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AN EMPIRICAL ANALYSIS OF ASYLUM-SEEKING, MIGRATION AND INTERNATIONAL TRADE

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by

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A Dissertation
Submitted in Partial Fulfillment of the Requirements for the
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DISSERTATION APPROVAL

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AN ABSTRACT OF THE DISSERTATION OF

Adisa Olawale David, for the Doctor of Philosophy degree in Economics, presented on April 5, 2023, at Southern Illinois University Carbondale.

TITLE: AN EMPIRICAL ANALYSIS OF ASYLUM-SEEKING MIGRATION AND INTERNATIONAL TRADE

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This paper aims to provide an empirical analysis of asylum seeking, migration, and international trade. These issues are among the most pressing challenges of our time and understanding the various factors that drive these phenomena and the relationships between them is crucial. Through rigorous analysis and examination of real-world data, this paper aims to contribute valuable insights into these topics.

The paper is structured into three chapters, each focusing on a specific area of investigation. The first chapter explores the impact of asylum decisions on future asylum applications. Utilizing a panel data approach that covers 205 countries from 2000 to 2019, the study uses the gravity model with both origin and destination time fixed effects to investigate the heterogeneity of this impact across different countries. The findings indicate a significant and positive relationship between successful asylum decisions and subsequent applications, highlighting the critical role of initial decisions in shaping future outcomes. This chapter's findings have important implications for policymakers and practitioners involved in asylum processes, particularly in decision-making processes and their potential long-term effects on asylum applications.

In the second chapter, the paper reexamines the hypothesis that the ethnic composition of the population affects international trade, using a more comprehensive dataset and up-to-date methodology. The study employs recent developments in gravity analysis, including pairwise,

importer-time, and exporter-time fixed effects. By estimating a gravity model using bilateral trade and migrant stock data from around 205 countries from 2000 to 2014, the study finds a positive and significant relationship between migrant stock and international trade. The result remains robust after controlling for free-trade areas and similarities/dissimilarities of the trading partners. This chapter's findings provide new insights into the complex relationship between ethnic composition, migration, and international trade, with potential implications for policymakers and practitioners involved in trade and migration policies.

The third chapter investigates the relationship between international trade and international migration, with a focus on the role of trade tariffs. The analysis examines bilateral migration flow and bilateral trade tariffs for 100 countries from 2000-2014, including exporter-imposed tariffs, which previous research has not addressed. By employing gravity analysis with importer time and exporter-time fixed effects, the results reveal that in OLS estimations, both importer and exporter-imposed tariffs are substitutes, while in Poisson Pseudo Maximum Likelihood (PPML) estimations, only exporter-imposed tariffs are substitutes. There is no evidence to suggest that importer-imposed tariffs are substitutes or complementary. These findings have significant implications for policymakers and practitioners involved in trade and migration policies, particularly in understanding the potential effects of trade tariffs on migration flows.

In conclusion, this paper provides a comprehensive empirical analysis of asylum seeking, migration, and international trade, focusing on the various factors that drive these phenomena and the relationships between them. The findings of this study have significant implications for policymakers involved in decision-making processes related to these issues. The study's rigorous

analysis and use of real-world data provide valuable insights into some of the most contemporary issues.

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DEDICATION

To God, my beloved family, and dear friends. As I conclude this dissertation, I want to express my deepest gratitude for your unwavering love, encouragement, and support. Your presence in my life has been a constant source of inspiration, and I could not have accomplished this without you.

To my loving parents, Oluwatoyin Adisa and Omobolaji Adisa, and my siblings Opeyemi Abejide, Oluwaseun Ajiva, and Oreoluwa Adisa, I am forever grateful for your endless support and encouragement. To my wonderful brother-in-laws, David Abejide and Lubem Ajiva, and my precious nieces, Tioluwa Abejide and Ebunoluwa Ajiva, your love and presence in my life mean everything.

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This dissertation is the fulfillment of God's promise over my life, an arrow shot into the future to fulfill His purpose on earth. By completing this work, I am walking His purpose for my life, and this marks the beginning of a new chapter in my journey.

I dedicate this dissertation to God, my cherished family, and my beloved friends. Thank you all for being my rock and my source of strength. This achievement is as much yours as it is mine.

With heartfelt appreciation and love,

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CHAPTER 1

THE EFFECTS OF ASYLUM DECIONS ON ASYLUM APPLICATIONS

1.1 Introduction

According to Amnesty International (2016), leaving one's place of birth is a common experience for most people in the world. While some people may only move to nearby cities or villages, others may need to leave their home country entirely, either temporarily or permanently. There are many reasons why people leave their homes, including seeking a safer and better life, pursuing education, or reuniting with family.

This paper focuses on the factors that influence the decision to seek asylum in another country and how previous asylum application decisions can affect current applications. Asylum applications are made by individuals seeking protection from persecution, war, or other forms of violence in their home country. The application process involves a detailed examination of the individual's claim for protection, including supporting evidence and interviews with the applicant.

Each asylum application is evaluated on a case-by-case basis, taking into account country conditions and other relevant factors. The outcome of each decision may vary depending on the specific circumstances of each case, and processing times and backlogs can affect the timing of asylum decisions. Asylum seekers are individuals who have left their home country and are waiting to receive a decision on their asylum claim. Seeking asylum is a human right, and everyone should be allowed to enter another country to seek asylum (Amnesty International, 2016).

According to the UNHCR global trends forced displacement report, in 2021, there were 1.7 million individual asylum applications in 155 countries, which is a 35% increase from the previous year (UNHCR, 2020). However, this number remains below pre-COVID-

19 levels. The report notes significant increases in asylum applications in Germany, Mexico, the Democratic Republic of the Congo, and Costa Rica, and significant decreases in Brazil, Peru, Spain, and the United States of America.

Numerous studies have attempted to examine the correlation between asylum decisions and applications, with many indicating that the former can have significant impacts on the latter. According to Keith (2010), the decisions made by judges regarding asylum seekers can be influenced by their prior socialization experiences, which can reflect or shape their values and policy preferences. Additionally, Issifou (2020) found that political factors, such as political polarization and electoral cycles, can influence asylum approval policies in high-income countries. Rodda (2015) discovered that certain characteristics, such as age, gender, and state of origin, can affect an individual's likelihood of being granted asylum. Meanwhile, Wiklund (2012) found that the most significant determinants of where asylum seekers lodge their claims are colonial ties and changes in asylum policy. Collectively, these studies suggest that various factors can influence asylum decisions.

However, none of the papers explicitly address the question, "to what extent do asylum decisions affect applications?". Hence, it is difficult to say definitively how great of an effect asylum decisions have on applications. Further research is needed to answer this question more directly. There has yet to be any paper other than that by (Hatton, 2016) that quantitatively assesses the impact of asylum decisions on asylum applications. This paper aims to quantitatively assess the relationship between asylum decisions and asylum applications. The paper draws from the idea of (Hatton, 2016); however, in this paper, the gravity model is used for analysis, which is a departure from the fixed and random effects model used by (Hatton, 2016). This paper also investigates other factors that affect asylum applications. Furthermore Hatton in his paper only observed applications to 19 OECD countries, This paper contributes to existing literature by applying more sophisticated

econometric techniques by way of the gravity model, also this paper tests for the heterogeneity's, and observes more countries making results from this study more generalized, and using more UpToDate data.

To assess the impact of asylum decisions and other determinants on asylum applications, this study employs various fixed effects, including origin time fixed effects, destination time fixed effects, and pairwise effects. Endogenous effects are controlled for through the use of fixed effects, including conflicts and GDP per capita, as well as time-invariant variables. The study also examines the potential for heterogeneity in the effect of successful asylum-seeking on new applications based on the characteristics of the origin and destination. Furthermore, this study seeks to highlight the importance of asylum and migration policy in managing asylum applications and the number of asylum seekers.

1.2 Literature and Theory

The issue of asylum policy has been a contentious topic for many countries worldwide. It has resulted in a range of debates and discussions on the appropriate measures to handle asylum seekers. In this regard, Toshkov's work in 2013 has played a significant role in shaping the theoretical framework for my research. Toshkov's study provides insights into the strategic behavior of both asylum seekers and governments, which are crucial in understanding the dynamics of asylum policy.

Toshkov's postulation that asylum seekers aim to maximize their chances of having their applications approved while governments attempt to minimize the influx of asylum seekers into their countries underscores the competing interests at play. Governments have a duty to ensure national security, while asylum seekers seek protection from persecution in their home countries. The recognition rates of asylum applications are, therefore, a crucial aspect of asylum policy.

Toshkov argues that there is a reciprocal relationship between recognition rates and the number of applications. As recognition rates increase, more individuals become incentivized to apply for asylum. Conversely, when the share of asylum seekers in a country's flow is high, recognition rates tend to decrease. This finding is essential in understanding the dynamics of asylum policy and the various factors that influence it.

Moreover, Toshkov's work highlights the influence of political and economic factors on both recognition rates and the number of asylum seekers. During favorable economic and political times, recognition rates tend to increase, leading to a rise in the number of applications. Additionally, these favorable conditions are expected to directly affect the number of asylum seekers, leading to an increase in the flow of individuals seeking asylum.

Toshkov's work has provided a valuable theoretical framework for understanding the complex interplay between recognition rates, the number of applications, and various political and economic factors. His insights into the strategic behavior of both asylum seekers and governments have been instrumental in shaping the direction of my research on asylum policy. By adopting Toshkov's theoretical framework, I hope to provide a better understanding of the issues surrounding asylum policy and make valuable contributions to the existing literature.

Asylum decisions can have a significant impact on asylum applications, according to several studies in the field. Andersson (2019) found that changes in asylum policy can affect the number of asylum-seekers. This suggests that asylum seekers are sensitive to changes in policy, and may be deterred from applying if they believe their chances of success are low. Similarly, Diez (2011) found that the way in which asylum officials elicit and record asylum seekers' narratives can affect the assessment of asylum applications. This highlights the importance of clear and consistent procedures in the assessment of asylum claims.

Herlihy (2010) found that decision makers in asylum cases rely on assumptions about human behavior when making credibility assessments. This suggests that subjective biases can influence asylum decisions, and that decision makers should be aware of these biases in order to make fair and objective assessments. Blight (2015) found that the way in which asylum narratives are reformulated by Swedish migration authorities can be detrimental to rape victims. This highlights the need for sensitivity and empathy in the handling of asylum claims, particularly for vulnerable groups such as victims of violence and trauma.

The relationship between asylum decisions and asylum applications is complex and not well understood. Toshkov (2014) found a weak negative relationship between asylum applications and recognition rates in Europe, suggesting that as asylum applications increase, recognition rates decrease. However, Ramji-Nogales (2007) found significant disparities in grant rates for asylum seekers, indicating that there is no clear relationship between asylum decisions and asylum applications. This highlights the need for further research to understand the factors that influence asylum decisions.

Silove (2000) found that policies of deterrence can have negative mental health effects on asylum seekers. This suggests that policies aimed at discouraging asylum seekers from applying may have unintended negative consequences. Bowes (2009) found that local level processes can both support and undermine government policies aimed at controlling migration. This highlights the need for a coordinated and consistent approach to asylum policy at all levels of government.

Neumayer (2004) found that origin-specific recognition rates vary with the extent of political oppression, human rights violations, inter-state armed conflict, and events of genocide and politicide in countries of origin. This suggests that asylum decisions are impacted by factors such as the political situation in the country of origin and the number of past asylum claims from the same country. Hatton (2016) found that asylum applications are

largely driven by political terror and human rights abuses, but that poor economic conditions in the origin country and tough asylum policies in destination countries also play a role. This highlights the need for a nuanced and multifaceted approach to asylum policy that takes into account a range of factors.

In conclusion, the relationship between asylum decisions and asylum applications is complex and multifaceted. While some studies suggest a weak negative relationship between asylum applications and recognition rates, others indicate significant disparities in grant rates for asylum seekers. Factors such as political oppression, human rights violations, and the political situation in the country of origin can also influence asylum decisions. The handling of asylum claims must be sensitive and empathetic, particularly for vulnerable groups, and policies aimed at discouraging asylum seekers from applying should be carefully considered to avoid unintended negative consequences.

1.3 Data Sources

Data from the United Nations refugee agency (UNHCR) data bank was utilized for Asylum application data between 2000-2019 and asylum decisions data between 2015-2020. Additionally, the migrant stock interval data for 2000, 2005, 2015, and 2019 was obtained from the United Nations Population Division database. The World development indicators (WDI) world data bank was the source of data for the Gross domestic product per capita (GDPPC), infant Mortality (per 10000 live births), Male mortality rate (per 1000 adult males), Adult literacy rate (total % of people age 15 and above), and life expectancy at birth total (years) variables.

Furthermore, the Political Terror Scale (PTS) dataset was used to measure state violations of physical integrity rights in approximately 200 countries between 1976 and 2021. The PTS dataset employs a five-point scale, ranging from secure rule of law with rare

violations at Level 1, to the most extreme Level 5, where terror affects the entire population and leaders have no limits on pursuing their goals. This dataset is used as a proxy for conflict and was applied as described in (Hatton, 2016).

Finally, the gravity variable data, which includes time-invariant data such as Distance cap (distance between capital cities in km), Contiguity (which measures how close countries are), Colony (which measures whether origin and destination countries have colonial ties), and Common language (measures whether origin and destination countries share a common language), was also utilized in this study.

1.4 Econometric Specification

In this paper, we aim to explore the relationship between asylum decisions and applications using econometric models. To achieve this goal, we adopt the gravity model which was first applied to trade by Jan Tinbergen in 1962. This same structural gravity equation has been estimated by various researchers, including Anderson (1979), Anderson and Van Wincoop (2003), and Anderson and Yotov (2016). In this research, we use the augmented gravity model, which takes into account additional factors that may affect the relationship between asylum decisions and applications.

Silva and Tenreyro (2006, 2011) argued that the Poisson Pseudo Maximum Likelihood (PPML) method generates more robust results than the traditional Ordinary Least Squares (OLS) estimates. One of the major advantages of this method is that it provides a natural way to deal with zero observations of the dependent variable, which is the case for asylum applications. Moreover, the method addresses the problem of heteroscedasticity, which is a common issue in econometric analysis. Therefore, we used both the OLS and PPML methods in this paper to ensure the robustness of our results.

Furthermore, we employed several methods to control for unobservable characteristics that may affect the relationship between asylum decisions and applications. Specifically, we used the Origin time fixed effects, Destination time fixed effects, pairwise fixed effects, and interaction terms. These methods help explain the unobservable characteristics and provide a non-biased estimate of the relationship between asylum decisions and applications.

Asylum applications are time-variant and country-specific, which means that the coefficient of asylum decisions cannot be identified in one step gravity model because the fixed effects will absorb them. Therefore, we adopted a two-step approach to assess the relationship between asylum decisions and applications. In the first step, we used the OLS method and the aforementioned control methods to estimate the coefficients of the explanatory variables. In the second step, we used the estimated coefficients from the first step to calculate the predicted values of the dependent variable, which is asylum decisions.

In conclusion, our study adopts the gravity model and the PPML method to explore the relationship between asylum decisions and applications. We employ several methods to control for unobservable characteristics and adopt a two-step approach to estimate the coefficients of the explanatory variables. By doing so, we provide a comprehensive analysis of the relationship between asylum decisions and applications, which can inform policy decisions in the field of migration and asylum.

OLS Specification

$$lnApplications_{ijt} = \beta_0 + \beta_1 lnAccepted\,share_{ijt-1} + .\beta_2 lnaApplications_{ijt-1} + \pi_{i,t} + \chi_{j,t} + \eta_{ij} + \epsilon_{ijt}$$

$$\text{PairFE}_{ij} = \beta_0 + \beta_1 \text{Distca}p_{ij} + \beta_2 \text{Conti}\,g_{ij} + \beta_3 \text{Colon}y_{ij} + \beta_4 \text{Comlan}\,g_o f_{ij} + \pi_{i,} + \chi_{j,} + \epsilon_{ijt}$$

$$\text{OriginFE}_{i,t} = \beta_0 + \beta_1 \text{Gdppcit} + \beta_2 \text{Mortalitysharel1it} + \beta_3 \text{Infantmortalityit} + \beta_4 \text{Conflictit} + \pi_i + \delta_t + \mu_{ijt}$$

PPML Specification

$$Applications_{ijt} = exp[\beta_0 + \beta_1 lnAccepted\, share_{ijt-1} + . \beta_2 lnaApplications_{ijt-1} + \pi_{i,t} + \chi_{j,t} + \epsilon_{ijt}]$$

$$\text{PairFE}_{ij} = \exp[\beta_0 + \beta_1 \text{Distcap}_{ij} + \beta_2 \text{Contig}_{ij} + \beta_3 \text{Colony}_{ij} + \beta_4 \text{Comlang}_{o}\text{ff}_{ij} +] + \pi_{i,} + \chi_{j,} + \epsilon_{ijt}$$

$$\text{OriginFE}_{it} = \exp[\beta_0 + \beta_1 Gdppcit + \beta_2 Mortalitysharel1it + \beta_3 Infantmortalityit + \beta_4 Conflictit +] + \pi_i + \delta_t + \mu_{ijt}]$$

The Econometric model seeks to understand the factors that affect the number of asylum applications from country i to country j at time t. It takes into account several variables, including past acceptance rates, the number of applications from the previous time period, and a range of other economic and social indicators.

The number of applications from country i to country j at time t is denoted as Applicationijt. The variable Accepted shareij,t-1 represents the proportion of asylum applications from country i to j at time t-1 that were accepted, while Applicationsij,t-1 is the total number of asylum applications from country i to j at time t-1. These variables capture the historical acceptance rates and the volume of applications in the past, which can influence the current number of applications.

The model also includes several time-varying variables that may affect the decision to seek asylum. Gdppc1 is the gross domestic product per capita of the origin country at time t. It is an indicator of the economic wellbeing of the origin country and can influence the decision to migrate. Infant Mortalityi is the infant mortality rate of the origin country at time t. It is an important measure of the health and well-being of the population and can be a factor that motivates people to leave. Life Expectancyi is the life expectancy at the origin country at time t. It is another measure of the overall health of the population and can be a factor that affects the decision to migrate. Conflicti represents the number of reported conflicts in the origin country at time t. It is a measure of the level of violence and instability in the country and can be a driving force behind migration.

The model also includes several fixed effects to control for factors that may be specific to certain countries or time periods. Pairwise Fixed Effects are denoted as PairFE and capture unobserved factors that may affect the relationship between country i and country j. Origin time Fixed Effects are denoted as Origin FE and capture unobserved factors that may affect all asylum applications from country i.

Finally, the model includes several error terms to account for factors that are not included in the model. The error term ϵ_{ijt} captures unobserved factors that may affect the number of asylum applications from country i to country j at time t. The error term μ_{ijt} captures unobserved factors that may affect the acceptance rate of applications from country i to country j at time t. including Origin time fixed effects $\pi_{i,t}$, Origin fixed effect $\pi_{i,}$ Destination time fixed effects $\chi_{j,t}$, Destination fixed effects $\chi_{j,}$ Pairwise fixed effects η_{ij} and time fixed effects δ_t capture unobserved factors that are specific to country i or time period t and can affect all asylum applications.

Overall, the equation represents a complex statistical model that attempts to capture the various economic, social, and political factors that influence the decision to seek asylum. By

understanding these factors, policymakers can better address the root causes of migration and develop effective policies to manage the flow of people across borders.

1.5 Results

Table 1.1, shows the OLS and the PPML estimates of the relationship between Share of Accepted asylum applications and Asylum applications. The main Variable of interest is the One period lag of Accepted share and the One period lag of asylum applications. The one period lag of the Accepted share denotes the ratio of applications that had a positive outcome in the past year while the one period lag of the applications denotes the number of asylum applications in the previous years from Origin country to destination, I will be discussing the results of the PPML estimates , in the table 1 there exists a significant positive relationship between the one period lag of the share of accepted applications, what this means is that a 1% increase in the number of accepted applications in the previous year will lead to a 0.033% increase in asylum applications from Origin country to destination country, an example of this would be if the number of accepted applications in year 2020 increased from asylum seekers from Syria seeking asylum in Turkey, then Asylum applications in year 2021 will increase.

There also exists a significant positive relationship between the one period lag of the Asylum applications and the present applications, what this means is that a 1% increase in the previous number of asylum applications will lead to a 0.272% increase in number of asylum applications, an example will me if the current year 2023 asylum seekers are considering where to go to seek asylum, they will consider the number of asylum applications in year 2022 and 2021, if there is increased asylum applications from 2021 to 2022, this is a positive signal to them hence the increased asylum applications in 2023.

The stage Two of the tables 1.1 shows both the OLS and PPML estimates as well, however in the stage two the pairwise fixed effects is used as a dependent variable in this statistical method it is used to estimate the effect of time-invariant explanatory variables on a dependent variable, where the data is structured such that each observation represents a pair of entities (e.g., individuals, firms, countries) that are related to each other in some way (e.g., same country, same language, same distance, same family etc).

In this method, the effect of the time-invariant explanatory variables is estimated by comparing the within-pair differences in the dependent variable to the within-pair differences in the explanatory variables. This approach assumes that any time-invariant differences between the pairs are captured by the fixed effects, and that any remaining differences can be attributed to the explanatory variables.

Hence from the Table 1.1 stage 2, we can see that there is a significant negative relationship between the distance of the capital cities of the Origin and Destination countries and the number of asylum applications, what this means is that when the average distance between the two countries is high the number of asylum applications will reduce. example the farther the distance between the Capital city of Athens in Greece and Washington Dc in the United states the fewer the number of asylum applications from Greece to the United States.

Contiguity shows common boundary or border, in this paper there is no evidence that there exists a significant relationship between the boarders and the number of asylum applications.

Colony, shows colonial history between origin and destination country, there exists a significant positive relationship between Colony and Asylum applications, when countries share a colonial history asylum applications increases by 0.653% , an example will be the colonial history shared between Angola and Portugal, this colonial relationship will increase asylum applications from Angola to Portugal.

The Table 1.1 shows a significant positive relationship between Common language and Asylum applications, when origin and destination countries speak the same official language, there tends to be an increase in the Number of asylum applications between those countries by 0.473%

Table 1.3 presents the impact of time-varying explanatory variables on asylum applications, using the ”OrigincountryTime” fixed effects regression model. This method includes a set of fixed effects that capture the unobserved time-invariant factors associated with the origin country of the data. After controlling for these fixed effects, the model estimates the effect of time-varying explanatory variables on the dependent variable, which is timevarying and influenced by both time-invariant and time-varying factors. The time-varying explanatory variables are included to capture the effect of time varying factors, while the fixed effects control for the time-invariant factors associated with the origin country of the data. The model enables the estimation of the impact of time-varying explanatory variables on the dependent variable, while controlling for unobserved time-invariant factors that may affect both the dependent and explanatory variables and are specific to the origin country of the data.

In this we are looking at the heterogeneity in the origin country, The Gdp percapita in the origin country shows a significant negative relationship with the asylum applications, when the GDP percapita increases there is a reduction in the number of asylum applications, A high GDP percapita, will imply that the economy of the origin country is blossoming and its people are doing well, safe for conflicts people will be less willing to go seek asylum elsewhere, since they are already well off wherever they are.

Infant mortality is the death of infants who are under one year of age and is considered an essential indicator of the health and well-being of a population (UNICEF, 2018). It reflects the availability and quality of healthcare, nutrition, and other social

determinants of health that can impact infant survival (CDC, 2021). Infant mortality rates are usually expressed as the number of deaths of infants under one year of age per 1,000 live births in a given year (WHO, 2021). High infant mortality rates are often indicative of inadequate healthcare and social conditions, while low rates are a sign of a healthy population with access to adequate healthcare and resources (UNICEF, 2018), there exists a positive relationship between infant mortality and asylum applications indicating that the higher the Infant mortality in the Origin Country the Higher the number of asylum applications to a destination country J. An example is Somalia with a high infant mortality, which also signals poor and inadequate access to health care and poor quality of life, when this happens you have increased asylum applications from Somalia to Germany.

Life expectancy at birth refers to the average number of years a newborn is expected to live if current mortality rates persist. It is a crucial indicator of the health and well-being of a population (WHO, 2021). Life expectancy at birth is determined by several factors, such as access to healthcare, nutrition, environmental factors, and social determinants of health (CDC, 2021). Public health initiatives worldwide aim to improve life expectancy at birth by promoting health and preventing diseases (WHO, 2021). Life expectancy at birth varies widely between countries and regions (CDC, 2021). There is no significant evidence to show a relationship between life expectancy and asylum applications in the PPML estimations (Table 1.3) however there is a significant negative relation in the OLS estimates, which shows that when the life expectancy at birth increases in the origin country, there will be less asylum applications in the destination countries.

There exists a significant positive relationship between the Conflict in Origin country and Asylum applications, what this means is that the Higher the number of conflicts in the origin country the more asylum applications from the origin countries to the destination countries,

an example will be the increased conflicts in Syria will lead to more asylum applications from Syria to Turkey

Table 1.1 : Asylum Application and Acceptance share

	(OLS) logApplications	(PPML) Applications
Accepted_share_L1	0.028***	0.033***
	(0.000)	(0.000)
logApplications_L1	0.188***	0.272***
	(0.000)	(0.000)
cons	3.612***	6.622***
	(0.000)	(0.000)
r2	0.947	0.983
N	9258.000	10247.000
Origin FE	Yes	Yes
Destination FE	Yes	Yes
Pairwise FE	Yes	Yes
Stage 2 a	Pairwise_FE	Pairwise_FE
logdistcap	-0.858***	-0.811***
	(0.000)	(0.000)
contig	0.077	0.026
	(0.595)	(0.851)
colony	0.622***	0.653***
	(0.000)	(0.000)
comlang_off	0.479***	0.473***
	(0.000)	(0.000)
cons	6.910***	5.415***
	(0.000)	(0.000)
r2	0.259	0.537
N	2399.000	2688.000
Origin Time FE	Yes	Yes
Destination Time FE	Yes	Yes
Pairwise	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.2 1: OLS 2015-2019 Time Dependent Variable

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTineFE	(4) OriginTimeFE
Gdppc_i	-0.000	-0.000**	-0.000***	-0.000***
	(0.316)	(0.012)	(0.007)	(0.004)
Mortality_Infant_i		0.074***	0.049**	0.06*
		(0.000)	(0.022)	(0.056)
Life_Expectancy_birth_i			-0.156**	-0.293***
			(0.036)	(0.004)
Conflict_i				0.172***
				(0.000)
cons	-0.222	-1.828***	9.836*	19.113**
	(0.103)	(0.000)	(0.078)	(0.012)
r2	0.900	0.904	0.905	0.907
N	554.000	554.000	554.000	252.000
Origin FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.3 1 :PPML 2015-2019 Time Dependent Variables

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTimeFE	(4) OriginTimeFE
Gdppc_i	-0.000	-0.000**	-0.000**	-0.000***
	(0.482)	(0.026)	(0.015)	(0.007)
Mortality_Infant_i		0.101***	0.059*	0.068*
		(0.000)	(0.056)	(0.100)
Life_Expectancy_birth_i			-0.267**	-0.216
			(0.014)	(0.107)
Conflict_i				0.151***
				(0.005)
cons	-2.102***	-4.255***	15.656*	11.992
	(0.000)	(0.000)	(0.053)	(0.229)
r2	0.955	0.956	0.957	0.958
N	588.000	588.000	588.000	260.000
Origin FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

The results of the relationship between Migrant Stock and Asylum applications is discussed below in Tables 1.4-1.

Table 1.4 1 : Migrant Stock and Asylum applications Interval

	(OLS) logApps	(PPML) Application
logStk	0.066***	0.238***
	(0.000)	(0.004)
logApps_L1	0.030***	-0.106***
	(0.001)	(0.000)
cons	0.158***	6.965***
	(0.000)	(0.000)
r2	0.852	0,970
N	173068.000	20427.000
Origin Time FE	Yes	Yes
Destination Time FE	Yes	Yes
Pairwise FE	Yes	Yes
Stage 2 a	Pairwise_FE	Pairwise_FE
logdistcap	-0.044***	-0.722***
	(0.000)	(0.000)
contig	0.142***	-0.478***
	(0.000)	(0.000)
colony	0.326***	0.716***
	(0.000)	(0.000)
comlang_off	0.078***	0.333***
	(0.000)	(0.000)
cons	0.366***	4.109***
	(0.000)	(0.000)
r2	0.009	0.500
N	38824.000	4829.000
Origin FE	Yes	Yes
Destination FE	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.5 1 : OLS Time Dependent Variables Interval

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTimeFE	(4) OriginTimeFE
Gdppc_i	-0.000***	-0.000***	-0.000***	-0.000***
	(0.008)	(0.007)	(0.006)	(0.001)
Mortality_Male_i		0.000**	0.000**	0.000
		(0.046)	(0.048)	(0.279)
Literacy_Rate_Adult_i			-0.000	-0.001*
			(0.140)	(0.057)
Conflict_i				0.083***
				(0.000)
cons	0.030***	-0.014	-0.010	-0.103*

	(0.003)	(0.564)	(0.682)	(0.057)
r2	0.911	0.912	0.912	0.912
N	804.000	804.000	804.000	341.000
Origin FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.6 1 : PPML Interval Time Dependent Variables

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTimeFE	(4) OriginTimeFE
Gdppc_i	-0.000**	-0.000	-0.000**	-0.000***
	(0.024)	(0.028)	(0.028)	(0.000)
Mortality_Male_i		0.002*	0.002*	0.001
		(0.078)	(0.079)	(0.282)
Literacy_Rate_Adult_i			-0.001	-0.002
			(0.372)	(0.259)
Conflict_i				0.281***
				(0.001)
cons	-3.799***	-4.127***	-4.107***	-4.250***
	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.922	0.923	0.923	0.933
N	684.000	684.000	684.000	307.000

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

This second set of estimations in table 1. 4 uses the OLS and PPML estimates, it examines the relationship between Stock of Migrants and Asylum applications . the Variables of interest here is the Migrant stock and one period lag of asylum applications . I will be discussing the results from the PPML estimates. In this section the stock of migrants has a positive and significant relationship with the number of asylum applications, a 1% increase in the stock of migrants from country i in country j, will lead to a 0.238% increase in the number of asylum applications from country i, here the established network effect is significantly at play. an example is the very robust migrant population in the USA, More important is that the Number of asylum applications from Nigeria to the USA will increase when there is an existing network of Nigerians in the USA, this will reduce cost of migration.

These shows a significant negative relationship between the one period lag number of asylum applications and number of asylum applications, what these means is that when there is a 1% increase in the number of asylum applications in last period, there will be less asylum applications in the current period, although the results is different to what the OLS results is saying as the OLS results , shows a significant positive relationship, these results will be investigated further.

from the Table 1.4 stage 2, we can see that there is a significant negative relationship between the distance of the capital cities of the Origin and Destination countries and the number of asylum applications, what this means is that when the average distance between the two countries is high the number of asylum applications will reduce. example the farther the distance between the Capital city of Athens in Greece and Washington Dc in the United states the fewer the number of asylum applications from Greece to the United States.

Contiguity shows common boundary or border, in this results there is evidence to show there exists a significant negative relationship between the borders and the number of asylum applications in the PPML estimates ,however there is a significant positive relationship in OLS estimates what this means is that when there exists a close boundary between origin country and destination country, the number of asylum applications will increase by 0.142% an example since there exists a close boundary between Mexico and Unites States of America, there will be more asylum applications from Mexico to USA, an explanation to this might be the reduced cost of moving from Mexico to USA since they are close., However in the ppml Estimates it shows that when countries share common boarders or boundaries, there is less asylum applications, an explanation could also be that those countries perhaps have similar problems, hence are not any better, or they do not necessarily have to seek asylum in those countries to benefit from the countries.

Colony, shows colonial history between origin and destination country, there exists a significant positive relationship between Colony and Asylum applications, when countries share a colonial history asylum applications increases by 0.716%, an example will be the colonial history shared between Angola and Portugal, this colonial relationship will increase asylum applications from Angola to Portugal.

there exists a significant positive relationship between Common language and Asylum applications, when origin and destination countries speak the same official language, there tends to be an increase in the Number of asylum applications between those countries by 0.333%

Table1. 5 and 1.6 shows the Estimations for the OLS and PPML estimates for the time variant variables. I will be discussing the PPML estimates as presented in table1. 6

Table 6 presents the impact of time-varying explanatory variables on asylum applications, using the ”OrigincountryTime” fixed effects regression model. This method includes a set of fixed effects that capture the unobserved time-invariant factors associated with the origin country of the data. After controlling for these fixed effects, the model estimates the effect of time-varying explanatory variables on the dependent variable, which is timevarying and influenced by both time-invariant and time-varying factors. The time-varying explanatory variables are included to capture the effect of time varying factors, while the fixed effects control for the time-invariant factors associated with the origin country of the data. The model enables the estimation of the impact of time-varying explanatory variables on the dependent variable, while controlling for unobserved time-invariant factors that may affect both the dependent and explanatory variables and are specific to the origin country of the data.

In this we are looking at the heterogeneities in the origin country, The Gdp percapita in the origin country shows a significant negative relationship with the asylum applications,

when the gdppercapita increases there is a reduction in the number of asylum applications, A high GDP percapita, will imply that the economy of the origin country is blossoming and its people are doing well, safe for conflicts people will be less willing to go seek asylum elsewhere, since they are already well off wherever they are.

Male mortality refers to the number of deaths of male individuals in a population within a specific time period, usually measured as the number of deaths per 1,000 males in a given year. Male mortality rates can be influenced by a variety of factors such as age, genetics, lifestyle habits, environmental factors, access to healthcare, and social determinants of health., There is however no evidence that shows a relationship between Male mortality and asylum applications

Adult literacy rate refers to the percentage of adults in a given population who are able to read and write with understanding. It is typically measured for people aged 15 years and older. The adult literacy rate is an important indicator of a country's educational development and is often used as a proxy for overall levels of human development. A high adult literacy rate is generally seen as an indicator of a country's ability to provide its citizens with basic education and opportunities for personal and economic growth., There is however no significant evidence to show the nature of the relationship between the Adult literacy rate and Asylum applications

There exists a significant positive relationship between the Conflict in Origin country and Asylum applications, what this means is that the Higher the number of conflicts in the origin country the more asylum applications from the origin countries to the destination countries, an example will be the increased conflicts in Syria will lead to more asylum applications from Syria to Turkey.

1.6 Robustness Checks

For the purpose of conducting robustness checks, we partitioned the data into subsamples, focusing on the regions with the highest number of asylum seekers, namely Africa and Asia. Both OLS and PPML estimation techniques were employed to analyze these subsamples.

Table 1.7 1 : Africa +Asia OLS and PPML Estimates

Africa + Asia Ols and PPML		
	(OLS)	(PPML)
	logApplications	Applications
Accepted_share_L1	0.026***	0.034***
	(0.000)	(0.000)
logApplications_L1	0.159***	0.287***
	(0.000)	(0.000)
cons	3.750***	6.240***
	(0.000)	(0.000)
r2	0.944	0.978
N	7349.000	8161.000
Origin Time FE	Yes	Yes
Destination Time FE	Yes	Yes
Pairwise FE	Yes	Yes
Stage 2 a	Pairwise_FE	Pairwise_FE
distcap	-0.884***	-0.842***
	(0.000)	(0.000)
contig	0.037	0.005
	(0.000)	(0.000)
colony	0.516***	0.455***
	(0.001)	(0.001)
comlang_off	0.423***	0.415***
	(0.000)	(0.000)
cons	7.197***	-5.873**
	(0.000)	(0.019)
r2	0.226	0.509
N	1900.000	2131.000
Origin FE	Yes	Yes
Destination FE	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.8 1 : OLS Estimate Africa + Asia Time Dependent Variables

OLS Africa+Asia 2015-2019 Time Dependent Variables

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTimeFE	(4) OriginTimeFE
Gdppc_i	-0.000	-0.000**	-0.000**	-0.000**
	(0.148)	(0.030)	(0.022)	(0.016)
Mortality_Infant_i		0.042**	0.017	-0.002
		(0.015)	(0.379)	(0.948)
Life_Expectancy_birth_i			-0.195***	-0.307***
			(0.006)	(0.001)
Conflict_i				0.020
				(0.679)
cons	-0.156	-1.473***	12.560**	21.072***
	(0.125)	(0.007)	(0.014)	(0.001)
r2	0.920	0.922	0.924	0.938
N	344.000	344.000	344.000	150.000
Origin FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.9 1 : PPML Estimate Africa + Asia Time Dependent Variables

PPML Africa+Asia 2015-2019 Time Dependent Variables

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTimeFE	(4) OriginTimeFE
Gdppc_i	-0.000**	-0.000***	-0.000***	-0.000***
	(0.023)	(0.001)	(0.000)	(0.004)
Mortality_Infant_i		0.094***	0.048	0.014
		(0.001)	(0.123)	(0.736)
Life_Expectancy_birth_i			-0.355***	-0.233*
			(0.002)	(0.081)
Conflict_i				-0.018
				(0.801)
cons	-1.378***	-4.297***	21.339**	14.617
	(0.000)	(0.000)	(0.011)	(0.129)
r2	0.957	0.958	0.960	0.962
N	365.000	365.000	365.000	155.000
Origin FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Based on the results presented in Tables 1.7,1. 8, and 1.9, the estimations reveal similar findings to the full sample analysis. The study identifies a significant positive correlation between one period lag accepted share, one period lag asylum applications, and asylum applications. Moreover, a higher distance between capital cities results in a lower number of asylum applications.

Furthermore, the study demonstrates a positive significant relationship between Contiguity, Colony, and Common Language, as shown in Table 1.1. This suggests that when countries share common boundaries, speak similar languages, and have colonial history, there is an increase in asylum applications.

The study also indicates that as the gross domestic product per capita of origin countries increases, there is a reduction in the number of asylum applications. Additionally, an improvement in life expectancy at birth leads to fewer asylum applications from country i to country J.

The results that examine the relationship between Migrant stock and asylum applications in the subsample for Africa and Asia Continents is discussed in Tables 1.10 to Tables 1.12.

Table 1.10 1: Africa + Asia Interval Ols and PPML

Africa + Asia Interval Ols and PPML

	(OLS) logApps	(PPML) Applications
logStk	0.087***	0.207**
	(0.000)	(0.019)
logApps_L1	-0.002	-0.064**
	(0.852)	(0.013)
cons	0.281***	6.787***
	(0.000)	(0.000)
r2	0.862	
N	87780.000	15620.000
Origin Time FE	Yes	Yes
Destination Time FE	Yes	Yes
Pairwise FE	Yes	Yes

Stage 2 a	Pairwise_FE	Pairwise_FE
logdistcap	-0.153***	-0.909***
	(0.000)	(0.000)
contig	0.026	-0.417***
	(0.596)	(0.005)
colony	0.677***	0.384**
	(0.000)	(0.021)
comlang_off	0.083***	0.352***
	(0.000)	(0.000)
cons	1.317***	5.923***
	(0.000)	(0.000)
r2	0.020	0.462
N	19900.000	3689.000
Origin FE	Yes	Yes
Destination FE	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.11 1 : OLS Estimate Africa + Asia Time Dependent Variables

OLS Interval Africa+Asia 2015-2019 Time Dependent Variables

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTimeFE	(4) OriginTimeFE
Gdppc_i	-0.000	-0.000	-0.000	-0.000***
	(0.258)	(0.228)	(0.219)	(0.002)
Mortality_Male_i		0.001***	0.001***	0.002***
		(0.001)	(0.001)	(0.002)
Literacy_Rate_Adult_i			-0.000	-0.000
			(0.303)	(0.404)
Conflict_i				0.069***
				(0.003)
cons	0.011	-0.191***	-0.188***	-0.437***
	(0.269)	(0.001)	(0.002)	(0.001)
r2	0.911	0.914	0.914	0.913
N	416.000	416.000	416.000	173.000
Origin FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 1.12 1: PPML Estimate Africa+Asia Time Dependent Variables

PPML Interval Africa+Asia 2015-2019 Time Dependent Variables

	(1) OriginTimeFE	(2) OriginTimeFE	(3) OriginTimeE	(4) OriginTimeFE

Gdppc_i	-0.000	-0.000	-0.000	-0.000***
	(0.132)	(0.131)	(0.126)	(0.002)
Mortality_Male_i		0.000	0.000	0.003
		(0.745)	(0.727)	(0.286)
Literacy_Rate_Adult_i			-0.001	-0.002
			(0.423)	(0.470)
Conflict_i				0.089
				(0.407)
cons	-3.006***	-3.112***	-3.101***	-3.602***
	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.926	0.926	0.926	0.931
N	402.000	402.000	402.000	170.000
Origin FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

The main findings are supported by the results presented in Tables 1.10, 1.11, and 1.12. The study demonstrates a notable positive correlation between the number of asylum applications and migrant stock, as well as one period lag asylum applications. Moreover, a higher distance between countries results in a lower number of asylum applications. Conversely, closer boundaries, colonial history, and shared language result in a higher number of asylum applications between country i and country J.

Additionally, the study indicates a significant negative relationship between the GDP per capita in the origin country and the number of asylum applications. Although the PPML estimations did not provide significant evidence to demonstrate a correlation between male mortality, adult literacy, conflict, and asylum applications, the OLS estimations revealed a significant positive relationship between male mortality, conflict, and asylum applications.

1.6 Conclusion

Based on the analysis, it is evident that there are significant relationships between the share of accepted asylum applications, the one period lag of asylum applications, and several time-invariant explanatory variables such as distance, contiguity, colony, and common

language. The one-period lag of the share of accepted asylum applications and the one period lag of asylum applications have a positive relationship with the number of asylum applications. Moreover, the pairwise fixed effects regression analysis reveals that distance has a significant negative relationship with the number of asylum applications while contiguity, colony, and common language have a significant positive relationship with the number of asylum applications.

The findings suggest that when the average distance between the origin and destination countries is high, the number of asylum applications tends to decrease. Conversely, the presence of a common boundary or border, a colonial history, and a shared language between the origin and destination countries increases the number of asylum applications. These results have important policy implications for destination countries in managing their asylum systems. For instance, countries with a colonial history with particular origin countries may need to develop more targeted integration policies and provide additional support to asylum seekers from those countries.

Moreover, countries that share a common border or language with certain origin countries may need to anticipate and plan for potential increases in asylum applications. They may also consider investing in language and cultural training for their immigration officers and service providers to facilitate the integration of asylum seekers. However, it is important to note that these policies should be implemented while upholding international standards and obligations to protect the rights of asylum seekers.

In terms of the relationship between the one period lag of accepted asylum applications and the number of asylum applications, the results indicate that an increase in the number of accepted asylum applications in the previous year leads to an increase in the number of asylum applications in the current year. This finding suggests that positive

outcomes in the asylum process can lead to a snowball effect, with more asylum seekers choosing to apply in subsequent years.

Furthermore, these findings highlight the need for destination countries to adopt a more holistic approach to asylum policies. Instead of focusing solely on the asylum process, policymakers should also focus on addressing the root causes of migration, such as economic insecurity and political instability, in origin countries. This could include increasing foreign aid and investment in developing countries, supporting fair trade policies, and promoting peace and stability through diplomatic efforts.

Policymakers should also ensure that their asylum systems are efficient and effective in processing asylum applications, including reducing backlogs and addressing lengthy processing times. They should also consider providing additional support to successful asylum applicants to facilitate their integration into society, such as language training, employment services, and access to healthcare.

In conclusion, the results from this study provide valuable insights into the factors that influence asylum applications from Origin country to destination country. By understanding these factors, policymakers can develop more effective and targeted asylum policies that consider the needs of both asylum seekers and destination countries, and also protect the rights of asylum seekers.

CHAPTER 2

ETHNICITY AND TRADE

2.1 Introduction

The role of ethnic networks in international trade has been widely discussed in the literature. Ethnic networks refer to the relationships that exist between individuals who share common ethnicity and are involved in trade activities. These networks help to overcome informal barriers such as information costs, risk, and uncertainty, by building trust and substituting for the difficulty of enforcing contracts internationally. Ethnic networks can form between migrants and natives in the host country and between migrants and their home country.

The literature on the role of ethnic networks in international trade has increased in recent years, with both empirical and theoretical works exploring this phenomenon. For example, Gould (1994) and Belderbos Sleuwaegen (1998) have investigated the role of ethnic networks in international trade from an empirical perspective. Theoretical works such as Greif (1993) and Rauch Casella (1998) have also explored this topic.

While most of the existing literature on ethnic networks in international trade has focused on a narrow range of ethnic groups, Rauch and Trindade (2001) investigated the role of ethnic Chinese networks in international trade. Their study found that ethnic Chinese networks, proxied by the product of ethnic Chinese population shares, increased bilateral trade more for differentiated than for homogeneous products of ethnic Chinese population shares.

Felbermayr, Jung, and Toubal (2010) found evidence for the existence of ethnic networks for Polish, Turkish, Mexican, and Indian communities. While their study confirmed the existence of a Chinese network, they also found that its trade-creating potential was

dwarfed by other ethnic networks. Other studies have also explored the effects of ethnic networks on international trade. For example, Epstein (2004) found that ethnic networks may facilitate international trade, and Rauch (1999) found that ethnic Chinese networks increased bilateral trade. However, Amin (2021) found that ethnic diversity generally negatively affects international trade, and Coughlin (2011) found that ethnic networks increase trade on the intensive margin but not on the extensive margin.

Although there have been numerous studies on the effect of ethnic networks on international trade, there has been little investigation into the heterogeneities that may exist. Therefore, in this paper, I aim to reexamine the hypothesis that suggests that the ethnic composition of a population affects international trade, with the main focus on investigating how the effect of Ethnicity on trade varies. The variations to be explored include regions, income groups, part of the regional trade organization, and destination effects. In addition to the investigation of heterogeneities, this study also uses a comprehensive and up-to-date data set to provide more empirical evidence for the hypothesis. The gravity model will be used to analyze the data and provide insights into the effect of ethnic networks on international trade. This study has important policy implications for governments, trade organizations, and businesses. Understanding the role of ethnic networks in international trade can help governments and trade organizations to develop policies that support the formation and growth of these networks, which can have positive effects on international trade. Businesses can also benefit from this knowledge by leveraging the power of ethnic networks to expand their customer base and increase their reach in international markets. Overall, this study contributes to a better understanding of the complex relationship between ethnicity and international trade, and can help guide policymakers and businesses in their decision-making processes.

This chapter is structured as follows. Section 2.2 describes the empirical methodology and data sources. Section 2.3 states and discusses the main findings of the paper In Section 2.4, I conduct robustness checks. Finally, in section 2.5, I made some concluding remarks and discuss the policy implications.

2.2 Data Sources

We made use of Annual Aggregate bilateral flow from 205 countries over the period 2000-2015 as constructed by Fouquin and Hugot(2016) in the Center for prospective studies and international information (CEPII database). The gravity variable data, i.e., time-invariant data such as Distance cap(Distance between capital cities in km), Contiguity(Which measures how close countries are), Colony(Which measures whether origin and destination countries have colonial ties), Common language(Measures whether origin and destination countries share a common language, Rta(Regional trade agreement coded 1 if either origin or destination countries belongs to a regional trade organization and O otherwise). Curcol_{ij}(if Origin and destination share a colonial relationship), land_{ij}(Measures if country i or j is landlocked), $\pi_{i,t}$(Vector of Exporter Time Fixed Effects), $\chi_{j,t}$(Vector of Importer Time Fixed Effects), ϵ_{ijt},Stochastic Error term $CONTI - 02$, (Continent 1 if Asia 0 otherwise), OECDO if Origin countries belong to the OECD ,OECDD if Destination countries belong to OECD, ECOCLASSD Economic Classification 1 if High Income 0 Otherwise

2.3 Econometric Specification

In this paper, we adopt the gravity model as first applied to trade by (Jan Tinbergen, 1962); this same structural gravity equation estimated by Andeson (1979), Anderson and Van Wincoop (2003), Anderson and Yotov (2016) were adopted, in this research and augmented gravity model was used. Silva and Tenreyro (2006 2011) stated that the Poisson Pseudo Maximum Likelihood (PPML) method generate more robust result than the traditional

Ordinary least square (OLS) estimates; one of the significant advantages of this method is that it provides a natural way to deal with zero observations of the dependent variables in this case Asylum applications, the method also addresses the problem of heteroscedasticity. For this paper, therefore, we used both the Ols and PPML methods. Furthermore, the methods adopted the Origin time fixed effects, Destination time fixed effects, as well as interaction terms which help to explain the unobservable characteristics and hence help to give a nonbiased estimate of the relationship between Ethnicity and Trade. In the interactions, we access the partial and total effects of Migrant Stock on Trade.

OLS Specification

$$logFlow_{ijt} = \beta_0 + \beta_1 logStock_{ijt} + \beta_2 Rta_{ijt} + \beta_3 logDistw_{ij} + \beta_4 Comlang_{ij} + \beta_5 Contig_{ij} + \beta_6 Curcol_{ij} + \beta_7 Landij + \beta_8 Interactionsij + \pi_{i,t} + \chi_{j,t} + \epsilon_{ijt}$$

PPML Specification

$$Flow_{ijt} = exp[\beta_0 + \beta_1 logStock_{ijt} + \beta_2 Rta_{ijt} + \beta_3 logDistw_{ij} + \beta_4 Comlang_{ij} + \beta_5 Contig_{ij} + \beta_6 Curcol_{ij} + \beta_7 Landij + \beta_8 Interactionsij + \pi_{i,t} + \chi_{j,t}] + \epsilon_{ijt}$$

2.4 Results

Table 2.1 1 : OLS Estimation

OLS Estimations

	(1)} logFLOW	(2) logFLOW	(3) logFLOW	(4) logFLOW	(5) logFLOW	(6) logFLOW	(7) logFLOW	(8) logFLOW	(9) logFLOW	(10)} logFLOW	(11) logFLOW	(12) logFLOW
logStockpolate2	0.126***	0.132***	0.129***	0.142***	0.122***	0.140***	0.125***	-0.246***	0.130***	0.132***	0.126***	0.107***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.410***	0.420***	0.409***	0.672***	0.412***	0.400***	0.415***	0.475***	0.411***	0.410***	0.410***	0.393***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-1.415***	-1.419***	-1.416***	-1.424***	-1.414***	-1.406***	-1.416***	-1.553***	-1.414***	-1.409***	-1.415***	-1.419***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.578***	0.574***	0.578***	0.576***	0.577***	0.569***	0.579***	0.569***	0.622***	0.573***	0.578***	0.586***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Contig	0.330***	0.321***	0.321***	0.454***	0.340***	0.312***	0.337***	0.701***	0.343***	1.398***	0.330***	0.226***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Curcol	-0.082	-0.078	-0.082	0.005	-0.090	-0.145	-0.070	0.054	-0.024	-0.101	2.990	0.028
	(0.669)	(0.684)	(0.667)	(0.979)	(0.637)	(0.448)	(0.713)	(0.778)	(0.900)	(0.598)	(0.131)	(0.883)
landlockedness1	-0.604***	-0.600***	-0.604***	-0.602***	-0.604***	-0.616***	-0.603***	-0.602***	-0.606***	-0.608***	-0.604***	-0.774***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OECDO*LnStock		-0.020***										
		(0.000)										
OECDD*LnStock			-0.010***									
			(0.003)									
RTA*LnStock				-0.063***								
				(0.000)								
ECOCLASSD*LnStock					0.006*							
					(0.057)							
CONTI_O2*LnStock						-0.034***						
						(0.000)						
OECDD*CONTI_O2*LnStock							0.012***					
							(0.000)					
LnDistw*LnStock								0.044***				
								(0.000)				
Comlang*LnStock									-0.013***			
									(0.000)			
Contig*LnStock										-0.123***		
										(0.000)		
Curcol*LnStock											-0.353	
											(0.119)	
Land*LnStock												0.078***
												(0.000)
cons	26.059***	26.094***	26.077***	26.111***	26.053***	25.984***	26.070***	27.255***	26.043***	26.000***	26.062***	26.148***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.737	0.737	0.737	0.737	0.737	0.737	0.737	0.738	0.737	0.737	0.737	0.738
N	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 2.2 1: PPML Estimations

PPML Estimations

	(1) FLOW	(2) FLOW	(3) FLOW	(4) FLOW	(5) FLOW	(6) FLOW	(7) FLOW	(8) FLOW	(9) FLOW	(10) FLOW	(11) FLOW	(12) FLOW
logStockpolate2	0.026***	0.024***	0.018***	0.026***	0.021***	0.046***	0.024***	-0.031*	0.029***	0.024***	0.026***	0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.065)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.210***	0.208***	0.233***	0.220***	0.213***	0.196***	0.233***	0.205***	0.206***	0.216***	0.210***	0.209***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-0.735***	-0.733***	-0.715***	-0.736***	-0.733***	-0.719***	-0.740***	-0.797***	-0.732***	-0.736***	-0.735***	-0.737***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.148***	0.147***	0.14***	0.148***	0.147***	0.130***	0.154***	0.142***	0.258***	0.151***	0.148***	0.127***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Contig	0.363***	0.360***	0.365***	0.364***	0.365***	0.350***	0.368***	0.382***	0.369***	0.244***	0.363***	0.352***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Curcol	0.855***	0.857***	0.877***	0.854***	0.849***	0.821***	0.840***	0.862***	0.845***	0.856***	-14.764***	0.878***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
landlockedness1	-0.398***	-0.398***	-0.382***	-0.397***	-0.397***	-0.398***	-0.391***	-0.390***	-0.387***	-0.40***	-0.398***	-0.869***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OECDO*LnStock		0.005										
		(0.220)										
OECDD*LnStock			0.031***									
			(0.000)									
RTA*LnStock				-0.001								
				(0.755)								
ECOCLASSD*LnStock					0.006							
					(0.285)							
CONTI_O2*LnStock						-0.031***						
						(0.000)						
OECDD*CONTI_O2*LnStock							0.015***					
							(0.000)					
LnDistw*LnStock							0.007***					
								(0.001)				
Commlang*LnStock									-0.012***			
									(0.001)			
Contig*LnStock										0.011**		
										(0.023)		
Curcol*LnStock											1.732***	
											(0.000)	
Land*LnStock											0.057***	
												(0.000)
cons	28.043***	28.009***	27.708***	28.042***	28.013***	27.852***	28.053***	28.566***	27.989***	28.060***	28.038***	28.099***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
r2												
N	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

From the baseline models in both Table 2.1 (Ols) and Table 2.2 (PPML) the primary variable of Interest stock of Migrants both has a positive relationship with trade; however, the coefficient of the OLS estimates shows a higher elasticity 0.126 (OLS) and 0.026(PPML). The results of some of the time- invariant variables, show mixed evidence In the OLS estimate Colonial Ties (CURCOL) has a negative elasticity (-0.082), while the PPML estimate has a positive elasticity (0.855) However, I will discuss the PPML results as the estimates are more robust than the OLS.

The results show that Migrant stock positively affects trade i.e when Migrant stock increases by 1 %, international trade flow increases by 0.026 %, When Countries belong to a Regional Trade Agreement it increases Bilateral trade.

Also, when countries share a common language, this positively impacts trade i.e, increases trade, this ease in communication reduces trade costs, hence the increase in Bilateral trade. When countries share common borders or boundaries, international trade flows increase between those countries, the results shows that a 1 % increase in the Common language spoken between countries tends to increase trade by 0.148 % an example will be trade between United States of America and Mexico, because they share a common boarder, this tends to reduce trade costs between those countries hence the increase in bilateral trade flows, between the two countries.

The PPML estimations shows that a 1 % increase in the Colonial past or history of countries will lead to a 0.855 % increase in Bilateral trade between those countries. When countries share a common colonial past or history this also positively increases international trade. An example will be Ivory Coast, a former colony of France, by virtue of the colonial history between the two countries, there tends to be increased trade between them, also because France already made huge investments in Ivory Coast during the colonial era, hence

the links and investment still remains post colonialism, hence the increase in trade between them, since trade cost will reduce.

When Countries are landlocked i.e. no access to the Ocean or water bodies, they tend to trade less, as the results show hence the negative relationship, what this means is that due to the absence of Water bodies, or a countries access to water, they cannot move goods via ship around the world or with potential trading partners, trading becomes difficult, significantly more expensive, hence the reduced bilateral trade activities.

Tables 2.4 and 2.5 show results for OLS as well as PPML estimations. I will, however, discuss Table 2.5, which is the PPML estimations for its obvious strengths over the OLS estimation. The PPML, as aforementioned, gives better estimations in that it takes into account the Zeros in the Explained variable compared to OLS does not. The results show that when an Origin country belongs to the Asian continent, it reduces the impact of migrant stock on trade; this could be a result of Trade Wars, which some of Asian countries have been engaged in. Also, belonging to the African Continent tends to increase the impact of Migrant stock on trade; America, Europe and Oceania also tend to increase the effects of migrant stock on trade. From the results, it shows a stronger effect for Africa than the other continents, which implies that the stock of Migrants from Africa has a significant impact on trade.

2.4.1 Interactions

Table 2.3 1 : Total Effects of Stock when

Total Effects Of stock when

	OLS	PPML
Origin Doesnt belong to OECD	0.132***	0.024***
	(0.000)	(0.000)
Origin belongs to OECD	0.112***	0.029***
	(0.000)	(0.000)
Destination Doesn't belong to OECDD	0.129***	0.018***
	(0.000)	(0.000)
Destination Belongs to OECDD	0.120***	0.049***
	(0.000)	(0.000)
Country Doesnt belong to RTA	0.142***	0.026***
	(0.000)	(0.000)
Country belongs to RTA	0.079***	0.025***
	(0.000)	(0.000)
Destination doesn't belong to Highincome	0.122***	0.021***
	(0.000)	(0.000)
Destination belongs to HighIncome	0.128***	0.027***
	(0.000)	(0.000)
Origin country doesnt belong to Asia	0.140***	0.046***
	(0.000)	(0.000)
Origin country belongs to Asia	0.106***	0.015***
	(0.000)	(0.000)
Origin doesn't belongs to Asia and OECD	0.125***	0.024***
	(0.000)	(0.000)
Origin belongs to both Asia and OECD	0.137	0.039***
	(0.000)	(0.000)
Zero Distance	-0.246***	-0.031***
	(0.000)	(0.000)
Average Distance	0.136**	0.028***
	(0.000)	(0.000)
No Commonlang	0.130***	0.029***
	(0.000)	(0.000)
Commonlang	0.117***	0.017***
	(0.000)	(0.000)
Not close	0.132***	0.024***
	(0.000)	(0.000)
Close to each other	0.009	0.035***
	(0.263)	(0.000)
No Colonial past	0.126***	0.026***
	(0.000)	(0.000)
Colonial past	-0.227	1.758***
	(0.316)	(0.248)
Not Landlocked	0.107***	0.021***
	(0.000)	(0.000)
Landlocked	0.185***	0.078***
	(0.000)	(0.000)

In this section, I will be discussing the heterogeneity's that exists in the relationship between trade between two countries Origin and Destination countries of Migration. The Ols and PPML estimates show similar results, I will however be discussing the PPML results as they present more robust results.

The results presented in Table 6, were calculated from Table 4 and 5.
It is important to note that this paper aims to investigate how the stock of migrants affects international trade an example will be the stock of migrants from Mexico in the United States of America and how that influences trade between Mexico and the United States of America, also how the heterogeneity's that exist affects trade.

The Organization for Economic Cooperation and Development (OECD) was set up by countries with market-based economies to collaborate to develop policy standards to promote sustainable economic growth. the results from table 6 show that When the stock of migrants from an Origin country does not belong to the OECD, i.e, they do not collaborate with other countries that belong to the union e.g when the Stock of Migrants from Albania(Non-OECD) in Canada(OECD), there exists a positive relationship between Migrant Stock and International trade. The total effects of Migrant stock however when the Origin country belongs to the OECD is stronger, which means that although Migrant stock positively affects international trade flow, its effects is stronger elasticity (0.029) when the Origin country belongs to the OECD

The stock of Migrants presents in Destination countries that doesn't belong to the OECD has a positive effect on International trade with an elasticity of **0.018**, which implies that regardless of a Destination country belonging to the OECD, Migrant stock in that country increases international trade. On the other hand, the total effects of Migrant Stock in Destination countries that belongs to the OECD has a stronger positive effect on international trade with elasticity **0.049** compared to when the destination country did not belong to the

OECD, this in essence means that Migrant stock increase International trade flow more when Destination countries belong to the OECD. for a better perspective an example will be migrant stock in Canada a destination country will increase trade more between Canada and Albania, as supposed to when the destination country doesn't belong to the OECD e.g. Lativia.

Regional Trade agreements have the main goal of liberalizing international trade between member nations. From Table 5, it has been established that when countries belong to Regional Trade organizations, they tend to trade more. In table 6, the Effects of Migrant stock on trade when Origin and Destination countries do not belong to any Regional Trade agreement has a positive elasticity **0.026**, which implies that Migrant Stock increases trade between countries even when they do not Belong to Regional Trade Blocs.

On the other hand, The Total effects of stock on trade when Countries belong to Regional Trade agreements remain positive, although the elasticity remains relatively the same regardless of whether or not the countries belong to RTA, the results, therefore, show that Migrant stock has a stronger effect on trade irrespective of a country belonging to an RTA.

High-income countries are synonymous with Developed countries with a GNI per capita of $12,535 or above (World Bank), The total effects of Migrant Stock on International Trade when the Destination Country isn't a High-Income country is positive with elasticity **0.021** i.e when Destination countries are low-income countries e.g Gambia, the effect on international trade flow is positive, on the other hand, the total effect of Migrant Stock on International trade when the Destination country is a High-Income country is higher than when it is not with an elasticity of **0.027**, what this means is that Migrant stock increases International trade, but it has a stronger effect on trade when the destination countries are high-income countries.

Total effect of Migrant Stock on International trade when Origin Country doesn't belong to the region of Asia, has a positive effect on the relationship with International trade with an elasticity of **0.046**, which implies that Migrant stock increases trade when the origin country doesn't belong to the Asian Region. The Total effect however of Migrant Stock on International trade flow, when Origin country belongs to the the Asian Region is also positive, but has a lower elasticity 0.015, which implies that belonging to the Asian region has little effect as it relates to the relationship between migrant stock and International Trade flow.

The Total effect of migrant stock on international trade flow when Origin country doesn't belong to Asia and also not a member of the OECD is positive with an elasticity of **0.024**, which implies that Migrant stock has a positive effect on International Trade., while on the other hand the Total effects of migrant stock on trade when the Origin country belongs to Asia and Also a member of the OECD, is higher with an elasticity of **0.039**, which implies that Stock of Migrant has an improves international trade, however it has a stronger impact when the country Region is Asia and also belongs to the OECD.

The Total effect of migrant stock on trade when there is No distance between countries is negative which implies that when countries are close Migrant stock reduces international trade, an explanation to this could be that those countries sell homogeneous goods hence there is little or no reasons to trade, and in most instances such countries have similar economies e.g. trade between Poland and Slovakia., however the effect of migrant stock on trade.

When the average log distance between origin and destination countries is 8.77684 is positive with elasticity of **0,092**, this implies that Migrant stock has a strong effect of bilateral trade when the log distance between countries is at least 8.77684.

The total effects of Migrant stock on bilateral trade when both origin and destination countries do not speak same language is positive with an elasticity of **0.029**, which implies that migrant stock has a positive effect on trade. The total effects of Migrant stock on trade however when origin and destination countries speak a common language, the effect is positive but with less elasticity **0.017**, what this implies is that although countries speaking same language has a positive effect on international trade, when interacted with Migrant stock, the effect of migrant stock on international trade is stronger. An example of countries that speak common language will be between Unites states and Canada as they both speak English and trade with each other, same with Honduras and Mexico as they both speak Spanish.

Contiguity signifies common boarder, the Total effects of migrant stock on trade when the origin and destination countries do not share a common boarder is positive with an elasticity of **0.024**, however when they share a common boarder such as Mexico and Belize, Argentina and Chile or India and Bangladesh etc., the elasticity is positive and more **0.035**, this implies that although Migrant stock has a positive effect on trade, when Migrant stock is interacted with countries that share common boundary or boarder, its effect on International trade is more, i.e international trade flows increases. Colonial ties as shown in table 5 impacts bilateral trade, however the total effects of Migrant Stock when origin and destination countries do not share a colonial past has a positive effect on Bilateral trade with an elasticity **0.026**, however when countries share colonial history migrant stock has a stronger positive effect on International Trade with an elasticity **1.758**, an example of countries with colonial ties would be trade between Nigeria and Great Britain, considering that the English colonized Nigeria, hence Nigeria is a former English Colony.

When countries are landlocked it implies that the countries does not have a direct access to the ocean or sea coasts, and is surrounded entirely by land and dependent on

neighboring countries for access to the ocean and its trade benefits, this theoretically increases trade cost. The total effect of migrant stock on bilateral trade when origin and Destination countries are not landlocked i.e that have access to water bodies, has a positive effect on international trade, with elasticity of **0.021**, on the other hand the total effect of migrant stock on international trade when the Origin and Destination countries are landlocked remains positive with elasticity of **0.758**, which is higher than the elasticity when there is access to water bodies, what this implies is that Migrant stock has a stronger effect on trade especially when the countries involved in trade are landlocked, examples of landlocked countries would be Afghanistan and Armenia, and non-landlocked countries will be trade between Nigeria and Netherlands.

2.4.2 Regions

Table 2.4 1 : OLS Estimations Regions

Region OLS Estimations

	(1) logFLOW	(2) logFLOW	(3) logFLOW	(4) logFLOW	(5) logFLOW	(6) logFLOW
logStockpolate2	0.126***	0.140***	0.120***	0.122***	0.130***	0.125***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.410***	0.400***	0.413***	0.418***	0.419***	0.410***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-1.415***	-1.406***	-1.420***	-1.408***	-1.419***	-1.414***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.578***	0.569***	0.576***	0.560***	0.574***	0.578***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Contig	0.330***	0.312***	0.302***	0.335***	0.328***	0.339***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Curcol	-0.082	-0.145	-0.041	-0.102	-0.034	-0.073
	(0.669)	(0.448)	(0.830)	(0.593)	(0.859)	(0.703)
landlockedness1	-0.604***	-0.616***	-0.604***	-0.604***	-0.598***	-0.603***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Asia*LnStock		-0.034***				
		(0.000)				
Africa*LnStock			0.027***			
			(0.000)			
America*LnStock				0.041***		
				(0.000)		

Europe*LnStock					-0.016***	
					(0.000)	
OCEA*LnStock						0.040***
						(0.000)
cons	26.059***	25.984***	26.104***	26.000***	26.094***	26.054***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.737	0.737	0.737	0.737	0.737	0.737
N	270521.000	270521.000	270521.000	270521.000	270521.000	270521.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 2.5 1: PPML Estimations Regions

Region PPML Estimations

	(1) FLOW	(2) FLOW	(3) FLOW	(4) FLOW	(5) FLOW	(6) FLOW
logStockpolate2	0.026***	0.046***	0.025***	0.026***	0.021***	0.026***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.210***	0.196***	0.209***	0.208***	0.208***	0.209***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-0.735***	-0.719***	-0.737***	-0.732***	-0.728***	-0.736***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.148***	0.130***	0.145***	0.143***	0.148***	0.147***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Contig	0.363***	0.350***	0.365***	0.361***	0.355***	0.363***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Curcol	0.855***	0.821***	0.861***	0.849***	0.836***	0.855***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
landlockedness1	-0.398***	-0.398***	-0.397***	-0.400***	-0.397***	-0.397***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Asia*LnStock		-0.031***				
		(0.000)				
Africa*LnStock			0.024***			
			(0.004)			
America*LnStock				0.017***		
				(0.001)		
Europe*LnStock					0.018***	
					(0.000)	
OECA*LnStock						0.012
						(0.367)
cons	28.043***	27.852***	28.064***	28.012***	27.949***	28.045***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

r2	0.940	0.940	0.940	0.940	0.940	0.940
N	369616.000	369616.000	369616.000	369616.000	369616.000	369616.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 2.6 1: Interactions Total effects of stocks when there is different Regions

Interactions Total Effects Of stock when there is Different Regions

	OLS	PPML
Not Asia	0.140***	0.046***
	(0.000)	(0.000)
Asia	0.106***	0.015***
	(0.000)	(0.000)
Not Africa	0.120***	0.025***
	(0.000)	(0.000)
Africa	0.147***	0.049***
	(0.000)	(0.000)
Not America	0.122***	0.026***
	(0.000)	(0.000)
America	0.163***	0.043***
	(0.000)	(0.000)
Not Europe	0.130***	0.021***
	(0.000)	(0.000)
Europe	0.114***	0.039***
	(0.000)	(0.000)
Not Ocea	0.125***	0.026***
	(0.000)	(0.000)
Ocea	0.165***	0.038***
	(0.000)	(0.000)

Table 2.6 is generated from Table 2.4 and 2.5, It shows the total effects estimations on migrant stock when they belong to different regions This table shows the response of Migrant stock to international trade when interacted with Various regions. When migrant stock is interacted with Asia as a region it has a positive relationship with International trade, which implies that as the region also affects its impact on trade. when not Asia i.e others it is also positive with a stronger magnitude, meaning that the effect of Migrant stock when Asia as

region is not considered is higher, same applies to Africa, America, Europe and Oceania, the impact however is stronger for the regions America and Oceania.

2.5 Robustness Check

Tables 2.7 – 2.10 show the estimations for OLS and PPML using the 2-period and 3-period intervals; the 2-period intervals were for the years 2000, 2002, 2004, 2008, 2010, 2012, and 2014. and 3-period intervals were the years 2000 2003, 2006, 2009, and 2012. the PPML results are consistent with the results in the primary estimations in Table 2.1 and Table 2.2. The results in both the 2-period and 3-period intervals show that Migrant stock positively affects trade. Also, when countries belong to a Regional Trade agreement, they trade more; the farther apart countries are to each other, the less trade they will perform. When countries speak a common language, this also positively impacts trade. When they share a common border and colonial ties they trade more with each other when countries are landlocked; they trade less with each other. A significant difference, however, is that the elasticity's are smaller under the interval estimation than on the primary estimates.

The estimation with the intervals serves as a robustness checks, the interval estimations is as a result of the time it takes for trade to adjust in response to changes in other covariates, hence the adoption of the interval estimations. Treer (2004) used 3-year intervals data, Baier and Bergstrand (2007) used 5-year intervals data, Olivero and Yotov (2012) found similar results using 3-year and 5-year intervals data, and Anderson and Yotov (2016) used 4-year intervals data. The results as shown in the interval estimations for the OLS and PPML, is consistent with the results as shown in the main Total effects tables as shown in tables 6, the difference however is that the magnitudes are smaller. we can however conclude that Migrant stock positively affects international trade.

2.6 Conclusion

The results have given evidence that suggests that Ethnic Population affects trade positively also when both origin and destination countries belong to the OECD and also classified as High-income ethnic population tends to improve trade more. When countries share common boundaries, have colonial ties, speak the same language and also belong to a Regional Trade agreement, the effect of the ethnic population is more on trade. Interestingly results showed that the farther the distance, the less trade there is; however, when looking at the interaction of distance and migrant stock, results shows that the effect of migrant stock negates the effects of distance hence the increase the impact of ethnic stock on trade. Policy-wise, it is pertinent that countries attract stock of migrants that can add value to their economies, as this has enormous potential to improve trade. Further studies will investigate the trade wars between Asia and the rest of the world as a possible explanation as to why it reduces the effect of ethnic stock on population.

CHAPTER 3

THE COMPLEMENTARITY OR SUBSTITUTABILITY BETWEEN INTERNATIONAL TRADE AND INTERNATIONAL MIGRATION: AN EMPIIRICAL STUDY

3.1 Introduction

The topic of the relationship between international trade and international migration has been a subject of longstanding debate among economists, policymakers, and scholars. While some experts argue that trade and migration are complementary and mutually reinforcing, others contend that they are substitutes that compete for resources and opportunities. In order to shed more light on this complex issue, this paper aims to empirically explore the relationship between international trade and international migration, drawing on theoretical literature.

In recent years, globalization has led to significant increases in both international trade and international migration. While trade has facilitated the movement of goods and services across borders, migration has enabled people to cross national boundaries in search of better economic opportunities, education, and personal growth. These two phenomena are often seen as closely intertwined, with trade providing opportunities for economic growth and development, while migration serves as a means of filling labor market gaps and enhancing cultural exchange.

Despite these apparent benefits, some scholars argue that international trade and international migration may also have negative consequences. For example, increased competition resulting from trade liberalization can lead to job losses and wage stagnation in certain sectors, while immigration can place a strain on public services and social cohesion in destination countries. Additionally, some critics have pointed out that trade agreements and

immigration policies can be discriminatory, favoring certain countries or individuals over others; although this isn't the focus of this paper, it is worth mentioning.

To better understand the complex relationship between trade and migration, this paper will draw on a range of theoretical frameworks, including economic models of international trade, and migration theories. Specifically, the paper will examine how trade policies and immigration policies affect each other, how the movement of goods and people affects eachother, and how social and cultural factors can influence both trade and migration patterns.

To achieve these goals, the paper will employ the gravity model analysis. By doing so, the paper hopes to provide a nuanced understanding of the relationship between international trade and international migration and to offer insights that can inform policy decisions in these areas. Ultimately, the paper aims to contribute to a more comprehensive and informed debate about the role of trade and migration in shaping the global economy and society, as it relates to complementarity or substitutability

One notable contribution of this study is that it expands upon existing research by including a comprehensive analysis of tariffs imposed not only by country J on imports from country i, but also by country i on imports from country J. While previous empirical studies have primarily focused on the former, this paper adopts a gravity model analysis to incorporate both sets of tariffs. This approach allows for a more thorough examination of the bilateral trade relationship between the two countries and provides a more nuanced understanding of the impact of tariffs on Migration flows.

This Chapter is structured as follows. Section 3.2 Discusses the Literature Section 3.3 and3.4 describes the empirical methodology and data sources. Section 3.5 states and discusses the main findings of the paper In Section 3. 6, I conduct robustness checks. Finally, in section 3.7, I made some concluding remarks and discuss the policy implications.

3.2 Literature and Theory

Theoretical discussions of the relationship between international trade and international migration have been grounded in the work of Rybczynski (1955) and Mundell (1957). Mundell pioneered the work on the relationship between factor mobility and international trade, finding that international trade on commodities serves as a substitute for factor movement under certain assumptions. Markusen (1983) argued that by relaxing some of Mundell's assumptions, the relationship between international trade of commodities and factor movement becomes complementary.

Classical trade theory posits that the uninhibited mobility of factors of production between regions leads to the equalization of relative prices. The subsequent advancements in trade theory have revealed that the unrestricted movement of commodities in international trade also engenders the equalization of factor prices across regions (Samuelson, 1948).

Recent studies in the field explore the potential relationship between trade and factor mobility, which could take on different forms based on the underlying assumptions. Wong (1986) developed a general equilibrium model that permits international differences in endowments, preferences, and technologies. Wong assumes that only capital is mobile and that it moves without its owners, who repatriate the income earned on capital abroad. Wong compared the volume of trade and capital movement in three situations: autarky in trade with free capital mobility, free trade with capital mobility, and free trade without capital mobility.

Wong defines substitution and complementarity between capital and trade flows. He defines substitution as the reduction of trade volume due to capital movement, and the reduction of capital flow due to trade. On the other hand, complementarity occurs when capital and trade flows augment each other.

Similarly, Neary (1995) developed a model where goods and capital trade are substitutes under the assumption that capital is used in the importcompeting sector, while

Markusen (1983) argued that capital and goods trade are complements when capital is used in the export-competing sector. Neary explains how a tariff on manufactured goods creates an incentive for capital inflow to the home country.

Schiff (2006) generalized Markusen's complementarity results between trade and factor movement, considering the impact of initial tariffs. He finds that the relationship between factors and commodity trade could be either that of complements or substitutes, depending on the initial tariff rate and the magnitude of the change. Schiff argues that the magnitude of the tariff rate could offset the technological change effect on factor prices. With high protection, substitutability holds, while low protection levels result in complementarity. Moreover, for large changes in the protection rates, either substitutability or complementarity could occur.

Empirical studies have been carried out to examine the relationship between international trade and international migration. Collins et al. (1997) analyzed historical data and found mostly neutral, statistically insignificant results, while Goldberg and Klein (1999) concluded that there is evidence of both complementarity and substitutability type of relationship between trade and factor movement using more recent data.

Collins, O'Rourke, and Williamson (1997) examined the historical link between factor mobility and trade for ten countries between 1870 and 1940. Their analysis considered changes over decade-averaged panel data and over fifteen to twenty-year periods to describe the trade versus factor movement relation. They regressed real trade values on absolute real values of factor flows (capital and migration), tariffs, and transportation costs. The dominant result under their time

Cogneau and Tapinos (1995) examined the relationship between trade and emigration for the specific case of Morocco, and found evidence supporting a complementary relationship. Richards (1994) also concluded that trade and immigration appeared to be

complements in the context of Latin America. However, most empirical analyses have examined the complements substitutes question by looking only at simple correlations between trade and labor movements.

In contrast, Wong (1988) used data for the period 1948-1983 and estimated export and import functions for the US to obtain estimated Rybczynski effects with respect to changes in capital and labor. Panagariya (1992) found that skilled and unskilled labor migrate from South to North and capital migrates from North to South, suggesting that labor and capital mobility affects trade.

While these studies provide valuable insights into the relationship between factor mobility and trade, the methodology used and the specific context examined can limit the generalizability of their findings.

Venables (1997) suggested that trade liberalization may have different effects on factor mobility depending on the model used. Panagariya (1992) also suggested that in a model with economies of scale, labor and capital tend to migrate in opposite directions.

On the other hand, Francois (2001), Neary (1995), and Parai (1989) did not find any direct evidence specifically addressing the relationship between labor factor mobility and mobility of trade. Instead, these studies looked at related topics such as the importance of factor mobility for the manifestation of agglomeration and location effects, a model of trade and factor mobility that reconciles the conflicting views of previous writers, and the implications of factor immobility for the customs union theory, respectively.

Despite the mixed findings, these papers suggest that the relationship between labor factor mobility and mobility of trade is an area worthy of further study.

Another important aspect of the relationship between trade and factor mobility is the impact of trade tariffs on migration flow. Hatzigeorgiou (2010) found that migrants help lower trade costs between their country of birth and their country of residence by providing

an information channel that reduces friction and facilitates trade relations. Egger (2011) found that the relationship between migration and trade is not log-linear, and Aguiar (2007) found that bilateral trade flows do not significantly explain migration flows, while the traditional determinants do.

Finally, studies have also examined whether trade affects migration flow as complements or substitutes. Akkoyunlu (2009) found that migration and trade are complements, and Schiff (2006) found that complementarity between trade and migration as well as investment holds under migration costs and financing constraints. Kugler (2007) found that migration and foreign direct investment (FDI) substitute one another in the matching process between workers and firms, but this is not directly relevant to the relationship between labor factor mobility and mobility of trade.

In summary, the relationship between factor mobility and trade is complex and multifaceted. While some studies suggest a complementary relationship between trade and factor mobility, others point to a substitutive relationship. The methodology used and specific context examined can limit the generalizability of these findings. Further research is needed to gain a deeper understanding of the relationship between labor factor mobility and mobility of trade, as well as the impact of trade tariffs on migration flow and whether trade affects migration flow as complements or substitutes.

3.3 Data

Estimates of bilateral international migration flows were used as presented by Abel & Cohen (2019) for 100 countries over the period 2000-2015. Trade tariffs data, namely the simple averages of both MFN (most favored nation) and preferential tariff rates, for each HS6 product from the United Nations Statistical Division, Trade Analysis and Information System (UNCTADTRAINS), was used. Specifically, we consider preferential tariffs if exporting and

importing countries are part of a preferential trade agreement, otherwise the MFN tariffs will be used. Then we found the average trade tariffs of 13 sectors on the manufacturing industries namely Food, beverages and tobacco, Textiles, wearing apparel related products, Wood and Furniture, Paper Products , Coke and refined petroleum products, Chemicals and pharmaceuticals , Rubber and plastics product Metals, stone and glass, Computer, electronic and optical product. Machinery and Electrical Equipment, Vehicles ,Other transport equipment, Other manufactured products. Then we aggregate HS6-level products for each industry to obtain bilateral tariffs at the sectoral level.

The gravity variable data, i.e., time-invariant data such as Distance *cap* (Distance between capital cities in km), Contiguity (which measures how close countries are), Colony (which measures whether origin and destination countries have colonial ties), Common language (measures whether origin and destination countries share a common language), *Rta* (Regional trade agreement coded 1 if either origin or destination countries belongs to a regional trade organization and 0 otherwise), $Evercol_{ij}$ (if Origin and destination were ever in a colonial relationship), $land_{ij}$ (Measures if country i or j is landlocked), $\pi_{i,t}$ (Vector of Exporter Time Fixed Effects), $\chi_{j,t}$ (Vector of Importer Time Fixed Effects), and ϵ_{ijt} (Stochastic Error term) were all collected from the Center for prospective studies and international information (CEPII database).

3.4 Econometric Specification

In this paper, we adopt the gravity model as first applied to trade by (Jan Tinbergen, 1962); this same structural gravity equation estimated by Andeson (1979), Anderson and Van Wincoop (2003), Anderson and Yotov (2016) were adopted, in this research and augmented gravity model was used. Silva and Tenreyro (2006 2011) stated that the Poisson Pseudo Maximum Likelihood (PPML) method generate more robust result than the traditional

Ordinary least square (OLS) estimates; one of the significant advantages of this method is that it provides a natural way to deal with zero observations of the dependent variables in this case Asylum applications, the method also addresses the problem of heteroscedasticity. For this paper, therefore, we used both the Ols to present main results and PPML methods for robustness checks. Furthermore, the methods adopted the Origin time fixed effects, Destination time fixed effects. Furthermore this paper, the Ols (ordinary least squares) and ppml (Poisson pseudo maximum likelihood) estimates were obtained for the statistical model. To account for the clustering of observations in the data, the VCE pairwise clustering method was used to adjust the standard errors of the estimated coefficients. This method considers the correlation between observations within each cluster and modifies the standard errors to provide more accurate estimates.

Ols Specification

$$logMigflow_{ijt} = \beta_0 + \beta_1 ln_{ijt} + \beta_2 ln_{jit} + \beta_3 Rta_{ijt} + \beta_4 logDistw_{ij} + \beta_5 Landij + \beta_6 Comlang_{ij} + \beta_7 Contig_{ij} + \beta_8 Evercol_{ij} + \pi_{i,t} + \chi_{j,t} + \epsilon_{ijt}$$

PPML estimation

$$Migflow_{ijt} = exp[\beta_0 + \beta_1 ln_{ijt} + \beta_2 ln_{jit} + \beta_3 Rta_{ijt} + \beta_4 logDistw_{ij} + \beta_5 Landij + \beta_6 Comlang_{ij} + \beta_7 Contig_{ij} + \beta_8 Evercol_{ij} + \pi_{i,t} + \chi_{j,t} + \epsilon_{ijt}]$$

3.5 Results

Table 3.1 1: OLS Estimates

	OlS Estimates		
	(1) lnMigflow	(2) lnMigflow	(3) lnMigflow
t_ij	0.056***		
	(0.000)		
t_ji	0.049***		

	(0.000)		
Rta	0.426***	0.442***	0.583***
	(0.000)	(0.000)	(0.000)
logDistw	-1.418***	-1.563***	-1.462***
	(0.000)	(0.000)	(0.000)
Land	-0.208	-0.467***	-0.200
	(0.287)	(0.008)	(0.305)
Comlang	1.260***	1.275***	1.214***
	(0.000)	(0.000)	(0.000)
Contig	0.854***	1.448***	0.803***
	(0.000)	(0.000)	(0.000)
Evercol	1.601***	1.440***	1.576***
	(0.000)	(0.000)	(0.000)
lnt_ij		0.046**	
		(0.013)	
lnt_ji		0.038*	
		(0.081)	
lnt_ij1			0.299***
			(0.000)
lnt_ji1			0.307***
			(0.000)
Cons	15.690***	17.661***	15.735***
	(0.000)	(0.000)	(0.000)
r2	0.771	0.775	0.773
N	28084.000	23395.000	28084.000
Origin FE	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table 3.1 shows the Ols estimates in 3 regression variations. regression 2 expresses Importer imposed tariffs in logs and regression 3 expresses them in the log+1 form. The results in the 3 regression as give the same conclusions, I will, however be discussing the regression 3 The main variables of interest in this study are the Importer imposed tariffs and the Exporter imposed tariffs. While previous research has focused on Importer imposed tariffs, this paper introduces the value-add of examining the relationship between Exporter imposed tariffs and migration flow. Both variables have a positive relationship with Migration Flow, which suggests that they are substitutes. The underlying assumption is that trade and migration are substitutes if a free trade agreement increases trade while reducing labor migration. Conversely, trade and migration are complementary if increased trade leads to increased migration. Trade tariffs are one of the costs associated with trade and are used to

restrict trade. Therefore, an increase in trade tariffs (which implies less trade) leads to an increase in migration flow, indicating substitutability between trade and migration when using Trade tariffs as a proxy for trade. On the other hand, if trade tariffs increase, bilateral trade decreases, which, in turn, reduces migration flow. This indicates complementarity between trade and migration. **t ij** denotes Importer imposed tariffs; what this means is that country J buys less from country i, as this policy is designed to restrict trade by making it more expensive, when this happens instead of more goods coming into country J from i, you have increased Migration flow, which shows the substitutability of trade and Migration flow, in the paper as shown in Regression 3 table 3 a 1% increase in trade tariffs imposed by country J, will reduce Bilateral trade between country J and i, but will lead to an influx of labor factor which is proxied by Migration flow by the elasticity of (0.299***) placing this results into context an example would mean that If United states as an Importing country imposes import tariffs on all trade with Mexico, this implies that the USA is trying to restrict trade with Mexico when that happens Less of Mexican goods will come into the USA, as this happens by extension you will have more Migration flows from Mexico into the USA.

t ji denotes the tariff imposed by country i on imports from country j, assuming that country i imports a lot of intermediate inputs from country j, this increases the costs of intermediate inputs in country i by raising its domestic price. This in turn reduces exports by country i to country j, hence leading to an increase in migration flow from country i to country j, as the results shows it reflects substitutability of trade and Migration. the table shows that a 1% increase in trade tariffs imposed my country i on imports from country j will lead to a reduction in Bilateral trade between country i and j, and by extension lead to an influx of labor factor proxied by migration flow by an elasticity of (0.037***) an example would mean that if China as an exporting country imposes tariffs on imports from South Korea, Chinas intermediate inputs costs will increase, therefore making its more expensive,

hence reduce it exports, what happens will be an increased flow of migration from China to South Korea.

The results of some of the time-invariant variables in the Ols estimates, as presented in table 3. shows a positive relationship between Regional Trade Agreement **(RTA)** and migration flow; when there exists a regional trade agreement between origin and destination countries, there is increased migration flow, from the origin to the destination, the table shows a positive elasticity of (0.583***).

The farther the distance between the origin country and the destination country, the lower the migration flow between the two countries a 1% increase in the distance between two countries shows a negative elasticity (-1.462***); an example will be the distance between China and Argentina which is about 19,996 km, what this means is that there will be less Migration flow between China and Argentina as a result of the distance between the two countries.

When countries are landlocked, it implies that those countries do not have access to water bodies, which means in terms of trade, there will be less, however in terms of the migration flow, there is less flow of migrants between the two countries, the ols results shows a negative elasticity (-0.200***) an example will be between Argentina and Armenia both countries are landlocked hence there will be less migration flow between both countries as a result of the difficulty in accessing the countries.

When countries share a common language, the costs of Migrating and the cost of trading reduce, hence improving trade as well as migration. In the result, there is a positive elasticity of (1.214***), which implies that when Country i and country j speak similar languages, there will be more migration flow between those two countries, an Example is an increase in Migration flow from Nigeria to United kingdom, as a result of Nigeria and United kingdom both speaking English.

When countries share common borders or boundaries, Migration costs reduces therefore making it easy for migrants to move across the borderline; the results above show a positive elasticity (0.803***) between contiguity and Migrants flow an example will be Singapore and Malaysia that, share common boarders, this makes it easier for migrants to move across the borders since the cost of Migration has become less expensive, hence the increased migration flow.

Evercol, measures if there has ever been a colonial relationship between countries; the history of colonial relationships between countries reduces migration costs hence enhancing migration flows between countries. in table 3, there exists a positive elasticity of(1.576***) which shows that when a colonial relationship exists between country i and country j, there will be an increase in Migration flow, an example will be the colonial relationship that has existed between Angola and Portugal, as Angola was a former colony of Portugal; hence the results shows that by virtue of that colonial history, there will be increased migration flow from Angola to Portugal.

3.6 Robustness Checks

Table 3.2 1: PPML Estimations

	PPML Estimates		
	(1)	(2)	(3)
	Migflow	Migflow	Migflow
t_ij	0.017		
	(0.389)		
t_ji	0.034**		
	(0.021)		
Rta	0.291**	0.160	0.304**
	(0.025)	(0.242)	(0.023)
logDistw	-1.061***	-1.165***	-1.074***
	(0.000)	(0.000)	(0.000)
land	-0.310	-0.300	-0.311
	(0.249)	(0.451)	(0.246)
Comlang	0.758***	0.769***	0.744***
	(0.000)	(0.000)	(0.000)
Contig	0.353***	0.467***	0.328**
	(0.006)	(0.005)	(0.010)

Evercol	1.235***	1.410***	1.234***
	(0.000)	(0.000)	(0.000)
lnt_ij		0.023	
		(0.649)	
lnt_ji		0.121***	
		(0.004)	
lnt_ij1			0.063
			(0.486)
lnt_ji1			0.178**
			(0.029)
cons	18.259***	19.701***	18.380***
	(0.000)	(0.000)	(0.000)
r2	0.791	0.800	0.791
N	28084.000	23395.000	28084.000
Origin FE	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

The PPML (Poisson Pseudo Maximum Likelihood) estimation method offers several advantages, including its ability to handle zero observations of dependent variables and address the issue of heteroscedasticity (Silva & Tenreyro, 2006). In a recent study, the PPML method was used to investigate the impact of trade tariffs on migration flows. In this section, the focus is on the results of the third regression, which investigates the impact of trade tariffs on migration flows. Specifically, the variable of interest is lnt ij, which represents the tariff imposed by country j on a country i. Previous research has yielded mixed evidence regarding the relationship between this tariff and migration flows. However, using the PPML method in this study did not reveal a significant relationship between the two. In contrast, the OLS estimations showed a significant positive relationship that suggested substitutability between trade and migration. Nonetheless, the PPML results did not provide significant evidence to support this claim.

The study also examined the impact of lnt ji, which represents the tariffs imposed by country i on imports from country j. When country i imports many intermediate inputs from country j, it increases the costs of intermediate inputs in country i, thereby raising its domestic price and reducing its exports to country j. This situation leads to an increase in

migration flows from country i to country j, indicating the substitutability of trade and migration. The results indicated that a 1% increase in trade tariffs imposed by country i on imports from country j led to a reduction in bilateral trade and an increase in migration flow, with an elasticity of (0.178**).

The study also investigated other gravity variables that were time-invariant. The results showed that the farther apart two countries are, the less migration flow is observed. Landlocked countries experience decreased migration flow because it is more expensive to move without access to water bodies that make transportation easier. Additionally, when countries share common languages, boundaries, or colonial relationships, there is an increase in migration flow between them. However, only the relationship between the tariff imposed by country j on imports from country i did not show evidence to conclude that the relationship is substitutable with migration flow.

In conclusion, the PPML method may offer more accurate results than other methods in certain cases, such as when dealing with zero observations of dependent variables or addressing the issue of heteroscedasticity. The study's findings also suggest that when trade becomes more difficult or expensive between two countries, people may turn to migration as an alternative means of economic exchange. Finally, the study's findings about the impact of gravity variables on migration flows are consistent with previous studies.

3.7 Conclusion

In Conclusion, the paper delves into the intricate relationship between trade and migration flows, with a specific focus on the impact of tariffs on migration flows. The study employs three regression models using OLS estimates to investigate the relationship between importer-imposed tariffs (t ij), exporter-imposed tariffs (t_ji), and migration flows, demonstrating substitutability or complementarity between trade and migration.

This paper contributes to the existing literature by introducing the variable of exporter-imposed tariffs, which has not been widely studied before. The results show that the positive relationship between tariffs and migration flows exists for both importer-imposed and exporter-imposed tariffs. These findings imply that the imposition of tariffs by either the importing or exporting country could lead to an increase in migration flows, as individuals seek alternative economic opportunities.

Moreover, the study also identifies time-invariant variables such as regional trade agreements, contiguity, shared language, and colonial history that have a significant effect on migration flows. The results show that regional trade agreements have a positive relationship with migration flows, which may indicate the promotion of economic ties and the facilitation of labor mobility among countries. Conversely, distance and being landlocked has a negative relationship with migration flows, indicating that migration patterns are influenced by geographical factors. The study also found that shared language and colonial history have a positive relationship with migration flows, which may suggest the existence of cultural ties and historical linkages that influence migration decisions.

Overall, the paper highlights the crucial role of trade policies, as well as historical and geographical factors, in shaping migration flows. The findings have important policy implications for countries seeking to manage migration flows and improve their trade relationships with other countries. Policymakers should take into account the impact of tariffs and other trade policies on migration flows and consider how they can balance economic interests with social and humanitarian concerns.

Future research could expand on this study by examining the impact of other trade-related variables, such as foreign direct investment, trade openness, and trade balance, on migration flows. The study could also investigate how the relationship between trade and migration flows varies across different regions and income levels. These avenues of research

could provide valuable insights into the complex relationship between trade and migration and contribute to more informed policy-making in this area.

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APPENDIX A

CHAPTER ONE

Table A1: Summary Statistics Application

Variable	Obs	Mean	Std. Dev.	Min	Max
Applications	226,845	46.88552	1312.101	0	268866
logApplications	18,366	3.63598	1.985685	1.609438	12.50197
logApplicationsL1	14,583	3.638319	1.98581	1.609438	12.50197
Accepted_shareL1	11,589	.2318586	1.613123	0	125.9825
distcap	196,090	8134.229	4601.525	.9951369	19904.45
logApps_L1	181,476	0.2379866	1.006437	0	12.4125
logdistcap	196,090	8.762523	.8374942	-.0048749	9.898699
Colony	196,090	.104799	.1018337	0	1
contig	196,090	.0141517	.1181163	0	1
comlang_off	196,090	.1710184	.376526	0	1
Gdppc_i	217,305	16270.81	25865.99	0	190512.7
Mortalitt̃_i	217,305	20.87538	20.21373	0	94.2
life_ Expec_i	217,305	67.31482	19.674	0	85.07805
Conflict_i	93,280	2.506818	1.309049	1	5

Table A2:Summary Statistics Mig Stock

Variable	Obs	Mean	Std. Dev.	Min	Max
Applications	226,845	31.56156	1118.896	0	258636
logApps	226,845	0.2520977	1.040328	0	12.46318
logApps_L1	181,476	0.2379866	1.006437	0	12.4125
Stk	216,340	4807.991	80608.41	1	1.22E+07
logStk	216,340	1.474544	2.951855	0	16.31437
distcap	196,090	8134.229	4601.525	0.9951369	19904.45
logdistcap	196,090	8.762523	.8374942	-.0048749	9.898699
contig	196,090	0.0141517	0.1181163	0	1
Colony	196,090	0.104799	0.1018337	0	1
comlang_off	196,090	0.1710184	0.376526	0	1
Gdppc_i	217,305	13304.37	22428.08	0	190512.7
MortaM̃ale_i	217,305	195.4474	126.667	0	730.605
Literacy_Rĩ	217,305	14.8743	32.78503	0	99.99995
Conflict_i	92,220	2.468966	1.23952	1	5

APPENDIX B

CHAPTER TWO

Table A3: Variable Definition

Variable	Definition
Flow_ijt	Bilateral Trade Flows from country i to j at time t
Stock_ijt	Stock of Migrant from country i to country j at time t
Rta_ijt	Regional Trade agreement coded 1 if either belongs to a Rta and 0 otherwise
Distw_ij	Bilateral Distance between capital cities of trading partners
Comlang_ij	If Origin and Destination countries speak same language
Contig_ij	if countries i and j share a common boundary
Curcol_ij	if Origin and destination share a colonial relationship
land_ij	Measures if country i or j is landlocked
_i,t	Vector of Exporter Time Fixed Effects
_j,t	Vector of Importer Time Fixed Effects
_ijt	Stochastic Error term
CONTI-02	Continent 1 if Asia 0 otherwise
CONTI-03	Continent 1 if Africa 0 otherwise
CONTI-04	Continent 1 if America 0 otherwise
CONTI-05	Continent 1 if Europe 0 otherwise
CONTI-06	Continent 1 if Ocenia 0 otherwise
OECD	Organisation for Economic Cooperation and Development
OECDO	if Origin countries belong to the OECD
OECDD	if Destination countries belong to OECD
ECOCLASSD	Economic Classification 1 if High Income 0 Otherwise

Table A4: Region Definition

Variable	Definition
Asia	Asia
AFRI	Africa
AMERI	America
EUROP	Europe
OCEA	Oceania

Table A5: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FLOW	488,894	2.28e+08	2.67e+09	0	2.84e+11
lnFLOW	351,054	14.02188	4.130477	-17.55835	26.37104
FLOW1	488,894	2.28e+08	2.67e+09	1	2.84e+11
lnFLOW1	488,894	10.06967	7.213147	0	26.37104
Stock	90,522	4793.969	72683.19	0	1.22e+07
Stock1	90,522	4794.969	72683.19	1	1.22e+07
logStock1	90,522	1.634725	3.04973	0	16.31437
Stockpolate2	451,482	5040.193	66619.75	-168718.2	1.22e+07
lnStockpo2̃	451,092	1.654462	3.075791	-30.49848	16.31437
lnDistw	568,386	8.77684	.752995	4.107106	9.892497
Distw	568,386	8051.927	4499.787	60.77057	19781.39
Comlang	574,215	.1448621	.3519621	0	1
Contig	574,215	.0151685	.1222231	0	1
Curcol	574,215	.0006548	.0255808	0	1
rta	564,053	.1180722	.3226939	0	1
logDistw	568,386	8.77684	.752995	4.107106	9.892497
land	449,444	.3451553	.4754194	0	1
Stock1	90,522	4794.969	72683.19	1	1.22e+07
OECDO	574,230	.1906501	.3928141	0	1
OECDD	574,230	.1966233	.3974454	0	1
CONTI_o2	574,230	.2483465	.4320542	0	1
ECOCLASSO	574,230	.5838706	.492916	0	1
ECOCLASSD	574,230	.5785678	.4937889	0	1

Table A6:OLS 2 Period Interval Estimate

	(1) logFlow	(2) logFlow	(3) logFlow	(4) logFlow	(5) LogFlow	(6) logFlow	(7) logFlow	(8) logFlow	(9) logFlow	(10) logFlow	(11) logFlow	(12) logFlow
logStockpolate2	0.129***	0.134***	0.130***	0.144***	0.119***	0.140***	0.127***	-0.264***	0.132***	0.135***	0.129***	0.110***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.546***	0.554***	0.546***	0.794***	0.549***	0.538***	0.552***	0.608***	0.547***	0.545***	0.546***	0.532***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-1.371***	-1.375***	-1.372***	-1.382***	-1.370***	-1.363***	-1.374***	-1.519***	-1.370***	-1.365***	-1.371***	-1.375***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.572***	0.568***	0.572***	0.570***	0.570***	0.564***	0.574***	0.563***	0.618***	0.567***	0.572***	0.580***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Contig	0.314***	0.305***	0.311***	0.435***	0.338***	0.298***	0.323***	0.704***	0.327***	1.407***	0.314***	0.214***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Curcol	-0.180	-0.176	-0.180	-0.092	-0.200	-0.234	-0.163	-0.030	-0.120	-0.199	1.328	-0.076
	(0.499)	(0.507)	(0.499)	(0.730)	(0.452)	(0.378)	(0.540)	(0.911)	(0.653)	(0.454)	(0.614)	(0.775)
landlockedness1	-0.619***	-0.615***	-0.619***	-0.617***	-0.619***	-0.629***	-0.617***	-0.617***	-0.621***	-0.623***	-0.619***	-0.781***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OECDO*LnStock		-0.018***										
		(0.000)										
OECDD*LnStock			-0.003									
			(0.504)									
RTA*LnStock				-0.062***								
				(0.000)								
ECOCLASSD*LnStock					0.015***							
					(0.001)							
CONTI_O2*LnStock						-0.030***						
						(0.000)						
OECDD*CONTI_O2*LnStock							0.018***					
							(0.000)					
LnDistw*LnStock								0.047***				
								(0.000)				
Comlang*LnStock									-0.014***			
									(0.001)			
Contig*LnStock										-0.126***		
										(0.000)		
Curcol*LnStock											-0.174	
											(0.565)	
Land*LnStock												0.074***
												(0.000)
cons	25.670***	25.704***	25.675***	25.736***	25.657***	25.603***	25.687***	26.942***}	25.653***	25.609***	25.671***	25.749***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.717	0.717	0.717	0.717	0.717	0.717	0.717	0.718	0.717	0.717	0.717	0.717
N	144931.000	144931.000	144931.000	144931.000	144931.000	144931.000	144931.000	144931.000	144931.000	144931.000	144931.000	144931.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table A7: OLS 3 Period Interval Estimate

	(1) logFLOW	(2) logFlow	(3) logFlow	(4) logFlow	(5) logFlow	(6) logFlow	(7) logFlow	(8) logFlow	(9) logFlow	(10) logFlow	(11) logFlow	(12) logFlow
logStockpolate2	0.129***	0.136***	0.130***	0.144***	0.121***	0.140***	0.127***	-0.254***	0.132***	0.135***	0.129***	0.111***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.534***	0.546***	0.534***	0.796***	0.536***	0.525***	0.541***	0.603***	0.535***	0.534***	0.534***	0.518***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-1.345***	-1.349***	-1.345***	-1.353***	-1.344***	-1.338***	-1.347***	-1.486***	-1.344***	-1.339***	-1.345***	-1.349***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.566***	0.561***	0.566***	0.562***	0.564***	0.558***	0.567***	0.555***	0.609***	0.561***	0.566***	0.573***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Contig	0.333***	0.322***	0.330***	0.460***	0.353***	0.318***	0.343***	0.716***	0.346***	1.429***	0.333***	0.238***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Curcol	-0.114	-0.110	-0.114	-0.039	-0.130	-0.165	-0.098	0.036	-0.058	-0.133	0.788	-0.014
	(0.732)	(0.742)	(0.732)	(0.906)	(0.696)	(0.620)	(0.769)	(0.914)	(0.863)	(0.689)	(0.799)	(0.967)
landlockedness1	-0.620***	-0.614***	-0.619***	-0.618***	-0.620***	-0.630***	-0.618***	-0.619***	-0.621***	-0.624***	-0.620***	-0.772***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OECDO*LnStock		-0.023***										
		(0.000)										
OECDD*LnStock			-0.004									
			(0.539)									
RTA*LnStock				-0.063***								
				(0.000)								
ECOCLASSD*LnStock					0.012**							
					(0.037)							
CONTI_O2*LnStock						-0.029***						
						(0.000)						
OECDD*CONTI_O2*LnStock							0.017***					
							(0.002)					
LnDistw*LnStock								0.045***				
								(0.000)				
Comlang*LnStock									-0.013**			
									(0.016)			
Contig*LnStock										-0.127***		
										(0.000)		
Curcol*LnStock											-0.104	
											(0.770)	
Land*LnStock												0.070***
												(0.000)
cons	25.361***	25.402***	25.368***	25.408***	25.351***	25.302***	25.377***	26.578***	25.347***	25.300***	25.362***	25.445***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.715	0.715	0.715	0.715	0.715	0.715	0.715	0.716	0.715	0.715	0.715	0.715
N	90023.000	90023.000	90023.000	90023.000	90023.000	90023.000	90023.000	90023.000	90023.000	90023.000	90023.000	90023.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table A8: PPML 2 Period Interval Estimate

	(1) FLOW	(2) FLOW	(3) FLOW	(4) FLOW	(5) FLOW	(6) FLOW	(7) FLOW	(8) FLOW	(9) FLOW	(10) FLOW	(11) FLOW	(12) FLOW
logStockpolate2	0.033***	0.030***	0.020***	0.032***	0.020***	0.053***	0.030***	0.006	0.035***	0.030***	0.033***	0.028***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.009)	(0.000)	(0.000)	(0.822)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.458***	0.456***	0.488***	0.441***	0.466***	0.448***	0.480***	0.456***	0.456***	0.466***	0.459***	0.457***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-0.652***	-0.648***	-0.620***	-0.651***	-0.647***	-0.635***	-0.660***	-0.681***	-0.649***	-0.653***	-0.651***	-0.654***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.130***	0.129***	0.118***	0.131***	0.127***	0.112***	0.139***	0.127***	0.213***	0.136***	0.130***	0.108***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Contig	0.368***	0.363***	0.371***	0.366***	0.373***	0.353***	0.374***	0.377***	0.372***	0.181*	0.368***	0.356***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.079)	(0.000)	(0.000)
Curcol	0.856***	0.859***	0.894***	0.858***	0.842***	0.822***	0.837***	0.858***	0.848***	0.860***	-14.701***	0.881***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
landlockedness1	-0.439***	-0.439***	-0.409***	-0.440***	-0.437***	-0.438***	-0.430***	-0.436***	-0.431***	-0.452***	-0.439***	-0.946***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OECDO*LnStock		0.007										
		(0.305)										
OECDD*LnStock			0.051***									
			(0.000)									
RTA*LnStock				0.002								
				(0.751)								
ECOCLASSD*LnStock					0.017*							
					(0.060)							
CONTI_O2*LnStock						-0.032***						
						(0.000)						
OECDD*CONTI_O2*LnStock							0.019***					
							(0.002)					
LnDistw*LnStock								0.003				
								(0.311)				
Comlang*LnStock									-0.009			
									(0.126)			
Contig*LnStock										0.018*		
										(0.051)		
Curcol*LnStock											1.737***	
											(0.000)	
Land*LnStock												0.062***
												(0.000)
cons	27.129***	27.077***	26.598***	27.130***	27.058***	26.925***	27.160***	27.374***	27.086***	27.163***	27.124***	27.194***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.915
N	198007.000	198007.000	198007.000	198007.000	198007.000	198007.000	198007.000	198007.000	198007.000	198007.000	198007.000	198007.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table A9:PPML 3 Period Interval Estimate

	(1) FLOW	(2) FLOW	(3) FLOW	(4) FLOW	(5) FLOW	(6) FLOW	(7) FLOW	(8) FLOW	(9) FLOW	(10) FLOW	(11) FLOW	(12) FLOW
logStockpolate2	0.038***	0.037***	0.024***	0.036***	0.021**	0.054***	0.035***	-0.004	0.041***	0.036***	0.038***	0.024***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.039)	(0.000)	(0.000)	(0.917)	(0.000)	(0.000)	(0.000)	(0.000)
rta	0.471***	0.471***	0.502***	0.431***	0.480***	0.463***}	0.495***	0.468***}	0.468***	0.477***	0.472***	0.223***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
logDistw	-0.640***	-0.639***	-0.606***	-0.639***	-0.633***	-0.626***	-0.649***	-0.684***	-0.636***	-0.641***	-0.639***	-0.729***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comlang	0.141***	0.141***	0.127***	0.143***	0.137***	0.126***	0.151***	0.136***	0.250***	0.145***	0.141***	0.136***
	(0.002)	(0.002)	(0.005)	(0.002)	(0.003)	(0.005)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)	(0.000)
Contig	0.372***	0.371***	0.373***	0.369***	0.379***	0.361***	0.378***	0.386***	0.378***	0.232*	0.373***	0.362***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.090)	(0.000)	(0.000)
Curcol	0.866***	0.867***	0.907***	0.870***	0.848***	0.838***	0.846***	0.868***	0.856***	0.869***	-13.613***	0.913***
	(0.003)	(0.003)	(0.002)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.000)	(0.002)
landlockedness1	-0.447***	-0.447***	-0.415***	-0.449***	-0.444***	-0.446***	-0.437***	-0.442***	-0.436***	-0.457***	-0.447***	-0.914***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OECDO*LnStock		0.002										
		(0.815)										
OECDD*LnStock			0.055***									
			(0.000)									
RTA *LnStock				0.005								
				(0.578)								
ECOCLASSD*LnStock					0.022*							
					(0.068)							
CONTI_O2*LnStock						-0.026***						
						(0.006)						
OECDD*CONTI_O2*LnStock							0.021***					
							(0.005)					
LnDistw*LnStock								0.005				
								(0.226)				
Comlang*LnStock									-0.011			
									(0.119)			
Contig*LnStock										0.013		
										(0.269)		
Curcol*LnStock											1.621***	
											(0.000)	
Land*LnStock												0.062***
												(0.000)
cons	26.914***	26.899***	26.347***	26.917***	26.823***	26.748***	26.952***	27.291***	26.857***	26.938***	26.908***	27.963***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
r2	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.918	0.943
N	123519.000	123519.000	123519.000	123519.000	123519.000	123519.000	123519.000	123519.000	123519.000	123519.000	123519.000	123519.000
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* p 0.05, ** p 0.01, *** p 0.001 t statistics in parentheses

Table A10 : Total Effects of Stock

	Interval 2 OLS	Interval 3 OLS	Interval 2 PPML	Interval 3 PPML
Doesn't belong to OECD	0.134***	0.136***	0.030***	0.037***
	(0.000)	(0.000)	(0.000)	(0.000)
Origin belongs to OECD	0.116***	0.113***	0.037***	0.039***
	(0.000)	(0.000)	(0.000)	(0.000)
Destination doesn't belong to OEDD	0.130***	0.130***	0.020***	0.024***
	(0.000)	(0.000)	(0.000)	(0.001)
Destination Belongs to OECDD	0.127***	0.126***	0.071***	0.079***
	(0.000)	(0.000)	(0.000)	(0.000)
Country Doesn't belong to RTA***	0.144***	0.144***	0.032***	0.036***
	(0.000)	(0.000)	(0.000)	(0.000)
Country belongs to RTA	0.082***	0.081***	0.034***	0.041***
	(0.000)	(0.000)	(0.000)	(0.000)
Destination doesnt belong to Highincome	0.119***	0.121***	0.020***	0.021***
	(0.000)	(0.000)	(0.000)	(0.039)
Destination belongs to HighIncome	0.134***	0.133***	0.037***	0.043***
	(0.000)	(0.000)	(0.000)	(0.000)
Origin Country doesn't belong to Asia	0.140***	0.140***	0.053***	0.054***
	(0.000)	(0.000)	(0.000)	(0.000)
Origin country belongs to Asia	0.110***	0.111***	0.021***	0.028***
	(0.000)	(0.000)	(0.000)	(0.000)
Origin doesn't belong to ASIA and OECD	0.127***	0.127***	0.030***	0.035***
	(0.000)	(0.000)	(0.000)	(0.000)
Origin belongs to both Asia and OECD	0.145***	0.144***	0.049***	0.056***
	(0.000)	(0.000)	(0.000)	(0.000)
Not for Distance	-0.264***	-0.254***	0.006	-0.004
	(0.000)	(0.000)	(0.822)	(0.917)
For Distance	0.149***	0.141***	0.032***	0.040***
	(0.000)	(0.000)	(0.000)	(0.000)
No Commonlang	0.132***	0.132***	0.035***	0.041***
	(0.000)	(0.000)	(0.000)	(0.000)
Commonlang	0.118***	0.119***	0.026***	0.029***
	(0.000)	(0.000)	(0.000)	(0.000)
Not Close	0.135***	0.135***	0.030***	0.036***
	(0.000)	(0.000)	(0.000)	(0.000)
Close to each other	0.009	0.008	0.048***	0.049***
	(0.462)	(0.560)	(0.000)	(0.000)
No Colonial past	0.129***	0.129***	0.033***	0.038***
	(0.000)	(0.000)	(0.000)	(0.000)
Colonial past	-0.045	0.025	1.770***	1.659***
	(0.882)	(0.945)	(0.000)	(0.000)
Not Landlocked	0.110***	0.111***	0.028***	0.032***
	(0.000)	(0.000)	(0.000)	(0.000)
Landlocked	0.184***	0.181***	0.090***	0.095***
	(0.000)	(0.000)	(0.000)	(0.000)

APPENDIX C

CHAPTER THREE

Table C1: Definition of Variables

Variable	Definition
MigFlow_ijt	Bilateral Migration Flows from country i to j at time t
t_ijt	Trade Tariff imposed by Importer j on Exporter i at time t
t_jit	Trade Tariff imposed by Exporter i on Importer j at time t
Rta_ijt	Regional Trade agreement coded 1 if either belongs to a Rta and 0 otherwise
Distw_ij	Bilateral Distance between capital cities of trading partners
Comlang_ij	If Origin and Destination countries speak same language
Contig_ij	if countries i and j share a common boundary
Evercol_ij	if Origin and destination were ever in a colonial relationship
land_ij	Measures if country i or j is landlocked
πit	Vector of Exporter Time Fixed Effects
χjt	Vector of Importer Time Fixed Effects
ϵijt	Stochastic Error term

Table C2: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
t_ij	35,359	8.349478	6.250766	0	33.08681
t_ji	35,359	8.349478	6.250766	0	33.08681
lnt_ij	31,478	1.861608	1.370887	-8.700589	3.499135
lnt_ji	31,478	1.861608	1.370887	-8.700589	3.499135
t_ij1	35,359	9.349478	6.250766	1	34.08681
t_ji1	35,359	9.349478	6.250766	1	34.08681
lnt_ij1	35,359	1.914468	0.9343275	0	3.52891
lnt_ji1	35,359	1.914468	0.9343275	0	3.52891
Migflow	39,084	6641.499	49106.78	1	2911348
lnMigflow	39,084	4.324538	3.311765	0	14.88413
landlocked Ĩ	33,934	0.2048683	0.4036113	0	1
rta	39,084	0.2344693	0.4236721	0	1
Distw	39,084	7498.598	4639.491	114.6373	19650.13
logDistw	39,084	8.639533	0.8694882	4.741773	9.885839
Comlang	39,084	0.118821	0.3235819	0	1
Contig	39,084	0.0263023	0.1600349	0	1
Evercol	39,084	0.0197523	0.1391498	0	1

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