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The Effect of Free Trade Agreement between the Mediterranean Arab Countries and Turkey on Foreign Trade Flows

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Abstract

This paper aims to investigate the impact of the bilateral free trade agreement that Egypt, Jordan, Morocco, and Tunisia signed with its trading partner, Turkey. The study used the gravity model, which is considered the best and most widespread standard model for estimating the effects of free trade agreements on trade flows. The results indicate the positive impact of the country's size on foreign trade flows, especially the GDP of exporting countries. Bilateral trade flows are affected positively by the total population of the importing country, while the effect is negative for exporting countries by 1.29%. Distance and sharing of borders and language had a zero effect as a result of the weak intra-Arab trade. The results of the study nullify the claim that the Free Trade Agreement between Arab countries and Turkey did not enhance trade. Rather, we found that it boosted trade exchange by 0.47%. The effect of spreading corruption on both the exporting and importing sides also appears to limit bilateral trade flows. The effect of the political instability factor was negative on trade flows to source countries, while the effect was positive for importing countries.

Keywords: *Gravity Model, Political Stability, Arab-Turkey FTAs, Control of Corruption.*

1. Introduction

The exponential number of Regional trade agreements (RTAs) between countries or regions is one of the most prominent phenomena in the international economy during the past three decades. In January 2021, the World Trade Organization notified the existence of 550 Regional Trade Agreements, of which 339 were in force. The free trade agreement (FTA) is the most popular form. Baldwin and Jaimovich (2012) justify the spread of FTAs with the domino theory of territoriality, by claiming that states that are not signatories to FTAs seek to rectify their status to benefit from the advantages granted. These advantages would increase the volume of intra-trade, increase competitiveness, and boost economic growth (Kahouli & Maktouf, 2015, p. 77), And achieve economic well-being. Although Baier and Bergstrand (2007) proved that the role of the FTA in promoting bilateral trade between members by 100%, experimental results after that indicated that developing countries benefit much less than those achieved in developed countries, and this is due to multiple reasons, including high fixed costs, weak infrastructure, and applicable rules of origin (Baier, Bergstrand, & Clance, 2018; Doan & Xing, 2018).

The European Neighborhood Policy has set the establishment of a Euro-Mediterranean Free Trade Area (EMFTA) as a major objective, which is why it has encouraged the establishment of an FTA between the Euro-Mediterranean countries. In addition to the desire of the Mediterranean Arab countries and Turkey to benefit from the advantages of establishing an FTA, Tunisia, Morocco, Egypt and Jordan signed an FTA with Turkey in the years 2005, 2006, 2007, 2009 respectively.

The Arab Spring and the subsequent closure of borders, the refugee crisis, a decline in the level of political stability, and the tension and division of political relations between countries,

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may be reflected in trade flows between Arab Mediterranean countries with its commercial partner Turkey. The Arab countries claimed to be harmed by the free trade agreement with Turkey, as a result of which Jordan canceled the agreement in 2018, Morocco requested to reformulate the agreement or threaten to cancel it.

Although there are some studies undertake on free trade agreements in the context of European countries (Kunroo, Sofi, & Azad, 2016) Asian countries, (Jagdambe & Kannan, 2020) and North American countries. (Heo & Doanh, 2020) However, with consideration of last development such as NAFTA-USMCA transformation, Brexit, and retreatment of many countries from FTA to the preferential trade agreement. Therefore, there is a need for an empirical study to understand the effect of FTA on foreign trade flow.

This paper aims to explore the impact of FTAs on the foreign trade flows of the participating countries, by focusing on the FTAs concluded between the Arab countries and Turkey. We also seek through this paper to add new evidence for international trade theories concerned with the impact of regional integration.

2. LITERATURE REVIEWS

The great importance attached to the gravity model in the literature on international trade is that it is the most powerful and widely used model in explaining trade flows. However, the search for a theoretical basis for it as an economic model, and its dimensions on the physical model, was the goal of the researchers. The development of this model began with the work of Tinbergen (1962) and Pöyhönen (1963), who identified finding the factors controlling the total supply of the importing country and the aggregate demand of the exporting country as a major objective. But Anderson (1979) is considered to be the first to establish a right theoretical root of the gravity equation, having built his model of differentiating product by country of origin on the assumption of Armington-CES. However Bergstrand (1985) claimed that eliminating price variables gives an indefinite equation to the gravity model. Bergstrand (1989) developed a model based on monopolistic competition with differentiated products and economies of scale. Deardorff (1998) advocated the application of the gravity model based on the "Heckscher-Ohlin" model and refuted the proposition of "Helpman" and "Krugman" who rejected this. Evenett and Keller (2002) found strong empirical support for the 2×2×2 model. After examining "Helpman-Krugman" and "Heckscher-Ohlin" models in the case of full specialization and incomplete specialization. Eaton and Kortum (2002) developed a Ricardian model of bilateral trade based on differences in production technology, distance, and price levels.

Anderson and Van Wincoop (2003) began their research with what was called the "border puzzle" introduced by McCallum (1995) which states that the existence of borders between countries has a great influence on the volume and structure of trade between countries, even those that are economically and culturally similar. They reached what they called "multilateral resistance", which they defined as: "theoretically appropriate average trade barrier". (Anderson & Van Wincoop, 2003, p. 170) This model was considered ideal for explaining trade flows between countries, due to its ability to answer how the balance is achieved, and the costs of trade. But obtaining multilateral resistance experimentally remains a challenge, making fixed effects in place in the model.

Chaney (2008) through his research of variable and fixed export costs in a heterogeneous firm, has claimed that higher elasticity makes intensive margin more sensitive to changes in trade barriers, while it makes wide margin less sensitive. He also expected that the impact of trade barriers on trade flows would be greater than their impact within a model consisting of homogeneous companies. Here it is assumed that fixed costs are borne by the exporters. (Chaney, 2008, p. 1708) Olivero and Yotov (2012) claim a dynamic gravity model (with a delayed dependent variable and directional effects varying over time) that surpassed alternative static-effect treatments for multilateral resistances.

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Although gravity modeling was successful in experimental application. However, the theoretical basis for it has been insufficient or even completely missing for a long time. (Anderson, 2011, p. 133) For this reason, various theoretical Curricula tried to solve the problem of determining the model. Which led to the multiplicity of commercial theories with different hypotheses and methods. Thus it can be said that it is not a single, accurate business model that explains theoretical derivation, but rather assumptions, plausibility, and consideration of multiple factors that give credence to the gravity equation.

Although there are other models that measure the impact of trade agreements on member countries' trade, such as WITS-SMART. However, the gravity model is the most used model (Baier & Bergstrand, 2007, 2009; Carrere, 2006) Their studies supported the countries' orientation towards establishing FTAs by showing them a significant and effective influence on the trade of member countries. But Anderson and Yotov (2016) argue that the effects of the FTAs are mixed, and rejects the claim Baier and Bergstrand (2007) that eliminating tariffs alone increases intra-trade for members. Baier, Yotov and Zylkin (2019) explained the variation that occurred within the same agreement due to the frictions imposed between the two parties and the long distance between them. (Péridy, 2005) Foretell the limitation of the Agadir Agreement due to high costs and limited export potential. Several studies have demonstrated the limited or negative impact of free trade agreements on Jordan, Egypt, and Morocco. (Busse, Gröning, & Groening, 2012; Hatab, Romstad, & Huo, 2010; JABRI, 2020)

3. Methodologies

The study sample concerned 59 countries for the period 2000-2019. The Mediterranean Arab countries that signed a free trade agreement with Turkey are Egypt, Morocco, Jordan, and Tunisia as exporting countries, and we have omitted from the sample the Syrian Arab Republic and the Palestinian government for lack of data. In addition to Turkey, the study sample contains the most important trading partners. In this study, we will use three standard Static Panel models to estimate the impact of the Free Trade Agreement between the Mediterranean Arab Countries and Turkey. The first model is the pooled model (OLS). The second model assumes the presence of fixed effects (FEM), while the last model contains random effects (REM). We estimated total bilateral trade for the countries under study using the Panel data as a maximum of 4720 observations ($59 \times 4 \times 20$).

Through the proposed model, we aim to determine the impact of trade flows on the basic variables of the traditional model of attractiveness, which are gross domestic product, population census, geographical and cultural convergence. We used a dummy variable that captures the effect of the Arab countries' FTA with Turkey. Moreover, this study is concerned with determining the effect of political stability, absence of violence and control of corruption on trade flows between the study countries.

Through the proposed model, we aim to determine the impact of trade flows on the basic variables of the traditional model of attractiveness, which are gross domestic product, population census, geographical and cultural convergence. Standard gravity is expressed as equation (01).

$$TRT_{ij} = \gamma_0 GDP_i^{\gamma_1} GDP_j^{\gamma_2} Pop_i^{\gamma_3} Pop_j^{\gamma_4} distw_{ij}^{\gamma_5} Contig_{ij}^{\gamma_6} Comlan_{ij}^{\gamma_7} \mathrm{K}_{ij}^{\gamma_8} + \varepsilon_{ij} \ldots\ldots (01)$$

By entering the logarithm to equation (01) and substituting the term E with the factors that stimulate or inhibit trade flows. In our estimated model, we used first, a dummy variable that captures the effect of the Arab Free Trade Agreement with Turkey, second, the indicator of political stability and the absence of violence and terrorism, and third, the control of corruption index. Equation (02) expresses the estimated model.

$$\ln trt_{ijt} = \gamma_0 + \gamma_1 \ln gdp_{it} + \gamma_2 \ln gdp_{jt} + \gamma_3 \ln pop_{it} + \gamma_4 \ln pop_{jt} + \gamma_5 \ln distw_{ij} + \gamma_6 \ln Contig_{ij} + \gamma_7 Comlan_{ij} + \gamma_8 ArturFTA_{ijt} + \gamma_9 \ln lc_{it} + \gamma_{10} \ln lc_{jt} + \gamma_{11} \ln pol_{it} + \gamma_{12} ln\, pol_{jt} + \varepsilon_{ijt} \quad (02)$$

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Where: ln denotes the natural logarithm of the variables, trt_{ijt} is the dependent variable that expresses the volume of bilateral trade between the country i and country j in the period t in (current US$). gdp_{it} and gdp_{jt} It denotes the current US dollar value of the GDP of countries i and j in period t. Pop_{it} and Pop_{jt} represents the total population in millions of countries i and j in period t, respectively. $distw_{ij}$ is the weighted geographical distance between the two largest cities of the recipient countries. $Contig_{ij}$ and $Comlan_{ij}$ are dummy variables that take the value 1 if the countries i and j are contiguous or have the same common language respectively, and take the value 0 otherwise. $ArturFTA_{ijt}$ is dummy variable that take the value 1 if the countries i and j members of a FTA with Turkey, and take the value 0 otherwise. lc_{it} and lc_{jt} designates control of corruption index for country i and country j in year t. pol_{it} and pol_{jt} are Political stability and absence of violence/terrorism index for country i and country j in year t. ε_{ijt} the error term. γ_n Parameters of the estimated model $= 0,1,2, \dots 12$.

In collecting the study data, we relied on the International Monetary Fund (Direction of Trade Statistics [DOTS]) to obtain bilateral trade. World Bank database of GDP and POPs variables. CEPII for distance, boundary, and general language variables. Transparency International for political stability variables, absence of violence/terrorism, and controlling corruption.

We have relied, in collecting the study data, on the World Bank database of the variables of GDP and POP. CEPII for distance, border, and common language variables. Transparency International for political stability variables, absence of violence/terrorism, and control of corruption.

4. RESULTS

The estimation results for equation (02) by STATA 16 appear in Table (01). To determine the appropriate model for estimation, we perform a (Poolability test) between PRM and FEM. Since the value of F = 587.47, which is significant at 1%, we reject the null hypothesis and accept the alternative hypothesis claim, which holds the validity of (FEM). The results of the "Breusch and Pagan test" were demonstrated by rejecting the null hypothesis, which states PRM, and accepting the alternative hypothesis claiming preference (REM). The Hausman test validates the FEM. The Fisher statistic (F = 93.35) is significant at the 1% level, meaning the overall model is significant. $R^2 = 0.547$ indicating that the explanatory variables explain the dependent variable by 54.7%.

The elasticity of GDP is very important, especially for countries i. Whereas, an increase in the size of the country by 1% raises the total volume of its foreign trade by 1.131% for countries i and 0.406% for countries j. An increase in the country's population (i, j) by 1%, raises the volume of trade flows for the country j by 0.48%, offset by a decrease in the country's trade flows i by 1.293%. This decrease conflicts with the expected results of the gravity models. The results of the countries' trade flows i are affected by both distance and sharing borders and language are non-existent, despite their conflict with the theoretical rooting of the models of gravity, but many previous studies have reached similar results such as. (Felbermayr & Toubal, 2010; Kahouli & Maktouf, 2015; Mele & Baistrocchi, 2012) This is explained by the weakness of intra-Arab countries Mediterranean trade.

Table 1: Results of the panel data estimation of the proposed gravity model

	OLS	FEM	REM
Dependent variable	lntrt	lntrt	lntrt
lngdpi	0.415***	1.131***	0.844***
	(0.054)	(0.051)	(0.042)
lngdpj	0.858***	0.406***	0.514***
	(0.016)	(0.033)	(0.029)
lnpopi	0.353***	-1.293***	-0.409***

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	(0.058)	(0.133)	(0.074)
lnpopj	0.13***	0.48***	0.303***
	(0.014)	(0.073)	(0.034)
lndistw	-0.846***		-0.786***
	(0.023)		(0.085)
Contig	1.009***		0.898**
	(0.107)		(0.396)
comlan	0.767***		0.52***
	(0.041)		(0.147)
ArturFTA	0.776***	0.469***	0.463***
	(0.158)	(0.136)	(0.136)
lnlci	0.262**	-0.296***	-0.403***
	(0.125)	(0.085)	(0.081)
lnlcj	-0.13***	-0.138***	-0.12***
	(0.042)	(0.045)	(0.044)
lnpoli	-0.042	-0.137***	-0.135***
	(0.04)	(0.024)	(0.024)
lnpolj	0.076**	0.06**	0.069***
	(0.032)	(0.026)	(0.026)
_cons	-12.416***	3.17	-0.428
	(1.077)	(2.035)	(1.306)
Observations	4622	4622	4622
R^2	0.700	0.547	0.541
F-test		93.35	
B-P test			2234.01
hausman test		122.04	

Source: Author (*,**,*** denotes significance at 10%, 5%, 1% level).

The FTA between Egypt, Jordan, Morocco, Tunisia, and their trading partner, the State of Turkey, boosted bilateral trade flows by 0.47%, and this confirms the role that the abolition of customs duties plays in raising trade exchange.

The results of the control of corruption are consistent with economic theory. An increase in corruption by 1% reduces the total foreign trade of countries (i, j) by 0.29% and 0.138%, respectively.

The Arab Mediterranean countries are characterized by a state of political instability, especially after the Arab Spring. This has led to many economic problems, such as reduced exports, declining incomes, and the closure of borders ... all of this negatively affected foreign trade flows.

5. conclusion

This study measured and analyzed the effects of the Free Trade Agreement between the Mediterranean Arab countries and Turkey on trade flows. The study used the approach gravity model assuming the existence of fixed effects "FEM". The results indicated that the benefits accruing to the source countries, Egypt, Jordan, Morocco, and Tunisia are for countries with larger economies and the least population size. Geographical convergence, border, and language sharing do not affect trade flows. The results supported the assumption that countries are called to conclude trade agreements because of the advantages they have over the member states of the agreement in exchange for the disadvantage for non-member states. It also nullified the argument of the four Mediterranean Arab countries that there is no benefit from the free trade agreement with

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the Turkish side. The results also showed that trade flows are affected by other factors not related to customs duties. Rather, the study proved that widespread corruption and the absence of political stability are important determinants of trade flows. Therefore, the study recommends restoring security and stability and combating corruption, especially at the level of customs authorities. It also stresses the necessity of developing trade exchanges with neighboring countries, which have a geographical, cultural, and ideological affinity.

References

Anderson, J. E. (1979). A theoretical foundation for the gravity equation. *The American economic review, 69*(1), 106-116.

Anderson, J. E. (2011). The gravity model. *Annu. Rev. Econ., 3*(1), 133-160.

Anderson, J. E., & Van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. *American economic review, 93*(1), 170-192.

Anderson, J. E., & Yotov, Y. V. (2016). Terms of trade and global efficiency effects of free trade agreements, 1990–2002. *Journal of international Economics, 99*, 279-298.

Baier, S. L., & Bergstrand, J. H. (2007). Do free trade agreements actually increase members' international trade? *Journal of international Economics, 71*(1), 72-95.

Baier, S. L., & Bergstrand, J. H. (2009). Estimating the effects of free trade agreements on international trade flows using matching econometrics. *Journal of international Economics, 77*(1), 63-76.

Baier, S. L., Bergstrand, J. H., & Clance, M. W. (2018). Heterogeneous effects of economic integration agreements. *Journal of Development Economics, 135*, 587-608.

Baier, S. L., Yotov, Y. V., & Zylkin, T. (2019). On the widely differing effects of free trade agreements: Lessons from twenty years of trade integration. *Journal of international Economics, 116*, 206-226.

Baldwin, R., & Jaimovich, D. (2012). Are free trade agreements contagious? *Journal of international Economics, 88*(1), 1-16.

Bergstrand, J. H. (1985). The gravity equation in international trade: some microeconomic foundations and empirical evidence. *The review of economics and statistics*, 474-481.

Bergstrand, J. H. (1989). The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade. *The review of economics and statistics*, 143-153.

Busse, M., Gröning, S., & Groening, S. (2012). Assessing the impact of trade liberalization: The case of Jordan. *Journal of Economic Integration*, 466-486.

Carrere, C. (2006). Revisiting the effects of regional trade agreements on trade flows with proper specification of the gravity model. *European Economic Review, 50*(2), 223-247.

Chaney, T. (2008). Distorted gravity: the intensive and extensive margins of international trade. *American economic review, 98*(4), 1707-1721.

Deardorff, A. (1998). Determinants of bilateral trade: does gravity work in a neoclassical world? *The regionalization of the world economy* (pp. 7-32): University of Chicago Press.

Doan, T. N., & Xing, Y. (2018). Trade efficiency, free trade agreements and rules of origin. *Journal of Asian Economics, 55*, 33-41.

Eaton, J., & Kortum, S. (2002). Technology, geography, and trade. *Econometrica, 70*(5), 1741-1779.

Evenett, S. J., & Keller, W. (2002). On theories explaining the success of the gravity equation. *Journal of political economy, 110*(2), 281-316.

Felbermayr, G. J., & Toubal, F. (2010). Cultural proximity and trade. *European Economic Review, 54*(2), 279-293.

Hatab, A. A., Romstad, E., & Huo, X. (2010). Determinants of Egyptian agricultural exports: A gravity model approach. *Modern Economy, 1*(03), 134.

ISSN: 2005-4238 IJAST

Heo, Y., & Doanh, N. K. (2020). Is NAFTA Trade-Creating or Trade-Diverting? A System GMM Approach. *Economic Papers: A journal of applied economics and policy, 39*(3), 222-238.

JABRI, A. (2020). DO EU-FREE TRADE AGREEMENT IMPROVE THE FOREIGN TRADE COMPETITIVENESS IN MOROCCO? GRAVITY MODEL ANALYSIS. *International Journal of Economics and Management Research, 1*(1), 59-75.

Jagdambe, S., & Kannan, E. (2020). Effects of ASEAN-India Free Trade Agreement on agricultural trade: The gravity model approach. *World Development Perspectives, 19*, 100212.

Kahouli, B., & Maktouf, S. (2015). Trade creation and diversion effects in the Mediterranean area: Econometric analysis by gravity model. *The Journal of International Trade & Economic Development, 24*(1), 76-104.

Kunroo, M. H., Sofi, I. A., & Azad, N. A. (2016). Trade implications of the Euro in EMU countries: a panel gravity analysis. *Empirica, 43*(2), 391-413.

McCallum, J. (1995). National borders matter: Canada-US regional trade patterns. *The American economic review, 85*(3), 615-623.

Mele, M., & Baistrocchi, P. A. (2012). A critique of the gravitational model in estimating the determinants of trade flows. *International Journal of Business and Commerce, 2*(1), 13-23.

Olivero, M. P., & Yotov, Y. V. (2012). Dynamic gravity: endogenous country size and asset accumulation. *Canadian Journal of Economics/Revue canadienne d'économique, 45*(1), 64-92.

Péridy, N. (2005). The trade effects of the Euro–Mediterranean partnership: what are the lessons for ASEAN countries? *Journal of Asian Economics, 16*(1), 125-139.

Pöyhönen, P. (1963). A tentative model for the volume of trade between countries. *Weltwirtschaftliches Archiv*, 93-100.

Tinbergen, J. (1962). Shaping the world economy; suggestions for an international economic policy.

ISSN: 2005-4238 IJAST