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Intra-OIC Trade: The Impact of IDB Trade Financing

Shafia S. A. Arifai[1] and Fithra Faisal Hastiadi[2]

To increase intra-OIC trade, defined as intra-OIC imports as a share of total imports of OIC countries, Islamic Development Bank (IDB) has been implementing trade finance activities. This study tries to shed a light on the determinants of intra-OIC trade and the impact of IDB trade financing on intra-OIC trade. Using gravity model both the intuitive and the theoretical one, this study observes eighteen OIC countries from 2000 until 2014. This study finds that GDP, distance of two capitals, IDB trade financing, common language, common colony, colony, landlocked, contiguous, the Arab Spring events and Asian as PTA are statistically significant factors in determining export. This study focuses on producing an output that can guide OIC member countries and IDB in developing a trade financing scheme that can increase intra-OIC trade.

Keywords: Intra-OIC Trade, IDB Trade Financing, The Gravity Model

JEL Classification: F13, F15

1. Introduction

IDB member countries are now facing at least three ongoing challenges: to create and sustain employment, to increase income, and to improve performance on human development. To overcome these challenges, the Islamic Development Bank Group (IDBG) has been performing trade finance activities designed to accelerate income and growth and create new employment opportunities in IDB member countries by fostering, facilitating, and expanding trade within OIC region and between the OIC region and the rest of the world.[3]

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[1] Corresponding author. Shafia was an undergraduate student at the Faculty of Economics and Business, Universitas Indonesia, Email: shafia_mail@yahoo.com

[2] Fithra Faisal Hastiadi is a Lecturer at the Faculty of Economics and Business, Universitas Indonesia, Email: fithra@ui.ac.id

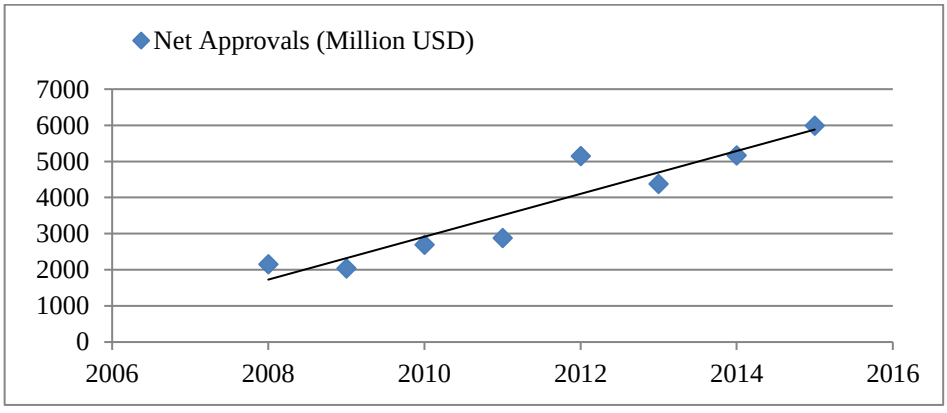
[3] ITFC Group Operations Evaluation (GOE) Department, Proposed Approach Paper For ITFC's Trade Finance Evaluation, 2015, page 1

IDB trade finance activities have been operating for more than 35 years. In 2008, trade finance activities reach two IDBG entities. One of it is International Islamic Trade Finance Corporation (ITFC). Since ITFC's inception in 2008, cumulative funded financing reached thirty five (35) billion US dollars. In terms of insurance, 12.4 billion US dollars in member countries' export and a further eight (8) billion US dollars in imports.[4]

As shown in Figure 1.1, ITFC's net approval for all OIC member countries has increasing trend from 2008 to 2015. Further, by comparing positive trend of ITFC's net approval with real condition of intra-OIC trade, this study obtains a thorough glimpse of the relationship between IDB trade financing and intra-OIC trade.

In Figure 1.2, we can see that overall trade volume from OIC countries to OIC countries (intra-OIC trade or trade within OIC region), to developed countries, and to developing countries are increasing. However, the trade volume to OIC Countries is still below the trade volume to developed countries and to developing countries.

Figure 1.1 ITFC's Net Approvals Yearly



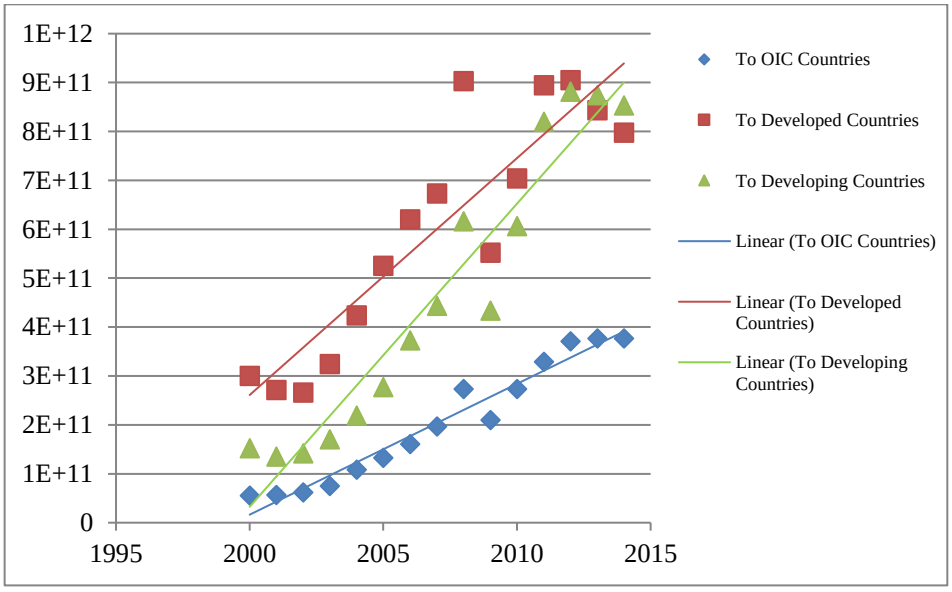
Source: Author. Data is from IDB.

In Figure 1.2, we can also observe that in year 2000, trade volume to developing countries and to OIC countries was not very different.

[4] ITFC Group Operations Evaluation (GOE) Department, loc. cit.

However, from 2006 up until now, the export gap continues to grow. One reasonable explanation of this phenomenon is that purchasing power of developing countries is bigger than that of the OIC countries' purchasing power. Twenty two (22) out of fifty five (55) LDCs countries, or almost 40%, are OIC member countries[5]. Moreover, it can be an indication that the intervention of IDB trade financing has been relatively small, that the impact on intra-OIC trade tends to look insignificant. Additionally, considerable event to be noted is the unstable political condition that occurred in eighteen (18) OIC member countries in late 2010 and in 2011, namely, the Arab Spring Events. This motivates the study to include additional factor capturing the Arab Spring Events as one of intra-OIC trade's determinants.

Figure 1.2 OIC Countries' Export Volume to OIC Countries, Developed Countries, and Developing Countries

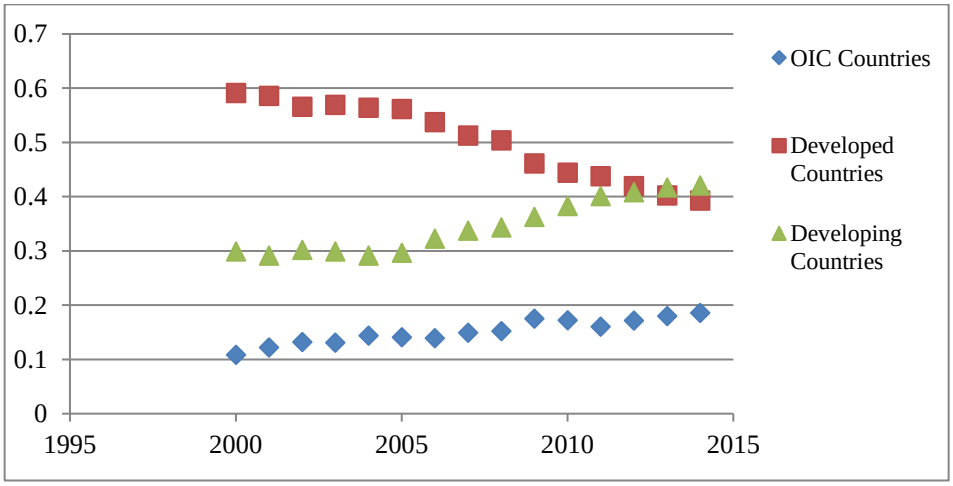


Source: Author. Data is from IMF Direction of Trade Statistics.

[5] SESRIC, Economic Problems of The Least-Developed and Land-Locked OIC Countries, SESRIC Publication Department, Ankara, 2009

It is interesting to note, as seen in Figure 1.3, that the portion of the export to developed countries keeps decreasing while the export to developing countries and OIC countries keep increasing. Moreover, for 2013 and 2014, the portion of export to developing countries can exceed the portion of export to developed countries. Furthermore, the gap between developing and OIC countries has been increasing since 2006.

Figure 1.3. Export Portion from OIC Countries to OIC Countries, Developed Countries and Developing Countries



Source: Author. Data is from IMF Direction of Trade Statistics.

Most of the above descriptions are based on aggregate data. Based on the non-aggregate analysis provided in Table 1.1, we can conclude that the export of each of the eighteen countries to all OIC countries have positive trend, despite the increasing or decreasing or constant zero trade financing from year 2000 to 2014. By comparison, we see that some OIC countries increase the export every year, irrespective of the IDB trade financing. To understand the impact of IDB trade financing on intra-trade of OIC countries in more detail, we need further research.

Table 1.1 Comparison Between Trend of IDB Trade Financing For 18 OIC Countries (Sample in this study) and Their Export Trend to All OIC Countries from year 2000 to 2014

Countries	IDB Trade Financing	Export	Countries	IDB Trade Financing	Export
Algeria	-	+	Libya	0	+
Bahrain	-	+	Malaysia	-	+
Cote D'ivore	+	+	Nigeria	+	+
Egypt	+	+	Oman	0	+
Indonesia	+	+	Pakistan	-	+
Iran	-	+	Qatar	+	+
Jordan	+	+	Saudi Arabia	-	+
Kazakhstan	+	+	Turkey	-	+
Kuwait	-	+	UAE	+	+

Source: Author. Data is from IDB.

The research conducted by Bendjilali (2000) uses cross sectional data in 1994 to examine the main determinants of intra-bilateral trade with reference to the characteristics of the OIC member countries that will help make the percentage of intra-OIC trade increase. Bendjilali (2000) finds that GDP of exporters and importers, distance, IDB trade financing, ASIAN economic block, and GCC economic block are significant determinants of intra-OIC trade. On the other hand, this study tries to obtain results using panel data from 2000 until 2014 not only with intuitive gravity model, but also with theoretical gravity model by Anderson & van Wincoop (2003).

Gundogdu (2009) scrutinizes the determinant of intra-OIC trade and adds tariff, proxy for trade facilitation and liberalization, and depreciation of real exchange rate, together with depreciation of US dollar against Euro. It is argued that the recent increase in intra-OIC trade is likely to be a product of the combined effects of oil price surge and Euro appreciation rather than the trade diversion effect of OIC membership (Gundogdu, 2009).

Jafari, Ismail, & Kouhestani (2011) identify the factors affecting the export flows among the D8. The results based on the panel data demonstrate that the trading partners' GDP, exchange rate, population of exporter country, border and distance are the notable factors affecting the volume of export flow among the countries in the D8 group.

The research conducted by Abdullah, Abdullah, and Abuhriba (2015) use data set of 1989-2009 to find the determinants of trade and trade direction of Arab Maghreb Union. The results indicate that there are strong positive and negative relationship between trade and GDP, population, distance, foreign country reserves (FOC) and real exchange rate (RER) among AMU countries.

On the one hand, this study tries to conduct the research by expanding the population to OIC member countries, different with Jafari, Ismail, & Kouhestani (2011) and Abdullah, Abdullah, and Abuhriba (2015) which focused on D8 and AMU. In addition, this study also considers IDB trade financing as the main variable and the Arab Spring events that prevailed in 2011 as one of control variables which are not included in Gundogdu (2009), Jafari et al. (2011) and Abdullah et al. (2015).

After considering the descriptive analysis, past literatures and research gaps, this study tries to find the determinants of intra-OIC trade and the impact of IDB trade financing on intra-OIC trade.

2. Literature Review

Recent studies on determinants of trade focused primarily on the determinants of trade of a particular region. Gundogdu (2009) confirms that the trade creation but not diversion effect of OIC membership through trade liberalization and facilitation efforts together with Terms of Trade improvement of OIC member countries boosts OIC imports from both imports from OIC countries and non-OIC countries.

Jafari, Ismail, & Kouhestani (2011) identify the factors affecting the export flows among the D8 countries, which comprise eight developing countries: Malaysia, Iran, Turkey, Indonesia, Egypt, Bangladesh, Pakistan, and Nigeria. The results based on the gravity model applied to the panel data between 1990 and 2007, which is estimated using Panel Correlated Standard Errors (PCSE), show that the trading partners' GDP, exchange rate, population of exporter country, border and distance are the notable factors affecting the volume of export flow among the countries in the D8 group.

Abdullah, Abdullah, and Abuhriba (2015) examine the determinants of inter-regional trade in the AMU countries. Using data set of 1989-2009

and standard gravity model, the study measures the pattern and trend of bilateral trade. The study indicates that there are strong positive and negative relationships between trade and GDP, Population, distance, foreign currency reserves (FOC) and real exchange rate (RER) among AMU countries (Abdullah, Abdullah, & Abuhriba, 2015).

Recently, studies using gravity model have been successful in explaining flows of goods and the production factor that occurs between regions or countries. Batra (2004) stated that gravity model which used for analyzing bilateral trade was developed separately by Tinbergen (1962) and then by Poyhonen (1963).

Tinbergen (1962) and Poyhonen (1963) specified the gravity model as:

$$\text{Trade}_{ij} = \alpha \frac{\text{GDP}_i.\text{GDP}_j}{\text{Distance}_{ij}} \quad (2.1)$$

Where:

- Trade is the export or import volume of bilateral trade between regions i and j
- GDP_i and GDP_j is national income of country i and j
- $Distance_{ij}$ is the distance between the two countries

The logarithmic equation then will become:

$$\text{Log}\left(\text{Trade}_{ij}\right) = \alpha + \beta_1 \log\left(\text{GDP}_i.\,\text{GDP}_j\right) - \beta_2 \log\left(\text{Distance}_{ij}\right) + \varepsilon_{ij} \quad (.2)$$

The equation above is the core equation from gravity model where national income has positive effect and distance has negative effect in bilateral trade flows.

In the most basic gravity model, total bilateral trade is assumed to increase along with the size of their economies, which is measured by the national income, and to decrease along with increase in transportation cost, which is measured by the distance between the centers of economy in the two countries.

Early studies on the determinants of trade focused basically on the relation between distance and trade (Srivastava & Green, 1986). In general, it has been well set that distance is a strong determinant of the intensity of trade flows that occur between nations (Beckerman 1956; Ullman 1956; Smith 1964; Linneman 1966; Yeats 1969).

One of the reasons the distance is included in the gravity model is that distance reflects difficulty in communication and cultural differences. To overcome this problem, two more variables are added to the model, *common language* for the communication problem and *colonial links* for the cultural difference (Putranto, 2007).

Evidence shows that the trade between countries use the same language is two to three times bigger compared to that between countries that use different language (Head, 2003). Ghani (2007) also shows that common language variable affecting trade positively.

Colonial links variable is included because in general there is a transfer in institution, language and culture, so the similarities in those matters may increase the trade volume. There are two variables that describe relation of past colonial history: colony and common colony. Colony variable shows whether there is colonial relationship between countries. Rose (2004), Batra (2004), Soderling (2005), and Ghani (2007) included colony variable and showed that there is positive effect on trade. Common colony variable shows whether both countries had the same colonialist after 1945. Common colony variable shows positive effect on trade by Rose (2004), Batra (2004), and Ghani (2007).

Variable *landlocked* shows whether a country has access to the sea. Rose (2003), Batra (2004), Soderling (2005), and Ghani (2007) found that lack of sea access has negative effect on trade.

Another variable is *adjacency*, sometimes called *contiguous* or *border that intersects directly*. Ghani (2007) finds that common border is positively affecting trade.

Free trade agreement is also included as a variable because it is expected to stimulate trade between countries. Signing free trade agreement is found by Batra (2004) and Clarete, Edmonds and Wallack (2002) to give positive effect on trade.

Other variable is the Arab Spring Event. The expression *Arab Spring* refers to the anti-government protests which started in late 2010 (see Oncel & Malik, 2015). Before the revolt of the Arab Spring Event, the economies of the Arab countries were generally in a better condition (Oncel & Malik, 2015). There is notable empirical evidence that political instability is not favorable to economic growth (Alesina et al. (1996); Khandelwal and Roitman (2013)), to investment (Alesina & Perotti, 1996) or to price stability (Aisen & Veiga, 2006).

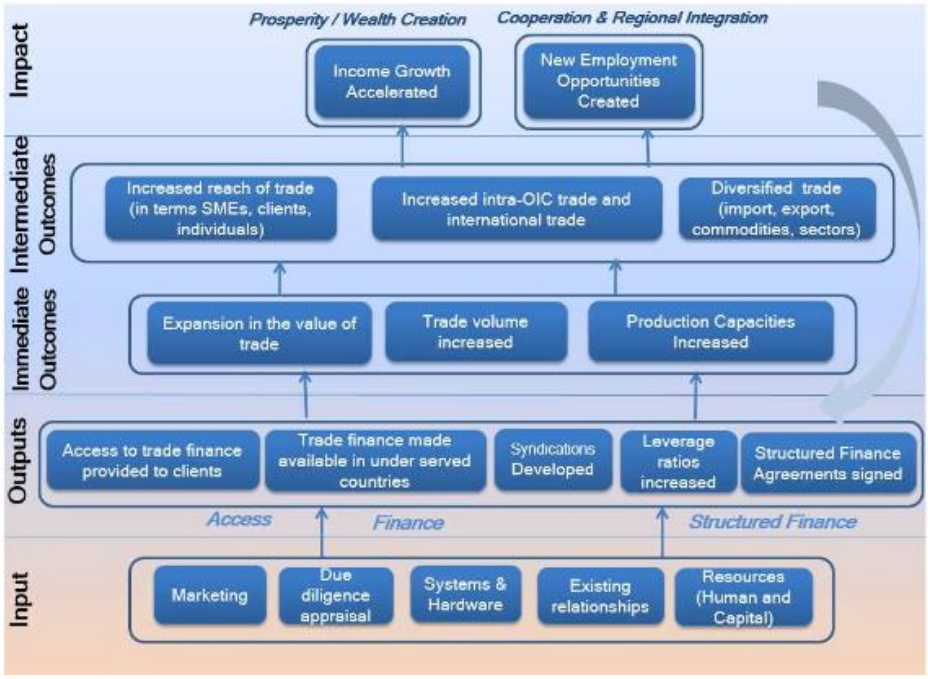
Trade finance, in addition to other factors, is an important determinant of trade flow patterns (Love & Zicchino (2006); Levchenko, Lewis, & Tesar (2010); Thomas, (2009); Chor & Manova (2011)). Ronci (2004) indicates that trade finance is only slightly positively correlated with export and import volumes in the short run. However, he further notes that in periods of financial turmoil, there exists a significantly larger positive relationship between these two variables. Specifically, Bendjilali (2000) has examined the relationship between IDB trade financing and intra-OIC trade. His study shows that IDB trade financing statistically significant in affecting intra-OIC trade.

Trade Finance activities reach two IDBG entities – the International Islamic Trade Finance Corporation (ITFC) and Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC). ITFC was established to encourage trade among the member countries of the OIC by providing trade finance.

The principal outcome from the trade finance activities is the improvement of livelihoods and regional cooperation among member countries through boosting income growth and creating new employment opportunities. These, as illustrated in **Figure 2.** 1, should be accomplished through a set of immediate and intermediate outcomes.[6]

[6] ITFC Group Operations Evaluation (GOE) Department, op. cit. page 3

Figure 2. 1 Theory of Change For ITFC's Trade Finance Activities[7]

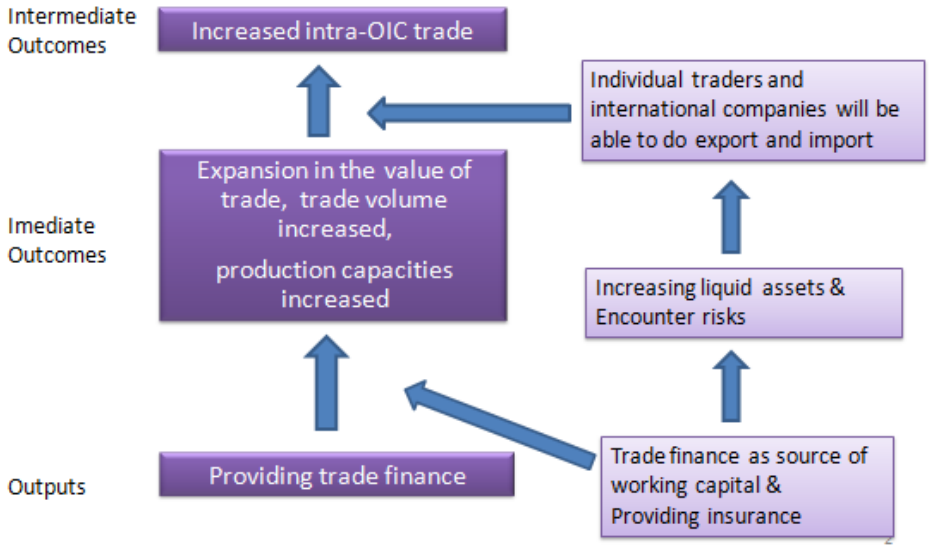


Specifically ITFC seeks to bring about an expansion in the value, volume and diversity of traded goods between OIC member countries and the rest of the world by expanding syndications and giving access to finance to clients and under-served countries. To perform these activities, ITFC depends on its internal resources, existing relationships and corporate processes such as marketing and due diligence appraisal.[8]

Banks and financial institutions essentially give trade finance for two purposes. First it provides a source of working capital for individual traders and international companies in need of liquidity. Second, it provides insurance to encounter the risks involved in international and domestic trade, such as price or currency fluctuations, and especially non-payments (Silvio & de Nicola, 2013).

[7] ITFC Group Operations Evaluation (GOE) Department, op. cit. page 3
[8] ITFC Group Operations Evaluation (GOE) Department, op. cit. page 3

Figure 2. 2 The Transmission of Trade Finance to Intra-trade



Source: Author. Elaborating ITFC's framework and Silvio & de Nicola (2013)

Elaborating the framework given by ITFC and Silvio and de Nicola (2013), the channel of trade finance to intra-OIC trade is summarized in Figure 2. 2.

3. Methods

The data used in this study is between 2000 and 2014. All variables are entered as natural logarithm, except for the dummy variable and the IDB trade financing variable (see Bendjilali, 2000). Additionally, to estimate the export data with zero values, they will be changed to other small value, which is 0,0001; 0,025; 0,05 (Kalbasi, 2004). The assumption is that there will always exist some bilateral trade even if very small.

The sample is selected from fifty-seven OIC member countries using selection criteria based on the percentage of exports defined as the ratio of the export from a given country to the other member countries over the total intra-OIC export. Note that, while Syrian is eligible to be a part of the sample, its export portion to OIC countries being 3.77 per cent, this country is excluded from the sample because its GDP data is not complete. Therefore, the sample includes 18 countries accounting for 86.69 per cent trade in OIC countries.

Table 3. 1 Sample for Exporting Countries

1	Algeria	10	Libya
2	Bahrain	11	Malaysia
3	Cote d'Ivore	12	Nigeria
4	Egypt	13	Oman
5	Indonesia	14	Pakistan
6	Iran	15	Qatar
7	Jordan	16	Saudi Arabia
8	Kazakhstan	17	Turkey
9	Kuwait	18	United Arab Emirates

After this study has settled the sample, further this study will explain the variables that will be examined. The statistics summary of variables which used in the analysis is summarized in Table 3.2.

Table 3. 2 Statistics Summary of Variables in General

Variable	**Observation**	**Mean**	**St. Dev.**	**Min.**	**Max.**
Export	13230	1.80e+08	8.35e+08	.05	2.90e+10
GDPexpimp	13230	1.69E+22	5.25E+22	1.73E+18	7.49E+23
distance	13230	4960.292	3104.38	139.007	18364.3
idbf	13230	7.61e+07	1.38e+08	0	1.20e+09
Contig	13230	0.054422	0.226857	0	1
Comlang	13230	0.24709	0.431336	0	1
Colony	13230	0.007937	0.088736	0	1
comcol	13230	0.170068	0.375707	0	1
landlocked	13230	0.047921	0.213608	0	1
Asian	13230	0.309448	0.462284	0	1
AMU	13230	0.00907	0.094809	0	1
GCC	13230	0.034014	0.181271	0	1
ArabSpring2011	13230	0.0666667	0.2494533	1	1

1. Export

In general, the biggest export volume is UAE's export to Iran in 2014, Iran's export to Turkey 2011-2012 and the smallest value is Iran's export in 2007 to Suriname.

Table 3. 3 Statistics of Export for Each Country (US Dollar) 2000-2014

Country	Mean	To Country (Max)	To Country (Min)
Algeria	7.87e+07	Turkey, Morocco, Tunis	Albania, Bahrain, Brunei, and many others
Bahrain	4.90E+07	Saudi Arabia, UAE, Qatar	Chad, Mozambique, Djibouti, and many others
Cote d'Ivore	4.34E+07	Gabon, Nigeria, Burkina Faso	Maldives, Turkmenistan, Kazakhstan, and many others
Egypt	1.05E+08	Saudi, Turkey, Libya	Guyana, Kyrgyzstan, Turkmenistan, and many others
Indonesia	2.66E+08	Malaysia, UAE, Saudi Arabia	Chad, Guinea Bissau, Tajikistan, and many others
Iran	1.79E+08	Turkey, Pakistan, UAE	Mauritania, Sierra Leon, Uzbekistan, and many others
Jordan	3.11E+07	Saudi Arabia, UAE, Lebanon	Benin, Burkina Faso, Comoros, and many others
Kazakhstan	8.13E+07	Turkey, Iran, Uzbekistan	Comoros, Guinea Bissau, Maldives, and many others
Kuwait	1.94E+08	Egypt, Pakistan, Indonesia	Burkina Faso, Chad, Comoros, and many others
Libya	3.56E+07	Turkey, Tunisia, Indonesia	Bangladesh, Comoros, Kazakhstan, and many others
Malaysia	3.01E+08	Indonesia, UAE, Pakistan	Guinea Bissau, Chad, Burkina Faso, and many others
Nigeria	8.43E+07	Indoenesia, Cote d'Ivore, Cameroon	Kyrgyzstan, Libya, Maldives, and many others
Oman	1.08E+08	UAE, Saudi Arabia, Pakistan	Suriname, Kyrgyzstan, Guinea Bissau, and many others
Pakistan	8.61E+07	UAE, Turkey, Saudi Arabia	Lebanon, Albania, Suriname, and many others
Qatar	1.12E+08	UAE, Indonesia, Saudi Arabia	Albania, Guyana, Comoros, and many others
Saudi Arabia	5.27E+08	Pakistan, Indonesia, Bahrain	Comoros, Gabon, Guinea Bissau, and many others
Turkey	3.74E+08	Iran, UAE, Egypt	Brunei, Comoros, Guinea Bissau, and many others
United Arab Emirates	6.41E+08	Iran, Oman, Pakistan	Burkina Faso, Mali, Sierra Leon, and many others

Source: Author. Data from IMF Direction of Trade Statistics.

2. GDP

Since GDP measure the scale of economic effect, the larger the values of GDP country i and country j, the larger the value of exports. The expected sign is positive. For GDP exporter, the biggest value is Indonesia in 2012 and Turkey in 2014 and the smallest value is Jordan in 2000. For smallest GDP importer is Comoros in 2000 (0.022 per cent of Indonesia's GDP in 2012).

Table 3. 4 Statistics Summary of GDP for Each Country (US Dollar) 2000-2014

Country	Mean	Min	Max
Algeria	1.31E+11	5.50E+10	2.10E+11
Bahrain	2.07E+10	9.00E+09	3.40E+10
Cote d'Ivore	2.07E+10	1.10E+10	3.40E+10
Egypt	1.61E+11	7.90E+10	2.90E+11
Indonesia	5.01E+11	1.60E+11	9.20E+11
Iran	3.27E+11	1.10E+11	5.90E+11
Jordan	1.97E+10	8.50E+09	3.60E+10
Kazakhstan	1.08E+11	1.80E+10	2.30E+11
Kuwait	1.03E+11	3.50E+10	1.70E+11
Libya	5.13E+10	2.00E+10	8.70E+10
Malaysia	1.98E+11	9.30E+10	3.40E+11
Nigeria	2.29E+11	4.40E+10	5.70E+11
Oman	4.59E+10	1.90E+10	8.20E+10
Pakistan	1.48E+11	7.20E+10	2.40E+11
Qatar	9.43E+10	1.80E+10	2.10E+11
Saudi Arabia	4.35E+11	1.80E+11	7.50E+11
Turkey	5.53E+11	2.00E+11	8.20E+11
United Arab Emirates	2.41E+11	1.00E+11	4.00E+11

Source: Author. Data from World Bank.

3. Distance

Since the proxy of distance which is a composite of transport cost, transport time etc., the larger the distance, it will reduce the export values. Therefore, the expected sign for this variable is negative. For distance between two capitals, the farthest is between Indonesia and Guyana, on the contrary the nearest is between Qatar and Bahrain.

Table 3. 5 Statistics of Distance for Each County (Km)

Country	Min	To Country	Max	To Country
Algeria	642.7219	Tunisia	11649.4	Indonesia
Bahrain	139.007	Qatar	11530.45	Guyana
Cote d'Ivore	715.0526	Mali	13268.58	Brunei
Egypt	494.248	Jordan	9584.535	Guyana
Indonesia	1174.2	Malaysia	18364.3	Guyana
Iran	540.446	Azerbaijan	11313.54	Guyana
Jordan	217.1311	Lebanon	10003.49	Guyana
Kazakhstan	950.3396	Kyrgyzstan	11996.13	Guyana
Kuwait	434.559	Bahrain	11192.6	Guyana
Libya	527.665	Tunisia	10819.99	Brunei
Malaysia	1174.2	Indonesia	17540.31	Guyana
Nigeria	568.2081	Benin	11872.48	Brunei
Oman	438.894	UAE	12386.11	Guyana
Pakistan	673.4186	Tajikistan	13210.75	Guyana
Qatar	139.007	Bahrain	11644.75	Guyana
Saudi Arabia	425.211	Bahrain	11193.37	Guyana
Turkey	714.7758	Lebanon	9620.562	Guyana
United Arab Emirates	303.944	Qatar	11948.63	Guyana

Source: Author. Data from CEPII.

4. IDBF

Increasing the IDB trade financing is hypothesized to increase the export values. For IDB trade financing, the biggest value is for Egypt in 2014 and second biggest is for Turkey in 2014.

Table 3. 6 Statistics of IDB Trade Financing (US Dollar) 2000-2014

Country	Mean	Country	Mean
Algeria	1.00e+07	Libya	0
Bahrain	1.87E+07	Malaysia	9733333
Cote d'Ivore	6933333	Nigeria	3.29E+07
Egypt	3.25E+08	Oman	0
Indonesia	6.98E+07	Pakistan	1.80E+08
Iran	1.46E+08	Qatar	100000
Jordan	5.00E+07	Saudi Arabia	1.79E+08
Kazakhstan	4.29E+07	Turkey	1.84E+08
Kuwait	8.55E+07	United Arab Emirates	2.94E+07

Source: Author. Data from IDB.

5. Contiguous

This variable is dummy variable which 1 if country i and j is neighboring country, zero otherwise. Neighboring countries are expected to stimulate trading activities because of similarity in tastes and awareness of common interests (Balassa, 1963). The expected sign is positive for this variable. Countries that has neighboring relationship are Egypt-Libya, Indonesia-Malaysia, Iran-Pakistan, Iran-Turkey, Jordan-Saudi Arabia, Kuwait-Saudi Arabia, Libya-Algeria, Oman-Saudi Arabia, Oman-UAE, Saudi Arabia-Qatar, UAE-Qatar, Tsaudi Arabia-UAE, Algeria-Mali, Algeria-Mauritania, Algeria-Morocco, Algeria-Nigeria, Algeria-Tunisia, Cote d'Ivore-Burkina Faso, Cote d'Ivore-Guinea, Cote d'Ivore-Mali, Egypt-Sudan, Iran-Azerbaijan, Iran-Turkmenistan, Kazakhstan-Turkmenistan, Kazakhstan-Uzbekistan, Libya-Chad, Libya-Niger, Libya-Sudan, and so on.

6. Common language

If country i and country j has same language, it is expected the trade activities between them increase. Therefore the export values will increase too. The expected sign is positive for this variable. Algeria, Bahrain, Benin, Burkina Faso, Cameroon, Chad, Comoros, Cote d'Ivore, Djibouti, Egypt, Gabon, Guinea, Jordan, Kuwait, Lebanon, Libya, Mali, Mauritania, Morocco, Niger, Oman, Qatar, Saudi Arabia, Senegal, Sudan, Togo, Tunisia, and UAE is one of the examples of countries that having same language. Kazakhstan and Kyrgyzstan is also having common language. Pakistan, Cameroon, Guyana, Nigeria, Sierra Leon, and Uganda are another group of countries having common language.

7. Colony

If country i and country j has colonizer and colony relationship, it is expected the trade activities between them increase so that the export values will increase too. The expected sign is positive for colony. This study's samples that have past colonizer-colonized relationships are Turkey-Egypt, Turkey-Libya, Egypt-Sudan, and Turkey-Tunisia.

8. Common colony

If country i and country j at least has one same colonizer, it is expected the trade activities between them increase. Therefore the export values will increase too.

This study's sample that has same colonizer is Bahrain, Bangladesh, Brunei, Guyana, Kuwait, Malaysia, Maldives, Uganda, Jordan, Nigeria, Qatar, Pakistan, and United Arab Emirates colonized by United Kingdom.

Algeria, Benin, Burkina Faso, Cameroon, Chad, Comoros, Djibouti, Gabon, Guinea, Mauritania, Morocco, Senegal, Togo, Tunis and Cote d'Ivore are colonized by France.

Indonesia and Suriname are colonized by Netherlands. Kazakstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Azerbaijan are colonized by Russian Federation.

9. Landlocked

If the country is surrounded by land, it is expected that its trade will be reduced since the cost of trading is increasing by its landlockedness. In this study, Kazakhstan is the only sample which is surrounded by land.

10. PTAs (Asian, AMU, GCC)

If the pairing countries are one of the PTA's members, it is expected that its trade will tend to increase since the cost of trading is reduced by tariff reduction, quota derogation, and trade facilitation.

Countries joining Asian are Indonesia, Malaysia, Azerbaijan, Bangladesh, Bahrain, Iran, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Maldives, Pakistan, Oman, Qatar, Saudi Arabia, Tajikistan, Turkmenistan, United Arab Emirates, and Uzbekistan.

Countries joining GCC are Arab Saudi, United Arab Emirates, Bahrain, Kuwait, Qatar, and Oman.

Countries joining AMU are Algeria, Libya, Mauritania, Morocco, and Tunisia.

Table 3. 7 Variable Description

Variable Dependent	***Explanation***	***Sources***	***Expected Sign***
Export	Export Values (US Dollar)	IMF Direction of Trade Statistics	
Variable Independent	*Explanation*	*Sources*	*Expected Sign*
GDPexpimp	GDP exporter multiplied by GDP importer (US Dollar)	World Bank's World Development Indicator	+
distance	Distance between capital of both countries (Km)	Cepii (*The Centre d'Études Prospectives et d'Informations Internationales*)	-
idbf	Trade finance from IDB (US Dollar)	Islamic Development Bank	+
contig	dummy variable 1 if both countries adjacent to each other; 0 otherwise	Cepii	+
comlang	dummy variable 1 if both countries have same language; 0 otherwise	Cepii	+
Colony	dummy variable1 if both countries have colonizer-colonized relationship; 0 otherwise	Cepii	+
comcol	dummy variable 1 if both countries have same colonizer; 0 otherwise	Cepii	+
landlocked	dummy variable 1 if the country is landlocked; 0 otherwise	Cepii	-
Asian	Dummy variable 1 if the country is member of the PTA;0 otherwise		+/-
AMU (Arab Maghreb Union)	Dummy variable 1 if the country is member of the PTA;0 otherwise		+/-
GCC (Gulf Cooperation Council)	Dummy variable 1 if the country is member of the PTA;0 otherwise		+/-
ArabSpring2011	Dummy year 1 for 2011 and 0 other years		+/-

3.1 Intuitive Gravity Model

The intuitive gravity model in this study takes the following log-linearized form:

$$\log(X_{ij}) = \alpha + \beta_1 \log(Y_i Y_j) + \beta_2 \log(Disctcap_{ij}) + \beta_3(IDBF) + \beta_4(ComLang) + \beta_5(Comcol) + \beta_6(Colony) + \beta_7(Landlocked) + \beta_8(Contig) + \beta_9(PTA) + \beta_{10}(ArabSpring2011) + \varepsilon_{ij} \quad (1)$$

The intuitive model will be estimated with OLS. It is important to understand the nature of OLS. OLS minimizes the sum of squared errors ε. There are three necessary and sufficient conditions in estimating the model with OLS (Shepherd, 2013) :

1. The errors must have average zero and be uncorrelated with any of the explanatory variables

2. The homoscedasticity assumption

3. The full rank assumption

If all three properties are maintained, then OLS estimates are consistent, unbiased, and efficient within the class of linear models (Shepherd, 2013).

3.2 Theoretical Gravity Model

Theoretical gravity model starts from the intuitive gravity model. Theoretical gravity model consider not only bilateral trade costs, but also the level of trade costs incurred on other routes. Intuitive gravity model bring several significant empirical regularities, but has been stated without any explicit theoretical foundation. Theoretical gravity model tries to incur the relative cost problem. To this day, Anderson and Van Wincoop- AvW 2003 represent the most formal benchmark for theoretical gravity model (Anukoonwattaka, 2015).

Anderson and Van Wincoop (2003) empirical implications (see Anukoonwattaka, 2015):

1. The intuitive gravity model does not include relative price so that the model has omitted variables which in turn the model is claimed to be bias and inconsistency.

2. Since the relative trade costs is significant, two types of trade costs have to be taken into account: trade costs between i and j & trade costs of i and j with third parties.

3. Trade flows are "unidirectional" trade flows for every observation, not total trade of a country pair.

4. Variables must be in nominal terms since price indices are included separately in the multilateral trade resistance terms.

5. Using aggregate GDP, not GDP per capita

6. Must account the estimated "trade costs", not just distance in gravity models.

The base line can be:

$$\log \tau_{ij} = \beta_1 \log\left(Disctcap_{ij}\right) + \beta_2(ComLang) + \beta_3(Comcol) + \beta_4(Colony) + \beta_5(Contig) \quad (2)$$

Policy related variables can be augmented into trade cost functions

7. $\hat{\beta}$ is not fully as a trade cost elasticity, but incorporated with elasticity of substitution (σ)

After understanding the nature of the model, next this study introduces its own model based on AvW (2003) model with fix effect estimation.

$$\log(X_{ij)} = -logY + \log Y_i - log\Pi_i + logY_j - logP_j + (1 - \sigma)\,[\log \tau_{ij}] \quad (3)$$

$$\log \tau_{ij} = \beta_1 \log\left(Disctcap_{ij}\right) + \beta_2(IDBF) + \beta_3(ComLang) + \beta_4(Comcol) + \beta_6(Colony) + \beta_7(Landlocked) + \beta_8(Contig) + \beta_9(PTA) + \beta_9(ArabSpring2011) \quad (4)$$

Explanations:

$\log Y_i - log\Pi_i$ = exporter fix effect (5)

$logY_j - logP_j$ = importer fix effect (6)

$\log \tau_{ij}$ = estimated trade costs (7)

Actually this model can be estimated with random effect approach but UNESCAP himself is not recommending it due to a strong assumption: multilateral resistance terms must be normally distributed across countries, with a given standard deviation. Another reason is that accounting for both inward and outward multilateral resistances need specification of a two-dimensional random effects model – random effects by exporter and by importer – which is rarely used in the literature. Although such models can be used in Stata using *xtmixed* command, they have obtained few considerations either in the econometrics literature or in the applied policy literature. The plausible reason is that fixed effects modelling is generally preferred for gravity work because theoretical models do not explain anything about the statistical distribution of trade costs or multilateral resistance (UNESCAP, 2012).

4. Findings And Discussions

My findings are shown in Table 4.1.

Table 4.1 Regression Result

Independent Variable	Intuitive Gravity Model	
	Coefficient	Robust Standard Error
lnGDPexpimp	1.635343***	0.081129
Lndistance	-0.86993**	0.370876
Idbf	3.98E-09***	7.64E-10
Comlang	2.475493***	0.535507
Comcol	1.68515***	0.501951
Colony	3.34154***	0.975155
Landlocked	-2.59135***	0.721971
Contig	2.150018***	0.728325
Asian	2.386055***	0.487784
GCC	-1.37298	0.847066
AMU	-1.23094	1.710605
ArabSpring2011	-0.76225***	0.13562
Constant	-62.4772***	4.704163
N	13230	
Fstat	F(12, 730) = 94.67	
R-squared	0.3644	
Significance level: *p<0,1 **p<0.05, ***p<0.01		

Source: Computed by Author.

The overall goodness of fit is reflected by the R-Square term. It can be concluded that the specified models explain almost 37 percent of the total variation in the exports variable can be attributed to a linear relationship between the explanatory variables.

As shown in Table 4.1, GDP of the country pair has significant positive relationship with trade. The positive coefficient on GDP is expected since scale effects are bigger than proximity effects (Bendjilali, 2000).

Distance variable shows the expected sign as the gravity model suggested, negative and statistically significant. This means that distance which is

proxy of transportation and communication costs is inversely related with export. The result consistent with Batra (2004) which suggests that distance is a proxy for *transportation costs*, indicator for time needed in delivering commodities, *cost of synchronization* (when factories combining many types of input, punctuality must be synchronized for avoiding production's resistor), and *transaction costs* (distance has correlation with cost of finding trading opportunities and building trusts between trading partners); those costs have negative relationship with trade.

Common language as proxy of cost from culture - where there is possibility that the more further the geographical distance between two countries, the cultural difference between two countries will be bigger (Batra, 2004) - shows positive sign in this study. This finding is consistent with other previous studies.

Common colony variable shows positive relationship with trade, significant at level 1 per cent. This variable shows positive effect on trade. We can infer from the positive relation that countries having same colonizer is likely to trade more than countries not having same past colonizer. Transfer in institution, language and culture from the same colonizer can increase trade volume.

Institution can be interpreted as the law that has been implemented in the country. Indonesia, as example, is still using many laws, especially its private law, that was given by Dutch colonial government. Pakistan and Malaysia's common law is based on English common law. Mauritania and Libya are using French Civil Codes mixed with Islamic law.

This study concludes that political factor, precisely colonial ties, has continuous effect and strong in international economy, both in trade and foreign direct investment. Colony variable is statistically significant affecting trade. It means that having past colonizer-colonized relationship does contribute positively on trade. In spite of attaining the independence, the ties of former colonial times is expected to influence the bilateral relations. It is understood since businesses of the former colonists are happened in the previous colonies and, in many cases, since close political ties still bonds between nations and their former colonies (Srivastava & Green, 1986).

Landlocked variable shows whether a country has direct contact with sea or not. The finding shows that landlocked has negative relationship with trade significant at level 1 per cent. It means that a country which has no direct contact with sea, its trade volume will be reduced. On the other hand, country that has direct contact with sea will not. Because having direct contact with sea is considered to facilitate trade because of a possibility to build harbors. Not having a harbor will increase transport cost because of utilize other country's harbor.

In the regression results, contiguous variable is found to have statistically significant positive relationship with trade. With the inclusion of adjacency variable, it will verify the probability of exaggerating on real effective distance between countries which are neighbors, because generally, countries with such condition always have larger trade on their border line (Head, 2003).

Asian is the only statistically significant variable that affects intra-OIC trade among the Preferential Trade Agreements (GCC, Asian and AMU). Asian variable has positive sign and significant less than 1 per cent. This finding is consistent with Al- Atrash and Yousef (2000) and Bendjilali (2000) which show that ASEAN give significant positive effect for trade. This implies that the pairing countries joining Asian block, their trade are likely to increase more than the pairing countries not joining Asian block.

For GCC and AMU that insignificant at any levels may be explained by the large effect of distance on the determination of trade flows. It is interesting to note that most nations in an economic union are relatively nearby to each other, so that a large part of the associated trade ties would have been integrated in the distance factor (Srivastava & Green, 1986).

The Arab Spring variable has negative relationship with intra-OIC trade and statistically significant. It is consistent with the expected sign. It means that the Arab Spring events in 2011 have decreased intra-OIC trade. Although the trade category is different, this finding is also consistent with Taleb Rifai (2011) which stated that trade in services and export services were devastated as an immediate effect of the Arab Spring events.

The sign of IDB trade financing is positive and statistically significant at level 1 per cent[9]. This result supports Bendjilali's work (2000). It means IDB trade financing has contributed positively to the bilateral trade of the OIC member countries even though the coefficient of this variable is considerably small, 3.98E-09.

To shed a light on how IDB trade financing concretely operates, this study will elaborate the practice and notable achievements of ITFC in affecting trade performance of some OIC member countries.

It has been signed US$2.2 billion financing program in Egypt between ITFC and the Government of Egypt to help the government in maintaining foreign currency reserves with syndicated murabaha financing as instrument. It is estimated that the aggregate financing amount reached 0.5% of the GDP to finance imports such as petroleum products, wheat and other foodstuff which are strategic commodoties(ITFC Report, 2013).

In Cote D'Ivore syndicated murabaha financing operation is signed in the amount of $27.39 million for farmers to purchase fertilizers, urea, pesticides, and anther agricultural inputs vital for Cote D'Ivore's strategic cotton crop which support in reviving the country's cotton production and was significantly benefit the employment of 10,000 cotton farmers. Moreover, for the cotton sector, it provides direct and indirect income to some 3.5 million Ivorians. The murabaha financing operation was extended to Yebe Wagnon, an umbrella organization integrating some cooperatives of cotton growers, through Compagnie Ivoirienne pour le Developpement des Textiles (CIDT), the distribution channel for trade financing funds. Not only enhance the country's economic welfare by providing a significant improvement to the livelihood of the country's cotton farmers, but also this operation assist to alleviate the poverty level in the rural areas (ITFC Report, 2013).

Hastiadi (2015) reports that ITFC sign a US$2-million murabaha trade finance operation for the coffee sector in Indonesia to assist their pre-export financing necessities. This affects by financing the pre-export working capital requirements of the exporter and by making payment to the suppliers who were the cooperatives, the 6,450 farmers in all 5

[9] This result is consistent with Theoretical Gravity Model conducted in this research, positively significant affecting trade.

cooperatives so that they were able to get paid earlier. ITFC's financing also assists the farmers to obtain a better price by lower interest charged by the exporters so that it also boosts the growth of the exporter and the co-ops.

Furthermore, Hastiadi (2015) suggests that ITFC financing has been very helpful during the period of global economic crisis in 2008. Without ITFC financing, the clients would have faced difficulties in fulfilling their trading activities.

WTO's Secretariat (2009) confirms that the global liquidity situation has been a significant matter in 2008 since some banks cannot meet the request from their customers for new trade operations, let a "market gap" approximated to be round $25 billion in November 2008, out of global market for trade finance around ten (10) trillion US dollars a year.

For the betterment of ITFC, Hastiadi (2015) suggests that ITFC best consider in diversifying its portfolio so that it may reduce idiosyncratic risks in its portfolio. Also ITFC should try to syndicate with local banks (domestic or foreign) to finance trade in various sectorsso that ITFC may increase its trade finance volume. In addition, ITFC may reconsider its administrative fees and provide expertise to guide customers on the type of financing mechanism, define the terms and conditions, and serve assistance during the lifespan of the transaction. Lastly, ITFC might need to consider the syndication with other banks based in Indonesia to finance trade in various sectors to be able to infiltrate into the private sector with objective of diversivication.

5. Conclusion

The finding in this study reveals that intra-OIC trade is positively affected by the size of their economics, the extent of IDB trade financing, common language, common colony and negatively affected by transportation and communication costs as proxy by the distance factor. Also this study shows that colony, contiguous, Asian has significant positive relationship with trade, while landlocked and the Arab Spring has significant negative relationship with trade. Afterwards, AMU and GCC are not significantly affecting trade. It was found that IDB trade financing has significant positive relationship with intra-OIC trade, although the coefficient is considerably small. The regression results offer an opportunity to initiate

and develop optimal trade financing strategy that stimulates and enhances intra-OIC trade potentials. The IDB policy makers can develop different scenarios to help obtain concrete trade strategies that increase trade between the OIC member countries.

Trade policymaker can also use explanatory variables by increasing the variables that are positively correlated to the export variable and by decreasing those that are negatively correlated. For instance, by improving communication network, they would achieve reduction of distance proxy variable. Distance may also be decreased through the substitution effect. Countries that are trading with far countries may change for closer OIC member countries with the requirement that the same goods be traded.

There are other variables that may affect trade such as appreciation of real exchange and tariff. Including these variables in the model would enrich our understanding of trade determinants.

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