

The OIC's Intra-Bloc and Extra-Bloc Trade: How Effective are the FTAs?

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Abstract The present study evaluates the role of Free Trade Agreements (FTAs) in facilitating trade for the Organization of Islamic Cooperation (OIC) member countries. We used the structural gravity model and the Poisson pseudo-maximum likelihood estimator to examine annual bilateral trade from 2000 to 2019. We find that FTAs have a positive impact, which is more pronounced in the case of the intra-OIC trade. Furthermore, the findings show that the quality of governance in the source country influences the adjustment of the exporting process in response to the entry of an FTA. The majority of OIC countries currently have poor governance. Therefore, improving the governance conditions would encourage trade, particularly for the extra-bloc exports.

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I. Introduction

International trade has recently emerged as an important source of foreign exchange earnings, employment, and sustainable economic growth for many countries. Given their importance, eliminating cross-border impediments to the movement of goods has been a significant step toward promoting bilateral trade. Therefore, over the last decade, there has been a proliferation in the number and depth of regional integration agreements as well as a dramatic increase in bilateral trade (Baier & Bergstrand, 2007; Behar & Cirera-i Crivillé, 2013; Freeman & Pienknagura, 2019; Jean & Bureau, 2016; Vicard, 2009). However, the increase in export gains as a result of these agreements is more pronounced in countries with improved levels of institutions

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Martínez-Zarzoso and Márquez-Ramos (2019).

Efficient institutions are beneficial because they help to overcome frictions in international transactions and reduce the uncertainty that is typically associated with cross-border trade (Martínez-Zarzoso & Márquez-Ramos, 2019). For instance, a better governance atmosphere reduces information imperfections, increases economic incentives, reduces transaction costs (Jalilian, Kirkpatrick, & Parker, 2007), and the threat to renegotiate trade agreements (Handley & Limão, 2017). It also promotes an efficient business environment, improving bilateral trade flow between nations (Wu, Li, & Samsell, 2012). The primary challenges confronting the Organization of Islamic Countries (OICs) afterward are vast economic disparities among its 57 members and a low level of intra- and extra-regional economic integration. This is reflected in the various economic structures of countries, as well as the concentration of exports in primary and low-technology manufacturing products (SESRIC, 2020). Besides, most of the countries in the region have low institutional quality, partly below the world median. If these institutional differences persist, many regional economies will never materialize, even if the trade is completely liberalized. For instance, for OIC countries, Yogatama, Hastiadi, et al. (2016) and Yusuf, Afolabi, Shittu, Gold, and Muhammad (2021) observed poor governance as one of the barriers to their trade. Intuitively, countries with efficient governance may expect to reap substantial benefits in export success from regional agreements.

In this context, the present study investigates whether Free Trade Agreements (FTAs) foster trade among OIC member countries. Furthermore, although the OIC is widely recognized as an efficient institution for promoting trade, its interaction with trade agreements and the differential impacts on intra and extra-bloc trade, particularly among the OIC, are less well studied. Thus, focusing on OIC and distinct from Yogatama et al. (2016) and Yusuf et al. (2021), this study employed a composite governance index that included all six indicators and a measure of distance in governance quality. As a result, in addition to their direct impact on trade, this study attempts to assess the importance of institutions as moderators of the relationship between FTA and trade among OIC countries and OIC and non-OIC countries. The study's findings will allow us to offer policy recommendations to address governance deficiencies in OIC countries. Notably, the efforts should be concentrated on combining trade liberalization and institutional improvements to maximize the benefits of any trade agreements.

The remainder of the paper is organized as follows. Section 2 provides a brief overview of the region's trade and governance profiles, followed by a section on literature on FTAs, trade, and institutional quality. Section 4 describes the structural gravity model and data, whereas Section 5 discusses the estimation results. Finally, Section 6 summarizes the findings and discusses policy implications.

II. Trade and Governance Profile

The share of intra-OIC trade has steadily increased over the last decade, accounting for 13.8% in 2001 and reaching its peak in 2017, accounting for roughly 19.2% of total OIC trade. In the same period, intra-OIC exports accounted for 19.6% of total exports, as depicted in Figure 1. These trends are depicted in Figure 1. Nevertheless, individual member countries' shares of total merchandise exports are concentrated in a few countries (IMF Direction of Trade). In 2020, the top ten exporters accounted for 79% of all member countries' total merchandise exports. Similarly, in 2020, OIC merchandise imports were concentrated primarily in a few countries.

In 2020, the share of manufactured goods in total exports increased from 38.2% to 43.8%, with a stronger increase in manufacturing exports to non-OIC countries (from 35.6% to 42.1%). Manufacturing products account for a larger share of exports, which is encouraging because they demonstrate the ability to produce more diverse and sophisticated products. However, economic ties between OIC member countries have historically been weak. Until the end of 2013, the share of intra-OIC trade in total OIC trade did not exceed 18.2%. Furthermore, there is a high concentration of trade by country and product. The top ten countries account for more than 70% of intra-OIC trade, with the UAE, Turkey, and Saudi Arabia at the forefront.

The OIC countries are overly oil-dependent countries and are spread across the Middle East, Asia, Africa, South America and Europe (Figure 2). They currently comprise 56 countries, with Bosnia and Herzegovina, the Central African Republic, the Russian Federation, Thailand, and the Turkish Cypriot State serving as observers. Asia has the highest number of member states (27), followed closely by Africa (27), and Europe and South America, each having one member state.

Between 2000 and 2019, the OIC countries exported approximately 734.58 million dollars in fuel, accounting for approximately 47.93% of total exports. On the import side, trade in machinery and electronics accounts for 163.90 million dollars in the same period. Nonetheless, trade also occurs across other products. As shown in Figure 3, apart from fuel, their top three exports are machinery and electronics, metals, and chemicals. Major imports include machinery and electronics (358.90 million dollars), which are closely followed by fuels, metals, and chemicals., whose imports are 184.77 million US\$, 136.28 million US\$, 127.12 million US\$, respectively. The least exported and imported products are hide and skins, and footwear. Nevertheless, significant trade deficits are witnessed in many of the products except for fuels, minerals, textiles and clothing having some trade surplus.

Figure 1. Intra-OIC trade share over time

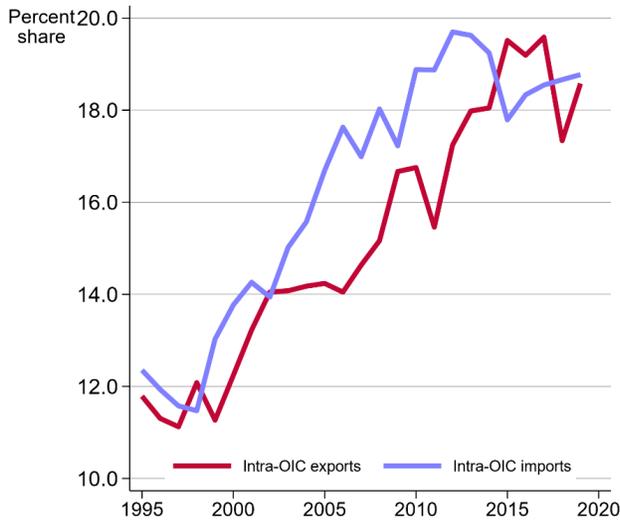
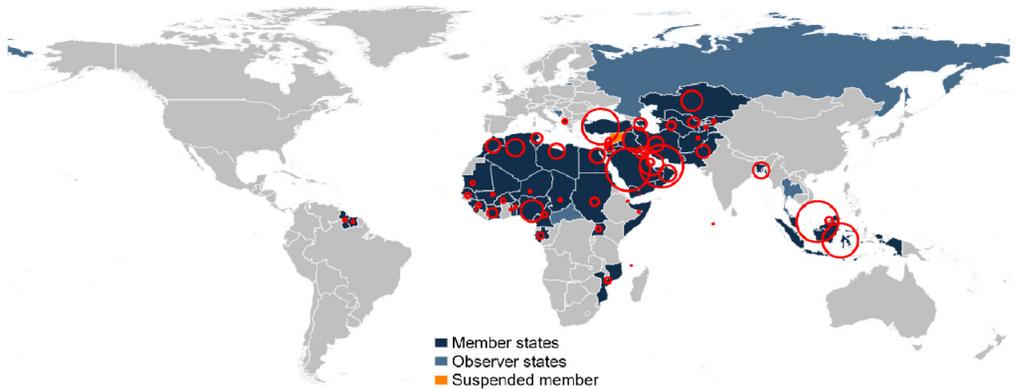
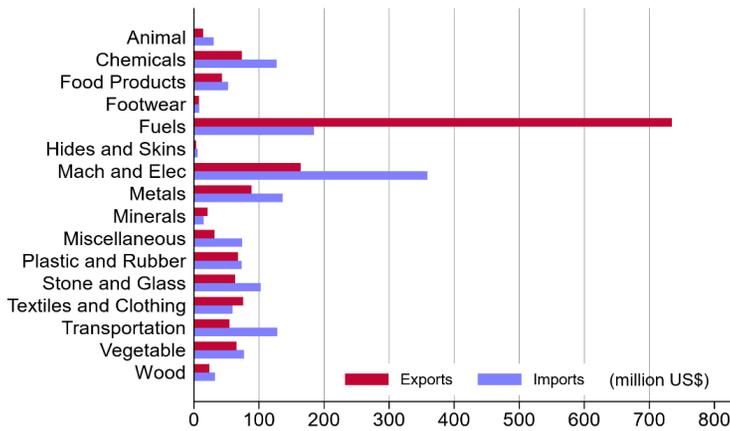


Figure 2. The spread of OIC countries around the world



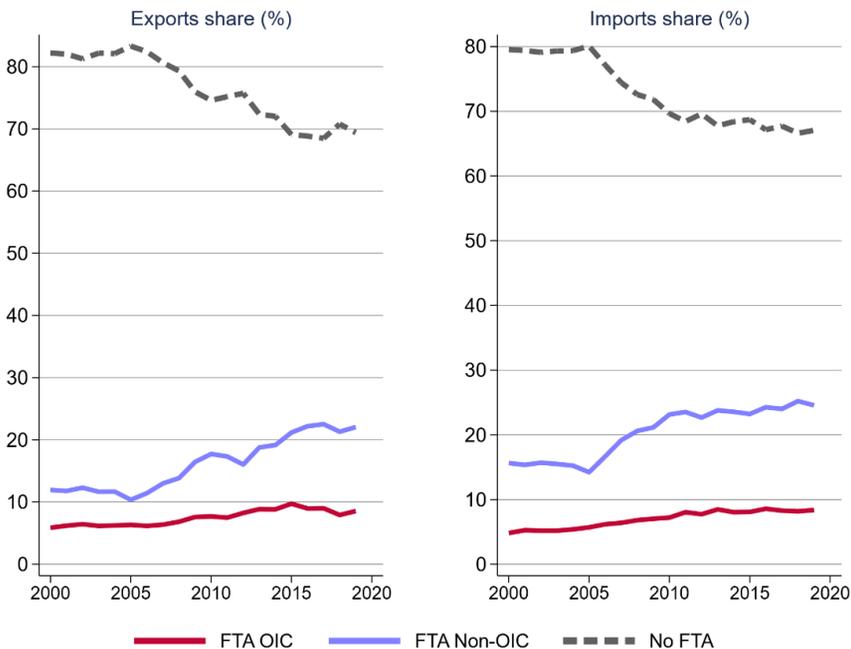
A huge trade surplus accrues mainly from fuel trade, amounting to a value of 549.81 million US\$. While fuel trade is synonymous with many of the OIC, trade shares differ, with those in FTAs being more pronounced. Some OIC countries have FTA membership within the OIC floral (OIC FTA) and outside the OIC floral (non-OIC FTA), while others have chosen not to sign any FTA. Nevertheless, as shown in Figure 4, membership appears to be especially advantageous for countries in such FTAs, as evidenced by their export shares. In particular, membership in FTA OIC and FTA Non-OIC has increased ratifying countries' export and import shares in many of the years under consideration.

Figure 3. The OIC aggregate exports and imports across sectors



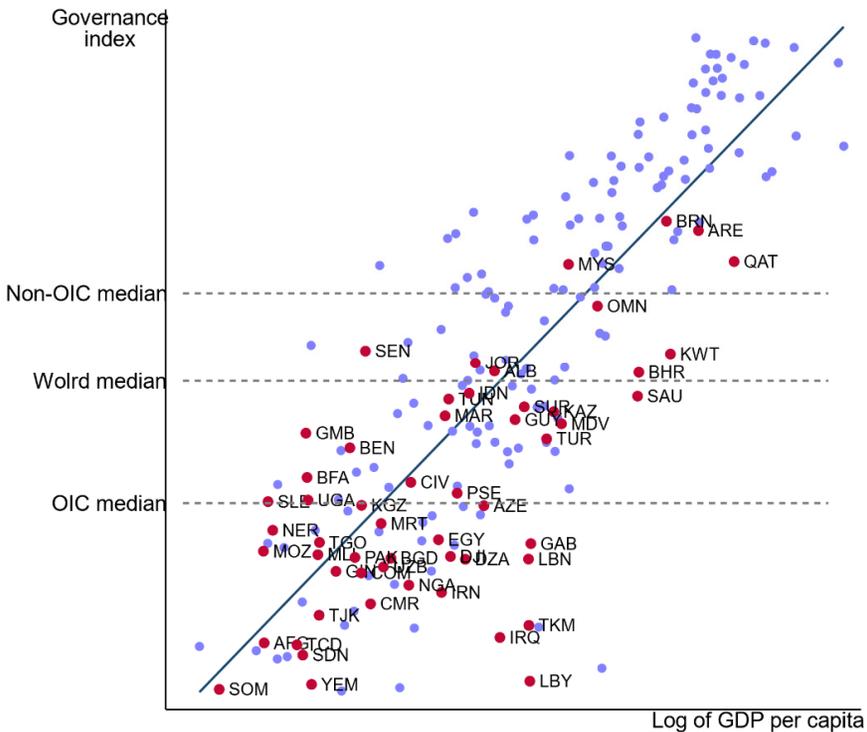
Indeed, in comparison to FTA among OIC, FTA with Non-OIC is much more capable of stimulating both exports and imports in ratifying OIC. However, without an FTA, the OIC's export and import shares have both been declining over the years. This is in line with Baier, Bergstrand, and Feng (2014) which posited that membership in FTA are indeed beneficial with positive trade effects accruing over the long run as trade barriers such as tariffs are gradually phased out (Baier & Bergstrand, 2007).

Figure 4. Trade shares of FTA members and other countries



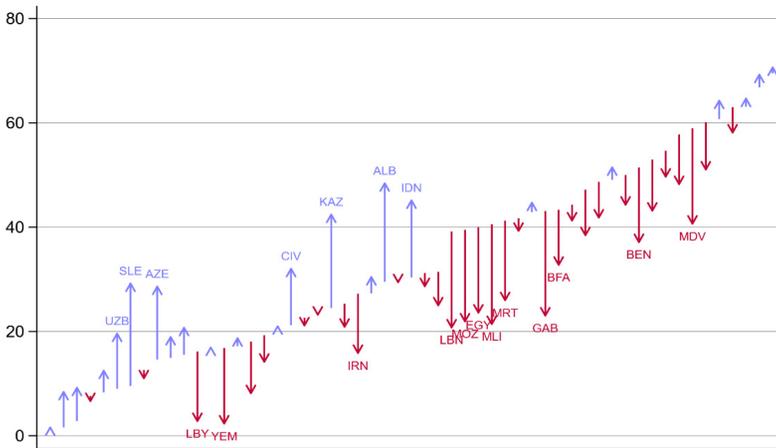
Although OIC exports have been booming, particularly due to significant oil trade, in terms of governance, low governance quality generally prevails among many OIC countries, as shown in Figure 5, which is a governance index of the countries against their per capita GDP. The governance index is built as a composite variable with a scale of 1 (lowest) to 10 (highest) based on the six World Bank World Governance Indicators: corruption control, government effectiveness, political stability, regularity quality, rule of law, and voice and accountability. The median governance index for the world, the OIC, and non-OIC were computed for comparison. In general, many OIC countries fall below the global median state of governance and those of the non-OIC. Only 10 of them, mostly from the Gulf region, are ranked higher than the median global governance index, and all but Senegal are high-income countries. Nonetheless, their governance quality is lower than that of other comparable countries in terms of GDP per capita. Furthermore, among OIC countries, Bahrain, the United Arab Emirates, Qatar, and Malaysia have remarkably high institutional quality. Furthermore, Figure 4 shows that OIC countries that have experienced conflict, such as Somalia, Yemen, Libya, Sudan, Afghanistan, Chad, and Iraq, perform worse in terms of governance quality, with Somalia being the worst.

Figure 5. Comparison of governance quality



Furthermore, the governance quality for most of the countries has deteriorated over the period, as shown in Figure 6 which depicts the change in governance index between 2000 and 2019. This is particularly the case for countries like Libya, Yemen, Iran.

Figure 6. Change in governance quality over the period 2000-2019



Such a poor level of governance has been identified as a barrier to their trade. This is particularly buttressed by Yogatama et al. (2016) and Yusuf et al. (2021), whose research indicates that the level of governance, such as democracy, political stability, regulatory quality of the government, and government effectiveness, has hampered their trade. However, it is unclear how the level of such governance may affect the potential benefits of their FTA membership. Given this, it is critical to assess the effectiveness of their FTA in light of their current state of governance.

III. Literature Review

In recent years, trade agreements have been sought in order to stimulate trade, ensure market access, and improve integration into the global economy. While there is a large body of research on how the formation of FTAs affects trade, the results have been mixed and inconclusive. The literature is replete with evidence of FTAs' trade-promoting effects on member trade flows. According to Baier and Bergstrand (2007), trade agreements stimulate exports and double members' trade after ten years. Vicard (2009) presented that trade preferences from all kinds of regional trade agreements significantly increase members' bilateral trade with no significant difference across the depth of the agreement. Similar trade-promoting effects were documented by

Jean and Bureau (2016), Freeman and Pienknagura (2019), and Behar and Cirera-i Crivillé (2013).

Besides, some studies have differentiated the impact along the extensive and intensive margins of trade. Foster, Poeschl, and Stehrer (2011) provided evidence that the formation of trade agreements stimulates members' exports, with a large proportion of the increase occurring at the extensive margin of trade. Larger exporters and country pairs, in contrast, benefit more Jean and Bureau (2016) find that trade agreements increase the probability of exporting, focusing on food and agricultural exports. At the disaggregated level, Baier et al. (2014) differentiated among various economic trade agreements find that relative to shallow trade agreements, deeper trade agreements have larger trade impacts on aggregate trade flows at both the extensive and intensive trade margins. A similar conclusion was made by Kohl, Brakman, and Garretsen (2016) to note that countries with more comprehensive trade agreements experience significant trade increments.

Pertaining to heterogeneous trade effect, Yamanouchi (2019) discovered that the trade effect varied significantly across Japan's various RTAs, with smaller-economy agreements having a relatively greater influence on Japanese exports. Geographic distance is a significant determinant of the trade effect of RTAs. For instance, Freeman and Pienknagura (2019) indicated that the trade effect of RTAs decreased over geographical distance, particularly for the intermediate goods. Related to multilateral agreements, Yi (2022) discussed the trade creation and trade diversion effects of the FTA of the United Kingdom with the European Union, Korea, and Japan in context of Brexit. Similarly, Yi (2020) discussed the facilitation role of trilateral Korea-Japan-EU free trade agreement for the participants. Their findings emphasize reducing the non-tariff barriers and tariffs for higher welfare gains.

Nevertheless, empirical evidence on trade agreements has been rather mixed. Although some studies have found trade-promoting effects, Van der Marel and Shepherd (2013) and Nordås and Rouzet (2017) found the effect of trade agreements to differ across sectors. Furthermore, Ghosh and Yamarik (2004), Martínez-Zarzoso and Márquez-Ramos (2019), and Gradeva and Martínez-Zarzoso (2016) provided evidence that regional trade agreements are not trade enhancing and that the trade creating effect of most existing FTAs are fragile.

The role of institutions in cross-border transactions has been discussed in the literature. Intuitively, this can help explain the negative trade response despite the formation of FTAs. In many cases, missing institutions have been identified intuitively as a necessary condition for export success, and their impact on the ability to fully utilize the potential benefits accruing from FTA membership. Martínez-Zarzoso and Márquez-Ramos (2019) suggested that governance explicitly impacts the ability to realize gain from FTA. Poor governance institutions affect trade by weakening long-term investment incentives, thereby decreasing productivity and quality improvement (Faruq, 2011). In countries with better governance and institution, good governance facilitates contracting and long-term agreements among firms (Bojnec, Fertó, & Fogarasi, 2014; Horsewood & Voicu, 2012), and it spurs both productivity and investment in such countries

(Bojnec et al., 2014); it increases transparency and trust while decreasing uncertainty among trading pairs. Overall, good governance cuts transaction (Bojnec et al., 2014), information and adjustment costs, thus promoting exports (Martínez-Zarzoso & Márquez-Ramos, 2019) as countries that share a similar understanding of ethical business environment or understanding of acceptable practices is an important factor in cross-border trade (Horsewood & Voicu, 2012).

While there is limited empirical literature on how governance interacts with FTAs to influence trade, existing ones emphasize the importance of good governance on bilateral trade flows. Empirical evidence on trade has been based on various governance measures. Using democracy as an indicator, evidence suggests that democracy lowers trade barriers. (Yu, 2010) and stimulates trade (Acemoglu & Yared, 2010; Milner & Mukherjee, 2009; Yu, 2010). Furthermore, Horsewood and Voicu (2012), Ali and Mdhilat (2015), and Dutt and Traca (2010) show that prevalence of corruption hinders trade. However, a variety of governance indicators were used by Berden, Bergstrand, and Van Etten (2014) based on the WGI for the importers focusing on 28 Organization for Economic Cooperation and Development (OECD) countries and 124 export destinations. Except for their indicators on voice and accountability and political voice, they believe that the rule of law, political stability, and corruption control in importing countries have a positive impact on trade flows. In addition, focusing on the BRIC countries, Bojnec et al. (2014) found that agri-food exports are stimulated with better governance in both importing and exporting countries.

Studies focused on the OIC countries have also found evidence of poor governance and institution as a barrier to their trade. Yogatama et al. (2016) determined that the state of democracy in OIC countries negatively affects Indonesia's exports to these countries. In addition, Yusuf et al. (2021) found that the state of the OIC regulatory quality, government effectiveness, and political stability have hindered bilateral trade among OIC African countries.

The importance of stronger institutions in both importing and exporting countries has also been emphasized. This has frequently been explained by similarities in their institutions, in accordance with the concept of institutional distance (Kostova, 1997). The bulk of the literature finds that more bilateral trade occurs between countries that have similar governance quality, particularly if they have high institutional quality standards. However, bilateral trade flows between trading pairs show greater differences in governance quality (Beugelsdijk et al., 2020; De Groot, Linders, & Rietveld, 2005; Kostova et al., 2020).

To summarize, while strong institutions are widely recognized as beneficial to trade, how they interact with trade agreements and the differential impacts on intra and extra-bloc trade, particularly among the OIC, are less well studied. Thus focusing on OIC, and distinct from Yogatama et al. (2016) and Yusuf et al. (2021), we employ a composite index of governance using all six indicators and a measure of distance in governance quality; and investigate how this measure interacts with FTA membership in FTA both among the OIC and non-OIC countries.

IV. Methodology

A. Econometric estimation approach

From the perspective of theoretical development, Tinbergen (1962) and Ravenstein (1885) pioneered the gravity trade model, which is analogous to the Newtonian law of gravitation: bilateral trade is directly proportional to trading partners' economic masses and inversely proportional to the distance between them. Later studies augmented the model with covariates such as whether or not a country-pair shares a common border, common language, and other variables, in addition to GDP and distance. These models, although empirical estimates, lacked a theoretical foundation. Anderson (1979) presented a theoretical gravity trade model based on elasticity of substitution by origin and constant elasticity of substitution expenditures. Later, Armington-CES approach of Anderson and Van Wincoop (2003) became the current gravity trade analysis benchmark.

The ordinary least square estimator, in addition to traditional gravity variables, has traditionally been used for statistical estimation of RTAs. However, because of the log transformation, zero trade values are dropped, resulting in sample selection bias. After seminal papers Silva and Tenreyro (2006) and Silva and Tenreyro (2011), the Poisson pseudo-maximum likelihood (PPML) estimator has become a common approach in the gravity trade estimation. The advantage of PPML is that it allows for zero trade and heteroscedasticity, which is commonly prevalent in trade data. Álvarez, Barbero, Rodríguez-Pose, and Zofío (2018), Lien, Lo, and Bojanic (2019), Kamel (2021), and Heid, Larch, and Yotov (2021) are some of the recent studies using PPML estimator for gravity trade analysis.

For empirical estimation, we specify the following model based on the traditional variables¹). We include the annual GDPs of exporting and importing countries to capture economic mass. Similarly, country-pair variables such as bilateral distance, the presence of a common official language, and the presence of a shared border are included. Our traditional econometric approach is specified in Eq. 1. In addition to these control variables, we included variables to estimate the effect due to the WTO membership, and the existence of any trade agreement between the country-pair.

$$\begin{aligned} Trade_{ijt} = \exp(\alpha_0 + \alpha_1 \ln GDP_{it} + \alpha_2 \ln GDP_{jt} + \alpha_3 \ln Distance_{ij} + \alpha_4 Language_{ij} \\ + \alpha_5 Contiguity_{ij} + \alpha_6 WTO_{ijt} + \alpha_7 FTA_{ijt} + \lambda_t) + \epsilon_{ijt} \end{aligned} \quad (1)$$

The dependent variable is the exports (imports) of an origin i to a destination j during year

1) See Anderson and Van Wincoop (2003) for the theoretical underpinnings of the gravity model.

t. Note that the variable is taken in levels which allows the inclusion of the cases of zero exports (imports) between the country pairs. Log-transformed values of the gross domestic product of exporter and importer are denoted by $\ln GDP_{it}$ and $\ln GDP_{it}$, respectively. $\ln Distance_{ij}$ captures the bilateral distance between country pairs whereas $Language_{ij}$ and $Contiguity_{ij}$ are dummies to capture the covariates on common language and common border. Similarly, the variable WTO_{ijt} takes value one in case both exporter and importer are the members of the World Trade Organization; and zero otherwise. Finally, FTA_{ijt} denotes the existence of an FTA between a country-pair. Furthermore, we included year dummies, denoted by λ_t to account for trade evolution over time.

Nonetheless, the traditional variable estimation approach does not account for various sources of unobserved heterogeneity. Trade analysis has recently been conducted using the structural gravity approach. (e.g. Anderson & Yotov, 2020; Freeman & Pienknagura, 2019; Heid et al., 2021; Oberhofer & Pfaffermayr, 2018). A comprehensive account of how to model trade agreements in the gravity equation is explained in Yotov, Piermartini, Monteiro, and Larch (2016, p.49). In this approach, exporter-specific time-variant variables, for example, $\ln GDP_{it}$, are absorbed by exporter-time fixed effects, whereas importer-specific time-variant variables, for example, $\ln GDP_{jt}$, are absorbed by importer-time fixed effects. Meanwhile, country-pair specific time-invariant variables, such as bilateral distance, as well as the language and border dummy variables (contiguity), are absorbed by the country-pair fixed effects. This allows for more rigorous estimation of variables related to WTO membership and FTAs, which are country-pair specific and time-variant in nature. We reformulate the above model using the structural gravity approach as Eq.2 where β_{ij} , γ_{it} , and δ_{jt} denote country-pair, export-time, and importer-time fixed effects, respectively. In order to disentangle the FTAs' effect for intra-bloc and extra-bloc trade, Eq.3 bifurcates the variable on the FTAs: $FTA_{intra_{ijt}}$ denote the existence of an FTA between the OIC members whereas $FTA_{extra_{ijt}}$ captures the trade effect in case of one of the FTA members is a non- OIC country.

$$Trade_{ijt} = \exp(\alpha_0 + \alpha_1 WTO_{ijt} + \alpha_2 FTA_{ijt} + \beta_{ij} + \gamma_{it} + \delta_{jt}) + \epsilon_{ijt} \quad (2)$$

$$Trade_{ijt} = \exp(\alpha_0 + \alpha_1 WTO_{ijt} + \alpha_2 FTA_{intra_{ijt}} + \alpha_3 FTA_{extra_{ijt}} + \beta_{ij} + \gamma_{it} + \delta_{jt}) + \epsilon_{ijt} \quad (3)$$

Next, we incorporate the element of governance level into the scenario. Martínez-Zarzoso and Márquez-Ramos (2019) presented a framework to illustrate the relation between governance quality and exporting process. Instead of looking at how governance quality affects the volume of bilateral exports, we look at how governance conditions affect the effectiveness of an FTA. Any variation in trade flows occurs in response to a policy change, such as the implementation of an FTA, as firms make adjustments such as the construction of marketing channels in the destination market where sales are expected to increase, training, product redesigning to meet

local tastes, etc. The governance quality influences the adjustment costs (both fixed and variable), information costs, and transaction costs associated with the FTA process.

Country-level data were first constructed by Kaufmann, Kraay, and Mastruzzi (2007) in the form of six indicators; control of Corruption, Government Effectiveness, political stability, regularity quality, rule of law, and voice and accountability²). Based on these indicators, we computed an index of overall governance quality Gov_{it} ranging from 1 (lowest) to 10 (highest) of the source country (exporter) i ; and similarly, Gov_{jt} denotes the governance level of destination country j . Furthermore, we formulate $GovDiff_{ijt}$ to capture the difference in the governance quality of exporter and importer. The interaction terms are included in the equations below to estimate the impact of the governance level on the effectiveness of an FTA. We also estimated the governance effect of intra- and extra-bloc FTAs.

$$Trade_{ijt} = \exp(\alpha_0 + \alpha_1 WTO_{ijt} + \alpha_2 FTA_{ijt} \times Gov_{it} + \alpha_3 FTA_{ijt} \times Gov_{jt} + \beta_{ij} + \gamma_{it} + \delta_{jt}) + \epsilon_{ijt} \quad (4)$$

$$Trade_{ijt} = \exp(\alpha_0 + \alpha_1 WTO_{ijt} + \alpha_2 FTA_{ijt} \times GovDiff_{ijt} + \beta_{ij} + \gamma_{it} + \delta_{jt}) + \epsilon_{ijt} \quad (5)$$

Note that we estimated the models separately for exports and imports. We used Poisson pseudo-maximum likelihood estimation with high dimensional fixed effects (the PPMLHDFE)³).

B. Data sources

The present study examines annual bilateral exports and imports of OIC member countries from 2000 to 2019. The trade data comes from the International Monetary Fund's Direction of Trade database. The information on FTAs comes from Mario Larch's database. Annual GDP values in current US\$ are taken from World Development Indicators, whereas the World Bank's World Governance Indicators database was used for the governance data. The study also includes data from the database on traditional gravity variables, such as, bilateral distance, common official language, and contiguity. Finally, we include membership information from the World Trade Organization web portal. We begin collecting data for all 57 OIC members as exporters and 196 UN members as importers. However, based on the availability of data for the various variables over the 20-year period, we arrived at a sample of 43 OIC members with 183 trade partners. Appendix A contain the complete list of the countries that are included in the estimation while Appendix B displays the product groups covered in this study.

2) see Kaufmann, Kraay, and Mastruzzi (2010) for detail on the underlying data sources and aggregation method.

3) see Correia, Guimarães, and Zylkin (2019) for details.

V. Results and Discussion

Table 1 presents the regression results for the impact of FTAs on OIC member countries' exports. The first two columns report gravity estimates using traditional variables. According to gravity theory, GDP as a proxy for the economic mass of exporting and importing countries has positive coefficients, indicating that, all else being equal, the larger a country, the more exports. The negative distance coefficient has the opposite effect: lower exports with trading partners located further away from the exporting country. According to the coefficient value, a 1% increase in bilateral distance results in a 0.6% decrease in exports. In contrast, having a common language between the country-pair promotes exports. Similarly, shared borders, or contiguity, have a positive impact on exports. The estimates show that the WTO membership is still insignificant for the sample countries. Finally, we observe higher exports between FTA members in both intra- and extra-bloc trade. Overall, the theory predicts that the outcomes of these traditional variables will be consistent across various specifications. In general, the results support those of (Baier & Bergstrand, 2007; Freeman & Pienknagura, 2019; Jean & Bureau, 2016), which show that trade agreements stimulate intra-member exports. In addition, the results are also in tandem with those of (Lee & Park, 2007; MacPhee & Sattayanuwat, 2014; Martínez-Zarzoso, Felicitas, & Horsewood, 2009) in relation to extra-bloc trade.

Columns (3) to (7) show the structural gravity estimates. Exporter-time fixed effects account for export-specific time-variant heterogeneity, including exporter GDP; importer-time fixed effects account for importer GDP; and county-pair fixed effects account for country-pair-specific time-invariant variables, that is, bilateral distance, common language, and contiguity. As a result, the structural gravity specifications account not only for GDP, distance, and other time-invariant variables, but also for other sources of unobserved heterogeneity. As a result, we prefer the findings reported in Table 1 columns (3) and (4). According to the coefficient values, FTAs facilitate exports, and their impact is greater when both trading partners are OIC members. Corresponding to Eq.3, the positive and statistically significant coefficient $\hat{\alpha}_2 = 0.223$ of the dummy variable $FTA_{intra_{ijt}}$ suggests that, all else equal, exports between the member countries increase by about $[\exp(0.223) - 1] \times 100 = 25\%$. Similarly, in case of the extra-bloc FTAs, the coefficient $\hat{\alpha}_3 = 0.098$ implies an increase in the exports by about $[\exp(0.098) - 1] \times 100 = 10\%$.

The FTAs appear to play a larger role in export facilitation for exporting countries with better governance. The relationship between governance quality and exports in the Middle East and North Africa region is discussed. Martínez-Zarzoso and Márquez-Ramos (2019) and for the organization of OECD countries Berden et al. (2014). Furthermore, the trade-facilitating role of regional integration agreements is altered by other conditions. For instance, Vijil (2014) showed an increase in exports when aid for trade is complemented with economic integration

agreements. However, Freeman and Pienknagura (2019) indicated that geographic distance reduces the beneficial effect of trade agreements, especially for intermediate goods. We examine the impact of governance on the effectiveness of FTAs in a similar manner. In response to

Table 1. Gravity Estimates of the OIC Exports

	Traditional gravity		Structural gravity		Structural gravity with governance		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\ln\text{GDP}_{it}$	1.062*** (0.013)	1.064*** (0.013)					
$\ln\text{GDP}_{jt}$	0.838*** (0.009)	0.833*** (0.010)					
$\ln\text{Distance}_{ij}$	-0.609*** (0.025)	-0.612*** (0.025)					
Language_{ij}	0.368*** (0.048)	0.411*** (0.058)					
Contiguity_{ij}	0.405*** (0.062)	0.431*** (0.069)					
WTO_{ijt}	-0.002 (0.051)	-0.005 (0.050)					
FTA_{ijt}	0.364*** (0.042)		0.108*** (0.025)				
FTAintra_{ijt}		0.230*** (0.082)		0.227*** (0.041)			
FTAextra_{ijt}		0.391*** (0.046)		0.098*** (0.027)			
$\text{FTA}_{ijt} \times \text{Gov}_{it}$					0.052*** (0.006)		
$\text{FTA}_{ijt} \times \text{Gov}_{jt}$					-0.040*** (0.006)		
$\text{FTA}_{ijt} \times \text{GovDif}_{ijt}$						0.037*** (0.005)	
$\text{FTAintra}_{ijt} \times \text{GovDif}_{ijt}$							0.019*** (0.005)
$\text{FTAextra}_{ijt} \times \text{GovDif}_{ijt}$							0.041*** (0.006)
Time FE	Yes	Yes					
Exporter-Time FE			Yes	Yes	Yes	Yes	Yes
Importer-Time FE			Yes	Yes	Yes	Yes	Yes
Country-pair FE			Yes	Yes	Yes	Yes	Yes
Observations	156,176	156,176	134,818	134,818	134,818	134,818	134,818

Note. Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; export-time, importer-time, and country-pair fixed effects are not reported for brevity.

the ratification of an FTA, exporting firms make adjustments in production, packaging, marketing, and labeling, among other things, to meet the requirements of the destination markets. Thus, the fixed and variable costs of these adjustments are influenced by macroeconomic conditions such as the country's governance quality. However, we discover a negative coefficient for the quality of governance in the destination (importing) country. This implies that higher governance quality in export destinations is associated with more stringent requirements for process attributes and product quality, making export to these countries difficult.

Finally, the coefficient of $FTA_{ijt} \times GovtDif_{ijt}$ shows that, higher governance quality of the source country relative to the destination country results in more exports of the FTA member country-pair. Because most OIC members have poor governance, the difference in governance quality among them is small. The impact appears to be greater for extra-bloc FTAs because the majority of OIC members have governance levels that are lower than the global average. This explains why extra-block FTAs have a lower impact. The finding suggests that policymakers should not view FTAs as a strategy that guarantees an increase in free trade, as this effect has been demonstrated to be significant for countries with higher institutional quality. In terms of policy, the success of trading partners in promoting exports in OIC countries is largely dependent on well-functioning institutions, particularly for extra-bloc exports.

Next, Table 2 then reports estimates for OIC imports: the first two columns present traditional gravity estimates, whereas columns (3) to (7) present the structural gravity estimates. The direction of the coefficients for various variables for traditional variables is as expected. The country-WTO pair's membership appears to encourage trade. In the case of structural gravity, however, the sign is reversed. Several studies with contradictory findings show that WTO membership is an explanatory variable for bilateral trade: positive effect (Gil-Pareja, Llorca-Vivero, & Martínez-Serrano, 2014; Larch, Monteiro, Piermartini, & Yotov, 2019), no effect (Esteve-Pérez, Gil-Pareja, & Llorca-Vivero, 2020; Rose, 2004), positive effect on extensive margin and no effect on intensive margin (Felbermayr & Kohler, 2010), positive effect on extensive margin and negative effect on intensive margin of trade (Dutt, Mihov, & Van Zandt, 2013), and positive effect on both extensive and intensive margins (Gil-Pareja, Llorca-Vivero, & Martínez-Serrano, 2016). In the case of the OIC, several countries are not a member of the WTO, and the dummy variable WTO_{ijt} takes a value equal to zero when either of the trading partners is not a WTO member. Therefore, the negative sign of the coefficient indicates that WTO non-members import significantly from other OIC countries and non-OIC countries like China, the United States, and the European Union states.

Table 2. Gravity Estimates of the OIC Impots

	Traditional gravity		Structural gravity		Structural gravity with governance		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
lnGDP _{it}	0.890*** (0.007)	0.882*** (0.007)					
lnGDP _{jt}	0.903*** (0.007)	0.906*** (0.007)					
lnDistance _{ij}	-0.766*** (0.020)	-0.771*** (0.020)					
Language _{ij}	0.041 (0.045)	0.120** (0.056)					
Contiguity _{ij}	0.308*** (0.057)	0.349*** (0.062)					
WTO _{ijt}	0.214*** (0.044)	0.211*** (0.043)					
FTA _{ijt}	0.479*** (0.031)		0.111*** (0.021)				
FTA _{intraijt}		0.231*** (0.073)		0.372*** (0.058)			
FTA _{extraijt}		0.516*** (0.034)		0.080*** (0.022)			
FTA _{ijt} ×Gov _{it}					0.012** (0.005)		
FTA _{ijt} ×Gov _{jt}					0.001 (0.005)		
FTA _{ijt} ×GovDif _{ijt}						0.014*** (0.004)	
FTA _{intraijt} ×GovDif _{ijt}							0.049*** (0.008)
FTA _{extraijt} ×GovDif _{ijt}							0.006 (0.004)
Time FE	Yes	Yes					
Exporter-Time FE			Yes	Yes	Yes	Yes	Yes
Importer-Time FE			Yes	Yes	Yes	Yes	Yes
Country-pair FE			Yes	Yes	Yes	Yes	Yes
Observations	156,176	156,176	143,824	143,824	143,824	143,824	143,824

Note. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; export-time, importer-time, and country-pair fixed effects are not reported for brevity.

Related to the FTAs, the main variable of interest, we find that the estimates are positive and statistically significant: intra-bloc $[\exp(0.375) - 1] \times 100 = 45\%$, extra-bloc $[\exp(0.079) - 1] \times$

100 = 8%, whereas the overall impact is $[\exp(0.111) - 1] \times 100 = 12\%$. The stronger role of the FTAs for intra-bloc imports compared to extra-bloc trade corroborates with the estimations of exports in Table 1. Furthermore, the impact of governance quality of the source country on the FTA effectiveness is positive.

VI. Conclusions and Policy Implication

The OIC is the world's second-largest multilateral forum. However, the regions have bizarrely poor governance quality, and several members, including Iraq, Egypt, Syria, and Afghanistan, are experiencing political instabilities. Political instability and poor institutional quality create economic uncertainty, which dampens investment and undermines research and development activities. As a result, it impacts on a country's economic activity, particularly its disappointing export performance, which is reflected in low intra-regional trade among OIC countries. As a result, it is critical to create a favorable business climate and embark on a path of economic development and integration into the global economy.

There is also a jumble of trade agreements to support intra-OIC and extra-OIC trade flows. However, the effectiveness of a trade agreement can largely be determined by the country's economic environment and governance quality. Any variation in trade flows occurs in response to a policy change, such as the implementation of an FTA, as firms make adjustments such as the construction of marketing channels in the destination market where sales are expected to increase, training, and product redesigning to meet local tastes, etc. The governance quality influences the adjustment costs (both fixed and variable), information costs, and transaction costs associated with the FTA process.

This study investigates the effectiveness of FTAs on OIC countries' exports. It also examines how their institutional environment interacts with FTAs in order to forecast differences in intra- and extra-bloc trade. It discovered evidence that FTA membership facilitates both intra and extra-bloc trade, with the impact being greater (for OIC members) with extra-bloc FTAs, or trading partners who are OIC members. While most OIC members have low governance, additional evidence shows that higher governance quality of destination (OIC) countries relative to OIC (destination) countries hinders (enhances) OIC exports. These findings imply that, in addition to trade agreements, governance quality is a driving force in facilitating trade and regional integration for OIC members with higher levels of governance quality. In order to fully grasp the significance of these agreements, our findings have several important policy implications for the OIC and other developing countries. Many OIC countries have "missing" governance institutions, as evidenced by both empirical and descriptive findings. Meanwhile, poor or weak institutions are detrimental to export performance and undermine their ability

to fully benefit from trade agreements. As a result, policymakers in the region must institutionalize long-term institutional reforms that include the reduction of corruption, the rule of law, and accountability for their actions, and improved policy formulation and implementation. Addressing their institutional challenges necessitates political will and dedication to institutional governance reforms. Furthermore, some FTAs include provisions/ clauses requiring member countries to adhere to good governance as a condition for trade. Hence, to facilitate trade and ensure deeper integration into the global economy (extra-bloc trade), the OIC countries must implement governance reforms that are at least in line with the institutional requirements of their trading partners.

In order to ensure the effectiveness of these agreements, national institutions' capacity to implement these agreements must be strengthened. Furthermore, promoting OIC intra-bloc trade integration will necessitate trade policies aimed at ensuring good governance. One of these policies is to include clauses or provisions requiring institutional reforms and a long-term commitment to good governance. As a result, future trade negotiations between them should include such clauses with special provisions for enforcement, monitoring, and dispute resolution.

Finally, good institutions increase transparency and trust while reducing political and economic uncertainty, thereby promoting long-term investment and thus trade. Given the foregoing, governance reforms are required to realize the significant role of FTA in maximizing trade benefits and deeply integrating into the global economy.

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Appendix

Appendix A. List of Countries

List of the OIC member states included in regression

Afghanistan	Gabon	Maldives	Senegal
Albania	Gambia	Mali	Sierra Leone
Bahrain	Guinea	Mauritania	Suriname
Bangladesh	Guyana	Morocco	Tajikistan
Benin	Indonesia	Mozambique	Togo
Brunei Darussalam	Ivory Coast	Niger	Tunisia
Burkina Faso	Jordan	Nigeria	Turkey
Cameroon	Kazakhstan	Oman	Uganda
Chad	Kuwait	Pakistan	United Arab Emirates
Djibouti	Kyrgyzstan	Qatar	Yemen
Egypt	Malaysia	Saudi Arabia	

List of the partner countries included in regression

Afghanistan	Dominican Republic	Liberia	Samoa
Albania	Ecuador	Libya	San Marino
Algeria	Egypt	Lithuania	Sao Tome and Principe
Angola	El Salvador	Luxembourg	Saudi Arabia
Antigua and Barbuda	Equatorial Guinea	Macedonia	Senegal
Argentina	Eritrea	Madagascar	Seychelles
Armenia	Estonia	Malawi	Sierra Leone
Australia	Ethiopia	Malaysia	Singapore
Austria	Fiji	Maldives	Slovakia
Azerbaijan	Finland	Mali	Slovenia
Bahamas	France	Malta	Solomon Islands
Bahrain	Gabon	Marshall Islands	Somalia
Bangladesh	Gambia	Mauritania	South Africa
Barbados	Georgia	Mauritius	South Korea
Belarus	Germany	Mexico	Spain
Belgium	Ghana	Micronesia	Sri Lanka
Belize	Greece	Moldova	Sudan
Benin	Grenada	Mongolia	Suriname
Bhutan	Guatemala	Morocco	Swaziland
Bolivia	Guinea	Mozambique	Sweden
Bosnia and Herzegovina	Guinea-Bissau	Myanmar	Switzerland
Botswana	Guyana	Namibia	Syrian Arab Republic
Brazil	Haiti	Nauru	Tajikistan
Brunei Darussalam	Honduras	Nepal	Tanzania
Bulgaria	Hungary	Netherlands	Thailand

Appendix A. Continued

Burkina Faso	Iceland	New Zealand	Togo
Burundi	India	Nicaragua	Tonga
Cambodia	Indonesia	Niger	Trinidad and Tobago
Cameroon	Iran	Nigeria	Tunisia
Canada	Iraq	Norway	Turkey
Cape Verde	Ireland	Oman	Turkmenistan
Central African Republic	Israel	Pakistan	Tuvalu
Chad	Italy	Palau	Uganda
Chile	Ivory Coast	Panama	Ukraine
China	Jamaica	Papua New Guinea	United Arab Emirates
Colombia	Japan	Paraguay	United Kingdom
Comoros	Jordan	Peru	United States of America
Congo	Kazakhstan	Philippines	Uruguay
Costa Rica	Kenya	Poland	Uzbekistan
Croatia	Kiribati	Portugal	Vanuatu
Cuba	Kuwait	Qatar	Venezuela
Cyprus	Kyrgyzstan	Russian Federation	Viet Nam
Czech Republic	Lao	Rwanda	Yemen
Denmark	Latvia	Saint Kitts and Nevis	Zambia
Djibouti	Lebanon	Saint Lucia	Zimbabwe
Dominica	Lesotho	Saint Vincent	

Appendix B. Product Groups

HS Codes	Description
HS01-HS05	Animal
HS06-HS15	Vegetable
HS16-HS24	Food Products
HS25-HS26	Minerals
HS27	Fuels
HS28-HS38	Chemicals
HS39-HS40	Plastic & Rubber
HS41-HS43	Leather
HS44-HS49	Wood
HS50-HS63	Textile
HS64-HS67	Footwear
HS68-HS71	Stone & Glass
HS72-HS83	Metals
HS84-HS85	Mechanical & Electrical equipment
HS86-HS89	Transport
HS90-HS99	Miscellaneous

Note. See <https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS>.