GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

GlobalFood
www.uni-goettingen.de/globalfood

RTG 1666 GlobalFood

Transformation of Global Agri-Food Systems:
Trends, Driving Forces, and Implications for Developing Countries

University of Goettingen

GlobalFood Discussion Papers

No. 126

The role of institutional quality on the performance in the export of coconut products

Jessie Lin
Insa Flachsbarth
Stephan von Cramon-Taubadel

October 2018

RTG 1666 GlobalFood · Heinrich Düker Weg 12 · 37073 Göttingen · Germany
www.uni-goettingen.de/globalfood

ISSN (2192-3248)

Suggested Citation:

Lin, J., I. Flachsbarth, S. von Cramon-Taubadel (2018). The role of institutional quality on the performance in the export of coconut products. GlobalFood Discussion Paper 126, University of Goettingen. http://www.uni-goettingen.de/de/213486.html.

The role of institutional quality on the performance in the export of coconut products

Jessie Lin*, Insa Flachsbarth, and Stephan von Cramon-Taubadel
Department of Agricultural Economics and Rural Development
University of Goettingen, 37073 Goettingen, Germany

Abstract

The literature that addresses the role of institutions in bilateral trade is extensive. However, research that link institutional quality to specific products and their different levels of value addition is lacking. In this study, we look into institutional quality, based on three indicators from the World Bank, and its indicator-specific effects on bilateral coconut trade. In particular, we study coconut products with varying degrees of value-addition. We utilize structural gravity models to measure how institutions affect the trade performance of the top 26 coconut producing countries to the top 15 importing economies over the years 1996-2016. Our results show that increased voice and accountability reduce bilateral trade of both high-value and low-value coconut products while government effectiveness increases trade flows of high value products. Better control of corruption decreases trade of coconut oil. Furthermore, similarities in the voice and accountability and government effectiveness indicators between trading partners decrease trade of coconut products on an aggregate level. We conclude that each indicator has different effects on each of the product categories. We end by giving recommendations for policymakers that will help to improve the coconut export performance in their respective countries.

Keywords: coconut supply chain; bilateral trade; gravity model; institutions; value-addition

JEL: F14 O43 Q17 Q18

Acknowledgements

This research was financially supported by the German Research Foundation (DFG) through grant number RTG1666 (GlobalFood).

* Corresponding author. Email: jessie.lin@uni-goettingen.de

1. Introduction

In the last few decades, agricultural value chains have become more and more internationally integrated due to advancements in technology, reduction in transportation costs, and market liberalization (Degain & Maurer, 2015). These global trends have altered the agricultural industry and increased trade in many countries over the past few decades. This process is supported by a wide range of outward-looking policies, such as a reduction in tariffs, market-determined exchange rate regimes, and more generally, measures to deregulate and facilitate international trade. Together, this has generated opportunities for export sectors, especially in developing and emerging economies (Gulati et al., 2007). In particular, the production and trade of non-traditional and high-value export commodities have increased (Gulati et al., 2007; Unctad, 2008; Maertens et al., 2009).

The trade literature has only recently begun to focus on the role of domestic governance and institutional influences in the development of high-value agricultural supply chains. Studies by Bojnec and Fertő (2009) and Mendonça et al. (2014) suggest that good governance leads to an increase in agricultural trade as a result of lower transaction costs and thus facilitates access to high-value agricultural markets. In other words, functioning institutions foster the transformation of countries that traditionally have traded low-value primary products into exporters of high-value food products. Given that poorer countries often depend heavily on agriculture, improving market access to such high-value chains can be of great relevance for their development paths. Therefore, a better understanding of the role of institutions in international trade is of high policy relevance in many regions of the world, especially since developing countries often lack such competent governance structures. This study looks closely into the effects of different institutional settings on the export performance of coconut products with different levels of value addition.

Coconut is an interesting commodity to study for a number of reasons. For many coconut-producing countries, particularly small Pacific Island countries, the production and trade of

this commodity support the livelihoods of large parts of the rural population. International coconut trade used to be driven by demand for coconut oil (Prades et al., 2016), but this has changed in recent decades. Coconuts are increasingly being transformed into high-value products that require more complex processing throughout export-oriented value chains. This move to high value-added products is in part driven by marketing strategies that brand coconut products as healthy alternatives for hydration and cooking. The aim of this study is to improve our understanding of how institutions influence the extent to which coconut producing countries benefit from emerging opportunities on world coconut markets. There is a growing literature on the role of institutions in international trade; however, no study focuses on individual high-value commodities and the effects of specific institutional variables. We differentiate between categories of coconut products, characterized by more or less value addition, and how they are affected by different dimensions of institutions. This allows us to take into account product-specific heterogeneities when evaluating the effect of each institutional indicator on exports. Since most coconuts are grown by poor farmers who have few resources (Naresh et al., 2013), and institutional quality tends to be traditionally lower in coconut producing countries than the predominant importing economies, it is crucial to look at the role of institutions in the different channels that affect coconut production and trade.

In our empirical analysis, we study the influence of institutions on the export performance of coconut products from the top 26 producing countries[1] to the top 15 coconut importing regions. We utilize three out of six governance indicators (voice and accountability, government effectiveness, and control of corruption) developed by Kauffmann et al. (1999) as measures of domestic institutions and apply them in a structural gravity model framework. We look at individual indicators since we expect that each indicator will affect trade in a specific manner. For instance, corruption could impede trade due to the reduction of domestic

[1] These 26 countries make up almost the entire global trade at 95% of the total world trade.

investments (Mauro, 1995), while voice and accountability could lower trade due to the increased bargaining power of workers (Berden et al., 2014). We address two specific questions: what kinds of institutions are relevant for trade in coconut products with different levels of value addition? Does institutional similarity influence bilateral trade of coconut products due to familiarization of procedures involved during trade? These questions are important to address in order to inform policy makers in coconut producing countries on how to improve export performance.

There are two main innovations to our approach. First, we look at a complexity of disaggregated products based on one specific commodity to explore how institutions affect not only trade but also the composition of value-added trade. Second, we consider the possibility that different types of institutions and institutional similarities, in general, could affect trade and its composition.

The structure of this paper is as follows. Section two reviews past literature on the linkages between institutions in international trade. Section three presents the theoretical framework that guides our research. Section four details the data collection method and the estimation strategy that we use in this study. Section five presents our results followed by a discussion and policy recommendations. Finally, section six concludes.

2. Literature review

This section gives an overview of existing literature on the linkages between institutional quality and international trade. Table 1 summarizes the main findings of selected studies on the subject.

Table 1: Summary of findings on institutional quality and international trade

References	Scope	Effect	Findings
Anderson & Marcouiller (1999)	Contract enforcement	Positive	Competent institutions can increase trade with contract enforcement by legal systems.

De Groot et al. (2004)	Aggregate of six indicators	Positive	High institutional quality decreases transaction costs thus positively influences trade flows.
Meon & Sekkat (2008)	Aggregate of six indicators	Positive	Good governance indicators increase exports of manufactured goods, but not in non-manufactured products.
Bojnec & Fertő (2009)	Importer-exporter-similarity of aggregate of six indicators	Positive	Similarities in institutional quality increase agricultural trade due to lower transaction costs.
Francois & Manchin (2013)	Aggregate of six indicators	Positive	Domestic institutions can boost exports due to increased international market access.
Mendonça et al. (2014)	Importer-exporter-similarity of aggregate of six indicators	Negative	Differences in institutional environments between trading partners decreases trade flows due to increased transaction costs
Martínez-Zarzoso & Márquez-Ramos (2018)	Political stability, rule of law, and control of corruption	Positive	Increased scores in political stability, rule of law, and control of corruption in exporting countries increase trade.

These studies all confirm that governance and institutions contribute to explaining trade flows. First, the effect of bad institutions can be seen as a tariff which increases the cost of business (Daude & Stein, 2007). Second, a bad institutional environment raises uncertainty during contract enforcement (de Groot et al., 2004). Anderson and Marcouiller (1999) find that a strong legal system that can enforce contracts increases trade. The same authors (2002) also argue that inadequate contract enforcement can be seen as a form of insecurity which introduces hidden transaction costs in international exchange. With good institutions in place, nations have jurisdiction not only to enforce contracts but also implement trade agreements (Rodrik, 2000). In addition to lowering transaction costs, competent institutions are able to facilitate long-term contracts and agreements at differing stages along the value chain; this

allows for increased exports in products with more complex processing (Martincus & Gallo, 2009).

De Groot et al. (2004) confirm that increased institutional quality is able to decrease ambiguity regarding the contract enforcement and the governance of overall economics. Institutional similarity between two countries can familiarize stakeholders with the procedures involved during the process of exchange (de Groot et al., 2004). Other authors confirm that international trade increases as a result of lower transaction costs when institutions are similar (Bojnec & Fertő, 2009). For instance, two countries might score poorly on political freedom, but this may facilitate trade between them since two autocratic regimes might have similar standards and behavior during bilateral exchange (Bojnec & Ferto, 2015). Furthermore, differences in institutional quality between two trading countries can reduce trade due to higher transaction costs between the two sides (Mendonça et al., 2014).

Lio and Liu (2008) find that better governance can boost agricultural production (and thus export surpluses) for a given level of agricultural inputs, human capital, and climate conditions. According to Mendonça et al. (2014), the production, processing, and commercialization of the agricultural sector can benefit when there are improvements in "transportation, logistics, information, communication, and biotechnology" (p. 167). Improved productivity can also decrease production costs, and make the final product more competitive in the export market (Berkowitz et al., 2006). Martincus and Gallo (2009) highlight the importance of an economy's technology as it can determine both production and transaction costs. Agricultural efficiency in developing countries can be enhanced when the government has strengthened respect for the institutional framework (Lio & Hu, 2009; Lio & Liu, 2008). Fulginiti et al. (2004) find that in the years that countries are rated "free" as opposed to "not free" in the Freedom House index, agricultural productivity is estimated to be 39 percent higher. Research by Nomman Ahmed et al. (2010) suggests that corruption

negatively affects productivity levels especially when institutions are weak and when transparency is lacking.

Many studies have shown that institutional quality is positively associated with trade on an aggregate level (Álvarez et al., 2018; Anderson & Marcouiller, 2002; Francois & Manchin, 2013). Studies using different institutional indicators show positive influences for the economy. Meon and Sekkat (2008) find that governance indicators are positively associated with exports of manufactured goods. Yu (2010) finds that democratization can lead to a three to four percent growth in bilateral trade. Abe and Wilson (2008) find that trade in the Asia and Pacific region increases with reductions in corruption and increased transparency. Research by Duc et al. (2008) shows that countries with higher levels of corruption trade less with each other. Francois and Manchin (2013) imply that institutional quality in both the exporting and importing country matter in trade. Martincus and Gallo (2009) find with increased institutional quality, countries have a comparative advantage at trading in sectors that produce more institutional-intensive goods. In a recent study, Álvarez et al. (2018) reconfirm that increased institutional quality fosters trade and that countries trade more easily due to better institutions.

Some authors suggest that institutions may not affect export performance equally across sectors. For example, corruption may smooth the export process in sectors such as oil and gas (Meon & Sekkat, 2008). Institutions seem to influence manufactured goods and non-manufactured goods differently, as Meon and Sekkat (2008) find no significant relationship between non-manufactured products and governance indicators. Martincus and Gallo (2009) find that better institutional quality leads to increased export of goods with production processes that are of higher complexity. Furthermore, not every aspect of governance is conducive to trade. For example, Berden et al., (2014) find that an rise in pluralism decreases trade flows due to the increase bargaining power of workers.

The studies to date have generated many interesting insights, but they have not specifically addressed the different dimensions of institutions and their effect on the composition of value-added trade within a specific agricultural product group. We intend to fill this gap by analyzing the relationship between various aspects of institutional quality and the trade of different coconut products with differing levels of value addition.

3. Theoretical Framework

3.1 Theoretical concepts

North (1991, p. 97) defines institutions as "the humanly devised constraints that structure political, economic and social interactions". We are interested in what North (1991) calls the "formal rules" of institutions, which are constitutions, laws, and property rights. These formal rules affect the transaction costs that arise during the production of goods and economic exchanges across international borders. In this study, we associate domestic institutions to the different processes and actors involved from the production to the export of coconut products. Transaction costs affect this supply chain via the transaction effect and the production effect (Belloc, 2006; Berkowitz et al., 2006; Iwanow & Kirkpatrick, 2009).

While definitions such as North's are widely accepted, measuring institutional quality is a difficult undertaking. We utilize the World Bank's good governance indicators as measures of institutions. We follow previous studies by categorizing the six indicators into three dimensions (Berden et al., 2014; Lio & Hu, 2009; Lio & Liu, 2008; Méon & Weill, 2005). Each dimension includes two indicators that measure the same aspects of governance. As outlined in the Methodology section below, we use one indicator from each of the three dimensions as our institutional variables. Figure 1 and our empirical analysis draw on these World Bank indicators.

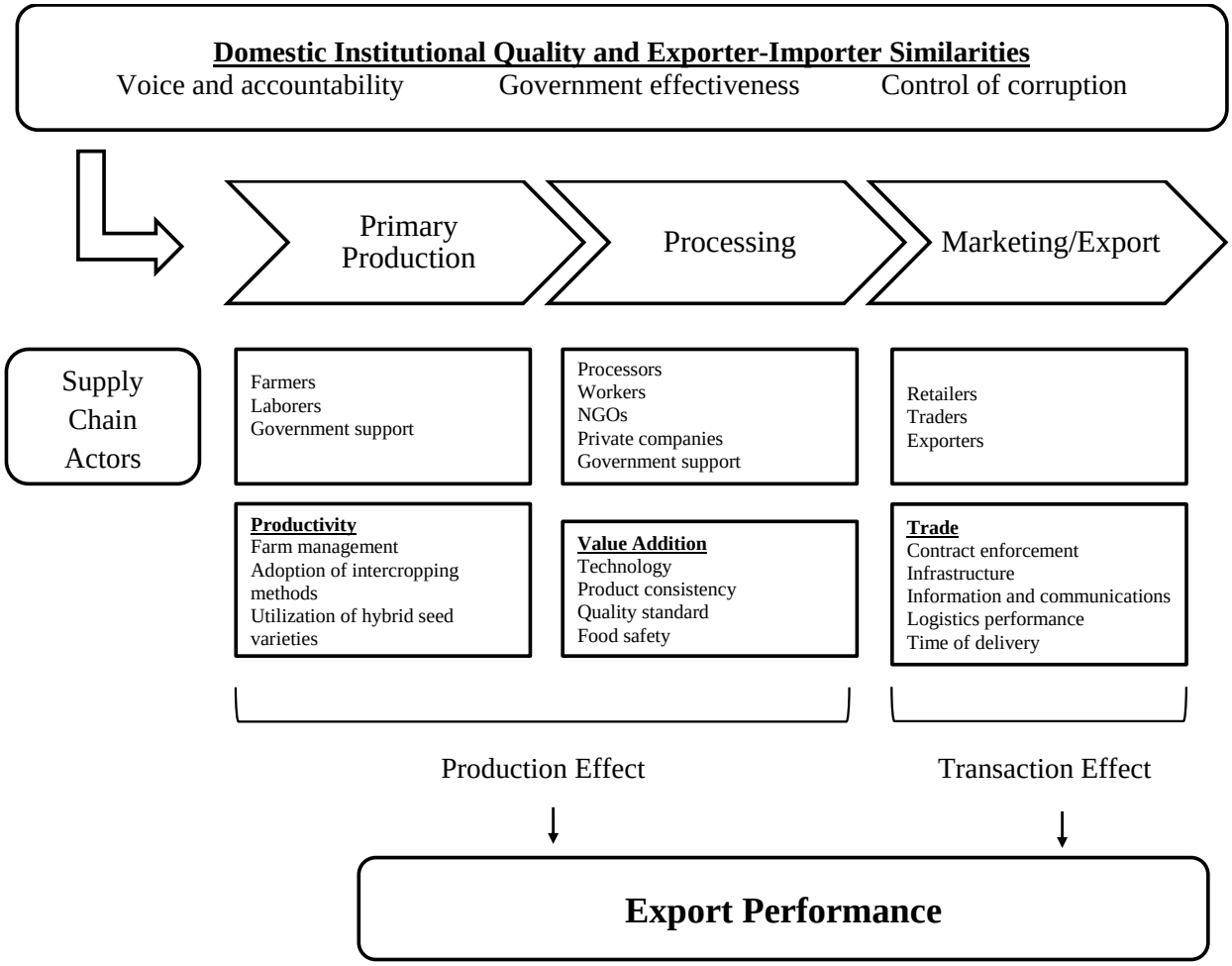

Figure 1: Conceptual framework, author's own illustration

We assess the production and processing aspects of the coconut supply chain through the lens of the production effect. As coconut products go through value addition, the factors and processes of production involve more steps and higher production costs, as suggested by Berkowitz et al. (2006). In order to produce an export product, the processing stage needs to ensure quality standards, such as product consistency, packaging, and safety. For example, packaging of coconut water exported to the European Union (EU) must preserve the color and taste of the original product. Furthermore, the product must be free from bacteria and other contamination (CBI Ministry of Affairs, 2017). Countries with lower institution quality may not be able to fulfill these requirements and end up exporting only primary and raw commodities (Martincus & Gallo, 2009). These countries could also fail to innovate in the

production of niche items due to the lack of complementary services and technology to develop them (Martincus & Gallo, 2009).

The production effect influences the production stage of raw coconut materials. It is estimated that around 85 percent of smallholders across the world still practice traditional nursery methods (Johnson & Bourdeix, 2014). Furthermore, many coconut palms are becoming senile in producing countries (FAO, 2013). Smallholder farmers need institutional support related to replanting strategies and access to seedling varieties to ensure productivity of the palms.

Institutional quality affects international trade through the "transaction effect", which involves the processes on the retail and export level. International transaction costs can be referred to as any type of cost that is incurred during trade; they include transportation costs, costs to enter and enforce contracts, border efficiency, and delivery time (Nordas & Piermartini, 2004). The gap in legal and political systems increases the chance of cheating during bilateral exchange (Belloc, 2006). When insecurities arise during the negotiation and enforcement stages of trade, they can act as a price premium on the traded good, resulting in less trade (Anderson & Marcouiller, 2002; den Butter & Mosch, 2003). During the marketing and exporting stage of the supply chain, adequate infrastructure is crucial to determine the delivery time of the final items.

3.2 Hypotheses

Based on the theoretical framework discussed above, we first hypothesize that institutions affect high value-added coconut products and low value-added coconut products differently. This is due to quality expectations in importing regions of high-value coconut items and the complexity of producing, processing and packaging these products. The production effect and transaction effect, as discussed, play a role in the level of technology, investment, cooperation, and infrastructure in exporting countries. Transaction costs are also higher for

high-value products during this stage since more care is needed to ensure the final good is delivered with its original qualities. We define each of the institutional indicators in table 2, and subsequently hypothesize their anticipated effects on bilateral trade given our conceptual framework.

Table 2: World Bank's good governance index and definitions

Indicator	Definition
Voice and accountability	Voice and accountability: the extent to which a country's citizens are able to participate in the selection of their government, as well as freedom of expression, freedom of association, and a free media.
Government effectiveness	Government effectiveness: the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
Control of corruption	Control of corruption, which is defined as the extent to which public power is exercised for private gain.

Source: Kaufmann et al. (2009)

The first indicator, "voice and accountability", assesses a country's procedure for selecting a government and keeping it in check (Berden et al., 2014). We link this indicator to the production and processing stage in our conceptual framework. Berden et al. (2014) contend that voice and accountability is most related to pluralism. Pluralism increases the voice and bargaining power of unskilled laborers, which could lead to a decrease in foreign investment (Berden et al., 2014). Li and Resnick (2003) suggest that pluralism could decrease the degree of cooperation in producing countries. Many actors are involved during the processing stage of the coconut supply chain. More voice and power to workers and laborers could disrupt this process from running efficiently. Following these authors, we hypothesize that increased voice and accountability negatively affects the international trade of high-value coconut products as the increase of bargaining power of workers undermines the level of cooperation needed in more complex processing and value-addition within the country. At the same time,

we expect that it has less influence on low-value products since the quality expectation and level of processing is less complex.

The second indicator "government effectiveness" measures the government's ability "to effectively formulate and implement sound policies" (Kaufmann et al., 2009, p. 6). It is said to be the most applicable indicator when measuring the efficacy of institutions (Daude & Stein, 2007). This indicator captures whether institutions are able to deliver complementary services during the production of coconuts and the enforcement of contracts during bilateral exchange. In particular, they can determine the efficiency of the exporting procedure by reducing bureaucratic costs. We expect increased government effectiveness to have a positive effect on all three stages of the supply chain. It facilitates complementary good and services needed to process coconut. Furthermore, it can increase exports of all types of coconut products due to increased ability to enforce and monitor the stages of processing. We hypothesize that this indicator will have a bigger effect on high-value products since it is more challenging to enforce contracts during trade of more complex products (Berkowitz et al., 2006).

The indicator "control of corruption" measures the extent to which the government respects its citizens and the rules of society (Kaufmann et al., 2009). Lack of corruption means that courts within a country are able to exercise impartiality and handle cases without any biased influence in the court's final decision (Berkowitz et al., 2006). This indicator further measures the extent to which public power is abused for personal gain (Kaufmann et al., 2009). High levels of corruption hinder international trade by lowering productivity and especially the quality of customs services (Ben Ali & Mdhillat, 2015). We expect that entry points for corruption occur as stages of processing coconuts become numerous and complex. We expect that easing corruption leads to better performance in all coconut exports. If a country is known to be corrupt, then importing countries are less certain that products will fulfil the

indicated quality and standards. Similar to government effectiveness, we expect the effect to be larger for high-value than for low-value products.

Lastly, we expect institutional similarities in all three indicators to be positively associated with bilateral trade. Institutional similarity reduces the adjustment costs that arise from dissimilar procedures and insecurities during bilateral trade (Linders et al., 2005). In addition, the nature of doing business in two countries could refer to ethical standards; if bribing officials is considered acceptable in two countries, then bribes might facilitate trade between both (Horsewood & Voicu, 2012; Ben Ali & Mdhillat, 2015).

In summary, our specific hypotheses are:

H1: Voice and accountability has a negative effect on bilateral trade flows of high-value coconut products as the increase of bargaining power of citizens undermine the level of cooperation needed in more complex processing and value-addition. However, this indicator has less or no effect on low-value products due to the simpler processes of production.

H2: Government effectiveness increases bilateral trade flows of both lower- and higher-value products, but more so for the latter, as contract enforcement and monitoring increase in importance as a result of more multifaceted stages of processing.

H3: The control of corruption increases bilateral trade flows of both product categories as it facilitates economic interactions and increases trust between exporting and importing countries.

H4: Similarities in all three above indicators lead to increased trade between two countries due to familiar procedures in bureaucratic procedures involved during both the production and transaction process.

4. Data and methodology

4.1 Data

To estimate the determinants of bilateral trade flows in coconut products, we gathered trade data and proxies for trade costs from various sources for the years 1996-2016. Reasons for using the specific data in our framework are explained in detail in section 4.2. We obtain bilateral coconut trade data from the United Nations Commodity Trade (UNComtrade) database, via the World Integrated Trading System (WITS). We use data on import values by the 15 largest importers of coconut products from the top 26 coconut producing countries measured in US Dollars. Import data is considered more reliable since governments have higher incentives to track imports for tax purposes (Francois & Manchin, 2013). Table 3 shows a list of the top coconut producing countries in 2016, expressed in metric tons, and their trade value in 1000 US Dollars.

Table 3: Main coconut producing countries in 2016 with production quantity in tons and trade value in 1000 US dollars

Country	Production (MT)	Export (in 1000$)
Indonesia	17.722.429	1,287,991.00
Philippines	13.825.080	1,861,631.00
India	11,127,898	281,608.20
Brazil	2,649,246	72,579.08
Sri Lanka	2,520,095	353,524.00
Vietnam	1,469,960	318,745.30
Papua New Guinea	1,191,438	88,386.06
Mexico	1,157,481	191,344.50
Thailand	815,406	1,069,091.00
Tanzania	555,836	2,359.12
Myanmar	531,730	27,855.91
Malaysia	504,773	473,522.60
Kiribati	437,000	2,106.76
Ghana	380,380	8,751.75
Dominican Republic	374,474	19,920.63
Solomon Islands	341,876	16,908.75
Vanuatu	336,988	15,183.71
China	316,579	732,289.60
Nigeria	283,744	2,068.85
Jamaica	255,411	8,454.77
Mozambique	248,394	6,816.43
Fiji	206,393	5,584.58
Samoa	179,602	555.34
Venezuela	157,391	1,172.44

Cote d'Ivoire	142,923	27,886.03
Marshall Islands	253,06	1,719.99

Source: FAOSTAT

We consider three categories of coconut products as shown in table 4. The first category includes high-value coconut products, which we assume are required to meet higher quality expectations of importing countries. These products are likely to be edible items that must fulfil exacting quality and traceability standards. The "low-value" products in the second category do not need to meet such exacting criteria. Finally, coconut oil is in its own category due to its dominance in coconut exports. In the year 2017/2018, the global export volume was around 1.7 million metric tons (USDA, 2018).

Table 4: Coconut product categories[2]

Categories	**Products included**
High-value products	Fresh and/or dried coconuts, coconut milk, activated carbon and coconut water
Low-value products	Copra, coir, and oilcake
Coconut Oil	All types of oil

Traded items are only published on the UN Comtrade database up to six-digit Harmonized System (HS) codes. Coconut milk, coconut water, and activated carbon from coconuts are all traded in eight-digit HS codes which are not documented in the database. Because of this, we take up six-digit codes reported by UN Comtrade.

As outlined above, we use the World Bank's Good Governance Indicators from the years 1996 to 2016 to measure institutional quality. The World Bank published the indicators bi-yearly from 1996 to 2002, and annually since then. For the years 1997, 1999, and 2001, we use the values from the previous year. The World Bank's good governance index is one of the most recognized and referenced indicators in research. It is based on hundreds of variables created by 33 international organizations (Kaufmann et al., 2009). The six indicators are scaled from -2.5 to 2.5. Higher values correspond to better governance, and

[2] See table A4 for detailed product HS codes and their average unit values

zero is the median score. For the purpose of our study, we have selected one indicator from each of the three dimensions mentioned in our conceptual framework: voice and accountability, government effectiveness, and control of corruption. Since the indicators are themselves correlated, each indicator could affect trade directly or indirectly by its influence on the other indicators (Lio & Liu, 2008).

Despite their great advantage of comparability at the global scale, these indicators do have certain weaknesses. Thomas (2010) asserts that the concepts of each indicator are not clearly defined. Furthermore, the definitions are not based on any theory, nor are they consistent with the existing literature (Thomas, 2010). Langbein and Knack (2010) contend that it is difficult to distinguish one indicator from another since each is represented by different concepts. Nevertheless, the index includes a wide sample of countries including almost all countries of interest in this study. Despite their shortcomings, these indicators are considered to be one of the best existing measurements to assess institutional quality (Kurtz & Schrank, 2007).

Table 6 gives an overview of the three indicators in percentile rank for some selected coconut exporting and importing regions in our study in 1996 and 2016. We can observe that some exporting countries, such as China, rank high on good government effectiveness and low on voice and accountability. By contrast, Brazil has improved its ranking in voice and accountability but fallen in government effectiveness and control of corruption.

Table 5: Percentile Rank of Voice and Accountability, Government Effectiveness, and Control of Corruption for selected exporting countries

Country	VA	GE	CC	Year
		Percentile Rank (1-100)		
Brazil	58	51	57	1996
	62	48	38	2016
China	12	43	48	1996
	7	68	49	2016
Indonesia	21	23	22	1996
	50	53	43	2016
Jamaica	66	60	62	1996

	70	69	52	2016
Mozambique	41	50	41	1996
	34	19	18	2016
Sri Lanka	41	49	54	1996
	43	45	48	2016
Solomon Isl.	72	N/A	65	1996
	63	15	44	2016

Note: Countries are listed in alphabetic order
Source: World Bank (2017)

Authors have used different methods to represent these six indicators. Some use all six variables as separate measures (Álvarez et al., 2018; Lio & Hu, 2009; Martínez-Zarzoso & Márquez-Ramos, 2018; Méon & Weill, 2005). Other studies have constructed dummy variables based on whether the institutional measure is positive or negative (i.e. above or below the median for all countries), or by summing or averaging the scores of all six indicators into one overall measure (de Groot et al., 2005; Linders et al., 2005; de Groot et al., 2004). In order to analyze the effects of each indicator, we treat each indicator as a separate variable. To better interpret the results of our main variables of interest, we have rescaled the three indicators of the exporting countries to 1-100. To put things into perspective, for example, if Indonesia were to improve their score of government effectiveness from 65 points in 2016 by ten points, this increase would take them to the same level of effectiveness as China in 2016. We constructed our institutional similarities variables by using the absolute values of the difference of each indicators as follows: $|WGI_i - WGI_j|$ (Bojnec & Ferto, 2015), where WGI refers to each of the three institutional variables, *i* is the exporting country, and *j* is the importing country.

We obtain coconut production data from FAOSTAT. The remaining gravity model variables, which include distance between the importing and exporting countries, gross domestic products (GDPs), indicators for common language, common religion, contiguity, and regional agreement come from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII). The EU is treated as one importing entity in this study since a large portion of

coconuts and coconut products are exported to the Netherlands, and then re-exported to other countries within the EU 27. Hence, the Netherlands is considered the destination for measuring bilateral distances. An exporting country is said to share a common official language with the EU 27 if it shares one of its official languages with at least one country in the EU 27. Table 6 shows the summary statistics of our main variables of interest.

Table 6: Summary Statistics

	Mean	**S.d.**	**Min.**	**Max.**
Trade (1000$)	734.49	8901.70	0	611,810.6
Distance (km)	8,641.16	4,762.39	505.54	19,146.71
GDP (US$ millions)	1,900,000	3,600,000	1,290	18,624,475
Production (MT)	2,112,673	4,352,028	4,080	196,000
Contiguity	.04	.21	0	1
Common off. lang.	.27	.44	0	1
Common religion	.08	.13	0	.81
RTA	.14	.35	0	1
VAi	-.13	.76	-2.23	1.26
GEi	-.36	.56	-2.27	1.27
CCi	-.43	.46	-1.67	.66
VAj	.19	.98	-1.78	1.67
GEj	.81	.93	-1.21	2.44
CCj	.57	1.14	-1.31	2.33
VAij	1.06	0.74	.0000562	3.79
GEij	1.34	0.87	.0002905	4.26
CCij	1.30	0.92	.0007986	3.97
Observations	88935			

4.2 Empirical specification

We use extended versions of the gravity model (Tinbergn, 1962) for our estimations. The gravity model has been used extensively in literature to examine the different factors that influence bilateral trade. The model has become increasingly popular throughout the last decade for research on trade due to its intuition, theoretical foundations, realistic equilibrium environment, flexible structure, and strong predictions (Yotov et al., 2016). Many recent studies that analyze trade and institutional quality, trade facilitation, and trade costs have utilized variations and extensions of the gravity model.

The model in its basic form takes into consideration the geographical distance between the exporting and importing countries, and the GDPs of both countries to represent the trade costs

between the two (Shepherd, 2013). The intuition behind the theory is that countries with larger GDPs or countries that are closer to each other have a bigger gravity force that pulls them together (Feenstra & Taylor, 2014), leading to larger volumes of trade.

We estimate the gravity model in its structural form at different levels of product aggregation: the trade effect of institutions is estimated (1) at the product-level, (2) at the aggregate coconut sector-level, and (3) at the aggregate agricultural-sector level. We compare the coconut product level with the aggregate coconut level is to see whether institutional quality affects aggregate trade in coconut products differently than it affects individual sub-categories of coconut products with different levels of value addition. Given that institutional quality indicators are not specifically designed for the coconut industry, other agricultural sectors might even benefit more than the coconut industry if institutions improve. This may even induce a shift away from coconut production and trade due to relative price changes in favor of other sectors. To consider these relative advantages in our analysis, we estimate the effect of the three institutional quality indicators on the remaining agricultural sector (defined as total agricultural exports minus exports of coconut products). Before we derive the concrete equations for each aggregation level, we explain some gravity-specific estimation issues that need to be accounted for in order to obtain valid results.

We use panel data for the estimates of our gravity model in order to capture the institutional changes that occur in coconut producing countries from 1996 to 2016. The data generating process of the gravity equation has a micro-theoretical foundation. For this reason, we take into account multilateral trade resistance (MTR), which refers to the fact that bilateral trade flows do not only depend on trade barriers between the respective exporting and importing country, but also on barriers that the exporting and importing country encounters with all of their trading partners (Adam & Cobham, 2007).

In our structural gravity models, we address MTR with the Bonus-Vetus method, proposed by Baier and Bergstrand (2009). This approach addresses MTR by applying a first order log-

linear Taylor series approximation to the non-linear MTR terms to account for exogenous variables that influence trade costs (Shepherd, 2013).

Each trade cost variable is transformed as follows, which we illustrate for the example of the variable 'distance':

$$lnDist_{MTRij} = lnDist_{ij} - \frac{1}{N}\sum_{j=1}^{N} \ln Dist_{ij} - \frac{1}{2}\frac{1}{N^2}\sum_{i=1}^{N_k}\sum_{j=1}^{N} ln\, Dist_{ij} \quad (1)$$

, where *i* = exporting country, *j* = importing country, *k*=coconut-product and *t* = year.

This method is preferred for the purpose of this study since the three main institutional variables of interest are country-time-specific or country-pair specific (in the case of institutional similarities), respectively. Therefore, country-time and country-pair fixed effects are collinear with the institutional variables of interest which would lead to their exclusion from the model (Shepherd, 2013). The alternative approach of using the multiplicative form of exporter-time (-product) and importer-time (-product) fixed effects is also not viable due to the occurrence of many singletons during the estimation. Thus, we follow Berger et al. (2013) and include importer and time fixed effects to limit omitted variable biases which might result from import regimes and the increasing role of non-tariff barriers that are specific to the importing country and traded product. Product fixed effects are also applied, but only in the aggregate coconut and agricultural sector estimations.

Since many coconut producing countries are small economies and have limited trading partners, zero trade values are frequent in our datasets, especially for the rarer coconut products. Traditional gravity estimations convert the dependent variables as logarithms, which omits zero trade data to include only positive trade flows (Martin & Pham, 2015). In our sample, we have a total of seven coconut traded products, resulting in large portions of zeroes. This poses a problem when measuring bilateral trade as it could lead to selection bias.

Different methods have been proposed to deal with zero trade. We adopt the poisson pseudo-maximum likelihood (PPML) estimation method proposed by Santos Silva and Tenreyro (2006), because it includes zero trade flows without any data transformation and provides unbiased estimates in the presence of heteroscedasticity.

We take our transformed right-hand-side variables from equation (1) and estimate their trade effects with the PPML method. This gives us the following gravity equation per coconut product category:

$$X_{i,j,t}^{k} = exp\left[\beta_0 + \beta_1 lnDIST_{ij} + \beta_2 lnProduction_{it} + \beta_3 lnGDP_{jt} + \beta_4 LANG_{ij} + \beta_5 RTA_{ijt} + \beta_6 Religion_{ij} + \beta_7 Contig_{ij} + \beta_8 VA_{it} + \beta_9 GE_{it} + \beta_{10} CC_{it} + \beta_{17} VA_{ijt} + \beta_{18} GE_{ijt} + \beta_{19} CC_{ijt} + \mu_j + \delta_t\right] \in_{ijt} \quad (2)$$

, where *k*= product which means that we estimate each trade effect separately for each of the mentioned coconut products.

For the aggregate coconut sector we estimate the following gravity equation:

$$X_{i,j,k,t} = exp\left[\beta_0 + \beta_1 lnDIST_{ij} + \beta_2 lnProduction_{it} + \beta_3 lnGDP_{jt} + \beta_4 LANG_{ij} + \beta_5 RTA_{ijt} + \beta_6 Religion_{ij} + \beta_7 Contig_{ij} + \beta_8 VA_{it} + \beta_9 GE_{it} + \beta_{10} CC_{it} + \beta_{17} VA_{ijt} + \beta_{18} GE_{ijt} + \beta_{19} CC_{ijt} + \mu_j + v_k + \delta_t\right] \in_{ijt} \quad (3)$$

, where k = coconut product, but all products are estimated within one equation, thus we only obtain one coefficient estimate for the entire industry and control for product fixed effects.

For the remaining agricultural sector we estimate the following gravity equation:

$$X_{i,j,t} = exp\left[\beta_0 + \beta_1 lnDIST_{ij} + \beta_2 lnProduction_{it} + \beta_3 lnGDP_{jt} + \beta_4 LANG_{ij} + \beta_5 RTA_{ijt} + \beta_6 Religion_{ij} + \beta_7 Contig_{ij} + \beta_8 VA_{it} + \beta_9 GE_{it} + \beta_{10} CC_{it} + \beta_{17} VA_{ijt} + \beta_{18} GE_{ijt} + \beta_{19} CC_{ijt} + \mu_j + \delta_t\right]$$

(4)

Here, no product dimensions are included.

Table 7 describes each of the variables and their definition as specified in our models.

Table 7: List of variables in the gravity model and their definitions

Variables	Definitions
$X_{i,j,t}^{k}$	Bilateral trade of product *k* between countries *i* and *j*
β_0	Unknown intercept
$lnDIST_{ij}$	Log of distance between the capital city of countries *i* and *j*
$lnProduction_{it}$	Log of coconut production in metric tons of country *i*
$lnGDP_{jt}$	Log of GDP of country *j*
$LANG_{ij}$	Dummy variable to indicate whether countries *i* and *j* share a common official language
RTA_{ijt}	Dummy variable to indicate whether countries *i* and *j* is part of a regional trade agreement
$Religion_{ij}$	Dummy variable to indicate whether country *i* and *j* share a common religion
$Contig_{ij}$	Whether countries *i* and *j* share a border
VA_i	Voice and accountability indicator in country *i*
GE_i	Government effectiveness indicator in country *i*
CC_i	Control of corruption indicator in country *i*
VA_{ij}	Voice and accountability similarity between countries *i* and *j*
GE_{ij}	Government effectiveness similarity between countries *i* and *j*
CC_{ij}	Control of corruption similarity between countries *i* and *j*
μ_j	Importer fixed effects
v_k	Product fixed effects
δ_t	Time fixed effects
$\in_{ijt}$	Error term, unobserved factors that change over time

Some authors such as Eicher and Leukert (2009) have expressed concerns of endogeneity in this framework. International trade can also potentially lead to better institutions as countries might see the improvements in institutional quality as a form of comparative advantage (Levchenko, 2013). In the same manner, a larger export value could increase or decrease costs incurred during trade (Djankov et al., 2010). We agree that trade, in general can affect institutional quality, but trade in a relatively specific product, such as coconuts, is unlikely to do so.

5. Results and Discussion

Table 8 presents the results of our PPML Bonus-Vetus estimations. Columns (1) – (7) specify the results of each of the coconut product categories. We then compare results to all the aggregate coconut products in column (8). Column (9) shows results from all agricultural products (excluding coconut products) in the same 26 coconut exporting countries. Figures in brackets below the coefficients represent standard errors. We compare results of coconut products to all other agricultural products since it's possible that institutional quality might redirect trade away from coconut products towards other high-value agricultural products.

We see in columns (1) to (7) that distance reduces trade flows in all but one category, coconut oil, for which increasing distance between two countries increases trade flows. Production of coconuts in exporting countries and GDP in importing economies has increasing effects on bilateral trade of coconut products. Contiguity increases trade of all products with the exceptions of oilcake and activated carbon. The remaining variables, common language, common religion, and RTA show different effects, depending on the category. For aggregated coconut products, sharing a common language and religion increases trade between two countries, but being part of a regional trade agreement reduces trade.

Our results suggest that increasing voice and accountability leads to a reduction in trade in all categories of coconut products. For example, for coconut products in aggregate, a one point increase in the voice and accountability index leads to a 5.1% reduction in trade flows, all other things being equal. Government effectiveness negatively affects trade flows of low-value products such as copra and coir. Copra trade decreases by 5.4 % when the government effectiveness indicator increases by one point. Trade in the remaining, mostly high-value products, increases with government effectiveness. For example, a one-point rise leads to a ten percent increase in coconut oil exports. In comparison with the first two indicators, the results for control of corruption are less consistent. Trade decreases by 1.9 % in copra and by

Table 8: Institutional quality and agricultural exports: low-value added versus high-value added coconut products versus aggregate product categories

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Low-value added products			High-value added products				
Dependent Variables	Copra	Coir	Oilcake	Coconut Oil	Milk/Water	Activated carbon	Fresh or Dried	Aggregate coconut sector	Remaining agricultural sector (excl. coconuts)
lnDIST	-0.387	-0.129	-1.893***	0.884***	-0.910***	-1.329***	-0.367***	-0.421***	-0.579***
	(0.246)	(0.173)	(0.240)	(0.138)	(0.103)	(0.096)	(0.104)	(0.068)	(0.040)
lnGDP	6.373***	1.878***	1.467***	0.341**	1.499***	1.135***	1.163***	0.698***	0.603***
	(0.742)	(0.411)	(0.226)	(0.173)	(0.247)	(0.092)	(0.197)	(0.137)	(0.017)
lnProduction	0.590***	1.547***	2.162***	1.435***	0.497***	1.074***	1.150***	1.032***	0.773***
	(0.059)	(0.158)	(0.147)	(0.081)	(0.065)	(0.071)	(0.066)	(0.046)	(0.088)
Contig	1.273**	1.115***	-0.588	0.570***	1.228***	-1.210***	0.418**	0.871***	0.454***
	(0.513)	(0.313)	(0.384)	(0.185)	(0.132)	(0.178)	(0.209)	(0.103)	(0.085)
LANG	0.620**	-0.652***	-0.641**	-0.343**	0.785***	-0.191	-0.335*	0.344***	0.406***
	(0.255)	(0.252)	(0.305)	(0.165)	(0.127)	(0.238)	(0.186)	(0.066)	(0.067)
RTA	0.460	2.678***	0.413	0.378*	-0.461***	-0.457***	0.0662	-0.350***	0.333***
	(0.453)	(0.538)	(0.278)	(0.206)	(0.124)	(0.158)	(0.183)	(0.100)	(0.0679)
Religion	0.324	-7.736***	3.383*	5.691***	-1.882**	0.399	4.684***	3.820***	-0.813***
	(0.456)	(0.974)	(1.778)	(0.724)	(0.820)	(1.092)	(0.493)	(0.314)	(0.295)
VAi	-0.012	-0.096***	-0.039***	-0.032***	-0.058***	-0.080***	-0.056***	-0.051***	0.000
	(0.012)	(0.011)	(0.013)	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)	(0.003)
GEi	-0.054***	-0.043**	0.102***	0.096***	0.074***	0.048***	0.040***	0.078***	0.009*
	(0.019)	(0.018)	(0.025)	(0.011)	(0.010)	(0.008)	(0.0108)	(0.006)	(0.004)
CCi	-0.019*	0.128***	-0.019	-0.022**	-0.011	0.032***	-0.014	-0.016**	0.025***
	(0.011)	(0.020)	(0.024)	(0.010)	(0.011)	(0.008)	(0.009)	(0.007)	(0.005)
VAij	-2.231***	-0.778***	-0.237	-0.201**	0.228**	0.338***	-0.423***	0.280***	0.233***
	(0.346)	(0.137)	(0.187)	(0.101)	(0.115)	(0.063)	(0.135)	(0.086)	(0.078)
GEij	0.188	1.218***	2.927***	1.273***	0.0323	-0.214**	0.208	0.483***	-0.613***
	(0.559)	(0.350)	(0.666)	(0.267)	(0.184)	(0.107)	(0.227)	(0.132)	(0.109)
CCij	0.592	-0.760*	-0.386	-0.789**	-0.092	0.313**	-0.830***	-0.634***	0.773***
	(0.548)	(0.441)	(0.837)	(0.323)	(0.256)	(0.143)	(0.268)	(0.185)	(0.156)
Importer FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Product FE	NO	NO	NO	NO	NO	NO	NO	YES	NO
Observations	8,085	12,206	8,085	16,170	16,170	8,085	16,170	88,935	7,469
R-squared	0.311	0.564	0.821	0.560	0.332	0.654	0.375	0.129	0.732

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1; Dependent variables are trade values in 1000 USD; VA_{ij}, GE_{ij} and CC_{ij} mean dissimilarity of institutional quality, thus a negative sign should be interpreted as a trade increasing effect if two countries are more similar; coefficients are interpreted as elasticities; production refers to coconut production in the coconut sectors, and total agricultural production (minus coconut production) in the remaining agricultural sector.

2.2% in coconut oil when this indicator increases by one point. Yet, trade in products such as coir and activated carbon increases when there is better control of corruption. Both voice and accountability and control of corruption decrease trade flow when coconut products are aggregated, while government effectiveness leads to an increase. It appears that the effects of all institutional indicators are driven by the coconut oil category. This should be no surprise given that coconut oil is still the dominant export for the coconut sector. Results from column (9), the remaining agricultural sector, show that voice and accountability have no effect in the trade of all other agricultural products. At the same time, government effectiveness and control of corruption increase trade with a one-point increase leading to a 0.9% increase and 2.5%, respectively. This indicates that institutions affect different agricultural subsectors differently with respect to trade.

Turning to institutional similarities, we find that countries that have similar levels of government effectiveness leads to less trade in individual coconut products. The one exception is activated carbon. However, aggregate trade is increased in all other agricultural products. Conversely, the two other indicators show ambiguous results. Similarities in voice and accountability lead to a decrease in trade of coconut milk/water and activated carbon, but an increase trade of copra, coir, coconut oil, and fresh/dried coconuts. Similarities in control of corruption increase trade in coir, coconut oil, and fresh/dried coconuts, but decrease trade trade of activated carbon. For all other agricultural products in aggregate, the more similar two countries are in control of corruption, the less they engage in trade.

5.1 Discussion

Our empirical evidence shows a pattern, where voice and accountability reduces trade and government effectiveness increases trade except for low-value-added products. Consistent with our hypothesis, not every indicator has the same effect on each of the product categories.

These findings are similar to those of Meon and Sekkat (2008), who suggest that the different features of institutions have dissimilar influences on trade.

First, results in column (4) show a positive influence in the trade of coconut oil when distance is increased, going against the intuition of the gravity model. A possible explanation is that coconut oil, a high-value product, is demanded in particular in high-income economies, such as the EU and the United States, whose location is farther away from the major coconut oil producing countries. In 2016, the United States and the Netherlands imported 45% of the world's total coconut oil (Indexbox, 2017).

Hypothesis one of this study states that voice and accountability decrease trade in high-value products and have no effect on low-value products. Our results confirm this hypothesis for high-value products. This is consistent with the findings of Berden et al., (2014) who find that higher levels of voice and accountability negatively affect trade flows and levels of foreign direct investment (FDI). We can speculate that more voice and rights to laborers and farmers disrupt not only further processed high-value coconut products, but also the low-value products. This is because low-value-added products are manually labor intensive, for example, the drying of copra and the weaving of coir products. We further see that this indicator has no effect on the trade of all other agricultural products, at least on the aggregate level.

Hypothesis two asserts that government effectiveness increases bilateral trade of especially high-value products. This too is confirmed by our results. Hence, we can infer that further processing of coconuts is facilitated by the provision of complementary services and contract enforcement. However, while we expected that government effectiveness would also increase trade in low-value products, albeit to a lesser extent than for high-value products, our results show that increased government effectiveness reduces trade in the low-value products of coir and copra, for which government effectiveness reduces trade flows. Perhaps as countries increase in government effectiveness, production and trade shifts from copra towards higher-value products.

The third hypothesis states that better control of corruption increases trade of all three coconut categories. Here our results are less clear cut. Our results suggest that control of corruption increases trade of coir. However, this is a comparatively minor product. At the same time, trade of coconut oil is decreased. The literature is also mixed in this regard. While some of the estimated coefficients are statistically significant, overall, the magnitude of the estimated effects is smaller than for the other institutional variables voice and accountability and government effectiveness. Our results confirm that the effects of corruption are complex. Part of our results fits the "*grease the wheel"* argument discussed by Ben Ali and Mdhillat (2015), that corruption eases bureaucratic processes involved during international trade. Another reason could be that importing economies have limited options when importing coconut oil due to the limited number of countries that have the capacity to produce them on a larger scale. Since we also find that some sub-categories would lose from preventing corruption, complementary policies are needed to cushion the negative trade effect.

Our final hypothesis states that institutional similarities will increase trade flows. The results fail to confirm our hypothesis. Similarities in government effectiveness decrease trade of coconut products. At the same time, it increases the trade of all other agricultural products in the same countries. This suggests that similarities in this indicator, in fact, redirect trade away from coconut products towards all other categories of agricultural commodities. Hence, similar trade procedures seem more relevant for other traded products than coconuts. A reason could be that most of the coconut producing countries score generally lower in government effectiveness than the most important importing countries. This, together with the producing countries' natural endowments of coconut trees may serve as an explanation of the negative trade effect of similarities. With this argument, we shadow Meon and Sekkat (2008) who suggest that when nations have natural endowments of a commodity that determine their comparative advantage, in this case, coconuts, then the influence of institutions might be of subordinate importance, or in our case even negative due to limited alternatives. Another

possibility could be that government effectiveness in most importing countries has improved from 1996 to 2016, whereas for some exporting countries, scores have decreased, increasing the distance of similarities in this indicator.

Similarities in voice and accountability increase trade of most products, except milk/water and activated carbon, where trade is decreased. This could be partly driven by some importing countries, such as Singapore, Russia, and China, share low scores on this indicator as many exporting nations[3]. Lastly, when two countries are similar in corruption levels, trade is increased in two major categories: coconut oil and fresh/dried products. Activated carbon is the only product where trade is decreased. It is possible that since exporting activated carbon is subject to stricter import standards because it is used for water purification and thus has a health component, the procedures require more formalized steps and procedures. Inefficiencies could arise during this process when two countries have different standards on how to deal with these procedures.

When interpreting the results in table 8, the coefficients might seem low for the aggregate remaining agricultural sector. However, they do not appear so low if we look at the observed changes of, for example, control of corruption in Brazil or Indonesia. Brazil performs much worse in 2016 compared to 1996 and lowers its score by 19 points, while Indonesia was able to increase its score by 21 points. This translates into a reduction of aggregate agricultural trade by 47.5% in Brazil or an increase in agricultural trade by 52.5% in Indonesia, ceteris paribus. Due to the strong improvement of government effectiveness (+30 points between 1996 and 2016), Indonesia could further increase agricultural trade by 29%. This exemplifies that changes in institutional quality can indeed have strong effects on the export performance, and even more on specific product groups. This is because aggregate measures average out some of the effects, which may lead to the misleading result that institutions have no or a low

[3] Refer to tables A6 and A7.

effect on trade. Thus, we confirm our hypotheses that institutions affect different agricultural subsectors differently, with respect to trade.

Our results are only partly in line with past research by Martinez-Zarsoso and Marquez-Ramos (2018), where they find that bilateral similarities in voice and accountability are negatively associated with trade flows while government effectiveness and control of corruption displays positive influences in the Middle East and North African countries. In other literature, Bojnec and Fertő (2009, 2015) find institutional similarities to increase agricultural trade, though the authors used different indicators for their institutional variables. De Groot et al. (2004) assess institutional similarities based on an aggregated indicator, rather than similarities between each individual indicator. They find differences in institutional quality begin to decrease trade only when the differences become substantial (de Groot et al., 2004).

It's worth noting that none of these literatures has looked into one specific commodity. Our finding in part contradicts our hypothesis that countries with similar institutional settings trade more with each other. However, with respect to the coconut sector, this is not too surprising, because some of the major importing regions, like the EU or the USA, score higher in institutional indicators than the major exporting countries. Due to climatic limitations of growing coconuts themselves, they nevertheless import from those regions.

5.2 Policy Recommendations

Our results confirm that institutional quality matter for the trade of coconut products. Yet, the effect of each institutional indicator differs. In order for countries to boost coconut exports and shift towards higher-value-added products, we first recommend countries to improve their government effectiveness indicator. Countries with increased government effectiveness can better facilitate a sound institutional environment for coconut exports. They are then able to more effectively implement, monitor, and evaluate efforts throughout the stages of the supply

chain. Our results show that attributes of an effective government lead to a general value-chain upgrade. In particular, it benefits high-value products as well as the agricultural sector as a whole.

Improving control of corruption is also of high relevance. Not only does the aggregate agricultural sector benefit, but so too do some high-value products, such as activated carbon. Trade of coconut oil seems to lose out from the control of corruption. However, improving this indicator could still benefit the entire agricultural economy.

Despite our findings that show a decrease in coconut trade when there is an increase in voice and accountability, we certainly do not suggest for countries to lower standards on this indicator as it might harm other parts of their economy. The neutral effect on the entire agricultural sector hints that countries with higher levels of voice and accountability do not necessarily suffer on an aggregate level, merely the coconut sector. Furthermore, it would not be unreasonable to predict that voice and accountability could have the effect similar to the Kuznet's (1955) curve. As this indicator first increases, it disrupts the coconut processing stage. However, once it reaches a certain turning point, the effect it has on coconut exports will start to increase.

6. Conclusion

We study the effect and influence of institutions on the international trade performance of coconuts by using an extended structural gravity model. We contribute to existing literature by assessing the role of different institutional indicators of different coconut products. Our results are mostly consistent with the literature on the effect of traditional gravity variables. However, our variables of interest show differing results. We find evidence that certain aspects of domestic institutional quality increase coconut trade while others decrease trade or have no effect. These results are category specific. Our main findings show that government effectiveness, in particular, can stimulate agricultural export performance. It also leads to a

value-chain upgrade in the coconut sector since the high-value-added products benefit. Thus, for strengthening exports in coconuts, which is a sector of major economic relevance in many of our exporting nations, governments should strengthen those institutions that facilitate operations and processes. Similarly, corruption should be controlled as this would increase exports on aggregate.

We conclude that each governance indicator has a different, sometimes opposite effect on the trade of various coconut products. Each of the World Bank's governance indicators measures different aspects of institutions, and they should not be assessed as an aggregated measure. When considering the export of coconut products of different value addition, strengthening government effectiveness can support and complement the coconut sector. Despite the undeniable effect of high institutional quality, complementary policies should be in place to further support the value chain upgrading process. Past literature on institutional quality on trade only assessed trade in general, or in certain aggregate sectors. Product and institutional indicator-specific studies are lacking. Our study is a first attempt to close this literature gap by considering institutional and product heterogeneities. Although our results provide evidence that government effectiveness and, in part, control of corruption are more important than voice and accountability scores in fostering trade, country-specific case studies on the opportunities and challenges for different coconut producing regions are needed that may complement our findings. Further research is also needed other agricultural products with various levels of value addition to study the influence of institutions and governance on international market integration. This would allow for more general conclusions while our results are sector specific.

Despite the interesting findings of our results with respect to product heterogeneity, this study is limited in some ways. First, coconut trade data is unavailable on the HS eight-digit level. This makes it challenging to assess individual products more accurately. For example, virgin coconut oil and low-value coconut oil are all clustered into the same six-digit category. It's

possible that trade flows of products could be either overestimated or underestimated. Secondly, other products, such as coconut sugar are not recorded at all as a traded product. Further data on certification and international standard labels are almost non-existent. These standards increasingly influence trade. It's possible that many major importing regions, such as the EU and the United States, might substitute missing institutions by implementing private certification schemes. Investigating this is, however, beyond the scope of this study, because there is no reliable information on coconut certification schemes in all countries. As coconut data and other agricultural trade cost data become more extensively available, research in the future would be more multifaceted.

References

Adam, C., & Cobham, D. (2007). Modelling multilateral trade resistance in a gravity model with exchange rate. *Centre for Dynamic Macroeconomic Analysis Conference Papers*, *44*, 1–49. Retrieved from https://www.st-andrews.ac.uk/CDMA/papers/cp0702.pdf

Álvarez, I. C., Barbero, J., Rodríguez-Pose, A., & Zofío, J. L. (2018). Does institutional quality matter for trade? Institutional Conditions in a Sectoral Trade Framework. *World Development*, *103*, 72–87. https://doi.org/10.1016/j.worlddev.2017.10.010

Anderson, J. E., & Marcouiller, D. (1999). Trade, insecurity, and home bias: an empirical investigation. *National Bureau of Economic Research Working Paper Series*, *No. 7000*. https://doi.org/10.3386/w7000

Anderson, J. E., & Marcouiller, D. (2002). Insecurity and the pattern of trade: an empirical investigation. *Review of Economics and Statistics*, *84*(2), 342–352. https://doi.org/10.1162/003465302317411587

Anderson, J. E., & Van Wincoop, E. (2003). Gravity with gravitas: a solution to the border puzzle. *Source: The American Economic Review*, *93*(1), 170–192. Retrieved from http://www.jstor.org

Baier, S. L., & Bergstrand, J. H. (2009). Bonus vetus OLS: A simple method for approximating international trade-cost effects using the gravity equation. *Journal of International Economics*, *77*(1), 77–85. https://doi.org/10.1016/j.jinteco.2008.10.004

Belloc, M. (2006). Institutions and international trade: A reconsideration of comparative advantage. *Journal of Economic Surveys*, *20*(1), 3–26. https://doi.org/10.1111/j.0950-0804.2006.00274.x

Ben Ali, M. S., & Mdhillat, M. (2015). Does corruption impede international trade? New evidence from the EU and the MENA countries. *Journal of Economic Cooperation and Development*, *36*(4), 107–120.

Berden, K., Bergstrand, J. H., & van Etten, E. (2014). Governance and globalisation. *World Economy*, *37*(3), 353–386. https://doi.org/10.1111/twec.12135

Berger, Daniel, William Easterly, Nathan Nunn, and Shanker Satyanath. 2013. "Commercial Imperialism? Political Influence and Trade during the Cold War." *American Economic*

Review, 103 (2): 863-96.

Berkowitz, D., Moenius, J., & Pistor, K. (2006). Trade, law, and product complexity. *Review of Economics and Statistics*, *88*(2), 363–373. https://doi.org/10.1162/rest.88.2.363

Bojnec, S., & Fertő, I. (2009). The institutional determinants of bilateral agricultural and food trade. *Apstract - Applied Studies in Agribusiness and Commerce*, *3*(3–4), 53–57.

Bojnec, S., & Ferto, I. (2015). Institutional determinants of agro-food trade. *Transformations in Business and Economics. 14(2), 35-52.*

CBI Ministry of Foreign Affairs (2016). *Exporting coconut water to Europe.* Retrieved from https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/coconut-water/europe/.

Daude, C., & Stein, E. (2007). The quality of institutions and foreign direct investment. *Economics and Politics*, *19*(3), 317–344. https://doi.org/10.1111/j.1468-0343.2007.00318.x

De Groot, H., Linders, G., & Rietveld, P. (2005). Institutions, governance and international trade. *IATSS Research*, *29*(2), 22–29. https://doi.org/10.1016/S0386-1112(14)60130-8

De Groot, H., & Linders, G., Rietveld, P., & Subramanian, U. (2004). The institutional determinants of bilateral trade patterns. *Kyklos*, *57*, 103–124.

Degain, C., & Maurer, A. (2015). Implications of global value chains for statistics and trade policy. In *Uncovering value added in trade* (pp. 9-45). Tokyo, Japan: World Scientific.

Den Butter, F., & Mosch, R. (2003). Trade, trust and transaction tosts. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.459501

Djankov, S., Freund, C., & Pham, C. S. (2010). Trading on time. *Review of Economics and Statistics*, *92*(1), 166–173. https://doi.org/10.1162/rest.2009.11498

Duc, C., Lavallee, E., & Siroën, J. M. (2008). The gravity of institutions. *Economie internationale*, (1), 95-113.

Eicher, T. S., & Leukert, A. (2009). Institutions and economic performance: Endogeneity and parameter heterogeneity. *Journal of Money, Credit and Banking*, *41*(1), 197–219. https://doi.org/10.1111/j.1538-4616.2008.00193.

FAO (2013). *Report of the FAO high level expert consultation on coconut sector development.* Bangkok, Thailand.

Feenstra, R., & Taylor, Al. (2004). *International trade.* NewYork, NY: Worth Publishers

Francois, J., & Manchin, M. (2013). Institutions, infrastructure, and trade. *World Development*, *46*, 165–175. https://doi.org/10.1016/j.worlddev.2013.02.009

Fulginiti, L. E., Perrin, R. K., & Yu, B. (2004). Institutions and agricultural productivity in sub-Saharan Africa. *Agricultural Economics*, *31*(2–3), 169–180. Retrieved from http://digitalcommons.unl.edu/ageconfacpub

Gulati, A., Minot, N., Delgado, C., & Bora, S. (2007). Growth in high-value agriculture in Asia and the emergence of vertical links with farmers. *Global supply chains: standards and the poor: how the globalization of food systems and standards affects rural development and poverty*, 98-108.

Horsewood, N., & Voicu, A. M. (2012). Does corruption hinder trade for the new EU members? *Economics*, *6*, 0–29. https://doi.org/10.5018/economics-ejournal.ja.2012-47

Indexbox. (2017). *World: coconut (copra) oil- market report. Analysis and forecast to 2025.* Walnut, United States.

Iwanow, T., & Kirkpatrick, C. (2009). Trade facilitation and manufactured exports: Is Africa different? *World Development*, *37*(6), 1039–1050. https://doi.org/10.1016/j.worlddev.2008.09.014

Johnson, V. & Bourdeix, R. (2014). *Global strategy for the conservation and use of coconut genetic resources, 2013-2023.* Unpublished manual.

Kaufmann, D., Kraay, A., & Zoido-Lobatón, P. (1999). Aggregating Governance Indicators. World Bank Policy Research Working Paper No. 2195. *Washington, DC*.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2009). *Governance Matters VIII Aggregate and Individual Governance Indicators*. *Policy Research Working Paper* (Vol. 21). https://doi.org/10.1080/713701075

Kazutomo, A., & Wilson, J. S. (2008). *Governance , corruption , and trade in the asia pacific region* (No. 4731). *Policy Research Working Paper*. https://doi.org/doi:10.1596/1813-9450-4731

Kurtz, M. J., & Schrank, A. (2007). Growth and governance: Models, measures, and mechanisms. *Journal of Politics*. https://doi.org/10.1111/j.1468-2508.2007.00549.x

Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review.*, *45*(1), 1-28. http://doi.org/10.2307/2118443

Langbein, L., & Knack, S. (2010). The worldwide governance indicators: Six, one, or none? *Journal of Development Studies*, *46*(2), 350–370. https://doi.org/10.1080/00220380902952399

Levchenko, A. A. (2013). International Trade and Institutional Change. *Journal of Law, Economics, and Organization*, *29*(5), 1145–1181. https://doi.org/10.1093/jleo/ews008

Li, Q., & Resnick, A. (2003). Reversal of Fortunes: Democratic institutions and foreign direct investment inflows to developing countries. *International Organization*, *57*(1). https://doi.org/10.1017/S0020818303571077

Linders, G., Slangen, A., de Groot, H., & Beugelsdijk, S. (2005). Cultural and institutional determinants of bilateral trade flows. *Tinbergen Institute Discussion Paper, TI 2005-07*, 1–31. https://doi.org/10.2139/ssrn.775504

Lio, M. C., & Hu, J. L. (2009). Governance and agricultural production efficiency: A cross-country aggregate frontier analysis. *Journal of Agricultural Economics*, *60*(1), 40–61. https://doi.org/10.1111/j.1477-9552.2008.00172.x

Lio, M., & Liu, M. C. (2008). Governance and agricultural productivity: A cross national analysis. *Food Policy*, *33*(6), 504–512. https://doi.org/10.1016/j.foodpol.2008.06.003

Maertens, M., Minten, B., & Swinnen, J. (2009). *Growth in high-value export markets in Sub-Saharan Africa and its development imploications*. *LICOS Centre for Institutions and Economic Performance*. Retrieved from http://www.econ.kuleuven.be/licos

Martin, W., & Pham, C. S. (2015). Estimating the gravity model when zero trade flows are frequent. *Policy Research Working Paper World Bank Group*, *7308*(June), 1–61. Retrieved from http://ideas.repec.org/p/dkn/econwp/eco_2008_03.html

Martincus, C. V., & Gallo, A. (2009). Institutions and export specialization: Just direct effects? *Kyklos*, *62*(1), 129–149. https://doi.org/10.1111/j.1467-6435.2009.00427.x

Martínez-Zarzoso, I., & Márquez-Ramos, L. (2018). Exports and governance: Is the Middle

East and North Africa region different? *The World Economy*. https://doi.org/10.1111/twec.12633

Mauro, P. (1995). Corruption and Growth. *THE QUARTERLY JOURNAL OF ECONOMICS*, *110*(3), 681–712. http://doi.org/10.2307/2946696

Mendonça, T. G. de, Lirio, V. S., Braga, M. J., & da Silva, O. M. (2014). Institutions and bilateral agricultural trade. *Procedia Economics and Finance*, *14*, 164–172. https://doi.org/10.1016/S2212-5671(14)00699-6

Meon, P. G., & Sekkat, K. (2008). Institutional quality and trade: Which institutions? Which trade? *Economic Inquiry*, *46*(2), 227–240. https://doi.org/10.1111/j.1465-7295.2007.00064.x

Méon, P. G., & Weill, L. (2005). Does better governance foster efficiency? An aggregate frontier analysis. *Economics of Governance*. https://doi.org/10.1007/s10101-004-0080-z

Naresh Kumar, S., & Aggarwal, P. K. (2013). Climate change and coconut plantations in India: Impacts and potential adaptation gains. *Agricultural Systems*, pp. 45–54. https://doi.org/10.1016/j.agsy.2013.01.001

Nomman Ahmed, M., Maas, S., & Schmitz, P. M. (2010). Analysing agricultural productivity growth in a framework of institutional quality. In *IAMO Forum*. Halle (Saale): Leibniz-Institut für Agrarentwicklung in Mittel- und Osteuropa (IAMO). Retrieved from https://www.econstor.eu/handle/10419/52695

Nordas, H. K., & Piermartini, R. (2004). *Infrastructure and trade*. WTO staff working paper, 2004. Geneva: WTO.

North, D. C. (1991). Institutions. *Journal of Economic Perspectives*, *5*(1), 97–112. https://doi.org/10.1257/jep.5.1.97

Prades, A., Salum, U. N., & Pioch, D. (2016). New era for the coconut sector. What prospects for research? *OCL*, *23*(6), D607. https://doi.org/10.1051/ocl/2016048

Rodrik, D. (2000). How far will international economic integration go? *Journal of Economic Perspectives*, *14*(1), 177–186. https://doi.org/10.1257/jep.14.1.177

Santos Silva, J. M., & Tenreyro, S. (2006). The log of gravity. *The Review of Economics and Statistics*, *88*(4), 641–658. Retrieved from

http://www.mitpressjournals.org/doi/pdf/10.1162/rest.88.4.641

Shepherd, B. (2013). The gravity model of international trade: A user guide. *ARTNeT Books and Research Reports*. https://doi.org/10.1017/CBO9781107415324.004

Thomas, M. A. (2010). What do the worldwide governance indicators measure. *European Journal of Development Research*, *22*(1), 31–54. https://doi.org/10.1057/ejdr.2009.32

Tinbergen, J. (1962). *Shaping the world economy: suggestions for an international economic policy*. New York, NY: Twentieth Century Fund.

Unctad. (2008). Export competitiveness and development in LDCs. Retrieved from http://unctad.org/en/Docs/aldc20081_en.pdf

USDA. (2018). Production volume of coconut oil world wide from 2012/13 to 2017/18 (in million metric tons). In *Statista- The Statistics Portal.* Retrieved October 17, 2018, from https://www.statista.com/statistics/613147/coconut-oil-production-volume-worldwide/.

Yotov, Y. V, Larch, M., Monteiro, J.-A., & Piermartini, R. (2016). An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model, (January 2014), 1–144. https://doi.org/10.1016/B978-0-444-53349-4.00238-7

Yu, M. (2010). Trade, democracy, and the gravity equation. *Journal of Development Economics*, *91*(2), 289–300. https://doi.org/10.1016/j.jdeveco.2009.07.004

Appendix

Table A1: Exporting and importing economies

Country Groups	Members
Exporters	Brazil, China, Cote d'Ivoire, Dominican Republic, Fiji, Ghana, India, Indonesia, Jamaica, Kiribati, Malaysia, Marshall Islands, Mexico, Mozambique, Myanmar, Nigeria, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Tanzania, Thailand, Vanuatu, Venezuela, Vietnam
Importers	Australia, Canada, China, EU27, Hong Kong, Indonesia, Japan, Korea, Laos, Malaysia, Philippines, Russia, Singapore, Thailand, USA

Table A2: Correlation table of the three governance indicators in exporting countries

	VA	GE	CC
VA	1.0000		
GE	0.1859	1.0000	
CC	0.5493	0.5824	1.0000

Table A3: Correlation table of institutional similarities between exporting and importing regions

	VAij	GEij	CCij
VAij	1.0000		
GEij	0.1723	1.0000	
CCij	0.2772	0.8243	1.0000

Table A4: Harmonized System (HS) codes and Average Unit Values

HS Code	Product	Avg. Unit Value
1203	Copra	.403
080111	Fresh or dried, desiccated	1.416
080119	Fresh or dried, other than desiccated	.409
151311	Coconut oil and its fractions, crude	.833
151319	Coconut oil and its fractions, other than crude	1.097
200819	Nut milk, including coconut	3.062
220290	Plant-based water, including coconut	.808
230650	Oil-cake and other residues, from the extraction of copra	.145
380210	Activated carbon	1.34
530511	Coconut coir, raw	.261
530519	Coconut coir, other	.263

Source: UN Comtrade

Nut Production:

With the exception of Cote d'Ivoire, Mozambique, Nigeria, Tanzania, and Vietnam, all other coconut producing countries listed in this study almost exclusively only produce coconuts according to nuts that are used to produce HS Code 200819.

Table A5: Share of coconut to total nut production in five countries

Country	Share of Coconut to Total Nut Production
Cote d'Ivoire	49.42%
Mozambique	81.54%
Nigeria	28.9%
Tanzania	81.17%
Vietnam	60.33%

Table A6: WGI scores in exporting countries in 1996 and 2016

Exporter	VA 1996	VA 2016	GE 1996	GE 2016	CC 1996	CC 2016
Brazil	0.24	0.47	-0.14	-0.18	-0.02	-0.44
China	-1.36	-1.62	-0.35	0.36	-0.27	-0.25
Côte d'Ivoire	-0.58	-0.28	-0.26	-0.67	-0.26	-0.54
Dominican Republic	0.06	0.19	-0.22	-0.25	-0.42	-0.78
Fiji	0.15	-0.03	-0.12	-0.26	0.66	0.13
Ghana	-0.21	0.64	-0.12	-0.20	-0.34	-0.17
India	0.48	0.41	-0.11	0.10	-0.38	-0.30
Indonesia	-0.92	0.14	-0.71	0.01	-0.86	-0.39
Jamaica	0.59	0.69	0.14	0.41	0.19	-0.16
Kiribati	1.15	1.03		-0.45		0.25
Malaysia	-0.18	-0.47	0.54	0.88	0.38	0.11
Marshall Islands	1.23	1.20		-1.56		-0.06
Mexico	-0.04	-0.09	0.23	0.14	-0.51	-0.77
Mozambique	-0.28	-0.39	-0.14	-0.85	-0.42	-0.87
Myanmar	-1.89	-0.85	-1.21	-0.98	-1.50	-0.65
Nigeria	-1.55	-0.30	-0.92	-1.09	-1.19	-1.04
Papua New Guinea	0.08	0.19	-0.34	-0.73	-0.43	-0.92
Philippines	0.26	0.14	-0.31	-0.01	-0.36	-0.53
Samoa	0.74	0.76	0.39	0.54	-0.03	0.28
Solomon Islands	0.81	0.49		-0.99	0.34	-0.34
Sri Lanka	-0.27	-0.11	-0.18	-0.21	-0.06	-0.28
Tanzania	-0.64	-0.18	-0.69	-0.55	-0.70	-0.51
Thailand	0.31	-1.10	0.18	0.34	-0.36	-0.40
Vanuatu	0.63	0.69		-0.88	0.22	-0.10
Vietnam	-1.09	-1.41	-0.58	0.01	-0.49	-0.40

Table A7: WGI scores in importing countries in 1996 and 2016

Importer	VA 1996	VA 2016	GE 1996	GE2016	CC 1996	CC2016
Australia	1.44	1.30	1.80	1.58	1.88	1.77
Canada	1.57	1.38	1.74	1.80	2.03	1.98
China	-1.36	-1.62	-0.35	0.36	-0.27	-0.25
Indonesia	-0.92	0.14	-0.71	0.01	-0.86	-0.39
Japan	1.07	1.00	0.91	1.83	1.19	1.51
Lao PDR	-1.13	-1.73	-0.64	-0.39	-0.72	-0.93
Malaysia	-0.18	-0.47	0.54	0.88	0.38	0.11
Philippines	0.26	0.14	-0.31	-0.01	-0.36	-0.53
Russian Federation	-0.22	-1.21	-0.45	-0.22	-1.05	-0.86
Singapore	0.14	-0.28	1.99	2.21	2.11	2.07
Thailand	0.31	-1.10	0.18	0.34	-0.36	-0.40
United States	1.35	1.10	1.52	1.48	1.57	1.33
EU27	1.13	1.07	1.13	1.12	1.04	1.04

Table A8: Robustness Check, Bonus-Vetus OLS results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Depenent Variables	Copra	Coir	Oilcake	Coconut Oil	Milk/Water	Activated Carbon	Fresh or Dried	Aggregate	All Products (excl. coconuts)
lnDIST	0.083	0.207	-0.917**	1.130***	-0.740***	0.084	-0.702***	-0.218***	-1.457***
	(0.255)	(0.173)	(0.357)	(0.151)	(0.083)	(0.150)	(0.125)	(0.061)	(0.051)
lnGDP	2.660***	1.418***	2.625***	-0.023	1.266***	1.323***	0.896***	0.861***	1.246***
	(0.405)	(0.516)	(0.547)	(0.277)	(0.166)	(0.196)	(0.205)	(0.105)	(0.388)
lnProduction	0.159**	0.189**	0.700***	0.575***	0.556***	1.100***	0.763***	0.489***	0.874***
	(0.078)	(0.085)	(0.113)	(0.061)	(0.037)	(0.104)	(0.060)	(0.026)	(0.015)
Contig	1.569**	0.849**	-1.045	2.343***	0.204	0.530***	0.799***	0.575***	0.242*
	(0.689)	(0.331)	(0.950)	(0.372)	(0.167)	(0.194)	(0.243)	(0.119)	(0.125)
LANG	-0.338	0.781***	-0.785	0.267	0.459***	0.386**	-0.086	0.220**	0.079
	(0.460)	(0.225)	(0.659)	(0.240)	(0.124)	(0.187)	(0.190)	(0.089)	(0.091)
RTA	0.263	1.084***	0.297	-1.288***	-0.089	0.079	-0.630***	-0.516***	-0.063
	(0.328)	(0.334)	(0.434)	(0.246)	(0.141)	(0.198)	(0.193)	(0.098)	(0.096)
Religion	1.205	-6.590***	-1.792	6.255***	0.903*	0.102	2.103**	2.408***	-1.008***
	(1.473)	(1.101)	(2.140)	(0.888)	(0.490)	(0.851)	(0.819)	(0.374)	(0.341)
VA	0.037***	0.005	0.0110	0.007	-0.064***	-0.074***	-0.034***	-0.034***	-0.002
	(0.009)	(0.007)	(0.014)	(0.007)	(0.004)	(0.008)	(0.005)	(0.003)	(0.002)
GE	-0.014	-0.093***	0.008	0.078***	0.097***	0.040***	0.027***	0.037***	0.036***
	(0.012)	(0.010)	(0.023)	(0.011)	(0.007)	(0.009)	(0.008)	(0.004	(0.004)
CC	-0.013	0.079***	0.005	-0.030***	-0.011*	0.041***	-0.029***	-0.007*	0.022***
	(0.010)	(0.012)	(0.024)	(0.010)	(0.006)	(0.009)	(0.008)	(0.004)	(0.004)
VAij	0.075	0.0972	-0.348	0.402**	0.074	0.763***	-0.272**	-0.038	0.576***
	(0.275)	(0.181)	(0.406)	(0.192)	(0.110)	(0.127)	(0.136)	(0.069)	(0.080)
GEij	0.355	-0.070	0.983	0.927***	-0.790***	0.107	-0.437**	-0.241**	0.508***
	(0.354)	(0.271)	(0.669)	(0.283)	(0.172)	(0.204)	(0.212)	(0.110)	(0.122)
CCij	0.752**	0.055	1.228	-1.312***	0.522**	-0.138	-0.591**	-0.215	-0.417***
	(0.356)	(0.465)	(0.877)	(0.362)	(0.234)	(0.262)	(0.260)	(0.145)	(0.158)
Importer FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Product FE	YES	YES	YES	YES	YES	YES	YES	YES	NO
Observations	1,074	1,111	610	2,803	4,950	2,010	3,501	15,449	6,695
R-squared	0.412	0.313	0.422	0.298	0.389	0.419	0.258	0.186	0.635

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1