



**“The Migrant Effect on Trade Across Countries of Middle East and North Africa (MENA)”**

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# The Migrant Effect on Trade Across Countries of Middle East and North Africa (MENA)

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## **ABSTRACT**

*The present text aims to clarify the impact of migrant flows on a host country's trade direction. The effect is estimated using "Total Trade", "Exports" and "Imports" trade directions according to the gravity model approach. The effect is tested using data for Middle East and North Africa (MENA) countries. The data sample includes eighteen countries from 1990 to 2015 at five year intervals. The gravity model used in this thesis is estimated using the Poisson Pseudo Maximum Likelihood estimator followed by Silva and Tenreyro (2006). The following independent variables are deemed statistically significant based upon the results; "Migrant Levels", "GDP for the home country", "GDP of the partnering country", "Exchange Rate", "Distance", "Language", and "Border". The Random Effect Poisson regression varied slightly in finding "Language", and "Border" to be statistically insignificant, whereas all other results between Poisson Pseudo Maximum Likelihood and the Random Effect Poisson regression were alike. Lastly, "Migrant Levels", "GDP for the home country", "GDP of the partnering country" and "Border" positively affect trade, while "Exchange Rate", "Distance", and "Language" have a negative effect on the trade direction. Specifically, the findings of this thesis show that higher migrant levels across MENA countries lead to higher trade relations (represented by trade levels) between MENA countries and migrant countries.*

**Keywords:** Migrant Flows; Trade Direction; MENA Countries.

## I. INTRODUCTION

This paper aims to understand the effect of a change in migrant levels, on trade direction of the host countries. The MENA region was selected to be studied for various reasons. The most prominent of which is that Asia as a continent has the highest number of migrants as of year 2015 ranging at 104 Million migrants with the fastest annual growth of migrants at 2.8 percent per year.

As per recent migration reports (United Nations, 2015), almost 67 percent of all migrants live within twenty countries. Among those countries, nine countries are in Asia and the rest are scattered in Europe, Northern America, Africa and Oceania. Within the top nine Asian countries hosting migrants three are in the Middle East; Saudi Arabia (10 Million migrants) is ranked 4th, United Arab Emirates (8 Million migrants) is ranked 6th, and Kuwait (3 million migrants) is ranked 20th equaling Jordan and Turkey (United Nations, 2015).

Furthermore, when it comes to international migrants as a percentage of total population, the three top countries among the world are the United Arab Emirates with 88 percent of total population consisting of Migrants, Qatar at 75 Percent, and Kuwait at 74 percent. As the MENA region has such an influx of migrants with some of the highest population levels worldwide, especially considering the relative size of countries such as Saudi Arabia versus the United States. It is compelling to understand the implications of these international migrant numbers and their influence on the economy overall, and more specifically trade.

Given the current socio-economic instability that disturbs numerous countries around the world, many citizens tend to migrate for a better life and future. Migration is the voluntary movement from one's own country of origin to a foreign country for various reasons. In general, the migrant population makes the decision to move to countries

that are of higher income for improved quality of life, vaster job opportunities, higher wages, and more. The influx of migrants affects different economies in several different ways worldwide. This is as migrants can positively and negatively influence the local and global markets and economies.

Between the years 1990 and 2015 international migrants worldwide increased by more than 91 million migrants, approximately 60% of the total international migrant base (United Nations, 2015). Europe and Asia are found to host 2/3 of all international migrants as of year 2015. Whereas around 76 million migrants are accommodated in Europe and roughly 75 million migrants in Asia (United Nations, 2015).

Of the 27 Million migrants in Asia, around 90% of these migrants are born in other countries within Asia, approximately 24 Million migrants, indicating strong ties between Asian countries. After the year 2000, Asia became the continent with the highest number of new additional international migrants than any other major region or continent. Asia received an average of 1.7 million migrants annually between 2010 till 2015, Europe was runner up with the second largest amount of additional migrants per year at 1.6 million migrants. As of 2015 the largest region migration corridor, a common route followed by migrants during travel to reach their destination country, was the Asia to Asia corridor where there was 59 million international migrants that moved through said corridor and reside in another country within Asia. Between 2000 and 2015, the Asia to Asia migration corridor increased to an average of 1.5 million migrants annually, and then from 2010 to 2015 increased to an average of 1.6 million migrants per year.

Three of the top six countries hosting migrants are from Asia, which are Russia, KSA, and the UAE. Whereas the top country hosting migrants is the United States, and the remaining two Germany and the United Kingdom are in Europe. Of the three Asian

countries, two of which are in the MENA region, more specifically the Middle East; the Kingdom of Saudi Arabia (KSA) and the United Arab Emirates which are also the two smallest countries of the top six countries.

As the KSA and the UAE host the most migrants in the MENA region and are some of the smallest countries in terms of size and population from the top 20 list, it would be interesting to understand the effect of high migrant levels on such countries. Countries such as the UAE are small open economies, and host migrants that comprise of more than half the entire country population. Trying to understand the effect migrants have on an entire countries economy is a vast endeavor, therefore narrowing down the scope of this dissertation to the effect international migrants have on trade, whether it be "Total Trade", "Exports", or "Imports". Identifying if there is a significant impact on trade from the increase or decrease in migrants, especially in recent years as noted previously there has been a sharp increase in migrants worldwide, Asia in particular. The increase in migrant population in recent years may have an effect on a countries trade due to the various demand changes as there are new tastes in the country from the additional migrants traveling annually. New skill levels can be imported from migrants which can create new industries and therefore jobs leading to the production of new products and services to be exported and more. For host countries to take advantage of their migrant population in an effort to promote economic growth, they must understand how their local economics and in this case trade are being effected and influenced by their migrant population.

Analyzing the growth and declining migrant population across MENA countries and the consequential effect on trade in addition to other variables influencing exports and imports, such as the exchange rate and distance between countries. Examining the effect an increase or decrease for international migrants in a host country has on

imports, exports and “Total Trade”. Clarifying the effect migrants have on a trade levels, whether it is positive or negative through the Poisson Maximum Likelihood (PML) estimator.

More specifically using the Poisson Pseudo Maximum Likelihood (PPM) estimator as trade data does not follow the traditional Poisson distribution. Using this estimator in lieu of other more common estimators such as the Ordinary Least Squares (OLS) limits issues dealing with zero trade observations which are common in gravity model data. Finally, the PPML estimator provides the same weight to all observations without emphasizing higher values over lower for more balanced and equally reflective regression results.

## **II. LITERATURE REVIEW**

The various readings and studies that focus on the effect immigration has on trade have rarely investigated the MENA region, specifically GCC countries such as the UAE which has the highest percentage of migrants as part of the total population. Head (1998) and Ries (1998) research the effect immigration has on trade in Canada using trade data from 136 countries during the years 1980 until 1992. They suggest that immigrants may expand trade of the host country with their own countries of origin due to their familiarity, knowledge, and access to those foreign markets. Immigration is found to create a significant positive relationship for Canadian bilateral trade, the results indicate that a 10% increase in immigrants led to a 1% increase in Canadian exports to the immigrant's home country and a 3% increase in imports, in 1992 immigrants generated an additional 3000 US dollars in exports and 8000 US dollars in imports.

Immigration may increase imports more than exports possibly due to the immigrant's preference to home country goods. Independent immigrants are found to have a larger

influence on trade than refugees who have the least impact on trade based on the immigrant level. Canadian immigration policy has a strong influence on both exports and imports as shown above, the results of the paper are consistent with the theory that immigration lowers transaction costs and generates gains from trade in return, expanded trade is likely to increase the general welfare level through the trade creation as well. Immigration does however have negative effects as it can increase trade deficits which may result in currency depreciation leading to a lower real income. Head and Ries (1998) make a point to note that trade effects are only one aspect of positive or negative effects of immigration, other effects may outweigh the positive and negative effects from trade.

Hyder (2016), Hussain (2016), Malik (2016), Anees (2016), and Khan (2016) estimate that each Pakistani migrant contributes 422 US Dollars to Pakistan exports to the selected middle east trading partners as per the available data. The increase in exports is partially due to the reduction of transaction costs. This study confirms the theory that migrants assist in increasing international trade due to foreign relations.

Karagoz (2016) examines the impact of migration on bilateral trade in an augmented panel gravity framework. Specifically on the relationship between Turkish migrant stock in the 13 OECD countries and bilateral trade volume (imports and exports) for the years 2000-2012. The results show that migration has a significant impact on bilateral trade both in terms of imports and exports. Economic size and distance are found to have a positive and negative effect respectively on trade.

Bahcekapili (2015) and Cetin (2015) study the impact of forced migration (Syrian Refugees) on regional economies in Turkey. Findings regarding foreign trade concluded that in cases where migration increased foreign trade balance improved. Hence the increase in Syrian Refugees assisted in balancing foreign trade, this is due

to two factors. The first is exports and imports from and to Northern Syria declined due to the civil war. The second is the increase of commercial exports originating from Syrian refugees in Turkey to various countries.

Çağatay (2014), Değirmen (2014), Genç (2014), Koska (2014), Lucke (2014), and Saygın (2014) analyzed the impact of migration on international trade and product diversity. Mediterranean Partners and Eastern European Countries constitute the home, the EU 27 constitutes the host countries. Trade analysis on total and industry-level bilateral exports and imports find migration to have a significant impact on exports and imports in most cases.

The effect of migration on trade is a relevant topic considering the current state of migration levels worldwide, thus the analysis of such can provide benefits, insight, and understanding to countries and their respective economies on how trade volumes fluctuate. If rising or falling migrant population levels have an impact on international trade and if so what is the extent of said impact. Some MENA countries have migrant levels where the citizen population levels are below the migrant population level, they are amongst the top countries in the world that host the highest migrant population levels. Competing with countries such as the United States and Germany. As such, it is interesting to investigate the effect of high migrant levels on smaller economies such as most countries in the MENA region. As opposed to the effect of the migrant population on larger and stronger economies such as the United States.



### III. OVERVIEW

Generally migrants move due to conflict, unemployment, poverty, and to seek a better life and future for themselves. In turn they fill labor shortages, import capital, create jobs, contribute in terms of taxes, and support for a more stable economic growth. At present migration has become easier due to new and modern transportation methods, as such the number of migrant population has grown briskly in recent years increasing by 22 million migrants from 2010 to reach 244 Million in 2015 (United Nations, 2015).

As per Appendix 2.1 Almost half of the world's migrants originate from Asia, while a quarter come from Europe. Of the total 244 million migrants worldwide, about 157 Million of them originated from Middle Income countries and moved to higher income countries for better prospects and future. Refugees have recently made up a large portion of the migrant population, due to major conflicts in countries such as Somalia and the Syrian Arab Republic, about 19.5 million refugees have migrated since the year 2014.

Of the 244 million migrants in the world, approximately 70 percent live in only 20 countries, essentially a large portion of migrants reside in a small share of the world as per Appendix 2.2. Whereas, of the 70 percent migrant population, 28 percent reside in the United States. Therefore, one country in the world contains the largest number of migrants, but factors such as the size and economic strength of the United States and its foundations encourage and entice migration to a degree.

Ten countries of the top twenty countries hosting migrants are in Asia and six are in Europe as per Appendix 2.3, confirming that most international migrants live in those

two continents. Smaller countries such as Saudi Arabia, Jordan, Kuwait, and the United Arab Emirates have a higher percentage of migrants per population due to the relatively small size and low population quantities.

For example, the United Arab Emirates as of 2015 have a population of approximately 9 million people, among which about 88% of which are migrants (7,920,000). Qatar has a population of 2.2 million migrants, 75% of which are migrants (1,650,000), and lastly the third highest country with a migrant population of 74% (2,960,000) from a total population of 4 million is Kuwait. The percentage of migrants as part of the total population in the MENA region declines to 51% and less, reaching 1% for countries such as Egypt which have high population levels equalizing the percentage for a more stable demographic.

Remarkably all the countries in the top 20 list that have high percentages of migrant populations are in the Middle East and more specifically the top four countries with the highest percentages ranging from 88% to 51 % are in the GCC.

As per Appendix 2.4 eight of the MENA countries have a percentage of 32 or higher as a share of the total population, with countries such as Bahrain, Kuwait, Qatar, and the UAE with more than half of the total population as Migrants. The highest of which is UAE with 88% of the total population being migrants, having such a large amount of Migrants must have an effect on the economy and society, to understand a small part of this effect, the paper studies the migrant levels in the MENA region from 1990 to 2015 at five year intervals and focuses in on the effect of migrants onto “Total Trade”, “Exports” and “Imports”.

As per Appendix 2.5 each significant increase in migrant levels from 1995 to 2010 exports to MENA countries from the UAE have increased as well at an increasing rate

each year coinciding with the positive increase in influx of migrants. Further more evidence to the theory, in 2015 migrant levels increased at a decreasing rate of approximately 2,827,606, migrants. A significant amount that could be due to the migrant policy of the UAE, and as a consequence perhaps of the decline in migrants, exports decreased from 2010 till 2015 by 5 billion US Dollars.

#### **IV. METHODOLOGY & MODEL SPECIFICATION**

##### **IV.I The Gravity Equation and its Shortcomings**

The traditional gravity equation pioneered by Tinbergen (1962), predicts bilateral trade flows based on a pair of countries individual GDP's in co-ordinance with their distance. The model has been used to determine the explanatory independent variables for trade, review results of trade agreements, and understand the bilateral trade implications of treaties and/or alliances. This paper attempts to find whether the level of migrant workers affected and is significant for the trade of most Middle Eastern and North African countries as well as what other variables explain the trade level for the past 25 years.

The gravity equation is used to determine which independent variables explain the dependent variable bilateral trade flows for MENA countries top 10 migrating partners. The panel data collected spans a time period of 25 years and includes non-negative "Export", "Import", and "Total Trade" observations at 5 year intervals from 1990 to 2015 for MENA Countries with the exception of a few due to data availability. One of the more common data complications that arise when using the gravity model is zero trade observations, their presence may be due to various reason such as; when two countries have no actual trade in that time period, if the minimum value of trade is not

met the data may be rounded down to zero which is most likely to occur for small and/or distant countries, and finally smaller countries may have measurement errors when missing or unavailable observations are incorrectly registered at zero due to their size and the transparency available in those countries.

Due to the above data complications, the traditional log-log model as mentioned above cannot be used when trade equals zero ( $F_{ij} = 0$ ) because logging the trade dependent variable automatically drops observations for which reported trade observations are zero. This may lead to issues such as over dispersion and falling into the trap of incorrectly explaining the dependent variable without important independent variables that were removed due to the presence of zero's, when the dependent variable equals to zero Silva and Tenreyro (2006) suggest to use the model in its multiplicative form as follows:

$$(1)T_{ij} = \exp[\beta_0 + \beta_1 \ln(GDP_i) + \beta_2 \ln(GDP_j) - \beta_3 \ln(D_{ij})]n_{ij}$$

The use of the above model helps in dealing with issues such as heteroscedasticity and zero observations as the model does not have a problem estimating the gravity equation with zero observations. Some studies may use another method to estimate the gravity model such as the non-linear least squares, but this estimator fails to deal with the heteroscedasticity problem that is mainly associated with this type of trade data. It is recommended to include the zero trade observations when dealing with international trade data to ensure results reflect actuality and maintain the integrity of observations.

#### **IV.II The Poisson Pseudo-Maximum-Likelihood Estimator**

Not logging the dependent variable and using a different estimator than OLS such as the Poisson pseudo-maximum likelihood (PPML) as recommended by Silva and

Tenreyro (2006) due to its well behaved nature when dealing with dependent variables that have large collections of zero trade observations, the estimator is able to incorporate zero values into the regression, as well as regress the variables that do not follow the Poisson distribution

Using PPML ensures sample data is not truncated (excluding countries due to zero trade observations) which may alter the true regression results, it ensures unrealistic solutions are not taken as they may alter data and outcomes to meet OLS assumptions. The Poisson Pseudo-Maximum-Likelihood estimator also ensures OLS biases such as biased estimates of true elasticities are avoided and is resilient to the presence of a specific type of measurement error of the dependent variable.

Finally, the estimator provides the same weight to all observations equally, it does not emphasize the observations with higher volumes, and this is due to all observations having the same information on the parameters of interest as the additional information on the curvature of the conditional mean coming from observations with larger trade is offset by their higher variance.

#### **IV.III The Random Effect Model**

The random effect model removes omitted variables bias by measuring change within a group across time, controlling for the number of potential omitted variables unique to the group and assumes normal distribution. It studies the variable variations assuming that they are random and uncorrelated. It also allows for inferences about the population from which the scope is drawn, if the effect size in each subject relative to the variance between subjects is large enough, the population can be presumed to exhibit said effect.

To ensure the multi-dimensional model that we are using does not endure massive over specification we use the random effect analysis, this model of regression coefficients has been proven to be more statistically efficient than its counterpart the fixed effect. The model's specific effect is uncorrelated with independent variables and as the differences across the independent variables influences the dependent variable it is recommended to use the random effect model.

Guaranteeing a proper understanding of the explanatory independent variables we need to take the mean effect with equally distributed weights, and estimate coefficients for explanatory variables that are constant over time (Language or Distance).

Therefore the reduced form of the estimated model for the gravity equation is as follows:

$$(2)T_{ij} = \beta_0 + \beta_1 \ln(MGNT_i) + \beta_2 \ln(GDPP_i) + \beta_3 \ln(GDPC_j) + \beta_4 \ln(XR_{ij}) \\ + \beta_5 \ln(D_{ij}) + \beta_6 \ln(LANG_{ij}) + \beta_6 \ln(BORD_{ij}) + \varepsilon_{ij}$$

Where,  $T_{ij}$  represents bilateral trade flows for countries  $i$  and  $j$ ,  $MGNT_i$  represents migrant levels for country  $i$ ,  $GDPP$  represents Gross Domestic Product for the partner country,  $GDPC$  represents Gross Domestic Product for the home country. The exchange rate between countries  $i$  and  $j$  is represented by  $XR_{ij}$ ,  $D$  is the distance between the two countries,  $LANG_{ij}$  and  $BORD_{ij}$  are dummy variables representing Language and Border respectively, and finally  $\varepsilon_{ij}$  is the error term.

Migrant levels ( $MGNT$ ) is expected to have a significant effect on bilateral trade flows ( $T_{ij}$ ) between the partnering countries as there has been a sharp increase in the migrant population worldwide. Gross Domestic Product (GDP) might likely affect the trade flows between countries as a larger GDP might indicate an increase in total trade

and perhaps exports, indicating that countries with higher GDP's trade more with their partner countries due to their higher production levels.

Exchange Rate ( $XR_{ij}$ ) might affect the volume of trade flows between partnering countries depending on the appreciation or depreciation of the rate between the countries. Distance (D) might impact the levels of trade depending on how far apart partnering countries are from each other and whether further distances have an effect or not. Language ( $LANG_{i\Box}$ ) and Border ( $BORD_{ij}$ ) are expected to affect bilateral trade levels if the partnering countries share a common language or a border in a positive manner, with higher trade levels than those non-bordering countries and that speak a different language.

## **V. DATA**

Recall that the purpose of this paper is to understand the effect migrants have on trade with additional significant independent variables, specifically the effect migrants have on MENA countries as certain countries have higher populations of migrants than citizens. The time period is 5 year intervals from 1990 until 2015. These MENA Countries include Morocco, Oman, Kuwait, Algeria, Bahrain, Egypt, Iran, Iraq, United Arab Emirates, Israel, Jordan, Lebanon, Libya, Qatar, Saudi Arabia, and Tunisia. Countries such as Djibouti, Malta, Syria, Palestine, Ethiopia and Sudan were not included in this study due to insufficient data hindering their regression abilities.

Each MENA country was analyzed and partnered with the top ten countries which migrate to the host country for example, Kuwait is partnered with; Bangladesh, Egypt, India, Indonesia, Jordan, Pakistan, Philippines, Sri Lanka, Sudan, and Yemen as they have the top migrating citizens to Kuwait as per the past 25 years' worth of data. However, some host countries top ten migrating countries varied, therefore the

partnered countries can be more or less than ten depending on the data. It is interesting to note that three of the MENA countries Kuwait, Bahrain, and the United Arab Emirates have the same top ten migrating countries worldwide, this could be due to the culture, economic and social needs, trade partnerships and/or agreements.

All the MENA countries and their migrating partners were assigned codes labeled under CPC (Country Partner Code), the exports and imports for each of the corresponding partnerships was taken from the Direction of Trade Statistics from the International Monetary Fund (IMF). The Migrant data for each country and its partner was collected from United Nations, Department of Economic and Social Affairs (2015).

Gross Domestic Product (GDP) and the exchange rate (versus US Dollar) data were taken from the World Bank. The exchange rate which represents the annual averages are based on the monthly averages and the partner country's rate was divided by the MENA country to represent the exchange rate; the exchange rate between the two currencies. Bilateral distance in kilometers for country pairs worldwide was taken from the Centre d'Etudes Prospectives et d'Informations Internationales. The remaining two dummy variables, language and border represent the partnering countries language similarities and the shared border with host countries, where a 1 represents a shared language or shared border whereas the zero value represents otherwise.

## **VI. RESULTS**

The reduced form of the estimated model for the gravity equation is regressed using the Poisson Pseudo-Maximum-Likelihood Estimator and the Random Effect Model. Where the dependent variable is "Total Trade" and the independent variables



are migrant levels “Migrants”, “Gross Domestic Product of the Partner country”, and “Gross Domestic Product of the home Country”. The “Exchange Rate” between partnering countries, “Distance” between the two countries, and finally “Language” and “Border” as dummy variables representing a common language and a shared border.

Results of the regression indicate that the independents explain 70% of “Total Trade” between the partnering countries, therefore variables such as GDP and Migrant population level directly affect total trade between nations. All seven independent variables are deemed statistically significant at different levels, “Exchange Rate”, “Language”, and “Border” are statistically significant as opposed to “Migrants”, “Gross Domestic Product of the home Country”, “Gross Domestic Product of the Partner country”, and “Distance” which are significant at the first level as evident in Appendix 1.1.

The population of Migrants in the host country, GDP of said country, and GDP of the partner country are both highly significant and have a positive relationship with the dependent. This means that if there is an increase in any of the three variables total trade will increase accordingly, therefore the increase in the level of migrants will lead to higher trade between partnering countries, as will the GDP of those countries. The GDP of the partner country has a very high effect on total trade which means that a country with a higher GDP is more likely to trade.

Generally a country with high GDP means they are producing more and therefore have more goods to export and import than a country with a lower GDP. Henceforth an increasing GDP means the amount of trade, exporting and importing of goods will increase as shown by the significance of the p-value. The positive relationship

between the dependent variable “Total Trade” and the independent “Border” is statistically significant but not highly so, it proves that if a country is bordering with a partner trading country the level of total trade between the two is more likely to increase, which can be due to ease of access, lower shipping cost, and trade relations.

On the other hand, “Exchange Rate”, “Distance”, and “Language” are statistically significant, however “Distance” is more significant at the first level since it has a negative relationship with the dependent variable as shown in Appendix 1.1 , it can be concluded that the further the partner country is the more likely trade will increase. This can be explained due to the nature of trade with MENA countries, most would assume that closer countries should have higher volumes of trade between themselves.

However, most MENA countries trade more with farther countries, as the level of migrants is much higher from distant countries and the volumes of trades from countries with higher GDP’s is much more than those bordering and close countries. Which is why overall the “Distance” variable is negative. For example, of the top ten migrating countries to Kuwait six of which are distant, the higher volumes of trade lie between the countries with higher GDP’s which are the likes of India and more.

## **VI.1 Poisson Pseudo Maximum Likelihood Regression Results**

The PPML regression results as shown in Appendix 1.1 confirms that all independent variables are significant, some more highly than others such as “Migrant Level” and “Border”. To take an in depth look into the effect said variables have on the trade of a host country, regressing the import and export volumes of trade against “Migrant level”, “Gross Domestic Product of the home country”, “Gross Domestic

Product of the partner country”, “Exchange Rate”, “Distance”, “Language”, and “Border”.

The aforementioned variables explain 69% of the total trade for the MENA countries selected, 68% of the exports, and 55% of the imports, ascertaining that imports are affected less by changes in the independents than exports. Although exports have five highly significant variables affecting the outcome the variables still explain more as they have more of an impact on the export trade fluctuations than imports which has six highly significant variables.

“Migrant level”, “Gross Domestic Product of the home country”, “Gross Domestic Product of the partner country”, and “Distance” are all consistently highly significant across all the dependent trade variables “Total Trade”, “Exports”, and “Imports”. Whilst “Exchange rate”, “Language”, and “Border” have more varying levels of significance for the different dependents, “Exchange Rate” is statistically significant with a negative relationship across trade direction. However it is least significant at the third level for the dependent “Exports” indicating that exchange rate appreciations/depreciations have a slight effect on the change in exports for MENA and partnering migrating countries. It is highly significant for imports which is consistent with the price theory, as with the negative relationship should the currency of the partner depreciate against the host country, imports will increase as it is now cheaper to purchase the same goods that were previously sold at a higher price.

The dummy variable “Language” is only significant for two of the three dependents with a negative relationship, it is insignificant for “Imports”. A non-common language has more of an effect for the exports of a host country than for imports, indicating that

host countries are more likely to export goods and services to partner countries with a different language. This may seem strange as many theories indicate that a common language encourages trade between nations, however in the case of the MENA region, most countries language is Arabic but trade tends to occur with larger countries such as India and China due to the goods produced and demanded.

Finally, “Border” is similar to “Language” as it is significant in two of the three dependents, highly significant with Imports and insignificant with exports with a positive relationship throughout. It is also similar in that MENA countries tend to trade mostly with partner countries that are not bordering. Most MENA countries partners are not their border countries but countries in East Asia such as the Philippines or Bangladesh, as such a closer border does not affect the exports of the country. However, MENA and partner countries that are bordering nations will tend to trade more in terms of imports from the host country.

In general the constantly statistically significant variables which have a direct relationship to total trade, exports, and imports are Migrant levels, GDP of the home country, GDP of the partner country, the Distance between partnering countries, and the Exchange rate. Language and Border are statistically significant for some of the dependent variables when regressed, but do not impact trade between MENA and partnering countries in any vital way.

After determining the independent variables and the relationship with trade, it is clear that increasing and/or decreasing migrant levels have an effect on trade of the host country, in this case the MENA region. An increase in Migrants will increase exports and imports for the host nation, this could be due to various reasons such as

relations developing between the partner countries, growth in the local economy producing more goods to be exports and more explained further in the conclusion.

## VI.II Random Effects Regression Results

To avoid over-specification and to ensure that zero trade observations don't impact regression whilst taking the mean effect with equally distributed weights we conduct the Random Effects Poisson regression on "Total Trade", "Exports" and "Imports".

This regression yields similar results for all three dependent variables "Total Trade", "Exports" and "Imports". "Migrant Level", "Gross Domestic Product of home Country", "Gross Domestic Product of Partner Country", and "Exchange Rate" are consistently highly significant with the same positive and negative relationships as the PPML regression, whilst "Distance" is statistically significant with a negative relationship for both "Total Trade" and "Exports".

"Migrant Levels" and "Gross Domestic Product levels" have a positive effect on the volume of trade for the host country, whilst the "Exchange Rate" has a negative relationship, therefore a depreciating exchange rate increases trade as the price of goods is not cheaper, increasing the demand, and this also provides insight into the types of goods traded which are normal and non- inferior as with the PPML regression.

As the model used in this paper is log-level, interpretation of the change in variables is as follows; should the independent variable such as Migrant Level increase by one percent, the dependent "Total Trade" will increase (due to the positive relationship) by the coefficient percentage (coefficient divided by 100) times the percent change in

“Migrant Level” in “Total Trade” units. For example, should “GDP Partner Country” increase by 20 % the increase in “Total Trade” will be .1707 %.

As seen in Appendix 1.2 “Total Trade” and exports the two dummy variables “Language” and “Border” are completely insignificant for all the dependent variables, meaning they don’t affect the volume of “Total Trade” and trade exports to partnering countries after equally distributing the weights. The random effects Poisson regression reflected the main variables that affect trade import volumes which are the migrant levels, the GDP’s of both the home and partner countries, and the exchange rate of those countries, and distance the least significant of the five independent variables. Of course, there are many more economic variables that affect trade, but the purpose of this paper, is to confirm and understand the relationship between migrant population levels and the effect on trade in MENA countries.

## **VII. CONCLUSION & POLICY IMPLICATIONS**

The results from the PPML estimator confirm that “Migrant Levels” are highly significant and positively affecting “Total trade”, “Exports”, and “Imports”. As such an increase in the population of migrants within a host country will increase its international trade with its top migrating partners. For example in 2005 the migrant level in Kuwait for India was 485,847 thousand and “Total Trade” was 924.16 Million (Dollars) and by 2015 when the migrant population of India increased to 1,061,758 Million “Total Trade” with India increased to 6757.81 Billion.

GDP of the host country and Partner Countries are positive and highly significant in relation to trade, this is logical as the Partner Country grows and produces more goods it will trade which therefore increases trade in both nations. Distance on the other hand is highly significant but is negative, this relationship displays the paradox of MENA

countries top trading partners which tend to be countries that are in Far East Asia such as India, Philippines, and Indonesia etc. Unlike the usual understanding of Trade and Distance being the closer the countries the more likely to trade, but MENA countries tend to be smaller open economies and trade the most with countries outside of the region that are larger such as China.

A less significant negative variable, the exchange rate is least significant for “Exports” at 0.063 and most significant for “Imports” at 0.010 respectively. From these findings, it is understood that should the exchange rate between nations depreciate Trade will increase causing an inverse relationship, and it is most relevant for imports as a depreciating currency assures that the host country is able to import foreign good cheaper.

The dummy variables border and language fluctuate significantly, “Border” is highly significant for Imports with a positive relationship indicating that host countries which share a border with their migrant partner country tend to increase imports from said country, and this could be due to the demand of the migrant population in the host country for goods from their original nation. Border on the other hand is insignificant when it comes to “Exports”, indicating that the Partner country in close proximity to the host country does not affect its own exports.

Finally, “Language” has a negative highly significant relationship with “Imports” indicating that should partnering countries speak different languages trade will increase. Naturally, the assumption would be the opposite, countries which speak the same language should trade more as a result of ease of understanding however, as with Distance the relationship is the opposite. Host countries tend to trade more with

countries that don't speak the same language as it receives migrants from countries that don't speak the same language.

The Random Effect Poisson Regression results varied slightly from the PPML estimator, migrant population levels and the GDP of the host and partner countries remained highly significant with a positive relationship and the dummy variables language and Border were deemed insignificant. The difference in significance came with Distance and Exchange Rate, the latter found to be highly significant with a negative relationship indicating the Exchange Rate between Partnering Nations affects the MENA countries trade levels directly. Whereas Distance, is significant but not at the First level, with the least significance on Imports into the host country, confirming the understanding that when it comes to the MENA region distance is not a variable that highly influences the trade between nations.

Therefore, the first policy recommendation is to introduce a new permanent citizenship that encourages the migration of highly skilled migrants which invest capital in to the economy creating jobs in new industries that may also increase trade with partnering migrant countries increasing and balancing GDP for a more stable economy.

However, the number of permanent citizenships provided is generally set and pertains to only a small number of the migrant population. The second policy recommendation is to input an annual quota set by the government based on the economic needs of the nation, some countries require more migrants to boost and encourage economic growth while others prefer to maintain or decrease the migrant population to gain control over the influx and manage the population level with respect to the percentage of migrants versus citizens.



Finally, a policy should be set in the MENA region countries which favors the more highly skilled migrant worker over the less skilled in an effort to invest into the economy with the hopes of returns in economic growth. However, Less Skilled workers should be allowed to migrate as some industries require the manpower and labor to produce the required goods, as such a balance between the acceptances of highly and less skilled workers should be set and maintained dependent on the needs of the labor market.

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## Appendix 1

### 1.1 Poisson Pseudo Maximum Likelihood Regression

Poisson Pseudo Maximum Likelihood Regression			
	T (Total Trade)	X (Exports)	M (Imports)
Migrant Level	4.95*** (0.000)	4.45*** (0.000)	4.38*** (0.000)
GDP Host Country	9.24*** (0.000)	8.95*** (0.000)	6.43*** (0.000)
GDP Partner Country	15.16*** (0.000)	14.22*** (0.000)	11.39*** (0.000)
Exchange Rate	-2.46** (-0.014)	-1.86* (0.063)	-2.57*** (0.010)
Distance	-5.02*** (0.000)	-3.96*** (0.000)	-4.71*** (0.000)
Language	-2.41** (0.016)	-2.64*** (0.008)	-1.36 (0.172)
Border	2.48** (0.013)	0.25 (0.804)	3.76*** (0.000)
R-Squared	0.6927	0.6795	0.5503
Number of Observations	887	873	874

*Note: Statistical Significance is indicated by \*(10%), \*\* (5%), \*\*\* (1%)*

*P-value are shown in parenthesis*

## 1.2 Random Effects Poisson Regression

Random Effects Poisson Regression			
	T (Total Trade)	X (Exports)	M (Imports)
Migrant Level	75000*** (0.000)	18000*** (0.000)	82000*** (0.000)
GDP Host Country	76000*** (0.000)	60000*** (0.000)	53000*** (0.000)
GDP Partner Country	140000*** (0.000)	100000*** (0.000)	92000*** (0.000)
Exchange Rate	-47000*** (0.000)	-17000*** (0.000)	-43000*** (0.000)
Distance	-2.35** (0.019)	-2.48** (0.013)	-1.89* (0.059)
Language	0.11 (0.909)	-0.26 (0.794)	0.41 (0.680)
Border	1.22 (0.221)	0.51 (0.607)	0.98 (0.327)
Number of Observations	887	873	873

Note: Statistical Significance is indicated by \*(10%), \*\* (5%), \*\*\* (1%)

*P-value are shown in parenthesis*

## Appendix 2

**Table 2.1: The breakdown of migrants by area of origin as of 2015**

Origin	Migrant Population
Asia	104,000,000

Europe	62,000,000
Latin America & the Caribbean	37,000,000
Africa	34,000,000
Other	7,000,000
<b>Total</b>	<b>244,000,000</b>

Source 1: United Nations, Migration Report 2015

**Table 2.2: The breakdown of Migrant Dispersion as of 2015**

Origin	Migrant Dispersion
Europe	76,000,000
Asia	75,000,000
North America	54,000,000
Africa	21,000,000
Latin America & the Caribbean	9,000,000
Oceania	8,000,000
Other	1,000,000
<b>Total</b>	<b>244,000,000</b>

Source 2: United Nations, Migration Report 2015

**Table 2.3.1: The Top 20 Countries hosting Migrants**

Ranking	Countries	Number of Migrants
1	United States	47,000,000
2	Germany	12,000,000
3	Russian Federation	12,000,000

4	Saudi Arabia	10,000,000
5	United Kingdom	9,000,000
6	United Arab Emirates	8,000,000
7	Canada	8,000,000
8	France	8,000,000
9	Australia	7,000,000
10	Spain	6,000,000

Source 3: United Nations, Migration Report 2015

**Table 2.3.2: The Top 20 Countries hosting Migrants (10-20)**

Ranking	Countries	Number of Migrants
11	Italy	6,000,000
12	India	5,000,000
13	Ukraine	5,000,000
14	Thailand	4,000,000
15	Pakistan	4,000,000
16	Kazakhstan	4,000,000
17	South Africa	3,000,000
18	Jordan	3,000,000
19	Turkey	3,000,000
20	Kuwait	3,000,000

Source 4: United Nations, Migration Report 2015

**Table 2.4: International Migrants as a Percentage of Total Population in the MENA Region**

<b>MENA Country</b>	<b>International Migrants as a Percentage of Total Population</b>
United Arab Emirates	88
Qatar	75
Kuwait	74
Bahrain	51
Jordan	41
Oman	41
Lebanon	34
Saudi Arabia	32
Israel	25
Libya	12
Syrian Arab Republic	5
Iran	3
Algeria	1
Egypt	1
Iraq	1
Tunisia	1
Yemen	1
Morocco	0

*Source 5: United Nations, Migration Report 2015*

**Table 2.5: Change in Migrant and Export Levels (to MENA countries) for the United Arab Emirates**

<b>Year</b>	<b>Change in Migrant Level</b>	<b>Change in Exports (US Dollar)</b>
1995	468,598	980,906,307.47

2000	564,155	1,053,661,361.56
2005	772,619	5,407,816,800.13
2010	3,696,706	29,159,822,718.07
2015	869,100	(5,048,307,178.19)

Source 6 - United Nations & World Bank Data

**Table 2.6: Change in Migrant and Export Levels for the UAE per Partner Country**

Year	2005		2010		2015	
	Change in Migrant Level	Change in Exports	Change in Migrant Level	Change in Exports	Change in Migrant Level	Change in Exports
Bangladesh	111,366	181,509,460.92	510,389	203,299,049.81	(12,882)	46,364,557.36
Egypt	79,936	55,148,223.93	413,388	537,530,544.55	180,150	646,672,731.82
India	371,145	3,043,667,928.89	1,626,809	24,137,246,778.39	585,535	(9,563,971,732.73)
Indonesia	27,336	135,351,710.00	145,997	131,564,567.27	(7,306)	789,688,079.09
Jordan	16,132	147,790,614.18	78,212	173,687,629.15	25,747	400,182,586.43
Pakistan	78,029	1,346,017,270.16	452,499	1,731,754,946.05	27,548	2,213,643,577.90
Philippines	73,758	(600,695,230.91)	271,445	1,180,750,118.00	81,641	(902,830,902.00)
Sri Lanka	3,954	139,798,923.64	51,951	35,577,457.53	12,643	673,243,275.25
Sudan	1,334	345,497,053.75	55,904	495,562,507.48	(24,854)	(94,465,234.75)
Yemen	9,629	613,730,845.58	90,112	532,849,119.85	878	743,165,883.44
Total	772,619	5,407,816,800.13	3,696,706	29,159,822,718.07	869,100	(5,048,307,178.19)

Source 7 - United Nations & World Bank Data