be considered to experience small changes during our study period. Finally, ε_{ij} represents the error term.

The only difference between tables A4 and A5 are the amount of product used in the regressions. While in table A4 we used chicken, eggs, bread, cheese, orange, potato, rice, apple, water, and lettuce, in table A5 we used chicken, eggs, bread, cheese, orange, potato, rice.

The regression results of tables A4 and A5 show that prices in Haiti are higher than in other comparable countries (Numbeo 2014). Since the dependent variable is measured in logarithms, the size of the estimated coefficient on the Haiti variable indicates that prices in Haiti

TABLE A4 Regression Results Using Numbeo Data for 2014 for 10 Products

Variables	Column 1	Column 2	Column 3	Column 4
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.0994 (0.0593)	0.0851 (0.0510)	0.0858 (0.0526)	0.215** (0.0773)
Cost to import (US\$ per container)		-6.98e-05 (7.04e-05)		
Haiti	0.512*** (0.128)	0.482*** (0.108)	0.489*** (0.112)	0.696*** (0.158)
Cost to import (US\$ per container, in logarithm)			-0.0870 (0.113)	-0.558** (0.145)
Tariff rate, applied, weighted mean, all products				0.0282 (0.0169)
Constant	-0.734 (0.564)	-0.488 (0.470)	0.0309 (0.890)	2.228 (1.408)
Observations	134	134	134	54
R-squared	0.840	0.842	0.841	0.857

Note: Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Products: chicken, eggs, bread, cheese, orange, potato, rice, apple, water, lettuce.

Countries: Brazil, Chile, Colombia, the Dominican Republic, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, República Bolivariana de Venezuela.

TABLE A5 Regression Results Using Numbeo Data for 2014 for 7 Products

Variables	Column 1	Column 2	Column 3	Column 4
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.108 (0.0622)	0.0939 (0.0631)	0.0951 (0.0633)	0.128 (0.0758)
Cost to import (US\$ per container)		-6.68e-05 (7.37e-05)		
Haiti	0.511*** (0.139)	0.482*** (0.138)	0.489*** (0.138)	0.471** (0.155)
Cost to import (US\$ per container, in logarithm)			-0.0805 (0.118)	-0.710*** (0.142)
Tariff rate, applied, weighted mean, all products				0.0404* (0.0166)
Constant	-0.709 (0.614)	-0.472 (0.637)	-0.000461 (1.088)	4.233** (1.362)
Observations	105	105	105	42
R-squared	0.841	0.843	0.842	0.842

Note: Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Products: chicken, eggs, bread, cheese, orange, potato, rice.

Countries: Brazil, Chile, Colombia, the Dominican Republic, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, República Bolivariana de Venezuela.

TABLE A6 Regression Results Using Numbeo Data for 2014, Including Two African Countries

Variables	Column (1)	Column (2)	Column (3)
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.0797 (0.0474)	0.0746 (0.0435)	0.0853* (0.0466)
Cost to import (US\$ per container)		-1.40e-05 (7.21e-05)	
Haiti	0.490*** (0.0891)	0.480*** (0.0784)	0.499*** (0.0834)
Cost to import (US\$ per container, in logarithm)			0.0221 (0.118)
Constant	-0.701 (0.428)	-0.632 (0.435)	-0.915 (1.084)
Observations	153	153	153
R-squared	0.825	0.825	0.825

Note: Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Products: chicken, eggs, bread, cheese, orange, potato, rice, apple, water, lettuce.

Countries: Brazil, Chile, Colombia, the Dominican Republic, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, República Bolivariana de Venezuela, Kenya, Mauritius.

are more than 47 percent higher than in other countries and are statistically significant. We control by the evolution of wealth in logarithm (column 1), evolution of wealth in logarithms and the cost to import (column 2), evolution of wealth and cost to import in logarithms (column 3), and evolution of wealth, cost to import in logarithms, and tariff rate (column 4). We also added two African countries (Mauritius and Kenya) where data was available (from Numbeo 2014) and found that the size of the estimated coefficient on the Haiti variable indicates that prices in Haiti are more than 47 percent higher than in other countries and are statistically significant (the tariff rate was not available for the two African countries, therefore only the regression results in columns 1, 2 and 3 are reported) (table A6).

Fixed Effect Regression Results Using GIEWS Data

In tables A7 and A8 we present estimates for the following model:

$$\text{Log}(\text{Price}_{it}) = \beta_1 \text{GDP}_{it} + \beta_2 \text{Log}(\text{Tariff}_{it}) + \beta_3 \text{Log}(\text{Transportation}_{it}) + \beta_4 \text{Haiti} + \delta_t + \varepsilon_{it}$$

where i represents the country, j is equal to 1, due to the fact that we are only using rice, and t represents the year. The dependent variable $\text{Log}(\text{Price}_{it})$ represents the logarithm of the price of rice in country i and in year t , measured in US\$. Model (3) also includes as control variables the logarithm of the GDP per capita PPP, the cost to import, and the tariff rate (definitions are below). The “Haiti Dummy” variable captures price levels in Haiti relative to other countries after adjusting for per-capita GDP, cost of imports, product variables, and time control variables. Model (3) includes year fixed effects δ_t these time effects seek to absorb temporal trends for the different product prices.⁵ Finally, ε_{it} represents the error term.

TABLE A7 Fixed Effect Regression Results on Rice Price Analysis from GIEWS

Variables	Column 1	Column 2	Column 3	Column 4
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.106 (0.0609)	0.125** (0.0467)	0.129** (0.0446)	0.166** (0.0603)
Haiti	0.354** (0.115)	0.383*** (0.0883)	0.395*** (0.0874)	0.371*** (0.0939)
Cost to import (US\$ per container)		1.14e-05 (4.75e-05)		
Cost to import (US\$ per container, in logarithm)			-0.00545 (0.0712)	-0.00601 (0.0657)
Tariff rate, applied, weighted mean, all products				-0.0229 (0.0131)
Constant	-0.940 (0.578)	-1.129** (0.422)	-1.113 (0.600)	-1.260 (0.703)
Observations	97	78	78	46
R-squared	0.840	0.675	0.675	0.854

Note: Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Product: rice.

Countries: Brazil, Costa Rica, Colombia, the Dominican Republic, El Salvador, Guatemala, Haiti, Nicaragua.

TABLE A8 Fixed Effect Regression Results on Rice Price Analysis from GIEWS-Ministry of Economy

Variables	Column 1	Column 2	Column 3	Column 4
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.106 (0.0609)	0.125** (0.0467)	0.129** (0.0446)	0.166** (0.0603)
Haiti	0.354** (0.115)	0.383*** (0.0883)	0.395*** (0.0874)	0.371*** (0.0939)
Cost to import (US\$ per container)		1.14e-05 (4.75e-05)		
Cost to import (US\$ per container, in logarithm)			-0.00545 (0.0712)	-0.00601 (0.0657)
Tariff rate, applied, weighted mean, all products				-0.0229 (0.0131)
Constant	-0.940 (0.578)	-1.129** (0.422)	-1.113 (0.600)	-1.260 (0.703)
Observations	97	78	78	46
R-squared	0.840	0.675	0.675	0.854

Note: Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Product: rice.

Countries: Brazil, Costa Rica, Colombia, the Dominican Republic, El Salvador, Guatemala, Haiti, Nicaragua.

TABLE A9 Regression Results on Rice Price Analysis from GIEWS, Including Two African Countries

Variables	Column (1)	Column (2)	Column (3)	Column (4)
	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)	Price (in logarithm)
GDP per capita (in logarithm)	0.106 (0.0609)	0.125** (0.0467)	0.129** (0.0446)	0.166** (0.0603)
Cost to import (US\$ per container)		1.14e-05 (4.75e-05)		
Haiti	0.354** (0.115)	0.383*** (0.0883)	0.395*** (0.0874)	0.371*** (0.0939)
Cost to import (US\$ per container, in logarithm)			-0.00545 (0.0712)	-0.00601 (0.0657)
Tariff rate, applied, weighted mean, all products				-0.0229 (0.0131)
Constant	-0.940 (0.578)	-1.129** (0.422)	-1.113 (0.600)	-1.260 (0.703)
Observations	97	78	78	46
R-squared	0.840	0.675	0.675	0.854

Note: Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Product: rice.

Countries: Brazil, Costa Rica, Colombia, the Dominican Republic, El Salvador, Guatemala, Haiti, Nicaragua, Kenya, Mauritius.

The regression results of tables A7 and A8 show that prices in Haiti are higher than in other comparable countries. Since the dependent variable is measured in logarithms, the size of the estimated coefficient on the Haiti variable indicates that prices in Haiti are more than 35 percent higher than in other countries and are statistically significant. We control by the evolution of wealth in logarithm (column 1), evolution of wealth in logarithm and the cost to import (column 2), evolution of wealth and cost to import in logarithms (column 3), and evolution of wealth, cost to import in logarithms, and tariff rate (column 4). We also added two African countries (Mauritius and Kenya) where data was available (from GIEWS) and found that the size of the estimated coefficient on the Haiti variable indicates that prices in Haiti are more than 35 percent higher than in other countries and are statistically significant (table A9).

Notes

1. Similarly, a document conducted by the United States Agency for International Development in 2010 also shows that a few large importers concentrate a high share of the market for most important staple commodities (such as rice, oil, and wheat flour).
2. <http://www.dailymail.co.uk/news/article-1043125/Tortilla-riots-mud-cakes-food-expensive.html>
<http://www.dadychery.org/2012/08/14/soaring-food-prices-in-haiti/>
3. Data from Numbeo Cost of Living, Ministry of Economy (Haiti), International Monetary Fund (IMF), World Bank, and FAO stats.
4. Levitt (2007) shows the need to include time effects in fixed effect regressions.
5. Levitt (2007) shows the need to include time effects in fixed effect regressions.

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