

**Trade Flow and Nation Brand Distance:
A Structural Gravity Model Approach**

تدفق التجارة والفرق في العلامة التجارية للدول:
دراسة تعتمد على نهج نموذج الجاذبية الهيكلية

by

HUDA ISMAIL AL BESHER

**A thesis submitted in fulfilment
of the requirements for the degree of
DOCTOR OF PHILOSOPHY IN BUSINESS MANAGEMENT
at
The British University in Dubai**

April 2021



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ABSTRACT

In today's fierce global competition, nations are aiming to improve their country's standing in the international trade market to sustain their economic vitality and growth. A progeny of this global milieu, the 'nation brand' concept has captured the growing attention of policy makers, practitioners, and scholars. Similar to corporations, countries are competing to improve their nation brand which represent the whole image of a country including economic, political, cultural, historical and social aspects to stimulate the trade flows. Despite the plethora of researches that is interested in studying this area, the concept of nation brand is divergent and fragmented as the field is still developing and lacking a coherent theoretical base and a solid reliable measurement. In response, this thesis will build on the existence literature to synthesize, analyze, examine and discuss the multifaced nation brand concept that is backed by the theoretical background of New Trade Theory (NTT), OLI Eclectic Paradigm and the Country-of-Origin effect (COO).

The purpose of this study is to examine the moderation impact of nation brand distance (NBD) on the relationship between geographical distance, trade agreements and both export and import flow. The Nation brand distance (NBD) is a distance type that is firstly introduced in this thesis and can be defined as the degree to which nation brand scores differ from the target county to another country. The NBD is calculated based on Country Brand Strength Index (CBSI) which consists of relative values per capita of the statistical data for five different areas that composite the index, which includes the dimensions of exports, tourism, foreign direct investment, immigration, and government environment.

Using a quantitative research method, this thesis has investigated both export and import flow between United States and its 36 major trading partners from 1993 to 2016. To test the panel data, the structural gravity model of international trade was employed using a first-order Taylor

approximation of multilateral resistance terms and estimated by Ordinary Least Square (OLS) and Poisson-Pseudo-Maximum Likelihood (PPML).

The empirical findings shows that NBD influence both export and import volume in which less distant countries in term of nation brands are able to overcome the negative effect of geographical distance which can stimulates the export mainly and import flow to some extent. The results on the impact of NBD on FTA and trade flows provides some interesting insights as the there is a negative and significant moderation impact of NBD on the relationship between FTA and both export and import volume which suggest that a decrease of NBD will increase the effect of FTA on trade flow. Overall, the results supported most of the study expectations and found evidence that less nation brand distance between two trading partners will have a positive moderation impact export volume mainly and import volume to some extent.

The theoretical contribution of the research is that it extends the New Trade Theory by focusing on countries, rather than companies. It also extends the monopolistic competition concept of the theory to show how nation brand of a country can explain importing products that is similarly produced in the local market due to consumer perception on the producing country image which drives the product demand. Further, economies-of-scale explains trade among countries like the US and other developed countries where they have similar technologies, similar production costs, and to some extent similar nation brand aspects. This thesis also extends the OLI theory by highlighting that it is a key variable for countries as well as firms for the decision to enter new markets. On the practical contribution, governments and public policymakers can improve their trade flow by improving the nation brand strategy. Thus, reducing the gap in nation brand distance between the trading partners will overcome the geographical distance negative affects and will lead to more trade agreements in place. Further,

for multinational businesses, this study will motivate them to use the nation brand distance to study the feasible target market abroad.

The originality of the study exists as it is the first to explore nation brand distance impact on trade flow. It contributes to the existing literature that studied nation brand based on aggregate effects on conjecture and anecdotal evidence. Further, future studies is recommended to use this research outcome to build on the concept of NBD for more regerous value added to the field that will help many nations to develop better branding strategies and may contribute to stimulate trade flow by billions of dollars.

ABSTRACT IN ARABIC (الملخص)

في ظل المنافسة العالمية المتنامية في الوقت الراهن، تهدف الدول إلى تحسين مكانتها في سوق التجارة الدولية للمحافظة على استدامة نموها الاقتصادي، وكنتيجة لهذا التنافس فإن مفهوم "العلامة التجارية للدول" قد استحوذ على الاهتمام المتزايد من الحكومات، وصانعي القرار، بالإضافة إلى العاملين والباحثين في المجال، وحاليا تحدد الدول حدود الشركات في العمل على تحسين العلامة التجارية، وتشمل الصورة الكاملة للدولة متمثلة في الجوانب الاقتصادية والسياسية والثقافية والتاريخية والاجتماعية، وبالرغم من تزايد الأبحاث التي تهتم بدراسة هذا المجال، إلا أن مفهوم العلامة التجارية للدول متباين ومجزأ ولا يزال قيد التطوير، كما أنه يفتقر إلى كونه مبني على مبادئ نظرية متماسكة وطرق قياسية معتمدة، ومن هذا المنطلق ستبني هذه الأطروحة على الأبحاث السابقة في هذا المجال لتجميع وتحليل ومناقشة هذا المفهوم متعدد الأوجه بالاستعانة بنظرية التجارة الجديدة (NTT) وتأثير بلد المنشأ (COO).

وتهدف هذه الدراسة إلى فهم التأثير الوسيط لفرق العلامة التجارية بين الدول (NBD) على تأثير كل من المسافات الجغرافية والاتفاقيات التجارية على تدفق الصادرات والواردات لهذه الدول، ويعتبر هذا المؤشر (NBD) مقياساً جديداً يتم تقديمه في هذه الأطروحة لأول مرة، ويمكن تعريفه على أنه الفرق في العلامة التجارية بين الدولة المستهدفة و العلامة التجارية للدولة الأخرى، و يتم احتساب الفرق بالاستعانة بمؤشر قوة العلامة التجارية للدولة (CBSI) والذي يتكون من القيم النسبية الإحصائية للفرد التي تشمل خمسة مجالات مختلفة وهي الصادرات، والسياحة، والاستثمار الأجنبي المباشر، والهجرة، والأنظمة والقوانين الحكومية.

وتعتمد هذه الدراسة في تحليل البيانات الإحصائية على الطرق الكمية للتحقيق في تدفق التجارة الخارجية من صادرات وواردات بين الولايات المتحدة و37 من شركائها التجاريين الرئيسيين للفترة من 1993 إلى 2016، وذلك باتباع نموذج الجاذبية الهيكلية وتطبيق المعاملة التقريبية لتايلور من الدرجة الأولى باستخدام معادلات المقاومة (MRT) ومقاييس ال (OLS) و (PPML).

تظهر النتائج التجريبية أن الفرق في العلامة التجارية يؤثر على كل من حجم الصادرات والواردات بحيث تكون البلدان المتقاربة من حيث العلامة التجارية قادرة على تقليل التأثير السلبي لبعد الدول جغرافياً مما يحفز التصدير بشكل أساسي وحجم الاستيراد إلى حد ما، أما عن تأثيرها على العلاقة بين اتفاقيات التجارة الحرة والتدفقات التجارية فإنها تؤثر سلباً في حالة الصادرات والواردات على حد مما يعني أن تقارب الدول في العلامة التجارية تعني زيادة قابلية العمل على اتفاقيات التجارة

الحرّة، وبشكل عام دعمت هذه النتائج معظم فرضيات الدراسة وأظهرت الأدلة على أن المسافة الأقل بين معدلات العلامات التجارية ستؤثر بشكل مباشر وغير مباشر على حجم الصادرات بشكل أساسي وحجم الواردات إلى حد ما.

إن نتائج البحث تساهم في النظريات العلمية بشكل واضح، حيث أنها توسع نظرية التجارة الجديدة لتشمل التركيز على البلدان بدلاً من حصرها على الشركات، كما أنها تضيف إلى مفهوم المنافسة الاحتكارية ضمن نظرية NTT لتوضح كيف أن العلامة التجارية لبلد ما يمكن أن تفسر استيراد الدولة لنفس المنتجات التي يتم إنتاجها محلياً لتأثير الصورة الذهنية للدولة المنتجة على قرارات المستهلك، وعلاوة على ذلك، تشرح اقتصاديات الموازين سبب التجارة بين دول مثل الولايات المتحدة ودول متقدمة أخرى تمتلك تقنيات وتكاليف إنتاج مماثلة وكذلك مقاربة العلامة التجارية، وفيما يتعلق بالمساهمة العملية للبحث، فإن الحكومات ومتخذي القرار يمكنهم العمل على تحسين تدفق التجارة من خلال تطوير استراتيجية العلامة التجارية الوطنية، وبالتالي فإن تقليص الفرق في مسافة العلامة التجارية بين الشركاء التجاريين سوف يساهم في تقليل الآثار السلبية للبعد الجغرافي وسيزيد من كفاءة الاتفاقيات التجارية القائمة، وعلاوة على ذلك ستحفز هذه الدراسة الشركات العالمية لاستخدام مسافة العلامة التجارية للدول لدراسة جدوى الدخول لأسواق عالمية.

تكمن جوهرية الدراسة أنها الأولى من نوعها في استكشاف تأثير الفرق بين العلامات التجارية للدول في فهم تدفق التجارة العالمي وتساهم في مجال البحث العلمي في فهم العلامة التجارية بين الدول بناءً على التأثيرات الإجمالية المبنية على بيانات اقتصادية، وكنتيجة للدراسة، فإنها توصي الباحثين باستخدام نتائج هذا البحث لبناء مفهوم أشمل عن تأثير العلامات التجارية وتحفز متخذي القرار لتطوير استراتيجيات أفضل قد تساهم في تحفيز تدفق التجارة بمبالغ كبيرة.

DEDICATION

I dedicate this thesis to my family who had supported me throughout this journey. Especially my angels: Fatima, Hamad and Abdalla who had been the source of my strength throughout this journey. I also want to highlight my appreciation to my parents who made me believe that nothing is impossible. I am very grateful to everyone around me who guided and encouraged me to give it all it takes to accomplish what I was always dreaming.

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LIST OF ABBREVIATIONS

CBI	Country Brand Index
CBSI	Country Brand Strength Index
CES	Constant Elasticity of Substitution
COO	Country of Origin
DR-CAFTA	The Dominican Republic-Central America FTA
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GATT	General Agreement on Tariffs and Trade
RTA	Reciprocal Trade Agreement
GDP	Gross Domestic Products
GM	Gravity Model
H-O Model	Heckscher–Ohlin Model
H-O Model	Heckscher-Ohlin Samuelson Model
MCBSI	Modified Brand Strength Index
MNC's	Multi-national Companies
MRT	Multilateral Resistance Terms
NAFTA	The North American Free Trade Agreement
NB	Nation Brand
NBD	Nation Brand Distance
NBI	Nation Brand Index
NEG	New Economic Geography
NTT	New Trade Theory
OLI	Ownership, Location and Internationalisation (Dunning Eclectic Paradigm Theory)
OLS	Ordinary Least Square
PPML	Poisson-Pseudo-Masimum Likelihood
SGM	Structural Gravity Model
GM	Gravity Model
UAE	United Arab Emirates

UNCTAD	United Nations Conference on Trade and Development
UNWTO	United Nation World Tourism Organization
US	United States
USD	United States Dollars
WDI	World Bank Development Indicators
WGI	The Worldwide Governance Indicators
WTO	World Trade Organisation

CHAPTER 1 : INTRODUCTION

1.1 Research Background

Increasing trade flows is a global imperative for many countries because of their reliance on international trade to generate economic growth (Czinkota & Ronkainen 2003, 2011). According to the World Bank, global trade volumes have grown significantly to reach from \$1.38 trillion in 1990 to \$20.834 trillion in 2018 as a total world export and for the total world imports had grown from \$1.35 trillion in 1990 to \$18.88 trillion in 2018 (WITS 2021). The challenges for policymakers responsible for increasing trade flows remain daunting. The difficulty arises from the trade literature in which trade flows are determined by multiple contributing factors such as geographical distance, the relative size of the two economies, FTAs, the existence of a language or border in common, and former colonial ties (Anderson & Van Wincoop 2004). However, these factors are hard to control unilaterally as the countries cannot simply change their location, economy size, colonial history or official language spoken to match their trading partners. Even with regard to FTAs, a difficulty arises due to the considerable time required to negotiate with the potential trading partners to accept terms of the FTA.

In the quest to enhance trade volumes, governments continue to explore new ways to enhance trade flows and as a result many policymakers are considering the development of nation brand as a possible solution. For instance, the United States announced the National Export Initiative in 2010, which targeted the improvement of public welfare by helping US firms to sell in foreign markets. China has also been active by running different marketing campaigns to promote the entire country by turning the label of “Made in China” into a better image in order to stimulate its overall trade volume (Dimitrova et al. 2016). Beginning in early 2020, the UAE is another country that has initiated an official nation brand logo and program as a national project to strengthen the positive image of the

country both regionally and internationally with the objective of stimulating tourism, trade and investment into the country (UAE NB 2021). The US, China and UAE are hardly alone in spearheading these sorts of efforts. There are many other countries that have trade initiatives of their own that are designed to improve their country image.

Developing a strong nation brand is desirable as it is linked to a positive perception of the country as well as to progress and development (Caldwell & Freire, 2004; Fetscherin 2010; Hao et al. 2019). Countries benefit from a strong nation brand in many concrete ways. First, it plays a significant role in economic development since nation brand equity has been found to boost gross national product (Boisen et al., 2011, 2017; Kotler & Gertner, 2002) because of its ability to stimulate a country's exports and sell their products in foreign markets at a premium (Dimitrova et al. 2017; Loo & Davies 2006; Papadopoulos 2004). This economic development is also supported by the foreign direct investments that a positive nation brand attracts (Kalamova & Konrad, 2010; Papadopoulos & Heslop 2002). Second, a strong country brand also acts as a magnet that draws in people – whether tourists, international students, or immigrants (Caldwell & Freire 2004; Gilmore 2002; Martens and Starke, 2008). Third, a strong country brand helps to improve the perceived level of satisfaction of a country's citizens (Kavaratzis, 2005), which may make them more productive and engaged. This, in turn, fosters a positive image of a country's citizens and residents in the eyes of foreign citizens, which might boost a country's rating in the “people” category on survey-based nation brand indices.

The specification of the nation brand definition and its role in promoting trade flows is a necessary step in the designing of a country's nation brand strategy (Kim et al. 2013). As a result of the review of the literature, it was found that nation brand is a complex concept that includes multiple disciplines, levels, and components that collectively encompass the joint involvement of many potential stakeholders. Nation brand is best understood as a result of the country's reputation or performance, measured across specific nation brand indicators (Anholt, 2010; Fetscherin, 2010; Lahrech et al.

2020b). This definition is important because the literature of nation brand has traditionally exhibited a lack of conceptual clarity regarding the definition of the nation brand terminology (Hao et al. 2019). As a response to these shortcomings, this thesis synthesizes the various definitions of nation brand to include the whole country image in terms of economic, social, political, and cultural characteristics that can be used to improve the nation reputation and promote trade among the different stakeholders. The history of nation brand research started in the 1990s at a time when scholars started to apply strategic concepts to geographical brands (Kotler et al. 1993). Although the idea was slow to develop, the academic research has quickened in the nation brand field. For example, the number of research papers increased after 2002 with the introduction of the special issue of the Journal of Brand Management, followed by an increase in 2004 with the launch of the issue of the Place Brand and Public Diplomacy, which was followed in 2008 with the issue of the Journal of Place Management and Development. For this study, the country-of-origin impact (COO) as defined by Nagashima, (1970) is used as the primary definition of Nation Brand (NB). This measure may be positive or negative because its impact is dependent on prevailing overall associations of the country with technical standards, innovation or quality. Country of Origin (COO) effect studies have typically been associated with exports (e.g., Bannister & Saunders 1978). At a certain level, the NB concepts are considered to be fairly intuitive, but it is still not clear whether they are simply wishful thinking or are based on solid theory and empirical evidence (Fan 2006; Papadopoulos et al., 2016; Dimitrova et al. 2016).

Nations, similar to corporate and product brands, have a significant potential to build brand equity. There are two main approaches that have been used to measure brand equity: either by measuring consumer perceptions of the brand based on opinion surveys or by measuring the financial performance of the brand based on multiple financial measures (Aaker, 1996; Farquhar et al., 1991; Simon & Sullivan, 1993). The former approach is generally referred to as the consumer-based brand

equity approach while the latter is known as the company-based or finance-based equity approach. Both approaches have also been applied to measuring nation brand performance. Examples of the consumer-based approach include such popular surveys as the Anholt Nation Brands Index (NBI) or the Country Brand Index (CBI) of rankings of nation brands published by the FutureBrand consultancy. These indices rank a number of countries based on consumer perceptions of a country's reputation in areas such as exports, investment, tourism, heritage and culture. An alternative approach is the Country Brand Strength Index (CBSI) developed by Fetscherin (2010) and modified (MCBSI) by Lahrech et al. (2020). This approach assesses countries through statistical data of their actual annual performance in the number of immigrants and tourists attracted, the amount of foreign direct investment received, the amount of exports generated and the ranking of the country's governance according to a set of governance indicators. In summary, NBI and CBI are based on people's perception of the country, while CBSI and MCBSI are based on how the country performs from a statistical perspective.

Although the various Nation Brand indexes have been widely used for many nation brand projects, it is apparent that the process by which they are derived has not been subject to rigorous validation and academic review. The issue with these indexes is that they claim to provide a nation brand score that is not necessarily correlated with what actually is being measured (Rojas-Mendez, 2013; Fetscherin, 2010). Validation of these indices is important for ensuring that our understanding of a nation brand is not based on what is actually being measured, but instead on what should be measured (Rojas-Mendez, 2013). For example, consumer surveys of people's perceptions are prone to bias (NBI & CBI) while approaches that rely on actual achievements of a country (CBSI & MCBSI) are considered to be more reliable measures of brand equity because they provide more accurate data on the actual inputs required for the underlying foundations of the nation brand based on data sourced from reputable statistics (Anholt, 2010; Fetscherin, 2010; Lahrech et al., 2020). In order to bridge this gap

in the literature, this thesis will extend the CBSI measurement by introducing Nation Brand Distance (NBD) as a new concept that captures how the difference of nation brand scores between trading partners can affect their trade flow preferences. This modified index consists of relative values per capita of the statistical data for five different areas that comprise the CBSI index, which includes the dimensions of exports, tourism, foreign direct investment, immigration, and government environment. For the NBD concept, two countries in a trading relationship are assessed based on a comparison of their actual brand equity and how the difference can impact the volume of their exports and imports, which provides a fundamentally different level of measurement than that of NBI, CBSI, MCBSI. The NBD method develops a more comprehensive and complete measurement for the examination of the many nation brand constructs analyzed over multiple years using the Structural Gravity Model -- the workhorse of international trade research. The working hypothesis is that NBD yields a measurement that is more efficient for the strategic planning process because it considers both the current perception of the trading partners and focuses on the areas requiring improvement.

The literature still lacks research linking country image with actual trade volumes at the aggregate level (Dimitrova et al. 2016). Linking international trade to the nation brand concept is a contribution in this research. To do this, the actual data is analysed to investigate the relationship of nation brand as a moderator for the competitive nature of the global trade market. The main factors impacting trade flows that attract the majority of attention from researchers are the market size, free trade agreements (FTA) and the existence of a common language and common borders (Anderson and Van Wincoop 2004). Geographical distance is used in this thesis as one main independent variable since it is a major determinant of trade. An increase in geographical distance between two countries can result in additional logistic and administration costs that might reduce trade flows. FTA is a second main independent variable since it is considered to promote the trade among trading partners by reducing tariffs, lowering trade barriers, and facilitating stronger ties between the participating countries

(Martín et al. 2014). Those factors are difficult to manipulate separately and must be treated and analyzed jointly with a number of other factors (like nation brand) which tend to be overlooked. For instance, the manipulation of the country location or language are considered to be relatively fixed due to cultural and residency ties. Similarly, the FTA variable is not easily manipulable because these agreements usually require a considerable amount of time and effort to negotiate. As such, the introduction of nation brand moderation impact is the main contribution of thesis.

Discussing the different international trade theories is also important for a deeper understanding of the trade flow determinants. In the late 1970s, Paul Krugman developed the concept behind New Trade Theory (NTT), which was supported by multiple scholars and economists between the 1970s and 1990s. NTT usually refers to a group of international trade theories that concentrate on returns to scale, monopolistic effects and network effects. The departure from the traditional trade theories by introducing the scale economies in production proved to be revealing. Hence, this thesis has extended the literature on New Trade Theory (NTT) by focusing on countries, rather than on companies. Nations, similar to corporate and product brands, have a significant potential to build brand equity. There are two main approaches that have been used to measure brand equity: either by measuring consumer perceptions of the brand based on opinion surveys or by measuring the financial performance of the brand based on multiple financial measures (Aaker, 1996; Farquhar et al., 1991; Simon & Sullivan, 1993). The former approach is generally referred to as the consumer-based brand equity approach while the latter is known as the company-based or finance-based equity approach. Both approaches have also been applied to measuring nation brand performance. Examples of the consumer-based approach include such popular surveys as the Anholt Nation Brands Index (NBI) or the Country Brand Index (CBI) of rankings of nation brands published by the FutureBrand consultancy. These indices rank a number of countries based on consumer perceptions of a country's reputation in areas such as exports, investment, tourism, heritage and culture. An alternative approach

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To investigate those factors that have an impact on trade, this research relies on the structural gravity model which is considered to be a workhorse in the trade literature for the analysis of import and export flows. By extending the Anderson model (1979), the studies by Anderson and Van Wincoop (2003) have provided a rigorous theoretical structure for applying the model to analyze real data in order to explain trade flows between countries with respect to policy factors. Based on that model, this research was designed on the analogy that bilateral trade flows between two countries are related positively to economy size, often measured by GDP, and negatively to the distance between them. The structural gravity model that accounts for MRT helps to overcome the challenges faced by

traditional models such as heteroscedasticity, the failure to take into account information contained in zero trade flows, the existence of bilateral trade costs, endogeneity with the error term, non-discriminatory trade policy errors, and measurement errors for changes in trade policy. Overall, the structural gravity model provides a framework that is both tractable for trade policy analysis in a multilateral trade environment and based on a solid theoretical foundation.

Despite the plethora of research focused on studying this area, the concept of nation brand is both divergent and fragmented because the field is still developing and lacks a coherent theoretical foundation and a solid reliable measurement index. This research attempts to bridge this gap by investigating the moderating impact of nation brand distance on the relationship between the country's geographical distance, trade agreements, and trade flows between trading partners.

1.2 Research Context

To illustrate the relationships between the main variables and accomplish the research aim, this thesis relied on United States trading data as the US is considered to be the world's largest single economy and a key market for many exporters and importers (Kose et al., 2017). Moreover, because the trade sector plays a vital role in the US economy, since nearly the beginning of the nation, the US government has paid attention to the importance of collecting accurate trade data to be used for government decisions. With its location in North America and a multi-cultural population of 329 million that uses English as the official language, the United States has been successful over the last 100 years to become the largest economy in the world measured by nominal GDP (Census 2020). In 2019, the real US GDP grew to USD 21.43 trillion to show an increase of 2.2%. As an indicator of the importance of trade for the US economy, the US trade-GDP ratio increased to 26.31% in 2019 compared to 19.82% in 1990 as shown in Figure 1 (Bureau of Economic Analysis 2020). The trade growth accelerated due to the US initiative to establish FTAs in the last decade, especially in the early

1990s, and to expand the North American Free Trade Agreement (NAFTA) with the objective to eliminate tariffs.

In addition, the US has been a member of GATT since 1948, of GATS since 1995 and of WTO since 2001. These initiatives have helped US international trade to reach \$5.6 trillion of which \$2.5 trillion is from exports and \$3.1 trillion is from imports of both goods and services. As a net importer, the main products that the US imports are capital goods, consumer goods, industrial supplies, automotive parts, and lastly food and beverages. The main exported products are food, beverages, animal feed, crude oil and other petroleum products, aircraft, cars and auto parts, industrial machines and pharmaceuticals. The main trading partners as per the World Bank data are: Canada, Mexico, China, Japan, United Kingdom, Germany and South Korea which are discussed further in the data descriptive section of Chapter 5. The following chart depicts the development of US exports and imports using data from the Bureau of Economic Analysis.

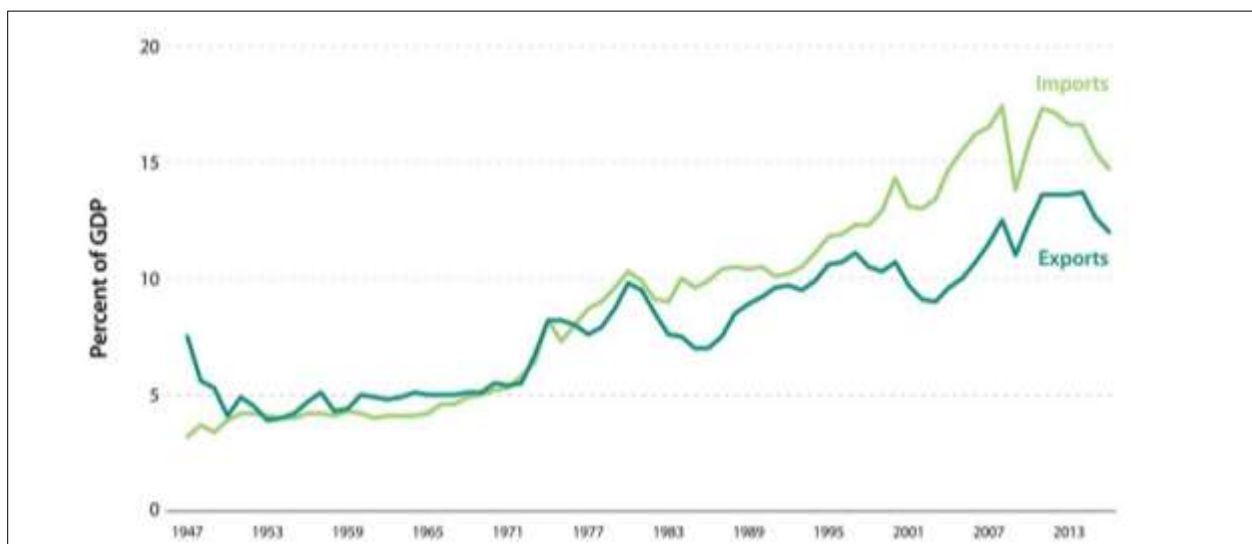


Figure 1: US Exports and Imports, 1947-2016

1.3 Research Problem Statement

As a result of the increasing pace of competition among nations to enhance export and import flows with their trading partners, researchers have examined the underlying determinants of international trade as well as the effects of NBD as a factor influencing both the exporting and the importing countries. Our review of the literature has identified a gap in the scarce existing research among scholars related to how the brand of a nation can impact trade volumes in the international market. While a hand full of studies attempt to measure the potential impact and role of nation brand on exports, a comprehensive literature of studies capturing the fundamental impact of NBD on trade including both export and import patterns is lacking. As a result, many of the existing studies in this area are based on qualitative methods that do not account for many significant types of variables and that lack a strong theoretical base. This deficiency can only be met by studies that use actual export and import data to link trade flows with a country brand at the aggregate level. This deficiency provided the motivation for the present research that aims to investigate the moderating impact of nation brand distance on the relationship between countries' geographical distance, trade agreements, and both export and import flows between trading partners. As a response to this deficiency, nation brand distance is proposed as a novel concept that measures the difference between the brand strength of two countries using the CBSI index, which is comprised of the relative values per capita of five different areas that form the core of nation brand equity: exports, tourism, foreign direct investment, immigration, and government environment. The foundations of the research rely on the theoretical perspectives of both New Trade Theory and the OLI Paradigm to explain how countries can work on their nation brand equity to achieve higher export and import volumes. To the best of our knowledge, no research has been conducted to examine the relationship between nation brand distance and both export and import volumes. An additional unique contribution of this research is the inclusion to the

literature of the use of structural gravity techniques applied to multiple countries, which strengthens both the reliability and validity of the data and results.

1.4 Research Questions

This research paper is centered around the following fundamental questions:

- 1.a. What is the relationship between geographical distance and export flows?
- 2.a. What is the impact of FTA on export flows?
- 3.a. What is the moderating impact of nation brand distance on the relationship between geographical distance and export flows?
- 4.a. What is the moderating impact of nation brand distance on the relationship between FTAs and export flows?
- 1.b. What is the relationship between geographical distance and import flows?
- 2.b. What is the impact of FTA on import flows?
- 3.b. What is the moderating impact of nation brand distance on the relationship between geographical distance and import flows?
- 4.b. What is the moderating effect of nation brand distance on the relationship between geographical distance and import flows?

1.5 Research Aim and Objectives

The aim of the research is to investigate the moderating impact of nation brand distance on the relationship between the countries geographical distance, trade agreements, and both export and import flows between trading partners, using the structural gravity model of international trade based on a comprehensive analysis of the related literature combined with a detailed analysis of the trade data. In addition, this research studies the impact of six control factors (GDP, country population, common borders, common language, being a member in WTO jointly and being a member in GATT

jointly) on international trade volumes between different countries and between different members in various trading blocs.

Using quantitative analysis, the aim of this study is designed to achieve the following research objectives:

- 1.a. To study the relationship between geographical distance and export flows.
- 2.a. To test the relationship between FTA and export flows.
- 3.a. To investigate the moderation impact of nation brand distance on the relationship between geographical distance and export flows.
- 4.a. To examine the moderation impact of nation brand distance on the relationship between trade agreements and export flow.
- 1.b. To study the relationship between geographical distance and import flows.
- 2.b. To test the relationship between FTA and import flows.
- 3.b. To investigate the moderation impact of nation brand distance on the relationship between geographical distance and import flows.
- 4.b. To examine the moderation impact of nation brand distance on the relationship between trade agreements and import flows.

1.6 Research Novelty

Even though there exist a plethora of studies investigating the determinants of trade in the international market, the impact of nation brand on these determinants has been relatively neglected. In addition, the landscape of the nation brand literature is uneven in terms of the maturity of the original theoretical framework developed. In response to these deficiencies, the findings of this study contribute to better differentiate nation brand in the literature as a marketing concept from nation brand as an economic tool that can be used to measure the effect on the flow of a country's exports

and imports. These findings are important for academics, practitioners and policymakers for many reasons. First, this study provides a new perspective on the impact of two key determinants (geographical distance and FTA) on both US export and import volumes. A second significant and novel contribution is the introduction of nation brand distance into the international trade and marketing literature through the use of a measure of the actual achievements of a country brand equity based on its (CBSI) score in comparison to its trading partner. Third, the NBD impact is analyzed as a potential moderator of the two key trade determinants of geographical distance and FTA. Fourth, the structural gravity model is used to estimate the relationships between the key trade variables of the US and its trading partners. As a fifth contribution, there is the extension of the NTT theory and OLI Paradigm theory to explain how countries are competing in the same way that firms compete and how the nation brand impacts their internationalisation entry decision. The finding of these studies is significant for their potential influence on how practitioners measure the country brand index in context of international trade and motivate the policy makers to reform the country strategies and policies to meet their objective of enhancing better nation brand to meet their trading partners' nation image and expectations.

1.7 Thesis Structure

This thesis is divided into the following chapters:

Chapter 1: sets out the introduction, context, research problem, main research questions, the aims and objectives of the research. The importance and novelty of the research are highlighted as well in this chapter.

Chapter 2: provides a thorough review of the development of international trade theory from Classical Trade Theory to New Trade Theory. This chapter also discusses two of the most important factors impacting international trade, i.e., geographical distance and FTA as per the literature. Likewise, the chapter focuses on the review of the nation brand concept and the fundamental

theoretical perspectives contained in previous studies. Moreover, the chapter discusses the different indexes that measure Nation Brand and their relation to previous trade flow studies. Further, this chapter highlights the existing gaps in the previous research designs. Finally, this chapter provides a detailed discussion of the traditional and structural gravity literature.

Chapter 3: demonstrates the research conceptual model in which the different variables and their relationships are discussed and linked to formulate the research hypotheses.

Chapter 4: outlines the methodology followed in this thesis with a detailed description of the data, the data sources and various data measurement issues.

Chapter 5: describes the panel data used in the thesis research design and discusses the preliminary tests conducted regarding the model estimates. The empirical findings are reported using the different estimation methods of SGM.

Chapter 6: explores the research results in-depth and in relation to the research hypotheses based on the existing body of knowledge. It provides an analysis of the meaning of the model relationships in relation to the theoretical background.

Chapter 7: provides the research conclusions, the theoretical and practical contributions, the recommendations for policymakers and the limitations of the study.

CHAPTER 2 : LITERATURE REVIEW

The attempt to explain the existing pattern of international trade and the determinants of export and import volume has long been a fertile area for economic research. Despite these efforts, there remain many competing explanations for the determinants of trade patterns among countries and the composition of a particular country's exports and imports. In recent years, the theoretical foundation of international trade has evolved from dealing solely with historical trading patterns to accommodate changes in the modern global market arising from modern transportation and communication technologies. In this section, the different trade theories will be discussed in the chronological order that they were developed in order to provide the theoretical background of this research. The second section will study the nation brand as a concept and show how it can be linked to trade, trade agreements and geographical distance. In addition, the gravity model will be discussed along with the structural gravity model and the uses of these models in economic research will be explained.

2.1 Theories of International Trade and Investments

2.1.1 Classical Trade Theory

Adam Smith (1776) and David Ricardo (1817) are considered to be the authors of the main lines of the classical theory of international trade. According to them, when countries trade in foreign markets, they each benefit from specialization and more efficient resource allocation. The main assumptions for their theories are (1) that two countries produce two goods using factors of production that are perfectly mobile and (2) that there are no transportation costs. To elaborate on these assumptions, this classical theory can be divided into three related theories: the Theory of Mercantilism, the Theory of Absolute Advantage, and the Theory of Comparative Advantage.

2.1.1.a Theory of Mercantilism and Absolute Advantage

Mercantilism assumes that countries should encourage exports and discourage imports through the implementation of protectionist policies by the government. According to this theory, a country's wealth relies on the balance of its gold exports minus its gold imports because national wealth at that time was based on the amount of gold that a country possessed. Critics of this view of trade as a zero-sum game point out that it focuses only on the benefits to one country and ignores the benefit arising from enhanced world trade.

To counter the premise of mercantilism, Smith developed the theory of Absolute Advantage which states that a country should specialize in the products that they can produce most efficiently. This theory is a "One Factor Model" with labour being the sole factor of production. It states that trade is beneficial for both the nations when the country with an absolute advantage exports its products to a country that produces the same product at a higher cost or lower quality. A significant limitation of this theory is that it fails to explain trade in multiple products.

2.1.1.b Theory of Comparative Advantage

Ricardo's Theory of Comparative Advantage asserts that trade can be beneficial between countries when one country has a relative advantage in the production of a given product. When production is specialized in this way, each country can boost productivity and allocate labour to the production of the product where they have an advantage in terms of labour hours per output unit.

Although it did establish a useful starting point for analysis, Classical Trade Theory is unable to explain trade flow among countries with similar inter-industry trade. Nor does it consider labour hours as a measure of supply costs impacting trade advantage. These weaknesses encouraged scholars to create a new international trade framework.

2.1.2 Neo-classical trade Theory

As the traditional trade theories of comparative advantage were perceived to be incapable of explaining intra-industry trade, economists such as Eli Heckscher (1919) and his student Bertil Ohlin (1933) developed a model that evaluates the equilibrium of trade flow between countries with different natural resources and specialties. In their model, the Ricardian model was extended by introducing variable resource endowments and by treating variations in labor productivity as an endogenous variable. The two primary examples of Neo-classical theories are Heckscher-Ohlin Theory (H-O) and Heckscher-Ohlin-Samuelson (HOS).

2.1.2.a Heckscher-Ohlin Theory (H-O)

The Heckscher-Ohlin theory (H-O) provides an explanation for why countries tend to export the most efficient product that they can produce and import the products that excessively draw on the country's scarce resources. This version of the neo-classical theory introduces a multi-factor model with marginal productivity rates and resource endowments. Economists have used this theory to explain the growth of international free trade on the basis of productive efficiency, global level optimization of production factors, consumption and capacity utilisation. In contrast to the Ricardian model which only considers labor hours to measure supply cost to determine trade advantage, the H-O model considers consumer preferences based on an ordinal ranking to determine the price of products for trading between countries (Davis, 1995).

2.1.2.b Heckscher-Ohlin-Samuelson (HOS)

Since the 1930s, the Heckscher-Ohlin model has been extended by many economists in an attempt to add additional critical factors (e.g., tariffs) in order to increase the predictive power of the model without changing its fundamentals. Of these extensions, the work of Paul Samuelson (1941) is the most notable for taking trade theory further, with the result that post-1941 the H-O model was renamed the Heckscher-Ohlin-Samuelson (HOS) model. Samuelson's work moved existing free trade

theory from a labor- and technology-based explanation to a resource interpretation for countries with similar levels of technology access. As technology has become a significant source of differences between countries, the HOS model has played an increasingly important role in predicting prices based on market demand. It explains that attracting resource endowments of countries to the center stage can be mutually efficient and a source of gainful trade. It shows that demand in both trading partners plays a significant role in determining commodity and labour prices in the pre-trade stage. This is a reflection of factor endowment disparities. Therefore, the price competitiveness of traded products is determined by factor endowments and is settled at a level that was within the limit set by the pre-trade stage. A theory of prices in such bilateral trading was a problem due to exchange rate differences between trading partners and was ignored in the model as it does not factor in monetary trade theory considerations. Theories that followed the HOS model, such as Stolper–Samuelson, have now included, in addition to factor price equalization, a corollary that relates production and wages. Other theorists have since attempted to expand on traditional and neoclassical trade theories by taking multi-factor, multi-commodity, and multi-country considerations into account. (Sen, 2010)

2.1.3 Post Neo-Classical Trade Theory: Product Life Cycle Theory

The Product Life Cycle Theory was developed by Raymond Vernon (1970) in response to the incapability of the H-O model to explain the observed trade patterns in the international market. The theory proposes that in the early stages of a product's life-cycle the associated labor and parts come from the area where it was invented which establishes the country of origin as the main exporter. After a while, the product will get adopted and used in the international markets, and that will cause the production to move gradually away from the country of origin. The theory also explains that when demand for a new product increase, local producers respond to demand for global standardization as the product is increasingly exposed to the international marketplace. However, this theory is no longer accepted as the concept of globalization as a homogenizing force was called into question and

subsequently rejected across the social sciences and humanities starting around 2010. Vernon's theory was therefore criticized as ethnocentric, since production is in fact dispersed internationally as the product is simultaneously introduced in multiple countries' markets.

2.1.4 New Trade Theories

Starting around 1980, a set of new models were developed that attempt to explain modern trade flows (Ethier, 1982; Krugman, 1984,1986; Brander and Spencer, 1985; Eaton and Grossman, 1986; Grossman and Horn, 1988; Grossman and Helpman, 1991). These models address the shortcomings of traditional trade theories by incorporating a fuller range of factors to explain the complicated modern trade flows. This section will examine the similarities and differences between New Trade Theory (NTT) and New New Trade Theory (NNTT).

2.1.4.a New Trade Theory (NTT)

In the late 1970s, Paul Krugman developed the concept behind new trade theory, which refers to a group of international trade theories that concentrate on returns to scale and network effects. These theories departed from the old theories by introducing scale economies in production, which proved to be significant because of the insights that it revealed. The modifications of the NTT theorists also took into consideration the effect of increasing returns on the patterns and benefits derived from mutual trade. In addition, the size of the firm and the way that the market was structured was seen to be related to economies of scale. The implication of these models is that economies of scale account for imperfect markets and market structure. Under monopolistic competition, the existence of a variety of products is a further deviation from a model of competitiveness. NTT is different from its traditional trade theory predecessors in terms of capturing these three deviations: imperfect markets, economies of scale, and differentiation of products. While the HOS model for example would predict that the pattern of trade across countries is based on factor prices and the pre-trade commodity, a constant return to scale assumption is seen to be relaxed by new trade theory, which introduces the

argument that some sectors will dominate the world market in certain industries as a result of the implementation of protectionist measures. It should be noted however that the protection of infant industries as a concept was introduced in the 18th century in fact and is not exclusive to NTT. The addition of this concept to NTT used mathematical economics to model increasing returns to scale and network effects, which supported the argument that the development of important industries is path dependent and that this development can be planned or controlled by legislation and tariffs. This helped to explain why countries specialize in specific industries and how concentration in specific industries can lead to monopolistic competition (Neary, 2009).

In 1991, Paul Krugman extended the New Trade Theory to include New Economic Geography (NEG) in order to introduce the important concepts of location, region, and distance into the economic model that takes into account increasing returns to scale, imperfect competition, external economies, and spatial distance to understand the competitive advantages among nations. In this model, Krugman stated four propositions: (1) for international trade and inter-regional trade, transportation costs play a key role; (2) for countries with interrelated economies, spatial agglomeration is a more important factor than competition for achieving greater cost savings and increasing the benefits from trade; (3) for those countries, spatial agglomeration is superior to competition for promoting economic development through specialization and industry concentration; and (4) the long term concentration of economic activity is frequently preceded by the existence of an early development advantage. Although this extension of trade theory to include geographic economics has broadened the scope of the analysis of the economic interaction between nations (or regions), it has been argued that NEG introduces transport costs mostly in an ad hoc fashion, although there are some attempts to endogenize these costs within the market prices for trade services (Ehnts et. al. 2012).

NTT faced several problems which motivated economists to find ways to enhance the theory. One of the challenges it faced was the difficulty of incorporating the complexity of increasing returns to scale

in a way that allowed theorists to incorporate the HOS theory and focus on the pattern of trade when there are common increasing returns and imperfect competition (Helpman, 1981,1984). Another problem which needed to be addressed was the breakdown of perfectly competitive markets and internal economies of scale for a firm.

2.1.4.b Porter's Diamond

In his competitive advantage of nations model (Porter's diamond), Michael Porter (1990) attempted to explain why a nation achieves international success in a particular industry. He introduced the concept of the importance of the firm, which asserts that countries will specialise in industries in which its main determinants are favourable for the firm. He identified four main attributes that can impede the creation of competitive advantage, namely: factor endowments, demand conditions, relating and supporting industries, and the strategy, structure, or competition of the firm. The main criticism of Porter's diamond theory is that the study focused on industrialized nations. This helped to provide insights for industrialized countries which were interested in improving their competitive advantage through innovation, but was less applicable for other economies. Moreover, the theory has not been tested sufficiently to ensure that its results are empirically verifiable (Yetton, Craig, Davis, 1992).

2.1.4.c New New Trade Theory (NNTT)

New developments in international trade theory have since been influenced by the research of Marc Melitz (2003), who has emphasized that production factor differences in the same industry and country can exist on the firm level. Paired with this concept, NTT became known as 'New' New Trade Theory (NNTT). This theory, however, was influenced strongly by the globalisation theorists of the 1990's because it emphasizes the importance of firms rather than industrial sectors in attempting to assess potential opportunities for enhancing trade or the challenges to trade (Neary 2009).

2.1.5 Internationalisation Theory

The objective of Internationalisation Theory is to assess the motivations for firms to enter new markets and to explain the growing importance of multinational corporations in the global economy. The idea was originated by Buckley and Casson in 1976 in their demonstration that multinational corporations develop specific advantages by organizing their internal activities in order to enable overseas expansion. The theory was further developed by many economists who attempted to identify the key determinants pushing firms to go international, e.g., transactions costs, competition, technology or market knowledge.

In 1997, Hitt et al. defined internalisation as the process of expansion beyond a country's border to other countries or regions. This expansion involves uncertainty related to the different economic, political, social, and legal systems, which collectively have a direct influence on the required commitment of resources and on operations complexity (Rocha and Almeida, 2006). For an internationalization process to be successful, the firms need to make strategic decisions, such as the choice of the entry mode or the selection of a production site in a foreign market (Mowla et al., 2014). There are various modes of entry, e.g., export, contractual, direct investment. The export option can be either direct to identified customers or indirect through cooperative trading agreements. The contractual option usually involves some form of legal agreement such as for franchising, licencing, access to technology, contracting for services, or even a contractual alliance. The foreign direct investment can be through subsidiaries, acquisitions, joint ventures, or greenfield investments. Firms usually follow a development path in the process of internationalisation that begins with exports and ultimately results in FDI (Johanson and Vahlne, 1997). The accessing of new international markets, i.e., internationalization, is achieved by firms by exploiting various determinants that can add value to their firms (Hitt et al. 1997, Bianchi 2011). For this reason, it is believed that the nation brand can support a country's internationalization process and can generate competitive power to firms that are

investigating international markets and determining overseas investment plans (Montanari et al., 2019). Within the internalization process, the export option might be decided by the firm to be the best entry mode option for a specific country based on the good image of this country in providing specific advantages when compared to other countries in the international market. For example, Singapore is known for its image as a business-friendly environment where many firms choose to enter in order to benefit from this aspect.

Although the internalization theory has proven its importance for explaining the entry of firms to foreign markets, the theory is limited because it only accounts for a part of the motivation for investment flows and does not consider other interacting factors in the international market.

2.1.6 The Eclectic Paradigm (OLI)

The Eclectic Paradigm (OLI) of Dunning (1979) has been widely recognized as a significant theoretical paradigm within the international business literature because of the holistic approach that it uses to overcome the weaknesses of the Neoclassical model. It makes a significant contribution to the literature by tying together both the traditional trade theories and the modern internalization theories (Chawla and Rohra, 2015). The economic analysis focuses on both the theoretical foundations and the empirical data to explain the actual motivations of Multinational Companies (MNC's) to decide on whether to rely on exports to enter new markets or to invest directly in the foreign market.

The OLI model refers to the following three-tiered evaluation framework used by firms for the investment decision of whether to enter foreign markets: (O) ownership, (L) location, (I) internalization. The advantage of ownership (O) captures the competitive advantage that a firm derives from such proprietary assets as trademarks, reputation for reliability or patent rights. In this case, MNCs decide to invest overseas in order to protect their competitive advantages and prevent the disclosure of their proprietary secrets to potential joint venture partners. The location advantage

(L) refers to the potential comparative advantage achieved by performing specific functions within a particular country. These considerations usually refer to the availability and costs of resources when operating in one location compared to another one. Location advantages might also include institutional, political, and cultural motives that create an attractive business environment. Finally, the internalisation advantage (I) is an extension of the Coase (1937) internalisation theory. It provides a signal for when it is better for MNCs to produce particular products inhouse rather than outsourcing to a third party. For example, this approach would indicate that it is more cost-effective for a firm to continue to do the work inhouse while operating from different market locations rather than by entering into partnership negotiations with local producers.

The eclectic paradigm takes a holistic approach to assess the entire business relationships and the interactions of the various determinants for the investment decision in the international market. The model has proven to be an effective extension of classical economic analysis for the determinants of Foreign Direct Investment (FDI). Subsequent studies have confirmed the significance of the following factors in determining the level of FDI: market size, transportation costs, ownership rights, legal protection and political stability. Nevertheless, the theory has been criticized in the literature for its inability to handle the dynamics of the MNC evaluation process easily, for the inexact specifications of the major parameters and for the limited ability to deal with the policy environment (Lucas, 1990).

From the viewpoint of this research, the location advantage is directly related to the country brand strategy, which proposes an influence of the country brand on the internationalization and entry mode. As a complimentary benefit of the Nation Brand approach, it is proposed that the FDI decision is positively influenced by the Nation Brand. This effect can contribute to the development of the nation by attracting additional investment into the country.

The trade theories discussed above are important for conceptualising the proposed model to be discussed. For years, these theories have aided policymakers in establishing monetary and fiscal policy as well as in deciding on appropriate industry subsidies. They have impacted trade considerations and have been the driving factors behind the terms of trade agreements and the resulting increases to bilateral trade flows. They have impacted infrastructure decisions, customs strategies, and wide-ranging national policy, such as labour law. This all bears heavily on the competitive advantage of a country and on its overall success in the international marketplace. Indeed, a brief examination of trade theory, as summarized in Table 2.1, illustrates just how significantly trade theories have developed from gains made in specific industries, to mutual trade in multi-factor endowments, to the introduction of labour saving technologies, to the effects of globalization on multi-national corporations (MNC's) and the contemporary focus on the importance of the firm in international trade. Each theory's limitations have helped scholars build upon the old and develop new foundations, resulting in the marked improvements reflected in the international trade theory of today.

Table 2.1: Summary of Theories International Trade and Investment

Major Economics Theories	Related Trade Theory	Scholars/economists	Description	Limitations
Classical trade theory	Mercantilism & Absolute Advantage	Adam Smith (1776)	Mercantilism is a zero-sum game as it promotes selfish trade and only one country benefits. It argues that a country should increase efficiencies in manufacturing a product relative to other countries, with the assumption that labour is the only factor contributing to production costs.	Unable to explain trade flow among countries with similar inter-industry trade. Limited production cost inputs.
	Comparative advantage	Ricardo (1817)	Introduction of one-factor model assumes that trade can still be beneficial for a country with maximum absolute advantage over another country with no absolute advantage in the same product to boost its productivity and allocation of labor.	Only considers labor hours to measure supply cost that determines trade advantage.

Neo-classical trade theory	Heckscher-Ohlin Theory (H-O)	Heckscher (1919) and Ohlin (1933)	Introduction of the multifactor model: evaluates the equilibrium of trade flow between countries that have different natural resources and specialties. Interprets how countries tend towards exporting the most efficient product that they can produce and importing the products that use countries' scarce resources.	Other important factors, such as tariffs, are not considered to be of predictive power in the model.
	Heckscher-Ohlin-Samuelson, HOS	Paul Samuelson (1941)	Moved free trade theory from a labor technology-based explanation to resource interpretation for countries with a similar level of technology access. Assumed center stage, ensuring mutually efficient and gainful trade.	Lack of factor price equalization a corollary that relates protection and wages.
Post neo-classical trade theory	Product Life Cycle Theory	Raymond Vernon (1970)	Held that when the demand for a new product increases, the manufacturing country will export it to other countries and that when demand grows more, local manufacturing should be opened to meet the demand for product standardization.	Criticized as ethnocentric. in which the production is dispersed Internationally and the product is simultaneously introduced in multiple countries markets.
Modern trade theory	New Trade Theory (NTT)	Paul Krugman (1970s) & others (1970s to the 1990s)	Introduced economies of scale in production. Noted increasing returns as a result of benefits that are derived from mutual trade and the size of the firm, and the way that market structure relates to economies of scale.	Challenged by incorporating the complexity of increasing returns on scale. Limited in ability to address only select circumstances, e.g.) perfect competitive market breakdown and the internal scale of economies for a firm.
	Porter's Diamond	Michael Porter (1990)	Introduction of the importance of the firm. Assumes that countries will specialize in industries in which the main determinants are favorable for the firm.	Insights are limited to industrialized nations only.
	New New Trade Theory (NNTT)	Marc Melitz and Pol Antràs (2003)	Applicable to the globalization movement as it underscores the importance of firms rather than industrial sectors in understanding opportunities or challenges for enhancing trade.	
Firms' Internationalization Theories	The Internanlisation Theory	Buckley and Casson in (1976)	Demonstrate how multinational corporations develop specific advantages by organizing their internal activities to be expanded overseas.	The limitation to cover the interaction of firms in term of location, legal or other aspect than cost
	The Eclectic (OLI) Paradigm	John Dunning (1979)	a holistic framework to identify and evaluate the significance factors influencing foreign production by enterprises and the growth of foreign production.	Inability to handle the MNC evaluation dynamics easily, unclear specifications of the major construct and limitation to deal with policy environment and the firm

2.2 International Trade Flow

In international economics, one of the best-established concepts is that nations and corporations are relying on international trade to grow (Czinkota & Ronkainen 2003, 2011). Literature on international trade is rich in studies that identify contributing factors to both imports and exports in bilateral trade. Nevertheless, Sousa, et al. (2008), who had reviewed the determinants of export performance related studies for the past 30 years, confirmed that despite the large volume of studies discussing export factors, there is clear lack of synthesis of the fragmented knowledge. Some scholars have argued that “distance factors” are still impacting the contemporary flow of trade and can be shortly defined as the following: 1) Geographical distance: refer to the distance between two countries defined on kilometres or miles. 2) Cultural distance: refer to the difference between the cultural values of the two countries. 3) Psychic distance: refer to the business owners'/managers' perception about home and host countries 4) FTA refers to the free trade agreements signed between trading partners to reduce and facilitates the flow (Martín et al. 2014). In this section, we will demonstrate the main variables impacting trade that this thesis is focusing on which are: geographical distance and trade agreements.

2.2.1 International Trade Flow and Geographical Distance

It has become increasingly apparent over the last number of years that geographical distance has been an overlooked determining variable when attempting to understand and explain international trade flows. In the last decade, the distance effect on export and import volume has gone from not being regarded by most economists, to being recognized as the key factor for studying international trade flows. One of the best-known empirical results in international economic trade is that when geographical distance increases, the bilateral trade flow decreases accordingly. Although this empirical result is well established, not many studies have systematically analyzed this effect, as argued by Disdier and Head (2008). Here, Head and Disdier conducted a quantitative meta-analysis

of distance-effect by examining 1,467 estimations of distance effect in 103 papers. Findings showed that the negative influence of distance on trade flow rose in approximately the middle of the century, and remained persistently high since. Even after controlling for differences in sample and methods; the results of their study hold. This supports Leamer's (2007) statement, that distance effect is, “possibly the only important finding that has fully withstood the scrutiny of time and onslaught of economic technique.”

The argument that economists have to take location seriously in economic process theorizations has been there for more than half a century. August Lösch, a German economist, tried to answer how the economy fits into space through incorporating location theory, which is a long-standing tradition in general equilibrium theory. Since its first mention by Johann Von Thunen in 1826, location theory was revived by Alfred Werber (1929). By the time of Lösch's work on the concept, he hoped that his work would stimulate the academy to do more on space and location thereby supporting the reformulation of economics. Unfortunately for Losch, it did not have much of an impact. By the 1950s, and through to the 1960s, two other disciplines employed the economics of location to formalize their respective fields -regional science and economic geography. These sharply diverged afterward, both theoretically and methodologically. By the 1970s, regional science had become highly mathematical and based on theoretical abstractions, and economic geography evolved to become a much more empirically oriented subject. Since the late 1980s, economic geography has been subsumed under the field of economic sociology, and significantly influenced theoretical development in the discipline (Martin 1999).

Krugman's Nobel Prize-winning research on new economic geography and new trade theory (1991) significantly contributed to the rediscovery of the importance of location in international economics, and his impact can be divided twofold: First, his work has reacquainted mainstream economics with

the role of geography. A critique of his work from Martin (1999) in fact argued that, despite increasing the status of economic geography within academic and policymakers work, Krugman's work did not intersect with and incorporate enough from the discipline, calling for more engagement; however, it has certainly increased the status of this study within academic and policymaker work. Krugman's second contribution was to narrow the gap between the regional and urban economy on one hand, and international economics on the other, which followed Ohlin's 1933 recommendation. In 1998, Krugman was successful in his attempt at building a theory of economic localization based on increasing returns. Likewise, Porter (1990-1996) has mentioned that the geographical clustering degree of an industry within a country is the main contributing factor to the international competitiveness of a nation. Considerable progress has thus been realized in the field of studying geographical distance and its impact on international trade, both theoretically and analytically. Many extensions to the model are now established, and many hypotheses have been recently tested (Puga 1999, Head & Mayer 2004).

There are a number of convincing reasons to encourage academics to study geographical distance as a determining variable in international trade, but two stand apart as most poignant. First, the location of different economic activities within nations is a major consideration for economists, academics and policymakers due to influencing factors such as infrastructure, transportation, and many other factors. Second, as the line between regional and geographical economics is becoming blurred, it is important, as Krugman notes (1991), to study the intellectual and empirical laboratory economic geography provides. New economic geography has impacted many economic fields, including international trade, as well as on the policy front. The World Bank is a good example of how Krugman's work is applied in this analysis. A critique of this however is that there is still much work left linking the models to trade theory. Econometrics has, however, been suggested as a promising tool for further investigations into distance effects.

One of the most successful models employed to measure trade and geographical distance is the gravity model. It is considered to be a workhorse in international trade literature for explaining and studying trade flow volumes. The model has so far been proven to examine trade flow effectively, being positively related to economy size, and negatively related to geographical distance (Anderson 1979, 2011, Deardorff 1998, Helpman and Krugman 1985, Feenstra 2002, Anderson and Van Wincoop 2004, Helpman et al. 2008; Chaney 2013-2018). Further theoretical descriptions and reviews of the literature will be included in the next subchapter. Many recent studies using geographical distance as a control variable and distance negatively and significantly related to exports have assured the same results (Laherch, et al. 2018) which used geographical distance as a control variable and distance was negatively and significantly related to exports. This implies that trade flows between two countries are negatively correlated with geographical distance (Baier and Bergstrand 2009; Lin and Sim 2012; Goh et al. 2013; Kahouli 2016).

2.2.2 International Trade Flow and Trade Agreements

The International trading system is characterized by many different preferential agreements which are discriminatory policies to facilitate liberalization with respect to the trading partners. There are two main categories for these: The first being bilateral trade agreements (or reciprocal) involving trade liberalization. The second being unilateral (or nonreciprocal) which involve asymmetric liberalization. This aims to provide a nation with access to an improved market without requiring the same nation to open its own domestic market. Usually, reciprocal agreements are used between countries which are geographically related according to trading patterns that already established. Nevertheless, these agreements are very diverse and complex, due to the preexistence of other agreements, creating some overlap. Nations around the globe compete to enter into preferential trade agreements that can help their economies to grow. In the past decade, the world has witnessed an

explosion of bilateral trade agreements, and nearly every nation in the world is part of one or more (Clarete et al. 2003). The most common reciprocal trade agreement (RTA) form is the Free Trade Agreement (FTA), where signatories adopt common trade policies and remove trade restrictions among them, with each member maintaining its own trade policy toward nonmembers. In some cases, deeper integration in terms of facilitating factor of production movements through customs, and economic unions where there is more harmonization of economic policies, is established. New trade agreements also cover the liberalization of investments, labor market, government procurement, cooperation in technology and science, environment, or common monetary system and financial integration (Cipollina & Salvatici 2010).

The literature relating to trade agreements and their impact on international trade flow is very rich in important studies. Trade agreements between nations are considered to stimulate exports, as these reduce trade and customs costs, make imports cheaper, and can replace domestic products or crowd out imports from different nations accordingly (Viner 1950; Meade 1955). The increasing number of unilateral and multilateral agreements between nations indicates that they have had a clear positive impact on growing trade relationship (Cipollina & Salvatici 2010). Since the 1940s, hundreds of agreements have been signed and notified to the General Agreement on Tariffs and Trade and the World Trade Organization, most occurring after 1995. Trade blocks have occupied most of the trade flows, and nearly every country in the world has signed one or more trade agreements (Lawrence 1996; Clarete et al. 2003).

The measurable impacts of trade agreements are estimated primarily using the gravity model. Gravity equations have been used to assess the difference between potential and actual trade flows between nations pre- and post- trade agreements (Baldwin 1994; Eichengreen and Irwin 1996; Feenstra 1998; Anderson and Van Wincoop 2003). A number of studies that incorporated the gravity technique

effectively in economic research on international trade and agreements have been conducted since the early the 1960s. Jan Tinbergen (1962) was the first to publish a study using a gravity equation to analyze international trade flows, and included the free trade agreement as a dummy variable in his research. Tinbergen's research indicated that trade agreements 'average treatment effect' on trade flows were economically insignificant, and pointed out that the Benelux FTA as related to the British commonwealth is associated with only 5% higher trade flow. Since then, studies have shown various conflicting results regarding the impact of trade agreements, including Aitken (1973), Abrams (1980), and Brada and Mendez (1983), who found that FTA have a statistically and economically significant impact on trade flow among members of European Community. Other researchers have found insignificant effects to the same degree, including Bergstrand (1985), and Frankel, Stein, and Wei (1995). Despite the clear positive relationship between trade agreements and trade flows in most of the literature, there are some unclear points that were disconcerting in the latter studies. These studies' results indicate a variance which is disconcerting when the coefficient of trade agreements is not stable. Also, their estimates varied widely, along with their ranking of trade creating agreements, all of which is worrying. In 2005, the World Bank provided a meta-analysis of trade agreements, which considered 17 research papers and 362 estimates Burns (2012) of the impact on the trade flow level between partners. The relationship was positive, but there was a high degree of variance around the mean. This demonstrates that the trade agreement studies results vary from one to the next, depending on methodology and theoretical background used. Another meta-analysis, done in 2010 by Cipollina and Salvatici on 85 studies and summarizing 1827 estimates concluded that estimates have a substantial positive impact on trade. Following this, the structural gravity model will be employed to study how trade agreements impact trade flow.

2.3 Nation Brand

In an increasingly connected and competitive world, both commercial markets and countries have been required to respond to a dynamic economic, social and cultural framework. A progeny of this global milieu, the ‘nation brand’ concept has captured the growing attention of policy makers, practitioners, and scholars. As the field continues to develop, the concept remains fragmented and diversely interpreted. The following section reviews the sizable literature on the concept of the nation brand, and synthesizes the research as it pertains to trade. Related definitions and components of nation branding are summarized, as well as theoretical and empirical research over the last two decades so as to identify major methodological approaches and key research themes. This review will expose problems encountered in the research, and how this study will help to fill the research gap.

2.3.1 Nation Brand Definitions and Scope

The definition of and components involved in nation branding differ among researchers in the field, with no consensus on scope (Fan 2006; Papadopoulos et al. 2016). The complexity of the concept has thus led to a lack of clarity on the term and what it encompasses in the literature. Moreover, confusion with other concepts such place brand, country brand, and destination brand have further complicated attempts at solidifying the concept. The nation brand literature has witnessed many different attempts to define the term in relation to previously studied concepts. Some of the early definitions stem from Nagashima’s (1970) description of country image, described as “the picture, the reputation, the stereotype that businessmen and consumers attach to products of a specific country.” This is “... created by such variables as representative products, nation characteristics, economic and political background, history and traditions.” Another definition, provided by Roth and Romeo (1992), describes it as “the overall perception consumers form of products from a particular country, based on their prior perceptions of the country’s production and marketing strengths and weaknesses.” Eventually, these definitions related to the country of origin effect formed the basis of subsequent

attempts to describe the nation brand concept in recent literature. The term ‘brand’ refers to one or a combination of name, symbol, term, design, or sign which identifies a product, goods, or services provided by a seller or multiple sellers to enhance their values beyond their price and performance. The brand is a promise between the buyer and seller to deliver a special experience based on an implied contract (Neal and Strauss 2008), or to deliver a meaning generally associated with the brand (Park, Jaworski and MacInnis 1986). When referring to the term as a geographical destination, it is commonly referred to as a ‘place brand’. Related marketing activities promote the image of a specific destination (place) to impact the destination choice of consumers (Blain et al. 2005). A nation, however, differs from a place, as a nation is generally held to incorporate reference to a geographical territory, in which a group of people share a cultural background and common interests (O’Shaughnessy & O’Shaughnessy, 2000). Govers & Go (2010), claim that these elements can shape the place and nation brand definitions.

Building on the above terms, scholars have enriched the literature with a vast array of definitions of nation brand. Florek (2005) argues that the nation brand is a process of establishing constructive associations with the country. It is also referred to as the process of building an effective environment and positive podiums that can help the nation to compete globally (Gudjonsson 2005). Dzenovska (2004), defines it as the practices undertaken by governments to articulate the identity of the nation and shape the conduct of their citizens. Fan (2006), attempted to define the concept as the promotion of the country using marketing activities and communication tools. Anholt (2008) takes this a step further, describing it as “the management of the country’s overall reputation” (p.265). Perhaps most poignant of the definitions, however, is Maheswaran and Chen’s (2006) encapsulation, that, as compared to a product or corporate brand, a nation brand is the emotional consumer evaluation of the country brand; an intangible asset of the nation (Fan 2006).

Although the terms “nation” and “country” are different, they are used interchangeably in the literature with great frequency (Fan, 2006). With the exception of the above attempts, when compared with other, similar concepts, there remain surprisingly few definitions of the nation brand construct, despite rising interest in the field (Hao, et al. 2019). Table 2.2 lists some definitions of the nation brand in the literature, and some terms that are used interchangeably to describe the brand of geographical locations. A common element which stands to unify all is that the term is related to a geographical entity, and created through its interaction with other entities, stakeholders, and other elements. The terms ‘place brand’, ‘country brand’, ‘nation brand’, and ‘destination brand’ are used heavily throughout tourism literature, although the nation brand concept is now starting to see wider use in related economic studies.

Table 2.2: Nation Brands Definitions

Concept	Definition	Author
Country Brand	The whole image of the country, including the political, historical, economic, environmental, cultural and social and aspects. It a complex concept that includes multiple disciplines, levels, and components that encompass the collective involvement of many appealing stakeholders.	Fetscherin (2010)
Nation Brand	“The sum of people’s perceptions of a country across the six areas of national competence: the cultural, political, commercial and human assets, investment, potential, and tourist appeal”	Anholt (2005)
	“The total sum of all perceptions of a nation in the minds of International stakeholders, which may contain some of the following elements: people, place, culture/language, history, food, fashion, famous faces (celebrities), global brands and so on”	Fan (2010)
Place Brand	“A network of associations in the consumers’ mind based on the visual, verbal, and behavioral expression of a place, which is embodied through the aims, communication, values, and the general culture of the place’s stakeholders and the overall place design”	Zenker & Braun (2017)
	“The sum of beliefs and impressions that people have of that place. The image represents a simplification of a large number of associations and pieces of information connected with a place. They are the product of mind trying to process and pick out essential information from huge amounts data of a place.”	Kotler & Gertner (2002)
Destination Brand	"A name, symbol, logo, word or other graphics that both identifies and differentiates the destination; furthermore, it conveys the promise of a memorable travel experience that is uniquely associated with the destination; it also serves to consolidate and reinforce the recollection of pleasurable memories".	Ritchie & Ritchie (1998)

When considering the function of a nation brand, one suggestion offered by Gudjonsson (2005) is that it has three primary goals - prosperity, support, and protection. These, they suggest, gain traction from economic, political and cultural aspects of the country. In 2010, Fan's review of the nation brand literature uncovered the following summary of objectives of a nation's brand development:

1. To shape identities (Olins, 1999b).
2. To enhance competitiveness of the nation (Anholt, 2007).
3. To embrace important activities related to a nation's businesses' sport or cultures (Jaffe & Nebenzahl, 2001).
4. To promote trade and other economic interests inside the country and abroad (Szondi, 2007).
5. To change or enhance the reputation of the country (Gudjonsson, 2005; Fan, 2006, 2008).

Some researchers have identified weak points in the nation brand concept, such as the inevitable role of a nation's private citizens in the process of brand development, or a national history or background that perpetuates certain commonly held preconceptions or stereotypes (Widler 2007). These argue that in order for nations to use the nation brand concept in a strategic national agenda, more clarity is required in the field in order to capitalize on its strengths, and control for potential interference. Harrison-Walker (2011), who explored strategic positioning via nation branding, highlighted that the effectiveness of nation brand is dependent on distinguishing, remarkable, recognized, and translatable positions. Furthermore, Lee (2009) demonstrated that nation brand should combine COO effect, place brand and development, and public diplomacy for an effective nation brand concept. Researchers have demonstrated that there is no conflict between political and economic ideologies (Gertner 2007). Overall, there appears to be a broad consensus throughout the literature that the development of a nation brand is multifaceted, and involves multiple stakeholders (Fan, 2010; Hanna & Rowley, 2008). Anholt (2007) underlined how challenging it is to bring these multiple stakeholders to the table, and

for all to agree on the selection criteria of nation brand strategy. The lack of systematic investigation of this rather complicating facet of the process of creating a nation brand is, however, identified as a gap in the literature by other researchers such as Paswan et al. (2002) and Fan (2010), who observed that empirical studies related to country branding are only taken from export or place branding with ignorance of Pawan people and history elements. Moreover, academics have admitted that the nation brand field is dominated more by practitioners than academics (Fan, 2010) and that the primary motivation for the concept emerged from consultants who saw the importance of applying the concept as a strategy, but failed to base their practice on empirical study (Kavaratzis, 2005). Although academics and practitioners agree that nations are branded, the interpretation of the concept in practice, and progress in deconstructing and reifying the term remains a rather significant gap (Fan, 2010). Many have participated in the academic debate around the existence of nation brands, which Gudjonsson (2005) classified into three categories: Absolutists, who agree the nation should be branded similarly to corporations; moderators who argue that nations should be branded using techniques to enhance value; and royalists, who argue that a nation cannot be branded at all. As illustrated above, the concept is supported by academics, and it is commonly held as a necessary component to address when attempting to improve a country's image and its competitive position globally (O'Shaughnessy & O'Shaughnessy, 2000; Kotler & Gertner, 2002, Anholt, 2005c, Temporal, 2009, Gilmore, 2002).

Nation brand is best understood as a result of the country's reputation or performance, measured across specific nation brand indicators (Anholt, 2010; Fetcherin, 2010; Lahrech et al. 2020b). As nation brand is ultimately linked to country reputation, it can only be earned through active improvements and continuous strategic management, not through marketing communications or relying on country's past achievements (Anholt, 2010). This is a central tenet of Anholt's new conceptualization of nation brands as vehicles of nations' competitive identity, a term which he calls

more appropriate for research on nation brands replacing the initial term “nation branding” that was widely used in early 2000s. According to Anholt (2007, 2010), nation brand building is fundamentally more about policies than about marketing communication, and that any successful nation brand is an outcome of its economic or political progress that facilitate creation of substance for the brand. The substance stems from the key pillars of progressive countries, that is usually understood to be a combination of good leadership, having solid long-term visions and concrete actions for socio-economic development, transparency and integrity, and having good infrastructure, education opportunities and so on. These aspects then create the foundation for reputation that is a more long-term assessment and result of progress and development, rather than short-term marketing campaigns that at best can make a country famous for something but which lack substance.

Despite the immaturity of the nation brand concept as a potential tool for countries seeking to improve their competitive edge in the international marketplace, these definitions and objectives provide a good initial overview of the nation brand as a concept, and a strong initial foundation for concretizing the nation brand construct.

2.3.2 Theoretical Perspectives

While nation brand literature in academia started to gain shape in the 1990s, the theoretical development of the place brand fields remains fragmented and lacks conceptualisation (Kavaratzis & Hatch 2013). The notion of the nation brand emerged out of a combination of areas of study including country of origin effect (COO), psychic distance, place or destination branding, nation identity and public diplomacy (Fan 2010). One significant factor impacting competitiveness is the product-country Image (PCI), or what is known as the country of origin (COO) (Al-Sulaiti & Baker 1998). The literature has many definitions of COO, the most relevant being that of Bilkey and Nes (1982), Cattin et al., (1982), Han and Terpstra (1988), Lee and Schaninger (1996), and Papadopoulos (1993),

who all identified COO as “the country of manufacture or assembly”. Some also used the terms “made in——” to refer to the COO, including While, Bannister, and Saunders (1978), Chasin and Jaffe (1979), and Nagashima (1970, 1977). Growth in multinational companies over the last couple of decades makes the application of the previous term complicated however, as many countries can be the source of multiple components comprising the final product (Baker and Michie 1995; Baughn and Yaprak 1993; Chao 1993).

Some researchers have argued that ‘country of origin’ and ‘psychic distance’ are in fact two sides of the same coin. One definition of psychic distance is that it captures “the difference in the perception between the home and the foreign country” (Johanson & Wiedersheim-Paul 1975). In addition, psychic distance can also be viewed as a measure of the uncertainty that results from differences in culture and business practices that create knowledge barriers about overseas markets. For this reason, it is regularly measured using cultural distance indices (Fletcher & Bohn, 1998). Since both psychic distance and country of origin are perceptual constructs, the literature is moving away from defining them as constructs in concrete terms. Psychic distance is considered to be a variable that affects the decisions of sellers, while buyer decisions are considered to be affected by the country of origin variable. For this reason, psychic distance can be viewed as the absence of information, while country of origin can be viewed as a proxy for information about a specific country that is not readily available. Both the country of origin (COO) effect and the physical distance concept are employed as key elements of the theoretical background for constructing the NB model.

The term product-country image is related to how consumers perceive the country that the product came from, and the term encapsulates a much broader set of ideas than ‘country of origin’ (Papadopoulos and Heslop, 1993). It has been proven that the country of origin of a product impacts consumer perceptions and attitudes toward that product (Nagashima, 1970). As per Johansson (1989),

country of origin impacts the decision-making process of potential consumers. In effect, stereotypes are utilized in product evaluation. The country-of-origin impact may therefore be positive or negative, accordingly, and is dependent on prevailing overall associations of the country with technical standards, innovation or quality. It is assumed that in the absence of factual information, the consumer will use the country-of-origin effect to evaluate the product, and this will derive from negative or positive connotations of the country in terms of its perceived 'modernity' or reliability (Maheswaran, 1994). Country of Origin effect studies have typically been associated with exports (e.g., Bannister and Saunders, 1978), nevertheless, some scholars have argued that with increasing globalization, the country of origin effect is perhaps a more useful approach for product promotion (Papadopoulos 1993). As a result of globalization, a product's country image is vividly used to standardize a product, and strategically position a country in the international marketplace to promote its exports. Despite, or perhaps as a result of, the increase in hybrid production using offshore product components, the country image concept encourages producers to use the country of origin in their promotions – a well-known example being Volkswagen's use of the term 'German engineered' in their promotional campaigns, so as to associate widely-held positive assessments of German manufacturing to sell their product (Baker & Ballington 2002).

In 2002, a research group led by Papadopoulos & Heslop reviewed a database of 750 publications relating to country of origin or product-country image, and identified a broad number of variables which were seen to impact final product evaluation. Key variables in their summary included stereotyping (Liu & Johnson 2005; Chattalas et al. 2008), ethnocentrism (Brodowsky 1998) and in some cases animosity towards a foreign nation, as was seen in the case of Jewish individuals avoiding German products (Nijssen & Douglas 2004). Furthermore, a number of mediators of COO impact were studied, such as perceived cultural determinants of individualism / collectivism, and motivation (Gurhan-Canli & Maheswaran 2000a&b). In addition to expertise, which was discussed by Pecotich

and Ward (2007), many scholars have studied the impact of COO variables as antecedents or moderators, along with others who study the relationship between product valuation and COO.

Nation Brand Research Themes and Theoretical Bases

Another major review of nation brand literature covering the past two decades of research, was published in 2019 by Hao, et al. This provided a holistic review of theoretical and empirical journal articles published between 1998 and 2018, and helped provide direction for future research. As part of their findings, the authors emphasized that that research in this area is still lacking a coherent and explicit theoretical base. Hao et al. identified three main themes across the research: nation brand and country image, nation brand personality, and nation brand measurement. The first concentrated on consumer perception of a nation at a macro level as it links to confidence in its products at micro level (Pappu and Quester 2010; Dinnie et al., 2010; Kotler & Gertner 2002; O'Shaughnessy & Jackson, 2000). These studies suggest that nations need to actively manage their image as a result of the country-of-origin effect. However, this research area has to develop a country image model that has a cognitive and effective dimension backed by a strong theoretical basis. The second research theme that Hao, et al. discussed was consumer attribution of personality traits to nations (D'Astous & Boujbel 2007; Kim et al. 2013; Rojas-Méndez et al. 2013, 2015). In this theme of research, the studies examine the validity of self-congruity theory through looking at the concept of individual personality as applied to brand personality in a nation brand context. The major limitation of this study was that nation brand personality measurements were not developed explicitly for individual countries (Rojas-Méndez et al., 2015). This theme shows the little research directed towards self-congruity theory examining whether the self-image of stakeholders together with particular nation brand personalities can impact consumer attitudes toward nations. The third research theme identified, which was heavily used in this study, was nation brand measurement. The two prominent

measures used to assess nation brand are the “Country Brand Strength Index,” developed by Fetscherin (2010) and the “Nation Brand Index” by Anholt (2011). Both CBSI & CBI indexes were led by practitioners’ sources, and have not been subject to rigorous academic review that validate their integrity (Rojas-Mendez. 2013; Hao, et al. 2019). A recent study conducted by Lahrech, et al. (2020) addressed the three main significant limitations of the CBSI by exploring the rigorous methods needed to build a complementary index to be used along with NBI. The authors constructed the index through applying weights to each construct, longitudinal data, and relative values for each factor. This dissertation could not follow the new index as it was unpublished at the completion of data analysis. Despite the use of a few theories such as self-congruity theory, resource advantage theory, attribution theory and social identity theory in the nation brand literature, a large portion of the studies which would be required to integrate related theories and build trusted models are missing (Hao et al. 2019).

The primary limitations of studies related to the country-of-origin effect are mainly that the methodologies used lack clarity on the terms of validity, reliability, and ability to compare with other studies. The sampling techniques were often non-probability convenience methods which saw consumers targeted specifically for the study. Consumers are known as ‘multi-cues’ when studying their purchasing goods behaviour, and studies failed to take this into account and employed the single-cue method instead. Cultural factors can additionally limit the comparison of results between countries and products, a point which was not accounted for adequately (Baker & Ballington 2002). The literature review for the country-of-origin effect has yet to be established in a timely and relevant manner that can be used to create a theory which explains differences of trade, export, product demand and supply, and the various impacts of country-of-origin effects. Despite its limitations however, the country-of-origin effect will be used to understand the bilateral trade between two

countries who have different country images, and how that can impact the flow and volume of products imported and exported.

2.3.3 Nation Brand Indexes and Measurements

2.3.3.1 Qualitative Based Measures

Despite the broad diversity of nation brand definitions and objectives, the concept provides an instrumental framework for understanding national identity as a liability or asset to be managed and positioned in tactical ways by experts. This approach supports various models of nation brand components and factors. One of the most well-known models for nation brand measurement is Anholt's' nation brand hexagon. In 2011, Anholt developed his Anholt GfK Roper nation brand index (NBI). This index supports countries in building a strong image using six different dimensions, including: exports, governance, culture, people, tourism, and immigration. Using this model, Anholt developed a survey instrument that can be used to generate a nation brand proprietary quarterly ranking of countries. The panel data used to build the NBI is collected from an online survey of nearly 20,000 respondents from 20 countries (Anholt, 2007). NBI has been widely used in the nation brand field to measure the value of a brand by its ranking. Participants are asked to rate twenty-five randomly selected nations from a total of fifty countries which results in a data-set of approximately 500 ratings per nation (GfK 2018). The nation ranking takes factors from each of the six dimensions into account: exports (demand for a country's goods and services); tourism (attraction to both natural and man-made areas, as well as the level of interest in visitation); governance (foreign appraisal of government competency, fairness, and commitment to global issues held in high public esteem); investment and immigration (to what extent a country appears attractive as a place to live, invest, work or study, as well as the quality of life and perceptions of the local business environment); culture and heritage (how participants view the nation's appreciation for its culture and heritage), and people

(the reputation of the population with respect to its human resource competencies, including such characteristics as openness, friendliness, competence, and tolerance). The responses are collected and summed up with results converted to an annual ranking which highlights countries at the center of global attention (GFK 2018; Rojas-Mendez 2013)

Another popular survey-based index, the CBI (Country Brand Index), approaches the nation brand from two major angles: what a nation offers on the supply side, and what is demanded by tourists, foreign investors and residents / citizens from the respective country. Primary key dimensions for the CBI include the economy, tourism, geography, government, culture and heritage, society, and science and technology (Rojas-Mendez 2013). The survey contains set of questions relating to culture, history, infrastructure, tourism, environmental protection and technology advancement and for the first time in 2019, the index reorders the countries based on the World Bank's top 75 countries in term of GDP (FutureBrand, 2019). As one would expect, the CBI dimensions are somewhat similar to NBI dimensions, but the CBI differs in that it places greater emphasis on intangible assets over economic performance. Furthermore, the CBI provides more future oriented information about a nation, while the NBI relies more on perceptions of the country which are based in the past. Accordingly, the CBI allows policy makers, brand managers, and those who work in the trade, investment, or tourism fields to adopt a more foresight driven approach with predictive power to manage the nation brand (Lahrech et al. 2020). Unlike the NBI, the CBI is not only based on a consumer survey, but also employs versatile sources of data in the form of expert interview surveys from the hospitality field (FutureBrand 2019). At its inauguration, the CBI collected data from 671 survey respondents from locations in Asia, America, the Middle East, and Europe. This scope has been significantly enlarged, and the index currently utilizes responses from 2,500 respondents spanning seventeen geographic areas and seventy-five countries (FutureBrand 2018). While the CBI index shows more reputation focused data as a nation brand index, the NBI aligns more with economic aspects, along with other,

more traditional, dimensions of nation brand. Both the CBI and NBI indexes were developed initially to legitimize the expertise of consultants, and produce new business from targeted national governments. Despite the fact that both indexes have been well received and popular among researchers, a few criticisms have remained. The potential bias of individual subjectivity is one, somewhat obvious, main point. Another criticism, however, is the time, cost, and effort expended yearly to conduct these surveys and calculate the comparative ranking. In addition, neither of the indices have been subjected to rigorous academic review, and survey data does not offer an accurate snap-shot of the actual performance of a nation brand in real time (Rojas-Mendez 2013). Even though they are considered to be the highest profile methods for measuring nation brand, these methods have come out of the work of private individuals, companies, and other, non-academic literature, or what can be called a private source. Current emerging indices are tending to overcome these issues by using approaches of consumer and company brand equity that combine both surveys and statistical data.

2.3.3.2 Quantitative Based measures

An alternative measurement for evaluating the strength of a nation brand using secondary data derived mostly from statistics was proposed by Marc Fetscherin (2010). He proposed compound index allows for marketers to compare the nation brands of a wide range of countries using standardized results yielded from measuring and combining the respective strengths of nations. The Country Brand Strength Index (CBSI) consists of relative values per capita of statistical data from four different areas composite the index, which include exports, of five dimensions, including exports, tourism, foreign direct investment (FDI), immigration, and government environment. Data is collected from thirty-one countries from the year 2007, and applies a company-based brand equity approach. Li and Filer (2007) developed the final government environment dimension of the index based on survey data that

analyses five areas (rule of law, political rights, free flow of information, public trust, and level of corruption).

The CBSI was initially designed to be used in conjunction with the NBI to overcome the weaknesses of its survey-based index, and provide a more comprehensive view of nation brands that would include an indication of the internal performance of each nation along with its external perceptions. The top five countries in the CBSI index from the thirty-one countries listed are Ireland, Switzerland, Austria, the Netherlands, and Belgium. According to Fetscherin (2010), the CBSI nation brand ranking strongly correlates with NBI rankings, meaning that the strongest countries in the CBSI index are similarly ranked in the NBI. Although there are some outliers between the two indices, many researchers used the CBSI over the NBI for its reliable statistical data, its wider range of included countries, and, more importantly, the cost to purchase the full report. The CBSI is a tool that can be used by both organizations and governments to measure the strengths and weaknesses of a country's brand, and adjust the nation brand strategy accordingly. On the other hand, some researchers have criticized the CBSI for measuring only what are considered traditional financial aspects (exports, FDI, tourism and immigration) of a nation's brand instead of capturing a more comprehensive image of the country. Only one aspect of the index takes the governing environment of the nation into account for promoting the image of the country, with cultural and population characteristics notably absent. Constructs that incorporate soft elements such as human development, education, level of income, culture, health, and the environment are becoming increasingly important in nation brand development. Many other indices are measuring some of these intangible elements, such as the NBI, CBI, Country RepTrak, and Good Country Index. Another critique of the CBSI is that it applies equal weighting to all index elements. Moreover, the index is built on a limited and narrow sample of data (Lahrech et al. 2020). Despite these limitations, Fetscherin (2010) claims that his index is the first of

its kind that provides objective measurement, as opposed to previous subjectively-based measurements collected by survey.

To overcome the methodological limitations in the CBSI, some researchers have explored attempts to expand its multinational scope and further enhance the index (Lahrech et, al., 2020), recently developing a modified version of CBSI (MCBSI). This research relied on World Bank panel data from 131 countries between the years 2007 and 2015. In their development of the MCBSI, the authors hypothesized that a high level of exports, FDI, tourism and immigration would indicate a stronger country brand, and that a supportive government environment is prerequisite to this. The index also includes a new soft element that the CBSI was missing - the Human Development Index (HDI). Moreover, the MCBSI applied weights to each factor to ensure optimization of variable importance. Lastly, the MCBSI used relative values by dividing each factor by its relative cross-country maximum, whereas the CBSI depends on per capita values. Lahrech et al. conclude by noting a stronger correlation between the MCBSI and NBI in comparison with the correlation between the CBSI and NBI (Lahrech et, al. 2020). The drawback to this index is that being only recently published it has few academic citations, and has not yet achieved wide-spread recognition for its contributions. The use of the MCBSI will grow as familiarity increases, and more become familiar with this new tool for building conceptual nation brand models.

2.3.3.3 Comparing the Different Indices

It is important to note that all of the indexes discussed (NBI, CBI, CBSI and MCBSI) are using different methodological approaches and data to measure the same phenomena. NBI and CBI are based on people's perception of the country, while CBSI and MCBSI are based on how the country performs from a more statistical perspective. Although the NBI and CBI index were widely used and have been considered very useful for country branding projects, they are limited in their

methodologies in terms of the questions asked and statistical methods. In contrast, the CBSI is based on previous studies (Shimp et al., 1993; Anholt, 1998) and relies on theoretical considerations more than the NBI. Another difference pertains to the data used to create each index - Anholt used data from approximately twenty-thousand adults who were interviewed online across twenty countries, whereas Fetscherin took the actual data of exports, tourism, immigration, and governance for thirty-one countries in the year 2007, and his method can be applied to any country using the same equation that the study proposes (Fetscherin 2010). Also, the NBI, CBI and MCBSI all used softer dimensions than the CBSI, including cultural, heritage, and human development index data. As each index has its own strengths and weakness, many researchers prefer to combine them to assess a nation brand and how a nation is performing in tourism, exports, investments, and immigration in order to close a gap between perceptions and real performance. Despite the wide-spread use of the CBSI and NBI in the literature and many branding projects, it appears that the process by which the CBSI and NBI were derived has not received rigorous academic scrutiny. Validation of these indices is important for ensuring that our understanding of a nation brand is based on what is being measured, but not indeed on what should be measured (Rojas-Mendez 2013).

As each index has its respective strengths and weaknesses, academics are trying to develop a more comprehensive and complete measurement for examining nation brand constructs. An accurate index would yield more strategically efficient planning. Simply considering the various data of all of the indexes separately is ineffective, if a country is not sufficiently aware of a need to manage the behavior of indigenous stakeholders when dealing with other countries, for example. Similarly, a country has to put effort into other factors, such as trade, promotion, or industry association with technology, and national policies. In other words, to enhance the country image, it has to change what it does, how it is performed, and how things are made. Nations need to make sure they are politically stable, avoid violence and conflict, and that they respect human rights before they are in a position to

make any positive changes to these rankings - as Anholt (1998) states, there is no magic shortcut using marketing, logos or slogans to enhance a national image.

2.3.3.4 Conceptualizing nation brands through nation brand equity and measuring through indices

Nations, similar to corporate and product brands, have significant potential to build brand equity. Brand equity concept stems from consumer behavior studies that generally understood it as the total value added to the product as a result of its brand name (Aaker 1996; Yoo & Donth 2001). In order to build brand equity, consumers must be able to perceive meaningful brand differentiation through which the product is ideally viewed as better in some aspects or the product overall fulfills consumer expectations better (Jones 2005). There are two main approaches that have been used to measure brand equity; consumer perceptions of the brand which are typically based on opinion surveys, or through measuring the financial performance of the brand (Aaker 1996; Farquhar et al. 1991; Simon & Sullivan 1993). The former approach is generally addressed as the consumer-based brand equity approach while the latter is known as the company-based or finance-based equity approach. Both approaches have also been applied to measuring nation brand performance. In general, this latter approach that relies on actual achievements of a country is considered to be more reliable measurement of its brand equity as it gives a more accurate data on the actual inputs into the underlying foundations of the nation brand and as the used data comes from reputable statistics rather than consumer surveys of people's perceptions which are prone for bias (Anholt 2010; Fetscherin 2010; Lachrech et al. 2020). Albeit different data sources and methods, studies identified a significant correlation between the two ways of measuring country brand strength as the Anholt Nation Brands Index country ranking has been found to correlate with studies that measured similar aspects of nation brands through statistical. The correlation was found significant across the following indicators of nation brand equity; export, foreign direct investment (FDI), immigration, tourism, and governance data (Fetscherin 2010; Lachrech et al. 2020).

2.3.4 Nation Brand and Trade flow

Similar to the corporate marketplace, the intensely competitive and dynamic nature of the global market demands a continuous response from participating nations (Anholt 2002; Kavartzis 2005). Countries compete with each other for resources that can enhance their competitive advantage (Kotler & Gertner 2002; Mihailovich 2006). The nation brand is considered to be a measure for the leverage of competitive advantage among countries, and of their sustainability of economic growth (Gilmore 2002; Dinnie 2008; Lee 2009). Nation brand has recently attracted the interest of researchers and academics in international trade, political science, sociology and history (Dinnie 2002). As mentioned in the previous section on the evolution of a nation brand, the multifaceted and holistic concept evolved from obscurity, to a more scientific and theoretical based field. Economists and academics have linked international trade to the nation brand to address the competitive nature of the global market. In the previous section, the nation brand concept was shown to emerge from many focused scientific disciplines, including country of origin, place branding, destination branding, national identity, and public diplomacy, with relative inattention given to precise definitions or concretization of these respective terms (Fan 2010). While the term ‘nation brand’ is complex and multifaceted, the definition can be linked to international trade, as suggested by Scott and Lodge (1985) in that it is a measure of a “country’s ability to create, produce and distribute products/services in international trade while earning rising returns on its resources.” This definition identifies the collectivized reason to ‘buy’ across the economic spectrum to increase import and export flows.

Following the literature discussed in the previous sections, the economic dimensions that remain consistent throughout all nation brand constructs are exports, tourism, science and technology, and foreign direct investment (Anholt 2005; Fetscherin 2010). The inclusion of key indicators of development illustrate that the nation brand has significance beyond simply being the opinion of consultants or an ethereal construct of researchers, but is a real variable which demands

operationalizing in order to effectively influence the nation policies. The concept is now capturing the attention of public policy makers dealing in international trade flows, such as the United Nations, the World Bank and the World Trade Organization (Kaneva 2011).

The literature review has shown a clear rising trend of studies focused on nation brand as it relates to trade or Foreign Direct Investment (FDI). A recent study published in the *International Journal of Economics and Finance* by Lahrech et al. (2020) highlighted this relationship between FDI inflows and nation branding. The objective of the study was to examine the correlation between the image of a country using the NBI index created by Anholt-GfK Nation Brands Index in 2017 using panel model regression to the 10 highest countries with NBI. The study revealed that there is a strong positive correlation between nation brand and FDI inflow, which can suggest that a high NBI score attracts more business into the country. Following this, attracting more business can lead to an increase in trade between countries.

Another key study on country reputation and export volume is Dimitrova, et al. (2016). The purpose of their research was to study the relationship between bilateral export volume and country reputation with focus on the nation in which that brand is held. The bilateral data consisted of 861 country pairs using a global survey measured reputation index and export flow for each country pair using the structural gravity model of international trade. The authors found a strong positive correlation between the ranking of a country's reputation for a specific product, and a 2% increase in exports for that particular country. A positive relationship was also identified between tariff reductions of 2.9% with reputation. The authors identified that a country's products, and its people as distinguished aspects of that country's reputation present a distinct form of uncertainty that can stimulate export volumes (Dimitrova, et al. 2016). Despite that this study is one of the few quantitative studies in country reputation, the country reputation variable is derived from a survey ranking of 20 countries,

which raises questions in terms of validity, bias and generalization. The study - as stated by the authors - cannot fully demonstrate causality between export volume and national reputation.

Other researchers have studied country image from a tourism perspective (Elliot and Papadopoulos, 2016). Here, a survey of Canadian consumers was conducted to assess the relation between Tourism Destination Image (TDI) and General Country Image (GCI) for Canadians, using the USA as the focus country. The results demonstrated a strong correlation between country characteristics and tourist impressions. Moreover, there was moderating effect between General Country Image (GCI) and Tourism Destination Image (TDI) (Elliot and Papadopoulos 2016). As tourism is part of the CBSI, this study suggests that nation brand can impact country trade characteristics.

A study by Sun, Paswan and Tieslau (2016) attempted to examine the relationship between country image and exports. The primary data for twenty-four different countries over twelve years between 1995 and 2006 was used. The random effect data model was used to assess the relationship between the country exports and a number of factors, including economic, product, infrastructure, geography and political factors. Although the findings of their models show that most of the factors were not statistically significant, the study was successful in providing information on which factors are more important to each nation's model.

The nation brand molecule (NBM) study by Rojas-Mendez (2013) aimed to determine the constructs that shape the country image molecule. metaphorical approach of a molecule to present the nation in a comprehensive way brand concept. The study analysed the responses of 532 graduate students from twenty different countries to identify concepts associated with the names of different countries. Responses were classified into seven areas, including geography, nature, culture, economy, tourism, society, science and technology, and government. Despite significant biases, the study claims to be the first to classify areas comprising the multinational nation brand construct.

An interesting study conducted by Kalamova and Konrad (2010) on nation brand and foreign direct investment used a knowledge capital (KC) model to explain the size and directions of foreign direct investments (FDI) as a result of such factors as trade openness, geographical location, and production fragmentation. The model builds on seminal work of Markusen (1984), which explored multinational companies' (MNC) productions in multiple countries to minimise trade costs. Helpman's model (1984) is referred to in the KC model for the geographical fragmentation of stages of production. These two models were combined by Markusen (2002) to posit that knowledge-based services such as R&D can be geographically separated from normal production (Carr et al. 2001). Kalamova and Konrad's 2010 study used bilateral FDI inflows from 30 countries to 34 host countries as dependent variables covering the years 2005 and 2006. The Anholt Nation Brands Index is used, along with the fundamental variables of the KC approach to study the model. Using OLS and Tobit estimators the study found the explanatory power of the nation brands index is quantitatively large and statistically significant, and positively correlate with FDI flows into a host country along with the value of its intangibles. Table 2.3 summarises the key articles on nation brand studies and their various methodologies.

Although the literature shows an emerging trend toward the study of nation brand, most studies lack generalization as they used survey results based on individual perceptions without the support of economic statistical indicators. Further study is needed to explore a more complete measurement based on subjective primary data, and to integrate theories to introduce new forms of models (Hao, et al. 2019).

Based on the above, this research would go the extra mile to create a model that explores the relationship between exports volume and import volume as a dependent variables, and distances, and free trade agreements using the nation brand strength difference of respective countries – the host and the source- with a range of well-recognized control variables. Further explanation of the methodology

will be discussed in the methodology chapter. Moreover, it is apparent that the structural gravity method was not widely used in the academic literature on the nation brand concept.

Table 2.3: Summary of Nation Brand Key Articles

Article Title	Authors /Year	Objectives	Methodology/Data Source	Major Research Findings
“Nation Branding and How It Is Related to Foreign Direct Investment Inflows”	(Abdelmounaim Lahrech, Sami Alabdulwahab, Safaâ Bouayach. 2020)	To examine the correlation between FDI inflow and nation brand	Quantitative / secondary data: Regression on panel data of the highest nation branding index countries between 2008 and 2014	The results reveal a strong positive correlation between nation branding and FDI inflow.
“When and How Country Reputation Stimulates Export Volume”	(Boryana V. Dimitrova, Daniel Korschun and Yoto V. Yotov, 2016)	To study the relationship between export volume and bilateral country reputation.	Quantitative / secondary data: (structural gravity) nation brand survey of respondents in 20 countries rate the reputation for products and people of 50 other countries with bilateral export data of 861 country pairs.	The result illustrates a strong positive correlation between the ranking of a country’s reputation for a specific product in the focus country and exports to that particular country.
“Beyond Tourism Destination Image: Mapping Country Image from a Psychological Perspective”	(Elliot and Papadopoulos, 2016)	To capture the relationship between Tourism Destination Image (TDI) and General Country Image (GCI) of the U.S.	Quantitative/ primary data: Survey which collected 1,147 verbatim responses from Canadian consumers (n=307) With factor analysis and regression.	The nation image is found to be strongly and positively associated with Country Characteristics Also moderately with GCI. The findings suggest that the perceived overall characteristics of the country holding the image could significantly influence its GCI and TDI.
“Country Resources, Country Image, and Exports: Country Branding and International Marketing Implications”	(Sun, Q., Paswan, K. and Tieslau, M., 2016)	To examine the relationship between country, institutions and resources, country image and exports based on resource advantage theory and institution theory.	Quantitative / primary data: Data from 24 countries over 12 years (1995–2006) was used to assess a random-effects panel data model. The country’s exports were assessed along with cultural, economic, product, industry, infrastructure, geographical, and political factors.	Not all of the key factors are significant in the model, but the paper offers information on which factors are more for country nation brand.

“The Nation Brand Molecule”	(Rojas-Mendez, 2013)	To determine by use of molecule the set of dimensions of a country brand and compare the results with practitioner led resources.	Quantitative / primary data: Survey total of 532 graduate students from 20 different countries reported on the concepts that they associated with different countries names.	The nation brand molecule developed. Seven dimensions: economy, tourism, geography and nature, culture and heritage, society, science and technology, and government.
“Nation Brands and Foreign Direct Investment”	(Kalamova and Konrad, 2010)	Used the knowledge capital (KC) model to explain the size and directions of foreign direct investments (FDI) with respect to trade openness, geographical location, and production fragmentation as explanatory factors.	Quantitative / secondary data: Using OLS and Tobit estimators. and bilateral FDI inflows from 30 countries to 34 host countries covering the years 2005 and 2006. The Anholt Nation Brands Index is used along with the fundamental variables of the KC approach.	The study found the explanatory power of the nation brands index is quantitatively large and statistically significant and positively correlate with FDI flows into a host country along with the value of its intangibles.

2.4 Summary

Theories and models related to nation brand and International trade were reviewed to explore the concept of nation brand and the relevance of existing models and frameworks with the key concept of each variable. The International trade literature is based on strong theories which has been evolved from classical trade theory reaching to the different new trade theories which was studied in details in the section one of this section. The second section has studied the nation brand as a concept, by highlighting all the related definitions of nation brand and key related definitions. The COO effect was raised as an important model to form the empirical missing part in the nation brand literature. Nation brand can be summarised as the ability of the nation to develop and manage the country image in terms of economic, social, political, and cultural realities and align them with a defined nation strategy that improve nation reputation and trade.

CHAPTER 3 : CONCEPTUAL FRAMEWORK

3.1 Introduction

In this chapter, the objective is to provide a comprehensive description of the conceptual framework that forms the foundation for this research as well as to clarify fully the research conceptual model that forms the substance for this thesis. As per Miles and Huberman (1994, p.18), a conceptual framework “explains either graphically, or in narrative form, the main things to be studied – the key factors, concepts or variables and the presumed relationship among them.” For this thesis, the conceptual framework is based on New Trade Theory and on the Internalisation Factor from the OLI Paradigm. It is designed to explain how international trade is determined by specific factors that include both the Nation Brand and the Country-of-Origin effect (COO). To model the significant drivers of international trade, the structural gravity model is employed. The conceptual framework constructed in this chapter serves to highlight the research plan and illustrate the relationships between the international trade variables employed in this study. With this foundation, a robust research methodology was developed to structure the research design and the data collection required for each of the separate trade determinants so that it was possible to capture the various interaction effects as well as the effect of Nation Brand as a moderator.

3.2 Research Conceptual Framework

This thesis builds on the philosophical foundations presented in Chapter 2 and extends the existing research on the main determinants of international trade. More specifically, this thesis is designed to provide a more detailed empirical analysis of the moderation impact of nation brand distance on the exogenous variables of geographical distance, FTA and international trade. Based on the gaps identified in the literature review, the current chapter addresses several issues identified in previous

studies. With this focus, the framework defines how the relevant trade variables relate to each other and map to the exogenous variables.

The research conceptual model of this thesis is organized around two primary determinants of international trade flows: geographical distance and free trade agreements (FTA). This is consistent with the assessment of the potential moderating impact of nation brand distance, which is a critical component of the research design. The concept of nation brand distance is used to measure the difference between two countries' nation brand image and is calculated based on the difference in their CBSI index. The CBSI distance affects both the individual trade determinants as well as the absolute level of trade flows. For this thesis, the variable related to trade flows is presented for both export volumes and import volumes using the U.S as the reference country. A significant theoretical contribution of this study is the measurement and confirmation of the moderating impact of nation brand distance on the determinants of export and import flows. The research conceptual model and the content of this chapter overview is demonstrated in the following figure (Figure 2):

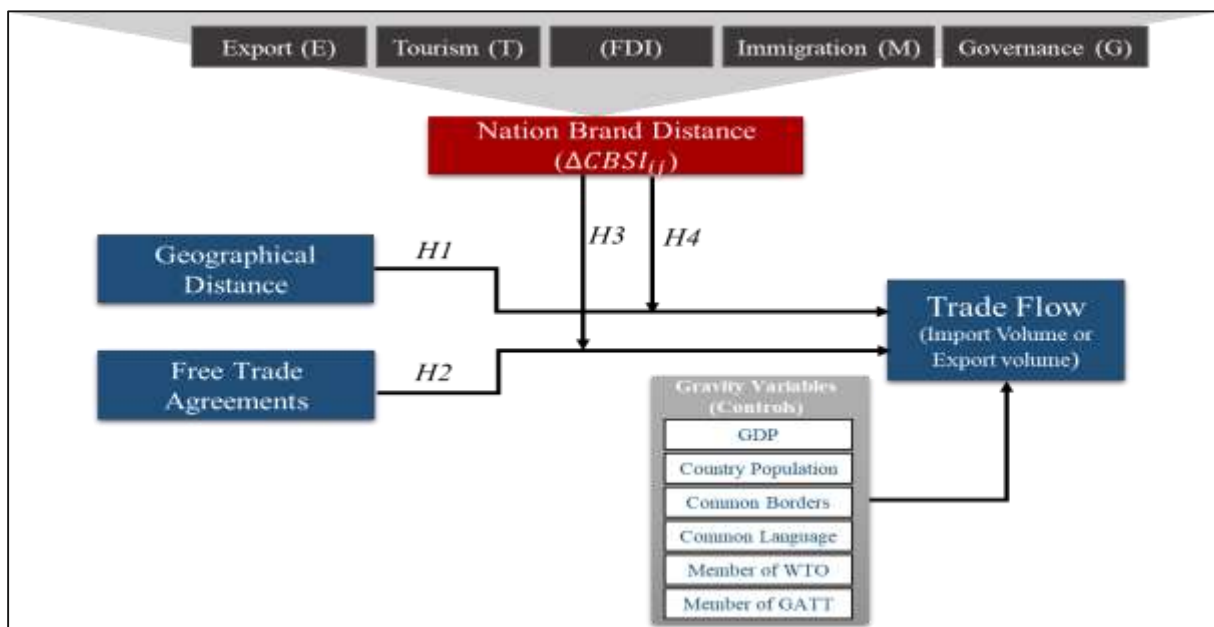


Figure 2: Research conceptual Model with the hypothesis

3.3 Key Determinants of International Trade

3.3.1 Geographic Distance

Geographic distance is defined as the spatial distance between two different locations, which can be a city, country, or region. From a trade perspective, this definition can also be extended to refer to the ease of accessibility between two countries, such as the existence of a common land or water border (Halaszovich and Kinra, 2018). The geographical distance between two points is frequently calculated using specific latitude and longitude measures. This static measure is readily available from sources like World Bank and alternatively can be calculated manually. This distance measure is then used on an abstract level in the studies using geographic distance as a proxy for transportation costs.

Following both New Trade Theory (NTT) and the OLI Eclectic Paradigm, many researchers have focused on identifying how geographical location determines either trade volumes or the entry mode. Fundamentally, NTT explains trade patterns between countries based on profitability calculations based on a specialization in a countries cost structure that might be independent from other attributes of a country that are assumed to be constant under traditional trade theory. Recently NTT has been extended by the New Economic Geography (NEG), which further emphasizes the importance of location and distance as determinants of international and interregional trade flows due to the influence of transportation costs. Similarly, the (L) advantage in the OLI paradigm focuses on the potential explanatory factor of location as a determinant of both the entry mode and the investment decision (Bailey et.al., 2015). Increasing the geographic distance between partners increases both transportation and communication costs, which leads to an increase in perceptions of uncertainty and results in the introduction of additional costs related to the additional control mechanisms (Sachdev and Bello, 2014; Daniels and von der Ruhr, 2014).

In tests of both of these theories of the relationship between international trade flows and geographical distance, the empirical results show a strong negative relationship between trade flows and geographical distance (Ghemawat, 2001; Halaszovich and Kinra, 2018). In that context, a country can be expected to prefer to export products to countries that are close to home rather than to distant countries. For this thesis, the testable hypothesis is that there is an expected negative relationship between geographical distance and both Export and Import Flows.

3.3.2 Free Trade Agreement (Independent Variable)

A Free Trade Agreement (FTA) is a pact to decrease barriers to the import and export flows between two or more nations. It is usually measured in gravity models by using a dummy variable with a value of 1 if an FTA exists among the trading country and 0 otherwise. The positive impact of trade agreements on the liberalization of trade flows has been highly effective and strongly supported by both economists and researchers. It has been widely documented that reductions in trade barriers lead to increases in both export and import flows, which is consistent with both classical trade theories and new trade theory models.

By incorporating those contributions from new trade theory of how a country's cost of trade is reduced with the use FTAs, it is possible to estimate the impacts of an FTA on export and import flows to specific countries. To test this hypothesis, Arata (2017) examined a set of Japanese FTA's with various trading partners based on the NNT model and found a strong positive relationship between export volumes and the existence of an FTA, which supports the importance of expanding FTA networks to increases in trade. In a similar study, Kehoe (2003) examined the performance of applied general equilibrium models with specifications based on the new trade theory to examine the impact of the NAFTA agreements on trade flows. His results supported the thesis that the existence of an FTA increases trade volumes for both export and import patterns. Other researchers have examined the economic consequences of trade agreements with respect to different variables, such as

trade flows, productivity, FDI, and wages using the gravity model and have come to the same conclusions (e.g., Trefler, 2004; Mattoo et al., 2017, Laget et al., 2018; Feenstra, 1998; Anderson and van Wincoop, 2003).

As these studies show, trade agreements have a strong positive influence on trade flows between associated countries. In this context, the working hypothesis is that an increase in signed trade agreements eventually lead to higher export and import flows. Accordingly, we hypothesize in this thesis that there is a positive relationship between the existence of FTAs and both export and import volumes.

3.4 Nation Brand Distance (NBD)

Nation Brand can be viewed as a proxy for a country's competitiveness and capacity to maintain sustainable growth. In the previous chapter, the literature related to nation brand and trade was explicitly described in relation to bilateral trade flows. It is clear from the literature that the concept of the Nation Brand has only recently attracted researchers, and economists in particular, to study the impact of Nation Brand on trade and FDI flows (Dinnie, 2002). Because it has been neglected until very recently, the Nation Brand concept has experienced a multifaceted development. As a result, its potential economic impact and the role that it plays as an important determinant of a country's international competitiveness has been seriously underrecognized. In this study, Nation Brand Distance (NBD) is introduced as a new concept used to measure the differences in the Nation Brand Index (CBSI) of a country in relation to a set of trading partners that are countries of destination. In the following sections, detail will be provided for how NBD can be viewed as a moderator for trade based on underlying theories.

3.4.1 NBD and Export Flows (Moderator)

Because Nation Brand represents the whole image of a country in terms of its political, historical, economical, environmental and cultural aspects in the mind of international stakeholders, very few studies have attempted to identify the Nation Brand impact on export flows. One study by Dimitrova et al. (2016) has suggested that a country's reputation for its products has a positive and statistically significant impact on export volumes. Another study by Sun, Paswan and Tieslau (2016) has discussed the country image as a moderator that can be measured by the perceptions of external observers for a specific country. They found that country image has a significant indirect impact on the relationship between exports and various trade determinants. Despite the growing body of research that is focused on the nation brand field, the concept is still divergent and fragmented when it comes to tests of its effect on trade determinants.

According to New Trade Theory (NTT), monopolistic competition explains how companies compete on branding and not just on product pricing. By extending the impact of brand on the strength of production to the country level, this thesis proposes that nations need to compete not just on the price of a single factor of production, but also on all elements of the nation brand in order to score as high as possible as a preferred country to trade with. An improvement in the nation brand score will enhance exports regardless of the negative effect related to geographical distance. In parallel, this improvement will serve to motivate countries with similar levels of nation brand to sign trade agreements with each other because they view each other as trustworthy partners.

From the Dunning OLI Paradigm, the internationalization advantage can also explain the export option as a choice of entry mode which can be either direct to identified customers or indirect through cooperative trading agreements. The uncertainty that is involved in entering specific new markets can constrain how firms choose to export, especially for countries that are distant in terms of nation brand. Confidence that a country and its traders will respect the terms contained in the negotiated trade

agreements provides a stimulus to enter into more trade agreements, which results in higher trade flows. In this thesis, we propose that countries with similar nation brands will tend to have more trust in each other to follow the terms and conditions of the negotiated FTA with the result that trade flows will be higher between these two partners.

By enhancing its nation brand, a country will ultimately enhance its country-of-origin image, with the expected result of higher export volumes with its trading partners. This change might also reduce the psychic distance between the partners by mitigating the lack of information that can be a factor in the determination of whether to export to a specific country or not. Most of the research that studies the relationship between nation brand and exports makes use of perceptions-based measurements which makes the results non-generalizable because there is not a solid theoretical background. In response to this lack of a theoretical foundation, this thesis hypothesizes that nation brand distance has a moderation impact on export flows and is a key trade determinant. More specifically, it is proposed that there is a positive moderation impact of nation brand distance on the relationship between geographical distance and export volume from the US, which means that an improvement in nation brand distance will reduce the effect of geographical distance on US export volume. In contrast, this thesis also proposes that there is a negative moderation impact of nation brand distance on the relationship between FTA and export volume. This means that a decrease of nation brand distance will increase the effect of FTA on trade flows. The hypotheses in the last section of this chapter provide detail for both moderation impacts.

3.4.2 NBD and Import Flows (Moderator)

While nation brand has recently become a significant strategy for countries to stimulate export flows, especially for emerging economies with inferior country-of-origin (COO) images (He and Wang, 2015; Wang et al., 2017), not much attention has been given to the impact of nation brand on the import model. Researchers like Sun, Paswan and Tieslau (2016) have emphasized that nation image

can impact a country's exports, but no mention is made of the impact on import flows. Similarly, other researchers have produced studies that show that an increase in the favorable image of a country leads to the willingness of consumers to pay a premium price for products imported by that country (Koschate-Fischer, Diamantopoulos and Oldenkotte, 2012). Finally, there is evidence that consumers compare the COO of products and are less willing to pay a premium or to buy products from countries with lower or inferior nation brand (Giraldi, Ikeda and Campomar, 2011).

The reason that export flows have been studied more intensively than import flows in relation to nation brand is that nation brand has primarily been associated with the internationalization process, where countries compete to enhance their image versus other competitors in order to be able to sell more in the international market. The import decision of the buyer is primarily based on the country of origin as the key decision factor, the perception of which is based on the available information on the imported products from this specific country. The hypothesis is that the local market prefers to buy products from a country with a superior COO image rather than from a country that is producing better quality products but which has a lower COO image. This hypothesis points to the potential impact of nation brand distance on import flows, where an improvement in nation brand distance might reduce the negative effect of geographical distance on import volumes.

Based on the New Trade Theory (NTT), the economic model of monopolistic competition is a vital component of NTT and suggests that companies regularly compete on branding and not solely on price. In this thesis, the branding effect is expanded to include a country competing internationally based on a better nation brand in order to ensure that it gains the confidence of its trade partners to engage in trade despite the geographic distance between the two. Branding can also be used to explain why it is that countries can both export and import similar types of products based on relative quality and the related market demand in different trading partners. With higher volumes of trade, the nation brand can also have a positive effect on the willingness to sign trade agreements. Even though imports

are statistically less significant than exports with respect to the moderating impact of NBD, the import model shows how important it is for countries that are targeting some markets to work on their nation brand. An increase in nation brand can lead to higher trade flows by moderating the negative effect of geographical distance and by encouraging the signing of more FTAs.

3.5 Gravity Variables and Trade Flow

The gravity model has been known as a workhorse model for studying and understanding bilateral trade since it was proposed by Tinbergen in 1962. The bilateral trade between two nations is proportional to their size and distance as per the gravity principles, and in the economic studies, the size is measured by GDP, while the distance is the geographic distance between trading partners. Control Variables (gravity variables) are included in the gravity equations to control for the country-specific factor that might impact export and import flows.

This study captures some proxies as control variables, which were widely used in the gravity model literature. The main gravity variables used in this dissertation include the following: 1. GDP, 2. country population, 3. common borders, 4. common language, 5. WTO membership, 6. GATT membership. Many recent studies have used similar control variables to study international trade using the gravity model, e.g.) (Halaszovich, & Kinra (2018), Lahrech (2018), and Dimitrova, Korschun, & Yotov (2017). The control variables in this research are expected to have similar results as those referenced in the previously mentioned studies. The GDP is expected to have a positive and significant impact on relation to trade flows. WTO and GATT membership are dummy variables that are expected to have a significant and positive impact, providing member countries privileges over those who are not. Common language is similarly a dummy variable that is expected to have a positive impact on trade flow, as this is assumed to open channels for successful communications between exporters and importers. Population is expected to have a positive impact on trade flow, as a result of

upward pressure on demand for imports, and the impact of this on the provision of labour for manufacturing goods for export. Finally, a positive coefficient between countries that are close in distance and with big economies is assumed.

3.6 Developing the Research Hypotheses

By combining the literature cited in the literature review chapter and the conceptual framework developed in the current chapter, four Direct Hypotheses are identified to link the key trade determinates to both export flows and import flows. In addition, two Moderating Hypotheses are developed to assess the influence of nation brand distance on the trade determinants related to export and import flows. Figure 2 shows the links between the Direct Hypotheses, the Moderating Hypotheses and the export and import flows developed in the research model. The following sections serve to illustrate the conceptual model and provide a brief formulation of the hypotheses that are developed for this thesis: -

3.6.1.a Export Model Hypotheses

Direct Hypothesis

H1.a. There is a negative relationship between Geographical Distance and Export Volumes.

H2.a. There is a positive relationship between FTA and Export Volumes.

Moderating Hypothesis

H3.a. There is a positive moderation impact of Nation Brand Distance on the relationship between Geographical Distance and Export Volume.

H4.a. There is a negative moderation impact of Nation Brand Distance on the relationship between FTA and export volume.

3.6.1.b Import Model Hypotheses

Direct Hypotheses

H1.b. There is a negative relationship between Geographical Distance and Import Volumes.

H2.b. There is a positive relationship between FTA and Import Volumes.

Moderating Hypotheses

H3.b. There is a positive moderation impact of Nation Brand Distance on the relationship between Geographical Distance and Import Volume.

H4.b. There is a negative moderation impact of Nation Brand Distance on the relationship between FTA and Import volume.

3.7 Summary

This chapter has presented the conceptual framework and conceptual model in detail by isolating variables from the comprehensive literature review and developing a hypothesis of their relationship within the context of international trade. It has clarified that the main economic theory used in this dissertation is new trade theory, which depends on economies of scale and a comparative advantage enhanced model and the OLI Eclectic Paradigm. It also links the country-of-origin effect (COO) and physics distance to the concept of bilateral trade. Having both theoretical references that can explain the relationships between the variables and build the story is needed for a rigorous dissertation. This section also has clarified some of the measures that can be used, such as the Country Strength Brand Index (CBSI), for measuring nation brand distance. Also, this chapter has provided thorough information on the relationship between the variables, through its reference of past studies and research. The expected results on each hypothesis were reviewed as they relate to the research question and aim. In addition, this chapter parented a diagram with a detailed hypothesis on the relationship between the variables, with reference to the development of the nation brand over time.

CHAPTER 4 : METHODOLOGY

4.1 Introduction

Designing and following the methodology that is most appropriate for the research problem is a key element of quality research (Kothari 2004). As the objective of this study is to understand the impact of nation brand distance on trade flows in relation to geographical distance and trade agreements, the structural gravity model was identified in the literature review as the best model and was chosen for the tests of nation brand distance in this thesis. This chapter will illustrate the research design and methodological approach that was used. To begin with, the research method will be highlighted together with the justification behind choosing the quantitative method. Then the philosophical assumptions and research approach will be discussed. Accordingly, the measurement of the variables will be discussed by highlighting the sample data which was chosen and the sources of this data. Also, the gravity model will be discussed along with structural gravity and what are the uses of the model in the economical researches. In addition, this chapter will take advantage of the solid theoretical foundations of the structural gravity model and will discuss the specification of the structural gravity model used to formulate the research functional form used in this thesis. Also, the PPML selection as an estimator will be discussed together with the challenges encountered with the gravity model as well as suitable recommendations for addressing these challenges. At the end of this chapter, a summary is provided to demonstrate the key elements of the methodology chapter.

4.2 Research Method

The selection of the research method is usually based on the research problem that the study is trying to resolve. There are three main categories that are commonly used: quantitative, qualitative and mixed methods. Quantitative research is an approach that is used to test objective theories by assessing the relationship between variables that can be measured. The instruments used to measure

these variables usually deal with a large sample of numerical data that can be analyzed using statistical procedures (Creswell 2009). As quantitative research is independent of the researchers, the data used and the results produced represent an objective measurement of reality. Moreover, the quantitative findings can be predictive, explanatory and confirming (Williams 2007). On the other hand, qualitative research is a holistic approach that aims to explore and understand the meaning that an individual or a group ascribe to the research problem based on human experience in the way it actually emerges in their lives (Polkinghorne 2005). The answers in qualitative research to questions of how, why and in what way can be deduced from respondents' thoughts or actions in a particular way (Barnham 2015). The mixed method is a research approach that combines quantitative and qualitative research methods in the same study with the objective of providing a more complete understanding of the research problem than either approach alone. It involves collecting both quantitative and qualitative data and using a distinct design that combines a theoretical framework with philosophical assumptions (Creswell 2009).

With reference to the literature reviewed in Chapter 1 related to international trade studies, the most common research approach used was the quantitative research method. A key article related to the research problem of this dissertation is the study by Dimitrova, Korschun & Yotov (2017) of how country reputation stimulates export volumes. It used a quantitative research approach to study the bilateral trade data set consisting of 861 country pairs. To analyze the data set, it used a well-established structural gravity model to test the relation of country reputation with export data of each country pair. The quantitative method used, and more specifically the gravity model chosen, was a successful tool to analyze the huge data set of country pairs and come up with solid findings. The authors concluded that each improvement of target country reputation for the product is associated with a 2% increase in exports to that particular country. This study highlights one of the major advantages of quantitative methods and procedures which is that it allows the researcher to analyze a

broad set of data and generalize the result, thus making it possible to present the results succinctly and parsimoniously (Yilmaz 2013).

Another study that used a quantitative approach to analyze export volumes was conducted by Lahrech et al. (2018) also using the structural gravity technique. The authors used data of Morocco export volumes to its major partners in trade for the period 2001 to 2015 to analyze the impact of global financial crises on export volumes. They found a significant correlation between the two variables using the quantitative method of structural gravity. Many additional recent studies have looked at international trade using quantitative methods in order to examine the bilateral trade data and identify the determinants of trade (see Hussain, 2017; Rasoulinezhad, 2017; Wang, 2016; Panda et al., 2016; Caporale & Sova, 2015). The majority of these studies used a gravity model that will be discussed in the following sections of this chapter, in which it becomes clear how the gravity model became a workhorse tool in quantitative approaches when studying bilateral trade flows.

On the other hand, in the nation brand literature, there exists a mixture of quantitative, qualitative and mixed methods, the choice of which depending on the purpose of the study. In his meta-analysis of the literature, Gertner (2011) studied the nation brand and other related articles and the methodology used. He stated that most of the studies before 2005 employed a qualitative approach based on interviews or case studies. He concluded that these studies lacked a theoretical framework, a testable model, or hypotheses that used statistical methods. From 2006 onward, more quantitative tests appeared, especially those using survey tools such as the one conducted by Simon Anholt (2007) or Hosany et al. (2006). Some mixed method studies also were done, such as the study conducted by Watkins et al. (2006) to explore the image of England as a tourist destination with data collected from 150 questionnaires and analyzed using ANOVA as a quantitative tool and supported by qualitative methods such as interviews. Gertner (2011) has discussed that using primary data in the field of nation brand has enriched the literature with more reliable studies. As mentioned in the literature review,

only recently have the studies focusing on nation brand evolved enough to be based on a theoretical foundation. For example, one related study mentioned above by Dimitrova, Korschun & Yotov (2017) was based on a gravity theoretical foundation and the COO model. Another study by Kalamova and Konrad was based on a quantitative approach based on a structural gravity model. This study linked the FDI flow from one country with the nation brand index using the knowledge capital model.

For conducting the empirical study of this thesis, the most appropriate method to be used is the quantitative research approach for three main reasons. First, the majority of scholars who have studied bilateral trade between two countries have preferred to use quantitative methods over qualitative methods. To be more specific, these scholars have tended to use the gravity model to analyze the data set of country pairs. Second, the research has tended to explore the relationship between quantitative variables in order to examine the objective theories. Third, the quantitative method makes it possible for the findings to be generalized after statistically aggregating the data using the structural gravity model. Having justified the selection of the quantitative method, it remains for the research philosophical assumptions to be discussed and clarified in the next section.

4.3 Research Philosophy

Research philosophy is a set of assumptions and beliefs about how knowledge is developed in a particular field. In the different stages of any study, researchers make a number of different assumptions based on the research problem that they are trying to resolve. The main philosophical assumptions can be summarised as follows. First, the ontological assumption concerns the realities encountered during research. Second, the epistemological assumptions relate to human knowledge. Finally, the axiological assumption deals with how our own values influence the research questions (Saunders et al. 2016). The research paradigms are a thinking framework for how the world is perceived. Accordingly, they serve to guide the behavior of the researcher (Jonker and Pennink 2010).

There are mainly four research paradigms that are used by researchers to clarify the research design. The following four paradigms clarify the terms of the required evidence, the collection of data, the interpretation of results and the methods used to overcome the limitations related to the research approach used: positivism, postpositivism, interpretivism, and pragmatism. Understanding each of these research paradigms helps researchers to provide reasonable answers to their research questions (Saunders et al. 2016). As presented in the literature review, this is a multidisciplinary study including the disciplines of macroeconomics and international marketing, which makes it a cross-sectional study. The most suitable method to test the moderation impact of nation brand distance on the trade flow relation with trade agreements and geographical distance is the quantitative method using the structural gravity model. The most appropriate philosophical assumption to be used is epistemology as it focuses on discovering observable and measurable facts and numbers, which helps to produce credible data and meaningful results to study the trade flow relation with other variables. Epistemology has been used by many business and management researchers since it allows for the study of different types of knowledge and data. In this way, it defines what creates acceptable and legitimate knowledge using data ranging from the numerical to the textual and visual. This paradigm can help to answer economic questions related to theories such as the NTT theory related to the reality of trade volume in relation to nation brand and how it is perceived.

The research paradigm adopted in this study is positivism. When combined with epistemological assumptions, this paradigm helps to understand the studied phenomena and provides credible data or facts that make it possible to focus on causality relationships and generalizations that reduce the phenomena to their simplest elements (Saunders et al. 2016). There are many reasons for using the positivist approach together with the epistemology school of thought. This approach enables both the exploration of relationships between variables using highly structured research methodology and the adaptation of a quantitative method approach that depends on real data. However, it is important to

understand the implications of these philosophical assumptions on the quantitative method chosen. With a positivist assumption, the view is that objective factual data can offer the best scientific evidence that is subject to generalization and is reliable with regard to the quantitative results. On the other hand, this assumption will be less likely to offer a complex view of organizational realities or account for individual experiences, neither of which is required for this thesis outcome. Accordingly, the epistemological positivist assumptions are diversified enough in terms of the knowledge that is produced by the facts and is legitimate for this research.

4.4 Research Approach

The research approach spans the steps required from establishing the broad assumptions in the study to deciding on the more detailed methods for how the data is collected, analyzed and interpreted by the researcher. It requires the researcher to form a plan and establish procedures that involve several key decisions for the study. Among others, these decisions involve choosing the research method that is most appropriately linked to the research philosophical assumptions in the study and to the methods chosen for the data collection, analysis, and discussion. The research approach in this thesis is deductive as it is associated with the quantitative method. Deductive reasoning occurs when a set of assumptions are used to derive the conclusion (Saunders et al. 2016). This thesis follows the deductive approach where the analysis started with theories such as New Trade Theory (NTT) and the COO effect model to test the relationship between the variables using the data collected to generalize the findings. It seeks to identify explanatory laws for the behavior of both export and import flows in connection with knowledge of the country of origin of the products. Likewise, the thesis tests for the effect on trade flows when economies of scale exist. This approach is associated with a statistical procedure used to test data and compare observations in a large sample using the structural gravity model (Saunders et al. 2016).

4.5 Data Description and Variables

Following a quantitative research approach and the philosophical assumptions mentioned above, this thesis investigates the research question of how export and import flows are impacted by nation brand distance directly and indirectly. For the thesis, the theoretical and conceptual discussion above is combined with entity level trading components and a macro perspective of the different international trade determinants at the nation level. Although both perspectives are relevant, the trade literature focuses exclusively on the macro-level in most of the studies (Zwinkels & Beugelsdijk 2010). The firm-specific level of analysis is acknowledged to exist, but it is considered in this thesis to be averaged out within each country, with the analysis of any possible difference being beyond the scope of this thesis. From a methodological perspective, bilateral trade data is collected on a macro country level following the literature analyzed in Chapter 2. The panel data source for this study will be secondary data, where “secondary data can include any data that are examined to answer a research question other than the question(s) for which the data were initially collected” (Vartanian 2010 pg.3). The process of secondary data analysis can be described as identifying datasets after developing research questions, evaluating the dataset, and interpreting it in the study. The advantage of using a secondary data method is that it is a viable method that is cost-effective and conveniently available to the researchers. It provides an opportunity to access high-quality data collected by government or specialized agencies (Creswell 2009).

The software used is STATA 14 .2 developed by StataCorp since 1985. This statistical package is recognized to be one of the most integrated and trusted tools used for statistical analysis in the economics field. For the purposes of this thesis, some codes were installed manually from Stata command using the Statistical Software Components (SSC) archive that is hosted by Boston College in the United States. This site is well known as one of the largest data programming collections that is contributed to by the open-source community and is used for data analysis and visualization.

4.5.1 Sample Selection

For this thesis, the focus is on the trade of the United States as a target country (the importing country) and its 36 major partners (the exporting countries). This country is of particular interest for two reasons: First, the significance of US as a leading economy and its ability to attract trade and FDI can be observed and measured. Second, the data related to trade and nation brand of US is available due to the factor explained in Chapter 1 of the government paying attention to trade data as a basis for successful decision making since the start of the nation.

The country of destination sample was based on two categories: first, the trading partner selection included countries which have signed different FTAs with the US (e.g., NAFTA, FTA Partner, DR-CAFTA). Second, the non-FTA countries were selected based on the highest exporting and importing nations with US in terms of volume. Including countries that did not yet have signed FTAs with US will help to explore the effect of the FTA existence on both sets of countries. The trading partners are scattered across different major trading blocs: European Union (EU), Gulf Countries Corporation (GCC), North American Free Trade Agreement (NAFTA), and Asia-Pacific Economic Cooperation (APEC). In addition to the availability of data, there were other key factors involved in the choice of the US target country and its 36 trading partners in this thesis. First, there is a significant nation brand difference in the score of the nations that are heavily trading with the US (e.g., US and Bahrain). The second reason is that these countries have signed FTAs with the US, with the result that there are intergovernmental agreements that regulate trade barriers and policy between the trading partners. The existence of signed FTAs can be used to characterize the trade relationship and help to understand the FTA impact in relation with NBD (Frankel, Stein & Wei 1997). The third reason is that these countries have been selected from trading blocs that are considered to be the highest in terms of trading activities worldwide, a characteristic which helps to generalize the finding of this research

(Madawela 2003). For this thesis, the data was collected for the years from 1993 to 2016 from online open data sources.

4.5.2 Measures and data collection

In this section, the sources of all the dependent, independent and covariate variables discussed in the conceptual model are described and the unit, nature and calculation if each is discussed. As mentioned previously, all the measures used in this thesis are based on secondary sources that are publicly available. The main source of the dependent variables (export and import volumes) is the World Bank Database. The Dynamic Gravity Dataset (1948–2016) as constructed by the U.S. International Trade Commission in 2018 was used to obtain the data for the measures of the independent variables (geographical distance and FTA) and control variables (GDP, population, common border, common language, inclusion as a member of either WTO and GATT). The Dynamic Gravity dataset delivers country-wide and country-pair information for more than 280 country-pairs annually between the years 1948 to 2016. The dataset provides lagged data and the methodology behind each variable in order to demonstrate the accuracy of the calculation. It also provides a large collection of summary statistics for comprehensive testing and analysis.

4.5.3 Main Variables

The first variable that will be discussed is the dependent variable of country exports and imports, which have been collected on an annual aggregate basis in USD from the World Bank. Consistent with the literature, the independent variables for geographic distance were obtained from the Dynamic Gravity Dataset (Gurevich & Herman 2018). The geographic variables are used to describe those physical characteristics of a country that can impact the level of trade between trading partners because they serve as a proxy for transportation costs. This dataset is based on latitude and longitude measurements for the locations of the largest city in the respective countries of the trading partners.

Using these measurements, the geographical distance in kilometers was calculated. The gravity dataset follows the methodology developed by Mayer and Zignago (2005) that accounts for country size by weighting the distance measure between cities by the proportion of the nation's population that resides in each of these cities. The dataset used mainly World Cities Database provided by Simplemaps.com to obtain the latitudinal, longitudinal, and population data. The other main independent variable in this study for both countries is an active Free Trade Agreement (FTA). This is a dummy variable that is also obtained from the Dynamic Gravity Dataset (Gurevich & Herman 2018). It takes a value equal to one if the country of origin (the US) and the country of destination are engaged in an active free trade agreement during the given year.

4.5.4 Macroeconomic Indicators & Control Variables

The control variables necessary for the testing for factors that indirectly affect trade flows are also obtained from the Dynamic Gravity Dataset as dummies. To measure country size, we follow the literature which generally uses bilateral GDP measured in USD and population size in the gravity model (Lahrech et al. 2018). Both macroeconomic indicators were also sourced from the Dynamic Gravity Dataset which relied on World Bank Development Indicators data (WDI) and is a reliable source for comparing a country's GDP to the US over time and across borders.

The variable common border is a binary indicator that is equal to 1 if the US and the country of destination share a border in year t , where a border is defined as a stretch of land or river. The variable common spoken language is thought to be trade facilitating. This variable is an indicator of trade that is facilitated when at least some residents of a country pair speak a common language. It takes a value equal to 1 when there exists a common language, which is determined by CIA World Factbook. The dummy variable indicating joint membership in WTO takes the value 1 in case the US and the trading partner are members of the World Trade Organization in the specific year. If present, this variable is

expected to increase bilateral trade. Similarly, the dummy variable indicating joint membership in GATT (the General Agreement on Tariffs and Trade) takes the value 1 if both countries are trading partners in the given year. Data describing membership in both organisations are based on information made available by the WTO website (Gurevich & Herman 2018). The Table 4.1 below summarizes each variable type, data description and source for the period from 1993 to 2016 for the US and its 36 trading partners:

Table 4.1: Variable types, Description, Sources and References

Variable Name	Variable Type	Data Description	Source	References
Export flows (Export_{ijt})	Dependent variable	Export value from US to trading partner in USD million, 1993 to 2016	World Bank	(Halaszovich & Kinra 2018) Iwanow & Kirkpatrick (2009) Sun, Paswan & Tieslau (2016) (Dimitrova, Korschun, & Yotov 2017).
Import flows (Import_{ijt})	Dependent variable	Import value to US from trading partner in USD million	World Bank	(Halaszovich & Kinra 2018) Chi and Kilduff (2010) Brun et al. (2005)
Geographical Distance (GeoDist_{ij})	Independent variable	“Population weighted distance between country pair” in km	Dynamic Gravity Dataset	Dimitrova, et al. (2016) Lahrech et al. 2018 Kristjánsdóttir, et al. (2020)
FTA (FTAi_j)	Independent variable	“Country pair is in at least one active Free Trade Agreement”	Dynamic Gravity Dataset	(Halaszovich & Kinra 2018) Baltagi et al. (2003) Nitsch (2000) Lahrech et al. 2018
US Gross Domestic Product (GDP_{it})	Macroeconomic Indicators	Nominal GDP of US as origin country (WDI) in USD million	Dynamic Gravity Dataset	Lahrech et al. 2018 Rahman, Shahriar & Kea (2019)
Gross Domestic Product (GDP_{jt})	Macroeconomic Indicators	Nominal GDP of the trading partner or country of destination (WDI) in USD million,	Dynamic Gravity Dataset	Lahrech et al. 2018 Rahman, Shahriar & Kea (2019)
US population (POP_{it})	Macroeconomic Indicators	Population of origin country (US), 1993 to 2016	Dynamic Gravity Dataset	Lahrech et al. 2018 (Halaszovich & Kinra 2018)
Population (POP_{jt})	Macroeconomic Indicators	Population of destination country (trading partner)	Dynamic Gravity Dataset	Lahrech et al. 2018 (Halaszovich & Kinra 2018)

CommonBorder_{ij}	Control variable	Country pair sharing a common border	Dynamic Gravity Dataset	Lahrech et al. 2018 (Halaszovich & Kinra 2018)
CommonLanguage_{ij}	Control variable	“Residents of a country pair that speak at least one common language”	Dynamic Gravity Dataset	Lahrech et al. 2018 (Halaszovich & Kinra 2018)
WTO	Control variable	“Country pairs are joint members in the World Trade Organization”	Dynamic Gravity Dataset	Rahman, Shahriar & Kea (2019) and Zahniser et al. (2002). Larch et al 2019.
GATT	Control variable	“Country pairs are joint members in the General Agreement on Tariffs and Trade”	Dynamic Gravity Dataset	Rahman, Shahriar & Kea (2019) and Zahniser et al. (2002). Larch et al 2019.

4.5.5 Measures and Calculation of Nation Brand Distance

Despite the lack of a theoretical foundation for nation brand, there is a significant amount of real world activity related to nation brand that generates conflicting government decisions and highlights the individual preferences that influence the decision to prefer trade with some countries over others. As such, the nation brand distance is a new concept that is introduced in this thesis. This thesis has the objective of understanding how differences in nation brand can impact the trade volumes between trading partners. Nation Brand serves both as a moderator variable and as an independent variable affecting both export and import flows as presented in the conceptual model in Figure 2. If we assume that the nation brand of a specific country can present the whole image of its political, historical, economical, environmental and cultural aspects in the mind of the international stakeholder, then the importance of the measurement of the nation brand distance can be appreciated. This variable is measured as the difference between the nation brand of the country of origin and the nation brand of country of destination.

As presented in the literature review chapter, the CBSI index has been chosen for this thesis due to its many advantages over the other popular indexes such as the Anholt Nation Brand Index (NBI)

which focuses on survey data and the perception of survey respondents in areas like exports, governance, culture, people, tourism, immigration and investment. Such nation brand indexes come from private sources. For example, the Country Brand Index from FutureBrands Consulting and Anholt GfK Roper Nation Brand Index (NBI) are well known and widely used for many countries to build their nation brand projects. They are generally based on participants' perception survey data and can be useful, however they are limited by the aggregation and statistical methods that are used in combination with their proprietary methodologies and the specific questions asked. Overall, as the literature review reveals, to the best of our knowledge there does not exist an objective measure that can be used to assess the strengths of a nation brand. Such a measure for nation brand could help a nation to assess their position within the competitive market (Fetscherin, 2010).

For this thesis, the CBSI developed by Marc Fetscherin (2010) will be used to measure nation brand distance. This index is calculated as the difference between the country of origin nation brand and that of the country of destination (i.e., the US and its trading partners) in terms of five dimensions (i.e., exports, tourism, foreign direct investment, immigration, and the government environment). Accordingly, the nation brand distance will be based on Euclidean distance between the CBSI scores of the trading partner and US CBSI score.

$$NBDist_{ijt} = \sqrt{(NB_{it} - NB_{jt})^2} \quad (4.5.1)$$

To calculate the nation brand (NB), we employ the Fetscherin's methodology (2010) in calculating the CBSI. This methodology shows a stronger nation brand value for a specific country whenever exports (E), tourism (T), FDI inflows (FDI), immigration to a country (I) or a positive government environment (G) are higher. The simplified equation that can be formulated from this argument is:

$$NB_{ijt}(CBSI_{it}) = f(E_{it} + T_{it} + FDI_{it} + I_{it} + G_{it}) \quad (4.5.2)$$

These proxies require two main modifications as per Fetscherin (2010). First, they need to be stated in terms of relative values in order for the researcher to be able to compare the countries. The values should be scaled according to the population of each country in order to reach the relative value per capita. The second step is to standardize the values so that there is a mean of zero and standard deviation of one in order to ensure that all the formats of the proxies (e.g., amount, dollar, people) are comparable. The final CBSI equation that we will use for the calculation of nation brand for the US and the country of destination is, where we get x_i for the population of country I in specific time t :

$$NB_{it}(CBSI_{it}) = \frac{E_{xit} - \bar{E}_{xit}}{\sqrt{\sum_{i=1}^n (E_{xit} - \bar{E}_{xit})^2 / (n-1)}} + \frac{T_{xit} - \bar{T}_{xit}}{\sqrt{\sum_{i=1}^n (T_{xit} - \bar{T}_{xit})^2 / (n-1)}} + \frac{FDI_{xit} - \bar{FDI}_{xit}}{\sqrt{\sum_{i=1}^n (FDI_{xit} - \bar{FDI}_{xit})^2 / (n-1)}} + \frac{I_{xit} - \bar{I}_{xit}}{\sqrt{\sum_{i=1}^n (I_{xit} - \bar{I}_{xit})^2 / (n-1)}} + \frac{G_{xit} - \bar{G}_{xit}}{\sqrt{\sum_{i=1}^n (G_{xit} - \bar{G}_{xit})^2 / (n-1)}} \quad (4.5.3)$$

Replacing the 5 components with (C_K) where $k = 1 \dots 5$, for simplicity and illustration purposes, we derive the following formula for calculating Nation Brand Distance (NBD) from (4.5.2) and (4.5.3):

$$NBDist_{ijt} = \sqrt{\left(\sum_{k=1}^5 \frac{C_{xit} - \bar{C}_{xit}}{\sqrt{\sum_{i=1}^n (C_{xit} - \bar{C}_{xit})^2 / (n-1)}} - \frac{C_{xjt} - \bar{C}_{xjt}}{\sqrt{\sum_{j=1}^n (C_{xjt} - \bar{C}_{xjt})^2 / (n-1)}} \right)^2} \quad (4.5.4)$$

The following is a summarized Table 4.2 that shows each component (k) based on equation number (4.5.4) and the guided measures of CBSI index: -

Table 4.2: NBD Components and Sources

Component	Description	Source
Exports (E)	Export value of each country, in millions of USD, 1993-2016	World Bank
Tourism (T)	International Inbound tourists, in millions of people, 1993-2016	World Bank
Foreign direct investment (FDI)	FDI Flows in millions of USD, 1993-2016	World Bank

Immigration (M)	Number of Immigrants, in millions of people, 1993-2016	United Nations, Population Division
Governance (G)	The Worldwide Governance Indicators (WGI) consists of 6 dimensions of governance: 1) Voice and Accountability, 2) Political Stability and Absence of Violence, 3) Government Effectiveness, 4) Regulatory Quality, 5) Rule of Law, 6) Control of Corruption The aggregate indicators combine the views concerning the quality of governance provided by a large number of enterprises, citizens and experts produced by survey.	World Bank

We note that the World Bank database is also the source for the population of the countries. Also, unlike the approach for calculating the CBSI used in the Fetscherin (2010) paper, we could not use the Li and Filer (2007) source because of the non-availability of the data for the studied years. However, we depend on the WGI by finding the Z-score of the sum of 6 components.

Equation (4.5.3) is applied to compute CBSI for the target country (US) (i) and the country of destination (j) in the given year (t) where all the 5 variables should have non-missing values. Since there is no weight applied in the CBSI index, equal weighting was given to each component in the index. The results of the CBSI for the most recent year of 2016 are included in the Appendix 1. The scores are similar to those of other published nation brand indexes, but the rankings are different due to the different methodology and sources of data.

4.6 Empirical Framework

4.6.1 Gravity Model in International Trade

One of the most successful empirical models in economics and trade literature is considered to be the ‘gravity model’ (Anderson 2011). In this chapter, a background of this will be provided, from the concept’s development, to its use and current theoretical backing. The model will then be analyzed in relation to its applicability to trade, geographical distance, and trade agreements.

The traditional form of the international trade gravity model predicts bilateral flows of trade using an analogy derived from Newton’s Law of Gravitation, which describes the phenomenon of particles

being mutually attracted to each other as a function of their size and proximity. The gravity model posits that the same applies to countries – that trade is a product of market size (such as Gross Domestic Product (GDP)), and proximity, and to the model has been applied to predict the movement of commodities and information between distant places and countries (Erlander 1980; Rosenberg 2004).

In the 1860s, the gravity model found popular use in early sociology to understand human behavior, and became gradually popular in other fields (Cheng & Wall 2005). Early immigration and trade flow studies conducted by Ravenstein (1885) and Tinbergen (1962) can be described as an initial, *a-theoretical* application of the gravity model. This early use in trade analysis was, however, based on intuition, not a strong theoretical foundation. The first researcher to offer this was Anderson (1979), who used it to argue that the place of origin that can differentiate a product based on the expenditure of Constant Elasticity of Substitution (CES). Bergstrand (1985) offered additional early work on gravity theory formation and implementation. The theoretical development of the gravity model in economics has since demonstrated a solid empirical performance; as applied to trade, however, it faced challenges in its ability to influence the field until the late 1990s. Although the gravitational model of trade flow has revolutionized the analysis of trade flow in econometrics, the traditional model has weaknesses beyond the clear lack of strong theoretical foundations. At its most basic, the gravity model fails to account for multilateral resistance, i.e., that a third-party cost in the gravity model can impact the trade between two countries, and that relative costs matter rather than absolute trade costs (Polak 1996). Work to develop the model and address these weaknesses is ongoing.

The gravity model is considered a workhorse in the trade literature for analyzing trade flow. It assumes that bilateral trade flow between two countries is related positively to economy size, often measured by GDP, and negatively by the distance between them (Lahrech et al. 2018). Moving from

the strict analogy to the traditional model allowed for a coefficient to be generated by data to fit the applied relationship between inflow and outflow data of mass variables and distance.

Recently, the theoretical foundations of the gravity model in international trade have received more attention. Studies have built on the work of Anderson (1979) and Bergstrand (1985) who used the CES, and Deardorff (1995) who also used CES along with the Heckscher–Ohlin (H-O) model to create a gravity model. Moreover, Kortum (2002) applied a Ricardian structure to supply, incorporating intermediate goods to derive an additional variant on the gravity model. The most famous study, considered a breakthrough in theoretical contributions to gravity literature, was put forth by Anderson and Van Wincoop (2003), who promoted Anderson’s model (1979) of Armington-CES, and highlighted the importance of trade cost general equilibrium. This approach provided a rigorous theoretical structure that uses OLS estimation, and was easy to apply using real data to explain trade flow between countries with respect to policy factors. Academic interest in the gravity model piqued recently with Arkolakis et al.’s (2012) remarkable study, which demonstrated that a large number of models create isomorphic gravity equations that reserve trade gains. *Figure 3* shows that these alternative theoretical foundations acquire gains from trade, rendering them invariant. Table 4.3 summaries theories related to the gravity model by theoretical background.

With this strong theoretical foundation, scholars were motivated to develop and use the gravity model, including such notable contributors as Pelletiere and Reinert, 2004; Feenstra 2002, Helpman et al. 2008, and Chaney 2013.

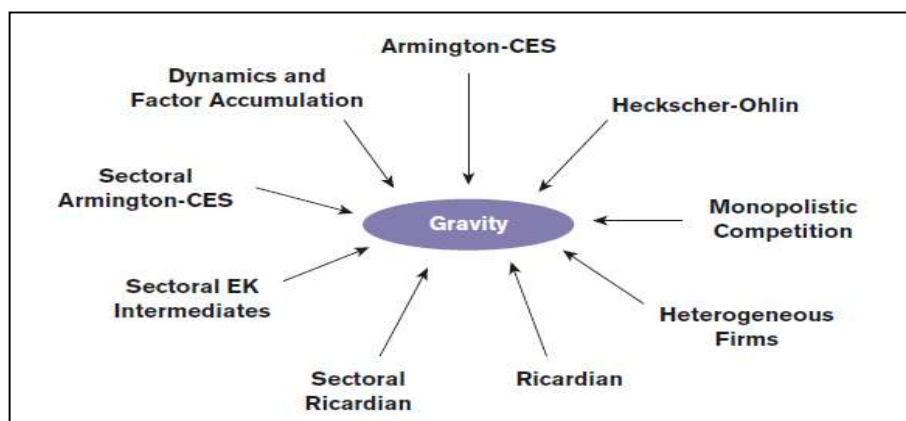


Figure 3: Theoretical foundations of gravity model (Source: Yotov et al. 2016)

Table 4.3: Gravity Theories

No	Related Theory	Author
1	Monopolistic competition	Anderson 1979; Anderson and Van Wincoop 2003;
2	Heckscher-Ohlin framework	Bergstrand 1985; Deardof 1998
3	Ricardian framework	Eaton and Kortum 2002
4	Entry of heterogeneous firms, selection into markets	Chaney 2008; Helpman et al. 2008
5	Sectoral Armington-model	Anderson and Yotov 2016
6	Sectoral Ricardian model	Costinot et al. 2012; Chor 2010
7	Sectoral input-output linkages gravity model based	Eaton and Kortum 2002; Caliendo and Parro 2015
8	Dynamic framework with asset accumulation	Olivero and Yotov 2012; Anderson et al. 2015C; and Eaton et al. 2016
9	The universal power of gravity on the uniqueness of the trade equilibrium	Allen et al. 2014

One of the major advantages of the structural gravity model when applied to trade is that it accounts for multilateral resistance. Baldwin and Taglioni (2006) highlight the importance of absolute control on multilateral resistance through their critique of studies that fail to do so. Despite the successful application and continuous progress of gravity in the literature, many estimates of the model suffer inconsistency and bias. One challenge for the gravity model, in particular when using an (OLS) estimator, was that it was failing to take into account information that contains zero trade flows –

when the algorithm was applied, it consistently dropped. Another major issue was that trade was plagued with heteroscedasticity, causing estimates to be inconsistent and biased (Silva and Tenreyro 2006). Other challenges have included bilateral trade costs, endogeneity, non-discriminatory, and adjustment of trade policy. Many researchers have suggested solutions for overcoming these challenges (See Yotov, et al. 2016). Overall, however, the structural gravity model delivers a framework that is tractable for trade policy analysis in a multilateral trade environment (Yotov, et al. 2016).

4.6.2 Choosing Structural Gravity Model

As mentioned in the literature review chapter, the gravity model is considered to be a workhorse for applied international trade analysis. The continued increase in trade as promoted by globalization has made the need for a detailed analysis of reliable trade data a requirement for both policymakers and stakeholders in international trade. The relevant literature has hundreds of papers that have employed gravity to quantify the effect of international trade determinants. This tool has proved to be effective and has produced a remarkable series of successful research outcomes. Below are some compelling arguments that highlight the reasons why the structural gravity model is used in this dissertation as a quantitative technique to analyze the relevant secondary data for both international trade and nation brand distance:

- 1) Using Newton's Law of Universal Gravitation as a metaphor makes the gravity model intuitive and predicts that international trade between the two countries is strongly influenced by the relative size of their economies. Just as the gravitational force attracts small objects to large objects according to their relative masses, the direction of international trade flows will be from the small economy to the large economy.

- 2) As explained in the literature review chapter, section 2.4, structural gravity has a solid theoretical foundation. This makes it the most appropriate model to quantify the effect of nation brand distance in order to include it in a counterfactual analysis of the effect on trade policy.
- 3) The gravity model can accommodate multiple countries simultaneously in what can be represented as a realistic general equilibrium environment. The gravity framework can capture the possibility that countries or markets are linked and any change in one can have a trigger wave effect in other countries.
- 4) The gravity equation is structured in a very flexible way that can integrate broad equilibrium models which can be used to examine the relationship between trade flows and nation brand distance.
- 5) The most attractive reason to choose the gravity model for this research is the predictive power of the model since it can consistently deliver a remarkable fit that can reach between 60 to 90 percent with aggregate data for an empirical trade flow equation.
- 6) Structural gravity provides a tractable framework for trade flow analysis between multiple countries.
- 7) The advantage of choosing structural gravity over the traditional gravity is that it accounts for Multilateral Resistance Terms MRTs (Yotov et al. 2016).

These advantages of using structural gravity are the motivator to select this model for the analysis of the collected data in order to reach a reliable answer for the research questions.

4.6.3 Model Specifications

Having presented the compelling arguments behind the selection of structural gravity as the major quantitative model for analysis for this dissertation, this section will illustrate the econometric

specification of the structural gravity model. This model will be employed to study the impact of nation brand distance on bilateral trade flows between the United States as the country of origin (i) and 36 countries as the country of destination (j) from different trading blocs using aggregate annual data from 1993 to 2016. These exporter and importer countries are listed in Table 8.1 in Appendix 1, the content of which depends on data availability. The model specification presented below follows recent studies such as Lahrech et al. (2018) and Yotov et al. (2016) that have used a structural gravity model to study international trade flows. To understand how the linear relationship of the model is derived, the study will start by elaborating it from the baseline functional form which is derived from Newton gravity function as below:

$$Trade_{ijt} = C Y_{it}^{\alpha} Y_{jt}^{\beta} D_{ij}^{-\mu} \varphi_{ijt} \quad , \quad (1)$$

Where $Trade_{ijt}$ is the export or import from country i to country j at time t , Y_{it} represent the economic size of country i , C is a constant parameter, Y_{jt} represent the economic size of country j with considering GDP per capita as the measurement of economic size of the country, and D_{ij} represent the geographical distance between country i to country j . The parameters α , β , and μ will be estimated and φ_{ijt} is the error term. To composite the next functional form, the dummy variable will be plugged in which is related to bilateral trade resistance such as common border, common language, and former colonial ties. This is based on many studies in the gravity literature which has emphasized the importance of including dummies to account for other indirect variables that impact the trade flow between country i to country j . Such studies are (Frankel 1997, Santos Silva and Tenreyro 2006; Cheng and Wall 2005). Accordingly, equation (1) turns to be: -

$$Trade_{ijt} = C Y_{it}^{\alpha} Y_{jt}^{\beta} D_{ij}^{-\mu} \exp(\theta Z_{ij}) \varphi_{ijt}, \quad (2)$$

In this equation, $\exp$ was added, where $\exp$ refers to explanatory functions including the previously mentioned dummy variables, where Z_{ij} is bilateral trade cost and θ is a vector of parameters to be estimated.

Because the traditional gravity model fails to account for omitted variables bias, Anderson and Van Wincoop (2003) have emphasized the necessity of accounting for Multilateral Resistances Terms (MRT) in the gravity equation. By taking into account the relative prices that could impact direct trade toward some countries while not impacting other countries, Anderson and Van Wincoop (2003) provided the key element for the foundation of structural gravity. To elaborate more, it can be shown in an example where country A is importing a specific product from country B. But if the price offered by country B is high, then country A is more likely to buy from country C where a lower price is offered. Nevertheless, in equation (2) the relative price examining the trade flow between country A and country C is not incorporated which can lead to biased estimates (Lahrech et al. 2018). The price P_i and P_j are multilateral resistance terms (MRTs) that are theoretically derived from average inward and outward shipments from all destinations and from all origins. Many scholars have suggested the use of a fixed cost for importers and exporters to account for MRTs (Anderson & Van Wincoop 2003, Feenstra 2004, Head & Mayer 2014). The use of MRT provides a clear solution to the multilateral resistances challenge. Because the omitted variables bias is not easily observable by researchers or policymakers, this mistake is known in the gravity literature as “Gold Medal Mistake” (Baldwin & Taglioni 2006). However, the fixed effect inclusion in the gravity model causes another issue which is the omission of all the time-invariant factors such as the distance and dummy variables. The solution proposed to overcome this challenge by Baier and Bergstrand (2009) was to use a first-order log-linear Tylor-series expansion of the MRT terms. This study follows the methodology proposed by Baier and Bergstrand (2009) to solve this issue. Beginning with the formulation from equation (2) and plugging in the Anderson and Van Wincoop (2003) MRT fixed price, we have:

$$T_{ij} = \left(\frac{Y_i Y_j}{Y_{world}} \right) \left(\frac{\tau_{ij}}{P_i P_j} \right)^{1-\sigma}, \quad (3)$$

Where:

$$P_i = \left[\sum_{j=1}^N \left(\frac{\theta_j}{\tau_{ij}^{\sigma-1}} P_j^{\sigma-1} \right) \right]^{\frac{1}{1-\sigma}} \quad (4)$$

$$P_j = \left[\sum_{i=1}^N \left(\frac{\theta_i}{\tau_{ij}^{\sigma-1}} P_i^{\sigma-1} \right) \right]^{\frac{1}{1-\sigma}} \quad (5)$$

From equation (3), where T_{ij} represent either exports or import flows between country i and country j , Y_i & Y_j represent the economic size of country i & j based on GDP and Y_{world} is the economic size of the world by GDP . The τ_{ij} represents the bilateral trade cost that is incurred when country i exports or import to country j . The θ_j and θ_i represent the $Y_i Y_j$ to the Y_{world} and denote the share of GDP of both countries i & j to the world GDP . From equations (4) & (5), the P_i & P_j indices represent the MRTs of the target country i and country of destination as country j . As identified by Anderson & Van Wincoop (2003), the challenge to implement this model is that the bilateral trade costs τ_{ij} is not observable directly. A solution is to use the following proxy for the measurement: -

$$\tau_{ij} = Dis_{ij}^{\rho} e^{\gamma Dum_{ij}}, \quad (6)$$

The bilateral distance between country i and country j is referred as Dis_{ij}^{ρ} , and the Dummy variables that are referred to as Dum_{ij} indicate any additional variable that is impacting the bilateral trade costs and needs to be accounted for, such as common border, common language, country population and being member in WTO/GATT that exist between the two countries.

$$\ln X_{ijt} = -\ln Y_{world} + \ln Y_{it} + \ln Y_{jt} + (1 - \sigma)[\ln \tau_{it} - (\ln P_i - \ln P_j)]. \quad (7)$$

Following the method used by Baier and Bergstrand (2009) and using the first-order log-linear Taylor-series expansion of the MRTs P_i and P_j , we derive the following 2 equations:

$$MRT_{ij} = \ln P_i + \ln P_j = (\sum_k \theta_k \ln \tau_{ik}) + (\sum_n \theta_n \ln \tau_{nj}) - (\sum_k \sum_n \theta_k \theta_n \ln \tau_{nk}) \quad (8)$$

and

$$\ln \tau_{ij} = \rho \ln Dis_{ij} + \gamma Dum_{ij}. \quad (9)$$

The following equation can be formulated by substituting equations (8) and (9) into (7):

$$\ln T_{ijt} = -\ln Y_{world} + \ln Y_{it} + \ln Y_{jt} + (1 - \sigma) [\rho MRT_{Dis_{ij}} - \gamma MRT_{Dum_{ij}}], \quad (10)$$

Where:

$$MRT_{Dis_{ij}} = \ln Dis_{ij} - (\sum_k \theta_k \ln Dis_{ik}) - (\sum_n \theta_n \ln Dis_{in}) + (\sum_k \sum_n \theta_k \theta_n \ln Dis_{nk}) \quad (11)$$

and

$$MRT_{Dum_{ij}} = \ln Dum_{ij} - (\sum_k \theta_k \ln Dum_{ik}) - (\sum_n \theta_n \ln Dum_{in}) + (\sum_k \sum_n \theta_k \theta_n \ln Dum_{nk}) \quad (12)$$

As mentioned previously, the dummy variables included in this study are the common border, the common language and the joint membership in WTO/GATT between country i and country j . When we combine all 12 equations, the model yields the following:

$$\begin{aligned} \ln Trade_{ijt} = & b_0 + b_1 \ln GDP_{it} + b_2 \ln GDP_{jt} + b_3 \ln POP_{it} + b_4 \ln POP_{jt} + b_5 NBI Dist_{ijt} + \\ & + b_6 MRT_{GeoDist_{ij}} + b_7 MRT_{FTA_{ij}} + b_8 MRT_{Border_{ij}} + b_9 MRT_{Language_{ij}} + b_{10} MRT_{WTO_{ij}} + \\ & b_{11} MRT_{GATT_{ij}} + b_{11} (X) + \varepsilon_{ijt}, \end{aligned} \quad (13)$$

Where $b_6 (X)$ can be replaced with moderator impact from the below equations: -

$$b_{11} (NBDist_{ijt}, FTA_{ijt}) = b_3 \ln(NBDist_{ijt}) \times FTA_{ijt} \quad (14)$$

$$b_{11} (NBDist_{ijt}, GeoDis_{ij}) = b_3 \ln(NBDist_{ijt}) \times \ln GeoDist_{ijt} \quad (15)$$

Where t is time, i is country of origin, and j is the country of destination. The variables represented in equations (13, 14, 15 and 16) are:

$Trade_{ijt}$: either export flows from country i to country j in year t or import flows to country i from country j in year t

GDP_{it} : country i GDP in year t ;

GDP_{jt} : country j GDP in year t ;

$NBDist_{ijt}$: Nation Brand Distance between country i and country j in year t ;

POP_{it} : country i population in year t ;

POP_{jt} : country j population in year t ;

$GeoDist_{jt}$: geographical distance between country i and country j ;

FTA_{ij} : dummy variable equals 1 when there is a Free Trade Agreement between country i and country j and 0 otherwise;

$Border_{ij}$: dummy variable equals 1 when there is a common border between country i and country j and 0 otherwise

$Language_{ij}$: dummy variable equals 1 when there is a common language between country i and country j and 0 otherwise;

WTO_{ij} : dummy variable equals 1 when country i and country j are jointly members of the World Trade Organization and 0 otherwise;

$GATT_{ij}$: dummy variable equals 1 when country i and country j are jointly members of the General Agreement on Tariffs and Trade and 0 otherwise;

ε_{itj} : is the error term.

Following the recommendation in the gravity literature to use PPML estimators, this study also deployed a first-order Taylor approximation of MRTs in order to formulate a functional form that reflects the most recent research (Lahrech et al. 2018, Francois and Manchin 2013, Afesorgbor 2016).

When estimating using PPML, the explanatory factor should be plugged into equation (13):

$$\ln Export_{ijt} \text{ or } \ln Import_{ijt} = \text{Exp}(b_0 + b_1 \ln GDP_{it} + b_2 \ln GDP_{jt} + b_3 \ln POP_{it} + b_4 \ln POP_{jt} + b_5 NBDist_{ijt} + b_6 MRT_{GeoDist_{ij}} + b_7 MRT_{FTA_{ij}} + b_8 MRT_{Border_{ij}} + b_9 MRT_{Language_{ij}} + b_{10} MRT_{WTO_{ij}} + b_{11} MRT_{GATT_{ij}} + b_{11} (X)) + \phi_{ijt} , \quad (16)$$

Where $Trade_{ijt}$ was replaced export and import volume, and by Where ϕ_{ijt} is the error term, and Substituting X with the moderators in equation (14 & 15). All the other variables are detailed in equation 13 above.

The estimation method used in this thesis is the Pseudo Poisson Maximum Likelihood (PPML) as adapted from Santos Silva and Tenreyro (2006). Traditionally, as was introduced by Baier and Bergstrand (2009), ordinary least squares (OLS) has been used to estimate the coefficients required to linearize and estimate the multiplicative gravity model under the assumption of homoskedasticity where the error is constant across observations. However, as highlighted by Santos Silva and Tenreyro (2006), in the presence of heteroskedasticity, the OLS estimation method may produce biased estimators that are highly misleading. Therefore, nonlinear estimation methods should be used. Another challenge facing the OLS estimator are the concerns arising from zero trade values in the dependent variables (Lahrech et al. 2018). The newest studies in gravity literature recommend the use of PPML over OLS as being a more reliable estimator. Following that recommendation, this dissertation used PPML for three main reasons. First, in the presence of heteroscedasticity, the PPML estimator can effectively handle the multiplicative form of the gravity model and provide unbiased estimates. Second, PPML is able to take advantage of all datasets, even those that contains zero trade flows. Third, the PPML estimator makes it possible to associate the gravity fixed effects to their corresponding structural terms (Arvis and Shepherd 2013; Fally 2015).

4.7 Summary

This chapter has focused on the research methodology, which is one of the most important parts of the study. It included a discussion about the different categories of research methods along with the justification from the literature for the choice of the quantitative method approach. Then the philosophical assumptions and research paradigms were discussed in order to identify the most appropriate school of thought for the research problem. For this issue, the conclusion was that the use of positivist epistemological assumptions combined with a deductive research approach was the best choice for the research problem. There followed a description of the data, sample and variables used in the conceptual model and how each were measured and obtained from a wide variety of databases. Also, the measure of nation brand index (CBSI) and how to drive the NBD equation was illustrated along with the sources of the data. The NBD is a significant contribution of this study to the related knowledge fields. In the next section, the gravity model was discussed along with structural gravity in terms of empirical and conceptual scope of medical originating from the Newton law of gravity theory. Moreover, to explain what has attracted researchers to deploy structural gravity in their studies and why it was chosen for this thesis, the advantages of this model were discussed in detail. With this background, the model specification used in this thesis was given and the functional form using a PPML estimator was justified. Thereafter, this chapter concluded with a clear picture of how the research is designed as well as how the data is collected, analyzed and interpreted based on the research approach.

CHAPTER 5 : EMPIRICAL RESULTS

5.1 Introduction

In this chapter, the empirical results of our research are presented and examined in detail. The basis for these results are the traditional and structural gravity models described in detail in the methodology chapter. In the preliminary data analysis section of this chapter, the set of panel data is described in detail and the related diagnostic statistics are presented as a basis for a better understanding of the model estimates that follow. The descriptive statistics provide an important overview of the key characteristics of the data, while the assessment of the data set (e.g., handling of missing data) and of the key model assumptions (e.g., tests of linearity between the dependent variables and independent variable as well as the standard tests of normality, homoscedasticity, multicollinearity and independence of the error terms) provide important checks on the reliability of the estimates derived from both the traditional and structural gravity models. The following section presents the results of tests of the data set using these models. Using bilateral trade data between the United States (US) and its 36 trading partners, model coefficients are presented using both OLS and PPML estimation methodologies (i.e., the Traditional Gravity Model) as well as the extension including multilateral resistance terms (MRT) as specified by the Structural Gravity Model. The final sections of this chapter relate our research findings to the original research assumptions.

5.2 Preliminary Data Analysis

5.2.1 Descriptive Statistics

In a quantitative study, descriptive statistics serve to simplify and summarize the data obtained from different sources in a visual format (e.g., Excel tables or graphs) in order to enable the reader to understand the raw data structure and link it to our analysis. In addition, this creates the basis for further analysis and allows the reader to reproduce the study if needed. As mentioned earlier, the

main source of the panel dataset used in this study was the World Bank Database including import, exports and nation brand indicators. For the control variables, the Dynamic Gravity Dataset (1948–2016) constructed by U.S. International Trade Commission in 2018 was used to obtain the data for the measures of geographical distance, GDP, population, common border, common language, inclusion as a member of either WTO and GATT. The research captured 36 trading partners which have a significant trade relationship with US as presented in Table 5.1. The sample is taken as explained with two major parameters, countries that with FTA with US and highest trading partners in term of export and import volume in million USD. Table 5.1 presents the 19 countries taken in the sample that have free trade agreements in force with US. It is clear that NAFTA trade partners (i.e., Canada and Mexico) have the highest trade volume with US, with an average of 400 Billion Dollars in the years (1993-2016). Of less importance are giant worldwide international traders such as China (296 bn USD), Japan (191 bn USD) and Germany (113bn USD). The mix of countries with FTA and without, will allow the researcher to study whether having FTA in place will impact the trade flow between the partners.

Table 5.1: Sample Data

	Destination Country	Type of FTA signed with US	Average US Import from Destination (US\$ Millions)	Average US Export to Destination (US\$ Millions)	Total Average Trade (US\$ Millions)
1	Canada	NAFTA	246.94	205.99	452.93
2	Mexico	NAFTA	173.04	130.53	303.57
3	China		242.73	53.69	296.42
4	Japan		131.20	60.09	191.29
5	Germany		76.96	36.31	113.27
6	United Kingdom		45.23	42.39	87.62
7	Korea, Rep.	FTA Partner	43.64	30.28	73.92
8	France		33.36	23.28	56.64
9	Brazil		20.62	22.51	43.12
10	Netherlands		14.10	28.02	42.12
11	Italy		29.36	12.11	41.47
12	Singapore	FTA Partner	17.45	21.80	39.25
13	Malaysia		25.85	10.87	36.73
14	Saudi Arabia		25.12	10.29	35.41
15	India		21.71	11.05	32.76
16	Venezuela		23.95	7.74	31.69
17	Switzerland		16.13	14.30	30.43
18	Ireland		23.20	6.87	30.06
19	Thailand		19.58	7.73	27.31
20	Australia	FTA Partner	7.42	17.29	24.72
21	Russian Federation		14.68	5.15	19.83
22	Colombia	FTA Partner	10.59	8.39	18.98
23	Chile	FTA Partner	6.16	7.91	14.07
24	Vietnam		11.60	2.35	13.95
25	Dominican Republic	DR-CAFTA	4.19	5.16	9.36
26	Costa Rica	DR-CAFTA	4.93	3.99	8.92
27	Peru	FTA Partner	3.97	4.25	8.23
28	Honduras	DR-CAFTA	3.45	3.44	6.89
29	Guatemala	DR-CAFTA	3.13	3.36	6.49
30	Panama	FTA Partner	0.38	3.96	4.33
31	El Salvador	DR-CAFTA	1.89	2.07	3.96
32	Nicaragua	DR-CAFTA	1.43	0.68	2.10
33	Morocco	FTA Partner	0.60	1.12	1.72
34	Jordan	FTA Partner	0.75	0.84	1.59
35	Oman	FTA Partner	0.74	0.84	1.59
36	Bahrain	FTA Partner	0.46	0.65	1.11

Using the data in Table 5.1, the average annual absolute values of U.S. import and export trade flows with its trading partners for the period (1993-2016) are shown separately in Figure 4 in order to illustrate the average trade deficits and surpluses with each country. As is apparent, Canada has a small absolute advantage in trade with the U.S., presumably due to the NAFTA regional trade agreement. On the other hand, the extreme trade surplus that China has with the U.S. is associated with the absence of a Free Trade Agreement (FTA) between the two countries.

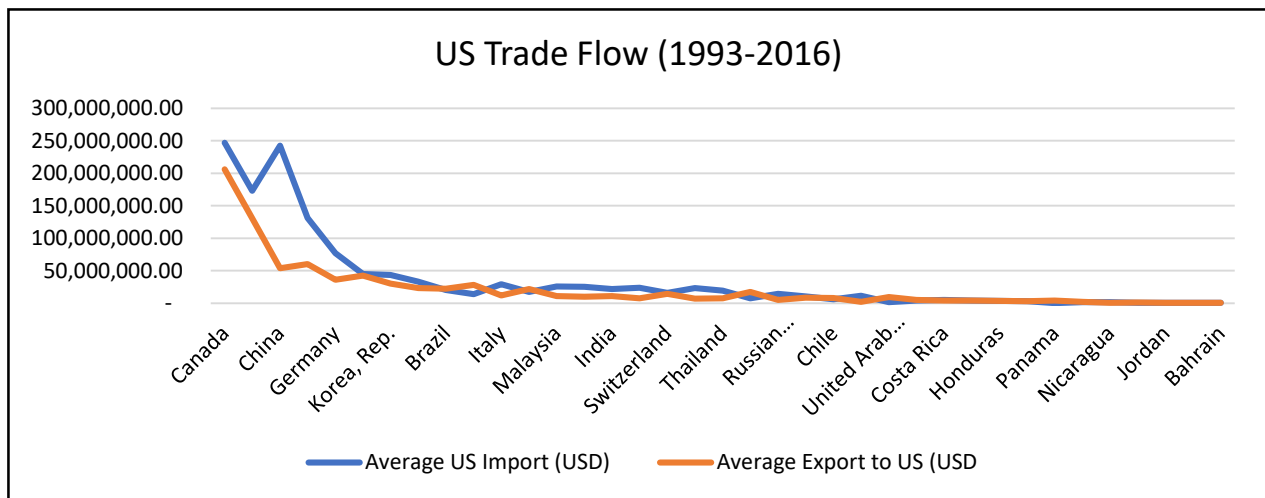


Figure 4: US Trade Flow (1993-2016), Source: World Bank

In order to be able to better interpret our model design and the resulting empirical results, a summary is presented in Table 5.2 to summarize the model variables and the labels used in the model. For the two dependent variables (exports and imports to the U.S.), separate models were developed using (1) absolute values and (2) a log transformation of the absolute values. For each of these models, the absolute values of three independent variables (i.e., country GDP, country population, and geographical distance to U.S.) were log-transformed and used as independent variables in the prediction model. In order to measure a moderator effect, the absolute value of our proposed moderator variable (i.e., Nation Brand Distance) was log-transformed and entered as an independent variable in our model. Finally, in order to control for possible cross-terms in the predictive variables,

four control variables (i.e., common border, common language, member of WTO and member of GATT) were included as dummy variables in our model. Because we employed a panel data set, it is important to note the subscript for time in order to clearly identify that the components of the dataset vary across time. For all variables, the notation uses United States (i) and country of destination (j) as the format for the subscripts

Table 5.2: Labels and Forms of Variables

Variable Type	Form	Description	Label used
Dependent Variable 1a	Raw	Export from US(i) to Country (j) at time (t)	Export _{ijt}
Dependent Variable 1b	Logged	Export from US(i) to Country (j) at time (t)	lnExport _{ijt}
Dependent Variable 2a	Raw	Import to US(i) from Country (j) at time (t)	Import _{ijt}
Dependent Variable 2b	Logged	Import to US(i) from Country(j) at time (t)	lnImport _{ijt}
Independent Variable	Logged	GDP of Country(j) at time (t)	lnGDP _{jt}
Independent Variable	Logged	population of Country(j) at time (t)	lnPOP _{jt}
Independent Variable	Logged	distance from US(i) to Country(j) at time (t)	lnGeoDist _{ij}
Moderator Variable	Logged	Nation Brand Distance from US(i) at time (t) to Country(j)	lnNBDist _{ijt}
Control Variable	Dummy	Free Trade Agreement between US(i) at time (t) to Country(j)	FTA _{ij}
Control Variable	Dummy	Common border US(i) to Country(j) at time (t)	CommonBorder _{ij}
Control Variable	Dummy	Common language US(i) to Country(j) at time (t)	CommonLanguage _{ij}
Control Variable	Dummy	US (j) and Country(j) are members of WTO	WTO
Control Variable	Dummy	US (j) and Country(j) are members of GATT	GATT

To summarize the statistical characteristics of the data set, Table 5.3 was created using the Stata14.2 simple summarize option. It shows that the number of observations for most of the variables is 864, although some variables such as import_{ijt}, lnPOP_j, lnNBDdist_{ijt} have a few missing observations which Stata can handle using an estimation procedure. The center of the data was measured using the mean (M) while the variability is measured by including the standard deviation, the minimum and the maximum values for each of the variables. From Table 5.3, all the main variables used in the model show different standard deviations except for the non-logged import and export variables. Furthermore, the logged nation brand distance (lnNBDdist_{ijt}) ranges between -1.934 and 3.912 with a mean of 0.075. This relatively wide range of values is due to having small economies included in the sample as US FTA partners in comparison to US.

The mean of $\ln\text{Export}_{ij}$ is 15.814 with a standard deviation of 1.588 while $\ln\text{Import}_{ij}$ has a mean of 16.037 with a standard deviation of 1.884. The zero value which shows in the minimum range of $\ln\text{Import}_{ij}$ can be handled when applying PPML estimator through the gravity model. The real logged GDP for country of destination (j) varies from 21.29% to 30.04% with a mean of 25.98% while the GDP for the country of study (i) varies from 29.559% to 30.523%. Additionally, this is explained by the financial and economic crisis of 2008-2009 where the US and many other nations had a clear drop in GDP which impacted their nation brand as well. The population for country of destination(j) is minimum value is 0.62, and maximum value is 7.222 while US population is between in the 5.563 with a mean of 5.767. The rest of the control variables are dummy variables with values of either 0 or 1. For the main independent variables, $\ln\text{GeoDist}_{ij}$ the range is between 7.666 and 9.623 with a mean of 8.85 and a moderate standard of deviation of 0.58. The FTA agreement dummy variable has a range between 0 in case of nonexistence of an FTA agreement and 1 in case an FTA agreement exists.

Table 5.3: Simple Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
export _{ij}	864	22,400,000	42,900,000	6,926	312,400,000
$\ln\text{Export}_{ij}$	864	15.81	1.59	8.84	19.56
import _{ij}	863	36,300,000	70,400,000	17,103	504,000,000
$\ln\text{Import}_{ij}$	863	16.04	1.88	9.75	20.04
$\ln\text{GDP}_j$	826	25.93	1.93	21.29	30.04
$\ln\text{POP}_j$	792	3.20	1.60	0.62	7.22
$\ln\text{GDP}_i$	828	30.10	0.29	29.56	30.52
$\ln\text{POP}_i$	792	5.67	0.06	5.56	5.77
$\ln\text{GeoDist}_{ij}$	864	8.85	0.58	7.67	9.62
$\ln\text{NBDdist}_{ij}$	862	0.08	1.05	(3.91)	1.93
agree fta	864	0.26	0.44	-	1.00
commonborder	864	0.06	0.23	-	1.00
commonlanguage	864	0.75	0.43	-	1.00
member wto joint	864	0.85	0.36	-	1.00
member gatt joint	864	0.80	0.40	-	1.00

Table 5.4 was generated with additional statistical details for each of the variables including percentiles, skewness, and kurtosis. Skewness measures the distribution symmetry for the variables $\ln\text{Export}_{ij}$ and $\ln\text{Import}_{ij}$ and shows values of -0.217 and -0.964, respectively. This means that the

median is greater than the mean in the distribution. Thus, the coefficients of skewness are within the acceptable range of between -3 and $+3$. Similarly, kurtosis measures the peakedness of the distribution and shows values for most of the variables used in the estimation falling within the expected range for a normal distribution of -10 to $+10$ (Brown, 2006). It is noticeable that the kurtosis coefficients for the variables $\ln\text{GeoDist}_{ij}$ and FTA agreement are 1.942 and 2.269, respectively. For these variables, both of the kurtosis coefficients are smaller than the other main variables, which indicates a flatter distribution in comparison to the other variables.

Table 5.4: Detailed Descriptive Statistics

Variable	p1	p99	Skew.	Kurt.
export _{ij}	864	22,400,000	42,900,000	6,926
$\ln\text{Export}_{ij}$	864	15.81	1.59	8.84
import _{ij}	863	36,300,000	70,400,000	17,102
$\ln\text{Import}_{ij}$	863	16.04	1.88	9.75
$\ln\text{GDP}_j$	826	25.93	1.93	21.29
$\ln\text{POP}_j$	792	3.20	1.60	0.62
$\ln\text{NBDdist}_{ij}$	828	30.10	0.29	29.56
$\ln\text{GeoDist}_{ij}$	792	5.67	0.06	5.56
agree fta	862	0.08	1.05	(3.91)
commonborder	864	0.26	0.44	-
commonlanguage	864	0.06	0.23	-
member wto joint	864	0.75	0.43	-

5.2.2 Normality Tests

The normality test refers to the data distribution shape per variable and detects departures from Gaussianity in the regression error term. A significant variation of the regression error term from the normal distribution can be an indication that the statistical method used in the study is not appropriate and needs to be modified with an appropriate deviation resistance technique. Different statistical tests exist for normality, of which the Shapiro-Wilk and Kolmogorov-Smirnov tests are considered to be

among the most powerful normality tests (Razali & Wah, 2011). According to the Shapiro–Wilk normality test (i.e., the Swilk test in Stata), the null hypothesis of data normality is rejected for our study because the p-values presented in Table 8.2 in the Appendices 2 at a 95% confidence interval indicate that the main variables in the panel data are not normally distributed. This issue is common for panel data sets. In particular, in the case of large datasets the violation of the normality assumption is not considered to be a major problem. Some researchers emphasize that the use of panel data with hundreds of observations can overcome the issue of non-normality, especially when employing an appropriate resistance-to-deviation method such as robust-clustering (Thode, 2002; Kennedy, 2008). For our study, a visual representation of the normality assumption using a plot of histograms combining the frequency of each component variable with normality lines is demonstrated in Figure5.

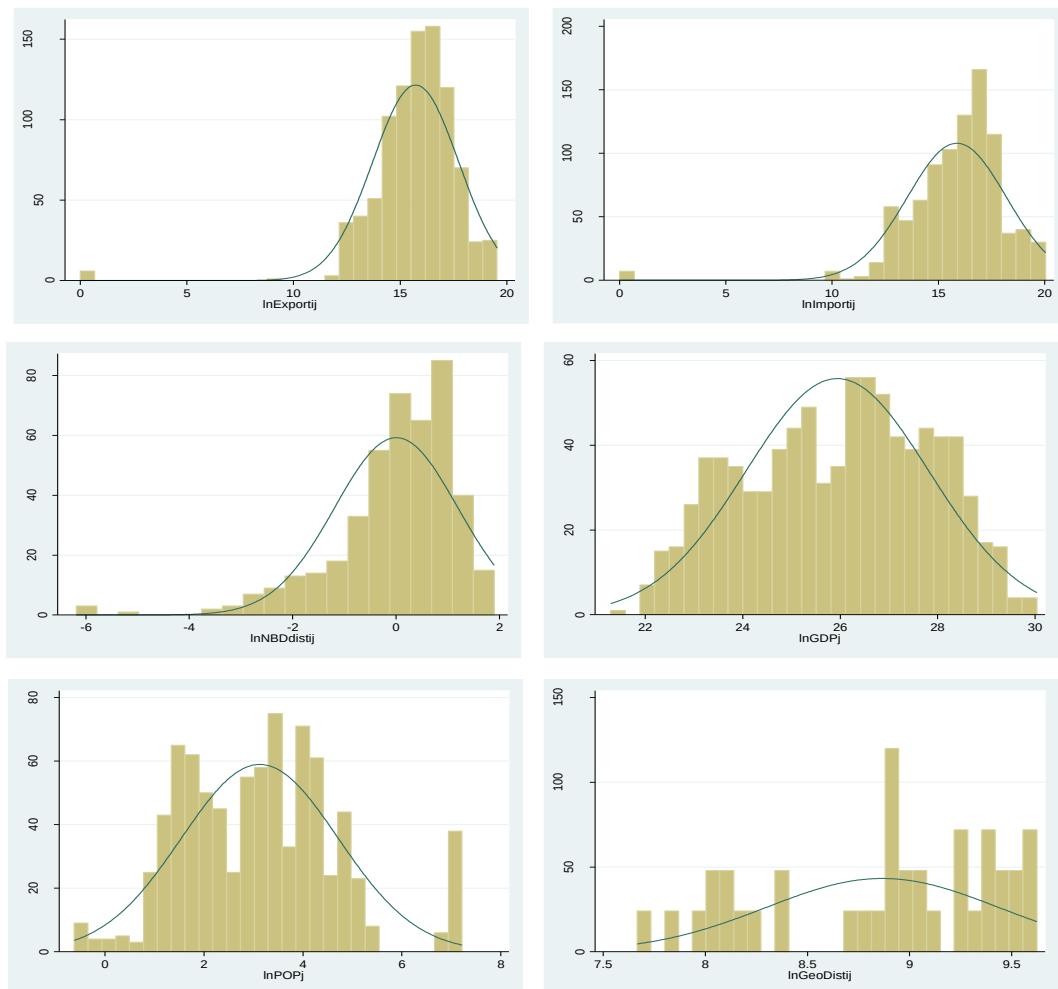


Figure 5: Normality Histograms

5.2.3 Linearity Tests

The assessment of linearity is a key assumption for the data sets used for linear regression models. There are multiple ways to check for linearity which can be both numerical and graphical. For multiple linear regression, the analysis requires that the residual error term for each independent variable be normally distributed. The plotted values for the squared residuals and the main variables do not display a systematic relationship as demonstrated in *Figures 6 and 7*. The scatterplot of residuals versus predicted fitted values (*Figure 8*) shows that no clear pattern is evident in the distribution and that the data do not converge, which can be interpreted as the assumptions of linearity of the data are met as per the graphs. Using the statistical test of Ramsey Regression Equation Specification Error Test (RESET) makes it possible to investigate whether the response variable can be explained by non-linear combinations of the fitted values. The test is performed after the linear regression model as a post-estimation specification (i.e., using the Stata command `estat-ovtest`). Table 8.3 in the Appendices2 shows the linearity Ramsey test (RESET) of the relationship between the dependent and independent variables. The linearity null Hypothesis is that the model has no omitted variables. According to the results of the test, the p-value is less than $\alpha = 5\%$, thus we fail to reject the null hypothesis. Therefore, the relationship between the export and import to the predictors is nonlinear.

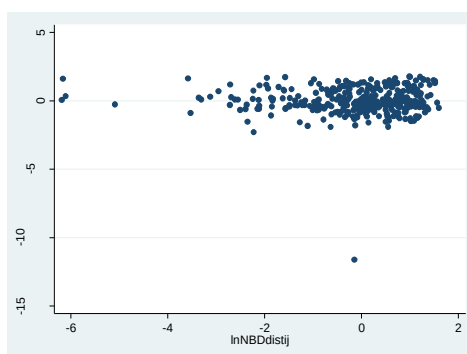


Figure 6: Plotted values for the squared residuals the main variables

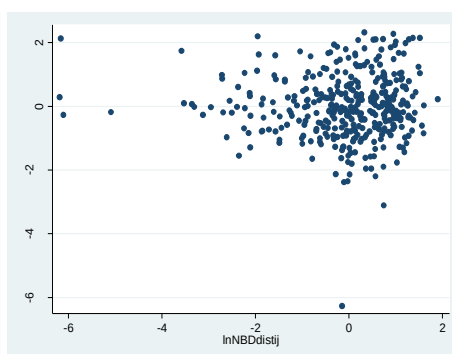


Figure 7: Plotted values for the squared residuals and the main variables

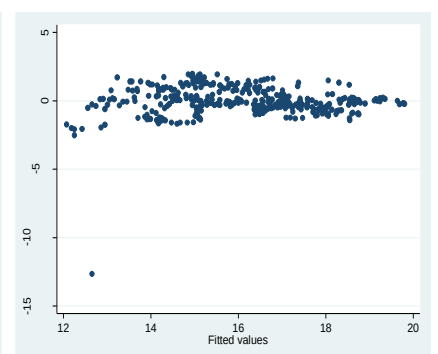


Figure 8: Scatterplot of residuals versus predicted fitted values

5.2.4 Homoscedasticity Tests

Checking for homoscedasticity in the error terms is another assumption of regression that needs to be assessed. When the data is homoscedastic, it means that the random disturbance in the dependent and independent variables relationship is the same across all values of the independent variable. The Breusch-Pagan test for heteroskedasticity was performed in Stata using the installed command *estat hettest*. The test results generated using Stata are shown in the Appendices2 in Table 8.4. The results show that the p-value is less than 0.05 which indicates a statistically significant Chi-square and the presence of heteroskedasticity in the datasets for the export and import dependent variables. Another test used to check for homoscedasticity in the residual terms was the White test, which assesses whether the variable's residual variance in a regression model is constant. The results of this test are reported in Tables 5.5 and 5.6 In both tables, the p-value is very small and less than 5%. Therefore, the null hypothesis and consequently the alternative hypothesis that the data is not homogeneous cannot be rejected. As recommended by Halbert White (1980), robust covariance matrices can be used to address the heteroskedasticity issue. Alternatively, another solution has been proposed by Santos Silva and Tenreyro (2006) to handle trade data, which are frequently plagued by heteroscedasticity and the resulting bias and inconsistency in the estimation results. Their proposed solution is to apply the Poisson Pseudo Maximum Likelihood (PPML) estimator. Both of the above solutions were utilized in this study to accommodate the issue of heteroskedasticity in the error terms.

Table 5.5: White's test for H_0 : homoskedasticity (Import)

against H_a : unrestricted heteroskedasticity			
chi2(69) = 415.60			
Prob > chi2 = 0.0000			
Cameron & Trivedi's decomposition of IM-test			
Source	chi2	df	p
Heteroskedasticity	415.600	69	0.000
Skewness	70.760	11	0.000
Kurtosis	0.110	z	0.744
Total	486.460	81	0.000

Table 5.6: White's test for H_0 : homoskedasticity (Export)

against H_a : unrestricted heteroskedasticity			
chi2(69) = 239.80			
Prob > chi2 = 0.0000			
Cameron & Trivedi's decomposition of IM-test			
Source	chi2	df	p
Heteroskedasticity	239.800	69	0.000
Skewness	13.710	11	0.249
Kurtosis	1.030	1	0.310
Total	254.540	81	0.000

5.2.5 Multicollinearity Tests

One of the common problems encountered in studies employing panel data is multicollinearity, which occurs when a strong correlation exists between two or more independent variables in a multiple regression model. A high degree of correlation can cause issues for both the model fit and the resulting interpretations. Therefore, it is important to conduct multicollinearity tests in order to ensure that any change in the independent variables included in the model will not result in drastically different predictions from the model. A simple test to assess multicollinearity is to conduct Variance Inflation Factor (VIF) analysis after each regression estimated. This test identifies correlations between independent variables along with the strength of each relationship. Some researchers propose that a value of 10 is the maximum level to accept VIF (Hair et. al., 1995), whereas other researchers insist that a value of 5 is still an acceptable maximum level of VIF (Ringle et. al., 2015). Using our set of panel data, Tables 5.7 and 5.8 show that all of the VIF values range between 1 and 3, which means that the multicollinearity issue does not exist in the data in our study with the sole exceptions being the independent variables of the US GDP and the host country population. Another test using the command `xtserial` in Stata is the test proposed by Wooldridge (2002). This test is highly recommended for panel data as it requires relatively few assumptions and is easy to implement. The null hypothesis is that there does not exist first-order autocorrelation in the panel dataset, with the

alternative hypothesis being that there exists significant autocorrelation and a response from the researcher is required. As the results show in Table 5.9, the null hypothesis of no serial correlation is rejected at 10%. In this case with first-order autocorrelation in the error terms, the proposed solution is to create clusters at the panel data level in order to generate more consistent standard error estimates (Baltagi 2001; Wooldridge 2002).

Table 5.7: Variance inflation factor (Importij)

	VIF	1/VIF
lnPOPi	38.157	.026
lnGDPi	36.98	.027
lnGDPj	5.65	.177
lnPOPj	2.723	.367
commonborder	2.47	.405
agree fta	2.408	.415
lnGeoDistij	2.16	.463
commonlanguage	2.007	.498
member gatt joint	1.505	.665
member wto joint	1.147	.871
lnNBDdistij	1.123	.89
Mean VIF	7.641	.

Table 5.8: Variance inflation factor (Exportij)

	VIF	1/VIF
lnPOPi	38.157	.026
lnGDPi	36.98	.027
lnGDPj	5.65	.177
lnPOPj	2.723	.367
commonborder	2.47	.405
agree fta	2.408	.415
lnGeoDistij	2.16	.463
commonlanguage	2.007	.498
member gatt joint	1.505	.665
member wto joint	1.147	.871
lnNBDdistij	1.123	.89
Mean VIF	7.641	.

Table 5.9: Wooldridge test for autocorrelation in Panel Data

Wooldridge test for autocorrelation in Panel Data	
H0: no first-order autocorrelation	
F (1, 36) =	2.886
Prob > F =	0.0980

5.2.4 Independence Tests

Checking for the cross-sectional dependence in the error terms is essential in panel datasets as it is a very common issue that needs the researcher attention. Many factors can lead to this issue such the presence of significant variables not captured in the panel data as well as common shocks affecting all of the data that ultimately become part of error term in the estimation. The unobserved common factors can impact each variable in the model in a different way that might cause disturbances of common components without an identifiable pattern. The econometric literature has discussed the biased and inconsistent estimation results that can occur due to the impact of cross-sectional dependence in the estimators. There are a variety of factors that can be the source of this dependence such as the nature of the dependence itself or the magnitude of the correlations across sections of the panel data. In the case of dynamic panel estimators, the impact is relatively severe as it can lead to a large decrease in the efficiency of the estimation method (Hoyos & Sarafidis 2006). Our study uses Pesaran's (2004) test of cross-sectional independence which is valid when $T < N$ and is applicable to our dataset having $T=23$ and $N=36$. Applying the Stata command `xtcsd`, the independence test results are generated and presented in Table 5.10 The Pesaran's test of cross-sectional independence coefficient is 3.149 with $P=0.0016$ for the export post-estimation model. Further, for the import post-estimation model, an independence coefficient of 3.068 with $P=0.0022$ was generated. Since the P-value is less than a 5% level of significance for both estimation models, the null hypothesis of the cross-sectional (CD) test (H_0 : there exists cross-sectional independence) is strongly rejected. Therefore, we conclude that there is cross-sectional dependence in our panel dataset which can be accommodated by using Driscoll-Kraay technique to estimate the standard errors. To apply this technique, we used the `xtscc` command in Stata to generate the Driscoll-Kraay standard errors. This is especially relevant for our panel data because it is robust enough to handle both cross-sectional and

temporal dependence in the error terms. With this command, a pooled OLS regression is generated with Driscoll-Kraay standard errors.

Table 5.10: Pesaran's test

Pesaran's test	
Pesaran's test of cross-sectional independence (Export) = 3.149,	Pr = 0.0016
Average absolute value of the off-diagonal elements =	0.414
Pesaran's test of cross-sectional independence (Import) = 3.068,	Pr = 0.0022
Average absolute value of the off-diagonal elements =	0.412

5.3 Gravity Models Results

This section reports the results of our empirical models. The models include the standard gravity variables using ordinary least squares (OLS) and Poisson Pseudo-Maximum Likelihood (PPML) estimation methodologies. Panel data of 36 countries (j) trading with US (i) over 24 years (1993-2016) will be analyzed using equations (2) and (16) from the methodology chapter. The extended gravity model includes 3 explanatory independent variables: geographical distance (GeoDist_{ij}), the existence of a free trade agreement (FTA_{ij}) and nation brand distance (NBD_{ij}). In addition, it accounts for 8 control variables: GDP country (GDP_i), population country (POP_i), GDP country (GDP_j), population country (POP_j), a common border (Border_{ij}), common language (Language_{ij}), joint membership in the World Trade Organization (WTO) and joint membership in the General Agreement on Tariffs and Trade (GATT_{ij}). The command used in Stata14.2 for OLS with Driscoll-Kraay robust standard errors was xtsc (Y, X) which accommodates for issues of heteroskedasticity, autocorrelation and cross-sectional dependence that are commonly encountered with trade panel data. On the other hand, to generate the standard gravity model, the Stata command used is PPML(X,Y), which refers to the Poisson pseudo-maximum likelihood (PPML) estimator introduced by Santos & Tenreyro (2006). The PPML is a robust approach to handle the challenges arising from zero trade flows and heteroscedastic data. Moreover, in all estimations, the standard errors are clustered by trading country pair in order to accommodate for any correlations at the intra-cluster trading pair

level. In fact, it is a common practice in the gravity literature to have the results of OLS estimations be tested side by side with PPML estimations and presented together in a table that can help to interpret and compare the data. With the support of asdoc command created by Shah (2018), the estimation results tables are transformed from STATA into a readable format in MS Word. In this section, the export and import models will be generated using the traditional gravity equations and the structural gravity equations.

5.3.1 Export Models using Traditional Gravity Equation 2

The traditional gravity model explains that bilateral trade is proportional to the size of the trading countries, measured by GDP and population, and inversely proportional to the geographical distance between the trading countries, independent of any multilateral resistance terms. Table 5.11 presents the relationship between US export volume and the explanatory variables under both the OLS and PPML estimation methodologies. The models estimate the effects of the different macroeconomic indicators on US Exportij in the period 1993 to 2016 with and without the moderation impact of nation brand distance. In addition to the significant effect of the nation brand distance on the US exports that is generally apparent in the results, several general properties stand out from the estimates shown in Table 5.11. First, the R-squared statistic for the OLS model is 0.863 which is less than the R-squared of 0.959 that results when the PPML estimators are included, which generally suggests a strong explanatory power for both of our export gravity models. Second, a closer inspection of the control variables shows that the $\ln(\text{GDP}_{jt})$ has a positive coefficient that is strongly significant at a 1% confidence interval, which indicates that United States exports increase as the size of the economy of the destination country increases. However, the $\ln(\text{POP}_{jt})$ population coefficients are negative and statistically significant in both models for countries that receive US exports. Finally, the coefficients for US GDP and population are generally not significant in most of the estimates with high standard errors that imply a low precision of the coefficient estimates.

Turning to the dummy control variables, the common border dummy is positive and strongly significant statistically. Similarly, the impact of speaking the same language with the US is positive and strongly significant statistically as it facilitates the communication needed for trade. Moreover, being a member in WTO jointly with US is a statistically significant and positive dummy variable that impacts trade volume. Interestingly, being a member of GATT jointly with US is a positive dummy variable, but it is only strongly significant at 1% for PPML estimates. Overall, the positive relationship between export volume increases and the control variables are in line with the gravity literature.

With respect to nation brand distance ($\ln\text{NBDdist}_{ijt}$), the key variable of interest, the coefficient is not strongly significant in the OLS specifications. Although the coefficient is not significant under OLS, it is significant when it is estimated by PPML including the interaction terms. Based on the coefficient estimates, it can be estimated that a decrease in NBDdist_{ijt} by 1% will lead to an increase of 0.39% in the Export_{ijt} . The negative sign of the $\ln\text{NBDdist}_{ijt}$ coefficient appears both in the base model estimates and in the model that includes the moderation impact of geographical distance. The OLS estimate shown in column 3 shows that a 1% increase in $\ln\text{GeoDist}_{ijt}$ will lead to a 0.55% decrease in the US export volume. Interestingly, in the estimate with the moderation impact with FTA, the ($\ln\text{NBDdist}_{ijt}$) had a negative sign. This means that an increase in NBDdist_{ijt} by 1% will lead to an increase of 0.05% in the Export_{ijt} volume. Proceeding to geographical distance ($\ln\text{GeoDist}_{ijt}$), the expected negative sign appears in all the estimates. It is highly significant in OLS models only, but statistically insignificant in PPML models. Similarly, the effects of a joint free trade agreement (FTA_{ij}) on export volume were assumed to be positive which is largely confirmed by the results. The FTA coefficient is positive and strongly significant for all estimates related to Export_{ijt} and has a range of 0.17 to 0.24%. The interaction term of nation brand distance and geographical distance, $\ln(\text{GeoDist}_{ijt}) \times \ln(\text{NBDist}_{ijt})$, is significant at 5% for OLS and strongly significant at 1% in the PPML

estimation. Hence, an improvement in nation brand distance by 1% will reduce the effect of geographical distance on export volume by 0.027% based on an OLS estimation and 0.048% based on PPML estimation. On the other hand, for the second interaction term of nation brand distance and free trade agreement ($(FTA_{ij} \times \ln(NBDist_{ijt}))$), which is negative and statistically significant at 1% providing strong support for the hypothesis of a moderating impact on the relationship. It can be interpreted as an decrease in nation brand distance by 1% can increase the effect of having free trade agreement by -0.021% using OLS and -.025% using PPML. Overall, this model is substantially consistent with the expected relationships of the respective hypotheses related to the export volume.

Table 5.11: OLS & PPML Results on $Export_{ijt}$

Estimator Dependent variable	OLS (1) $\ln(Export_{ijt})$	PPML(2) $Export_{ijt}$	OLS(3) $\ln(Export_{ijt})$	PPML(4) $Export_{ijt}$	OLS(5) $\ln(Export_{ijt})$	PPML(6) $Export_{ijt}$
$\ln(GDP_{jt})$	.878*** (.023)	.749*** (.019)	.878*** (.016)	.745*** (.019)	.88*** (.015)	.749*** (.019)
$\ln(POP_{jt})$	-.155*** (.02)	-.145*** (.016)	-.154*** (.022)	-.143*** (.016)	-.156*** (.023)	-.145*** (.016)
$\ln(GDP_{it})$	-.735 (.821)	-.63 (.495)	-.761 (.759)	-.851* (.496)	-.742 (.734)	-.881* (.494)
$\ln(POP_{it})$	2.661 (3.737)	2.91 (2.239)	2.761 (3.536)	3.88* (2.243)	2.625 (3.446)	3.993* (2.228)
$\ln(NBDist_{ijt})$	-.022 (.021)	-.016 (.013)	-.213 (.076)	-.394*** (.148)	.035 (.027)	.05*** (.019)
$\ln(GeoDist_{ij})$	-.549*** (.052)	-.035 (.057)	-.551*** (.027)	-.043 (.057)	-.541*** (.026)	-.031 (.057)
FTA_{ij}	.21*** (.07)	.199*** (.066)	.208*** (.043)	.178*** (.067)	.241*** (.045)	.23*** (.067)
$Border_{ij}$	.869*** (.142)	1.683*** (.097)	.867*** (.058)	1.69*** (.097)	.841*** (.06)	1.652*** (.096)
$Language_{ij}$	.548*** (.065)	.308*** (.049)	.549*** (.024)	.299*** (.049)	.55*** (.022)	.304*** (.049)
WTO_Joint_{ij}	.246*** (.079)	.38*** (.076)	.241** (.092)	.373*** (.076)	.252** (.097)	.374*** (.076)
$GATT_joint_{ij}$	.083 (.07)	-.249*** (.09)	.085 (.049)	-.23*** (.089)	.079 (.05)	-.232*** (.088)
$\ln(GeoDist_{ij}) \times \ln(NBDist_{ijt})$			.027** (.067)	.048*** (.018)		
$FTA_{ij} \times \ln(NBDist_{ijt})$					-.088*** (.021)	-.076*** (.025)
Constant	4.589 (4.651)	-.78 (2.859)	4.844 (3.686)	.562 (2.889)	4.89 (3.346)	.609 (2.869)
Observations	789	789	789	789	789	789
R-squared	.863	.958	.863	.959	.863	.959

Notes: OLS models estimated with Driscoll-Kraay robust standard errors, PPML models are estimated with clustering Standard errors by country pair and are reported in parentheses. *, **, ***Significant at 10, 5 and 1 percent levels, respectively, Standard errors are in parentheses

5.3.2 Import Models using Traditional Gravity Equation (2)

To report the US Importijt, estimate results, Table 5.12 was prepared with the relevant details of the coefficients, the levels of significance and the standard errors for each of the related explanatory variables using both PPML and OLS estimators. With this foundation, a sample of country pairs was used for estimating US importijt flows to 36 trading partners in the period between 1993 and 2016 with the inclusion of the impact of nation brand distance. Although the import model has a high explanatory power based on its R-squared value range of between 0.80 to 0.92, compared to the Exportijt model, the explanatory power is relatively lower. In our study, the PPML results generally conformed with our robust results matching the expectations of our study hypotheses. The $\ln(\text{GDPjt})$ in this model has a positive coefficient and is strongly significant, which indicates that a 1% increase in trading country economy size will lead to a rise in US imports volume by 0.778% at a maximum. Similarly, $\ln(\text{GDPit})$ is positive and significantly related to import flows, where a 1% increase in US $\ln(\text{GDPi})$ will lead to an increase by 1.614% of a maximum for the US import from its trading partners.

The population coefficients of the importing countries $\ln(\text{POPjt})$ are also positively related and statistically significant in all estimations. It is clear from the results in columns 2,4,6 that the PPML model coefficients are significantly smaller than those estimated using the OLS model, indicating a reduced impact of trading partner population on the US imports. However, from the perspective of the importing country, the estimates of the coefficients for the US population $\ln(\text{POPit})$ were negative and highly significant ($p < 0.01$) for all models. Based on the OLS model estimates, our results indicate that a 1% increase in US population will lower US imports by up to 9.46%. For the common border coefficient (Borderijt), the sign is positive and strongly significant at 1% for all of the estimated coefficients. Likewise, although the common language coefficient (Languageijt) is positive for all models, it is only statistically significant at 1% for the OLS estimates, but is not significant for the

PPML coefficient estimates. Interestingly, although the coefficient related to being a member in WTO jointly with US (WTO_Jointij) is also positive for all models, it is only statistically significant at 1% for the PPML estimates, but is not significant for the OLS coefficient estimates. Finally, we find that the coefficients related to being joint members of GATT (GATT_jointij) are statistically significant ($p < 0.01$) for all models, but positive for OLS model estimates and negative for PPML model estimates.

Regarding the main independent variables, the sign of the nation brand distance $\ln(\text{NBDistijt})$ coefficient is negative and statistically significant at $P=10\%$ for PPML specifications that include a moderation impact (column 4). Our results show that an increase in $\ln(\text{NBDistijt})$ by 1% will lead to a decrease of up to 0.788% in the US import flow in the first four models. The $\ln(\text{NBDistijt})$ is negatively correlated with US imports flow in all the estimations except the one that accommodate the moderating impact of $(\text{FTAij} \times \ln(\text{NBDistijt}))$ in column (5,6). The coefficient for geographical distance ($\ln(\text{GeoDistij})$) exhibits the expected negative sign and is statistically significant in relation with ($\ln(\text{Importij})$) only for the OLS models. Finally, a review of the coefficient related to the effect that a free trade agreement (FTAij) has on import volume shows a result contradicting the expected positive sign. For FTAij, all of the coefficients are negatively related to US imports and are statistically significant for all of the OLS and PPML results.

Highlighting the results of the interaction terms, the coefficient showing the impact of $\ln(\text{GeoDistij}) \times \ln(\text{NBDistijt})$ is positive and statistically significant at a level of 10% for OLS and 5% for PPML. Thus, an improvement in nation brand distance by 1% will reduce the effect of geographical distance on US import volume by 0.092 % in the OLS model and 0.046% in the PPML model. For the second interaction term $\text{FTAij} \times \ln(\text{NBDistijt})$, the coefficient is negative for both OLS and PPML models, but only somewhat statistically significant ($p < 0.10$) for the PPML model. We conclude from this that there is no moderating impact from nation brand distance $\ln(\text{NBDistijt})$

on the relationship of FTA to US import volume under OLS only, while PPML is significant at 10%. Overall, this model meets partially the expected hypothesis related to the import flow models.

Table 5.12: OLS & PPML Results on Import_{ij}

Estimator Dependent variable	OLS (1) ln(Export _{ij} t)	PPML(2) Export _{ijt}	OLS(3) ln(Export _{ij} t)	PPML(4) Export _{ijt}	OLS(5) ln(Export _{ij} t)	PPML(6) Export _{ijt}
ln(GDP _{ijt})	.776*** (.031)	.703*** (.026)	.776*** (.031)	.697*** (.027)	.778*** (.031)	.701*** (.026)
ln(POP _{ijt})	.098*** (.021)	.038* (.022)	.099*** (.022)	.041* (.022)	.096*** (.022)	.04* (.022)
ln(GDP _{it})	2.614*** (.55)	1.966*** (.726)	2.522*** (.523)	1.816** (.734)	2.607*** (.557)	1.83** (.732)
ln(POP _{it})	- 9.423*** (2.525)	-8.909*** (3.265)	-9.078*** (2.409)	-8.239** (3.302)	-9.46*** (2.515)	-8.31** (3.294)
ln(NBDist _{ijt})	-.02 (.049)	-.008 (.019)	-.788 (.012)	-.383* (.026)	.034 (.056)	.031* (.026)
ln(GeoDist _{ij})	-.379*** (.052)	.095 (.096)	-.386*** (.05)	.09 (.096)	-.371*** (.051)	.098 (.096)
FTA _{ij}	-.312*** (.103)	-.213* (.122)	-.319*** (.106)	-.232* (.122)	-.279*** (.097)	-.187 (.123)
Border _{ij}	1.432*** (.124)	2.167*** (.175)	1.425*** (.128)	2.177*** (.174)	1.402*** (.123)	2.142*** (.174)
Language _{ij}	.393*** (.057)	.057 (.058)	.395*** (.058)	.046 (.058)	.396*** (.055)	.05 (.058)
WTO_Joint _{ij}	.144 (.103)	.617*** (.11)	.128 (.104)	.61*** (.11)	.15 (.107)	.612*** (.11)
GATT_joint _{ij}	.303*** (.059)	-.815*** (.081)	.309*** (.063)	-.795*** (.083)	.298*** (.06)	-.8*** (.083)
ln(GeoDist _{ij}) × ln(NBDist _{ijt})			.092* (.082)	.046** (.027)		
FTA _{ij} × ln(NBDist _{ijt})					-.093 (.058)	-.059* (.037)
Constant	- 26.917** *	-11.536***	-26.037***	-10.631***	-26.599***	-10.789***
Observations	788	788	788	788	788	788
R-squared	.8	.922	.801	.923	.8	.923

Notes: OLS models estimated Regression with Driscoll-Kraay robust standard errors *, **, ***Significant at 10, 5 and 1 percent levels, respectively, Standard errors are in parentheses

5.3.3 Export Models using Structural Gravity Equation (16)

Accounting for the multilateral resistance terms (MRTs) is essential in trade models in order to avoid severe biases in the estimates of the gravity variables (Anderson and van Wincoop, 2003). As explained in chapter 4, MRTs can serve as proxies for the unobserved factors that can serve as trade

barriers. By including MRTs in the model, it is possible to predict trade flows based on relative prices rather than absolute prices. This paper employs a first-order Taylor approximation of the multilateral resistance term in the gravity model. In order to calculate the first-order approximation of the multilateral resistance terms, Excel was used for both bilateral and the country-specific data. The first-order Taylor approximation was applied to geographical distance (MRT GeoDist_{ij}) and to all the dummy variables in the model (MRT FTA_{ij}, MRT Border_{ij}, MRT Language_{ij}, MRT WTO_Joint_{ij}, MRT GATT_Joint_{ij}).

The findings for the export model modified to include MRT are presented in Table 5.13. In general, there is a considerable improvement in the results between the model with MRT and the model without MRT. The R-squared statistics remain high with a range similar to the export model without MRT (between 0.863 to 0.959) which continues to suggest a strong explanatory power for the model. Looking to the control variables for GDP and population for the importing country, the estimates reported are similar to the export model without MRT. Beginning with the GDP of the importing country “ln(GDP_{jt})”, the coefficient in the MRT model is positive and strongly significant ($p < 0.01$) for both the OLS and PPML models. Our results suggest that a 1% increase in trading country GDP will lead to an increase in US export volume by up to 0.88%. The coefficient for the population of the importing country “ln(POP_{jt})” is also strongly significant ($p < 0.01$) for all models, but with the difference that the sign is negative. In this case, our results show that a 1% increase in ln(POP_{jt}) will lead to a decrease of US exports by up to 0.156%. On the other hand, as predictors of export volume from the US, the sign for US GDP (lnGDP_{it}) is negative while that for US population (lnPOP_{it}) is positive, but both estimates are only slightly significant at 10% as shown in columns 4 and 6. Continuing to the MRT proxy for a common border (MRT Border_{ij}), the coefficient is positive and statistically significant ($p < 0.01$) for both the OLS and PPML models that include MRT, which represents an improvement in predictive power over the models ignoring MRT. As reported in

column 6, a 1% increase in “MRT Borderij” will lead to a 1.698% increase in US exports to the trading country. For the control variable for a common language (“MRT Languageij”), the positive sign of the coefficients confirms the results of the traditional gravity model, but the level of significance ($p < 0.01$) represents an improvement. Our results show that a 1% increase in “MRT Languageij” will lead to an increase of up to 5.66% in US exports to the trading country (OLS 5). With respect to trade organizations, the results are mixed. Being a member in WTO jointly with the US is statistically significant and positive with a higher coefficient than the previous estimation ignoring MRT. However, being a member of GATT only remains strongly significant at 1% for models using PPML estimates.

With respect to the key variables of interest, the coefficient for the nation brand distance ($\ln\text{NBDistij}$) including MRT continued to be negative and statistically significant ($p < 0.01$) when using PPML with the moderation effect (see columns 4 and 6, Table 5.13). In addition, the coefficient for “MRT GeoDistij” has improved considerably compared to the estimated results ignoring MRT. While retaining the negative coefficient sign, there was a higher statistical significance in PPML at the 1% level of significance and OLS at the 10% level of significance compared to the base model (columns 1 and 2). Our results show that a 1% increase in “MRT GeoDistij” will lead to a decrease of US exports of up to 0.566 % as reported in column 3, Table 5.13. Finally, the inclusion of the MRT term in the prediction model shows an improvement in the effect of joint membership in an FTA (“MRT FTAij”). For this independent variable, the sign of “MRT FTAij” remains positive, but the level of significance improves to $p < 0.01$. Based on the results of our model, a 1% increase in MRT FTAij will lead to an increase of up to 0.248% in US exports.

Comparing the results of the interaction terms, the impact of $\ln(\text{GeoDistij}) \times \ln(\text{NBDistij})$ on the predicted relationship to US exports shows a slight improvement in terms of statistical significance

in the OLS and PPML models. Accordingly, an improvement in nation brand distance by 1% will reduce the negative effect of geographical distance on US export volume by 0.027 % for the OLS model and 0.048% for the PPML model. For the second interaction term $FTA_{ij} \times \ln(NBDist_{ijt})$, the coefficient remained negative and statistically significant ($p < 0.01$) suggesting that there is a strong moderating impact on the relationship of FTA to US export volume where 1% decrease of nation brand distance will increase the effect of FTA on trade flow by 0.088% in the OLS model and 0.076% in the PPML model. In other words, the existence of NBD compensates for the absence of an FTA. Overall, the export model that accounts for MRTs shows an improvement in predictive power compared to the model ignoring MRTs.

Table 5.13: OLS & PPML Results on $\ln Export_{ijt}$ with MRT

Estimator	OLS (1)	PPML(2)	OLS(3)	PPML(4)	OLS(5)	PPML(6)
Dependent variable	$\ln(Export_{ijt})$	$Export_{ijt}$	$\ln(Export_{ijt})$	$Export_{ijt}$	$\ln(Export_{ijt})$	$Export_{ijt}$
$\ln(GDP_{jt})$	.749*** (.019)	.878*** (.016)	.878*** (.016)	.745*** (.019)	.88*** (.015)	.749*** (.019)
$\ln(POP_{jt})$	-.145*** (.016)	-.155*** (.023)	-.154*** (.022)	-.143*** (.016)	-.156*** (.023)	-.145*** (.016)
$\ln(GDP_{it})$	-.63 (.495)	-.735 (.756)	-.761 (.759)	-.851* (.496)	-.742 (.734)	-.881* (.494)
$\ln(POP_{it})$	2.91 (2.239)	2.661 (3.54)	2.761 (3.536)	3.88* (2.243)	2.625 (3.446)	3.993* (2.228)
$\ln(NBDist_{ijt})$	-.016 (.013)	-.022 (.026)	-.213 (.576)	-.394*** (.148)	.035 (.027)	.05*** (.019)
$MRT_{GeoDist_{ij}}$	-.035* (.058)	-.564*** (.027)	-.566*** (.028)	-.044* (.058)	-.556*** (.027)	-.031** (.058)
$MRT_{FTA_{ij}}$	.204*** (.068)	.216*** (.043)	.214*** (.044)	.183*** (.069)	.248*** (.046)	.236*** (.068)
$MRT_{Border_{ij}}$	1.73*** (.099)	.894*** (.06)	.892*** (.06)	1.737*** (.099)	.864*** (.061)	1.698*** (.099)
$MRT_{Language_{ij}}$	.316*** (.05)	.563*** (.025)	.564*** (.025)	.307*** (.05)	.566*** (.023)	.312*** (.05)
$MRT_{WTO_Joint_{ij}}$	.391*** (.078)	.253** (.099)	.248** (.094)	.383*** (.078)	.259** (.1)	.384*** (.078)
$MRT_{GATT_joint_{ij}}$	-.256*** (.092)	.085 (.051)	.087 (.051)	-.236*** (.091)	.081 (.052)	-.238*** (.091)
$\ln(GeoDist_{ij}) \times \ln(NBDist_{ijt})$			.027** (.067)	.048*** (.018)		
$FTA_{ij} \times \ln(NBDist_{ijt})$					-.088*** (.021)	-.076*** (.025)
Constant	7.984 (12.457)	-92.731*** (6.414)	-92.938*** (6.469)	7.584 (12.444)	-90.776*** (6.12)	10.356 (12.488)
Observations	789	789	789	789	789	789
R-squared	.863	.958	.863	.959	.863	.959

Notes: OLS models estimated Regression with Driscoll-Kraay robust standard errors *, **, ***Significant at 10, 5 and 1 percent levels, respectively, Standard errors are in parentheses

5.3.4 Import Models using Structural Gravity Equation (16)

Our findings for the US import model accounting for MRT are reported in Table 5.14. As in the previous sections, the results are presented using both OLS and PPML estimates. Similar to the export models accounting for MRT, the import model results show a considerable improvement in comparison with the import model results that do not account for MRT. The R-squared statistics are still high and exhibit a range (i.e., between 0.80 and 0.92) similar to the import model that does not account for MRT. This shows that the model continues to have strong explanatory power. Starting with the control variables for GDP and population, the estimates reported are similar to those of the import model ignoring MRT. The $\ln(\text{GDP}_{jt})$ in the MRT model had a positive coefficient and was strongly significant ($p < 0.01$). Our results suggest that a 1% increase in the trading country GDP (GDP_j) leads to an increase in US import volumes of up to 0.778%. Likewise, the prediction variable related to the population of the trading country ($\ln \text{POP}_{jt}$) continues to show a significant ($p < 0.01$) positive relationship with US imports. Our results indicate that a 1% increase in $\ln \text{POP}_{jt}$ leads to an increase of US imports by 0.099%. Similarly, the independent variable US GDP ($\ln \text{GDP}_{it}$) has a positive relationship with US imports and is strongly significant at 1% in all the estimates. This suggests that a 1% increase in US GDP_{it} leads to an increase in US import volume by up to 2.614%. On the other hand, the independent variable for the US population ($\ln \text{POP}_{it}$) had a negative and significant ($p < 0.01$) relationship with US imports. This indicates that a 1% increase in $\ln(\text{POP}_{it})$ leads to a decrease of US import up to 9.46%. Moving to the dummy variables, the independent variable for a common border (MRT Border_{ij}) shows a slight improvement in comparison within the import model that ignores MRT. Based on our models, we conclude that a 1% increase in “MRT Border_{ij} ” leads to a 2.228% increase in US imports as reported in column 2 of Table 5.14. Similarly, the dummy variable tracking a common language (MRT Language_{ij}) has improved with a structural gravity approach in contrast to the traditional gravity approach, although the coefficient results are positive

and statistically significant ($p < 0.01$) only for the OLS estimates. Our results indicate that an increase of 1% of MRT Language_{ij} leads to US import increases of up to 0.41% (Table 5.14, column 5). Finally, the dummy variable tracking the joint membership between the US and the trading country (MRT WTO_Joint_{ij}) shows an absolute increase in the value of the coefficient compared to models that do not include a MRT term. Although the sign remains positive, the results are only statistically significant for PPML estimates. In contrast for an alternative trade union, being a member of GATT remains strongly significant at 1% in all estimates with negative coefficient in PPML models.

A review of the independent variables shows that the nation brand distance (lnNBDist_{ij}) coefficient continued to be partially significant ($p < 0.10$) in PPML (Table 5.14, columns 4 and 6) and generally retained its negative sign in most of the estimates. However, for the variable related to geographic distance (MRT GeoDist_{ij}), the predictive power of the model employing MRT has improved significantly compared to the estimated results obtained when MRT is ignored. While none of the PPML results are statistically significant, the sign of the OLS estimates remained negative with an improvement in the statistical significance of the estimate to $p < 0.01$. Our results show that a 1% increase in MRT GeoDist_{ij} will lead to a decrease of up to 0.396% in US imports (Table 5.14, column 3). Finally, the predictive power of the variable capturing the existence of a free trade agreement (MRT FTA_{ij}) has been enhanced in terms of significance level while retaining the positive sign in relation to US imports. Our model predicts that a 1% increase in MRT FTA_{ij} will lead to a significant decrease of up to 0.328 % in US imports.

Looking to the moderation effects of the variable capturing the nation brand, the coefficient for $\ln(\text{GeoDist}_{ij}) \times \ln(\text{NBDist}_{ij})$ as a predictor for US imports remained positive, but the statistical significance declined in both PPML and OLS. The interaction coefficient is significant at a 10% level in PPML only and indicates that an improvement in nation brand distance by 1% will reduce the negative effect of geographical distance on US import volume by 0.046 in PPML model. For the

second interaction term ($FTA_{ijt} \times \ln NBDist_{ijt}$), the coefficient remained negative, but only statistically significant for the PPML model. This model predicts that when a free trade agreement exists, a 1% decrease of nation brand distance will increase the effect of FTA on trade flow by 0.059% in the PPML model. In other words, the existence of NBD compensates for the absence of an FTA. Overall, the import model with MRTs shows that Nation Brand Distance has a lower impact on the prediction variables in the import model than in the export model.

Table 5.14: OLS & PPML Results on $\ln Import_{ijt}$ with MRT

Estimator Dependent variable	OLS (1) $\ln(Export_{ijt})$	PPML(2) $Export_{ijt}$	OLS(3) $\ln(Export_{ijt})$	PPML(4) $Export_{ijt}$	OLS(5) $\ln(Export_{ijt})$	PPML(6) $Export_{ijt}$
$\ln(GDP_{jt})$	.776*** (.031)	.703*** (.026)	.776*** (.031)	.697*** (.027)	.778*** (.031)	.701*** (.026)
$\ln(POP_{jt})$	.098*** (.021)	.038* (.022)	.099*** (.022)	.041* (.022)	.096*** (.022)	.04* (.022)
$\ln(GDP_{it})$	2.614*** (.55)	1.966*** (.726)	2.522*** (.523)	1.816** (.734)	2.607*** (.557)	1.83** (.732)
$\ln(POP_{it})$	-9.423*** (2.525)	-8.909*** (3.265)	-9.078*** (2.409)	-8.239** (3.302)	-9.46*** (2.515)	-8.31** (3.294)
$\ln(NBDist_{ijt})$	-.02 (.049)	-.008 (.019)	-.788 (.712)	-.383* (.226)	.034 (.056)	.031* (.026)
$MRT\ GeoDist_{ij}$	-.39*** (.053)	.098 (.099)	-.396*** (.051)	.092 (.099)	-.382*** (.053)	.101 (.098)
$MRT\ FTA_{ij}$	-.321*** (.106)	-.219* (.126)	-.328*** (.109)	-.239* (.126)	-.287*** (.1)	-.192 (.126)
$MRT\ Border_{ij}$	1.472*** (.128)	2.228*** (.18)	1.465*** (.131)	2.237*** (.179)	1.441*** (.127)	2.202*** (.179)
$MRT\ Language_{ij}$	.404*** (.058)	.058 (.06)	.406*** (.059)	.047 (.06)	.407*** (.057)	.051 (.06)
$MRT\ WTO_Joint_{ij}$	.148 (.106)	.634*** (.113)	.131 (.107)	.627*** (.113)	.154 (.11)	.629*** (.113)
$MRT\ GATT_joint_{ij}$	.311*** (.061)	-.838*** (.084)	.318*** (.065)	-.817*** (.086)	.307*** (.061)	-.823*** (.085)
$\ln(GeoDist_{ij}) \times \ln(NBDist_{ijt})$			.092 (.082)	.046* (.027)		
$FTA_{ij} \times \ln(NBDist_{ijt})$					-.093 (.058)	-.059* (.037)
Constant	- 87.768*** (9.893)	17.041 (20.836)	- 88.483*** (9.489)	16.897 (20.771)	- 85.705*** (10.453)	18.531 (20.835)
Observations	788	788	788	788	788	788
R-squared	.8	.922	.801	.923	.8	.923

Notes: OLS models estimated Regression with Driscoll-Kraay robust standard errors *, **, ***Significant at 10, 5 and 1 percent levels, respectively, Standard errors are in parentheses

5.4 Hypothesis Testing

This section will link the empirical results to the research hypotheses in order to summarize the extent to which the gravity results support each of the individual hypotheses. As presented in Tables 5.15 and 5.16, the results used to test the hypotheses were mainly from the structural gravity model that includes MRT. This model is one of the most successful frameworks in economics for studying and quantifying the effects of various international trade determinants. As has been explained previously, this model is particularly suited for dealing with the different challenges that frequently appear in trade panel data such as heteroscedasticity in the error terms or the existence of zero trade flows. For both tables, the hypotheses are tested mainly using PPML estimations. From Table 5.15, it is apparent that most of the hypotheses related to the export models are supported completely and show a strong relationship with nation brand distance, while results in Table 5.16 show that the import models are generally only partially supported, which suggests a weaker relationship with nation brand distance.

Table 5.15: Summary of the research hypothesis test results of structural gravity (when the Dependent variable is Export)

Hypothesis (Export flow)	Supporting hypothesis under Export as Y	Sign	Summary of the finding on the relationship between X and Export(Y)
H1.a. There is a negative relationship between Geographical Distance and Export Volumes.	Supported	-	The findings reveal that there is a significant and negative correlation between export flows and geographical distance.
H2.a. There is a positive relationship between FTA and Export Volumes.	Supported	+	The findings show that there is a significant and positive correlation between export flows and FTA.
H3.a. There is a positive moderation impact of Nation Brand Distance on the relationship between Geographical Distance and Export Volume.	Supported	+	The result reveals that there is a positive and significant moderation impact of nation brand distance on the relationship between geographical distance and export volume. It implies that an improvement in nation brand distance will reduce the effect of geographical distance on US export volume.
H4.a. There is a negative moderation impact of Nation Brand Distance on the relationship between FTA and Export Volume.	Supported	-	The result reveals that there is a negative and significant moderation impact of nation brand distance on the relationship between FTA and export volume. This means that a decrease of nation brand distance will increase the effect of FTA on trade flow.

Table 5.16: Summary of the research hypothesis test results of structural gravity (when the Dependent variable is Import)

Hypothesis (Import Volume)	Supporting hypothesis under Import as Y	Sign	Summary of the finding on the relationship between X and Import(Y)
H1.b. <i>There is a negative relationship between Geographical Distance and Import Volumes.</i>	<i>Partially supported</i>	-	The findings reveal that there is a significant and negative correlation between import flows and geographical distance using an OLS model.
H2.b. <i>There is a positive relationship between FTA and Import Volumes.</i>	<i>Not supported</i>	-	The findings show that there is no significant correlation between export flows and FTA.
H3.b. <i>There is a positive moderation impact of Nation Brand Distance on the relationship between Geographical Distance and Import Volume.</i>	<i>Partially supported</i>	+	The results reveal that there is a positive and significant moderating impact of nation brand distance on the relationship between geographical distance and export volume only using the PPML estimation method. It implies that an improvement in nation brand distance will reduce the effect of geographical distance on US import volume.
H4.b. <i>There is a negative moderation impact of Nation Brand Distance on the relationship between FTA and Import Volume.</i>	<i>Partially Supported</i>	-	The results reveal that there is a negative and significant moderating impact of nation brand distance on the relationship between FTA and import volume only when using the PPML estimation method. This means that a decrease of nation brand distance will increase the effect of FTA on trade flows.

5.5 Summary

The empirical results chapter reported the findings and analysis of panel data using different methodologies to test multiple hypotheses related to the research questions. In this chapter, the bilateral trade data between 36 countries and the United States was presented in descriptive statistics tables. In addition, a preliminary check on the panel data was performed using Stata to test for normality, linearity, homoscedasticity, multicollinearity and independence of the error terms. The challenges identified in the panel data (i.e., the issues related to heteroscedasticity and autocorrelation) were addressed using robust methods proposed in the econometrics literature on international trade. Further, as described in the model specifications presented in the methodology chapter, this chapter applied the empirical gravity equations 2 and 16 to the panel data and reported the findings in summary tables. The findings highlight the relationship of the nation brand distance

with two primary determinants of international trade, i.e., geographical distance and the existence of free trade agreements. Overall, the predictive model for US exports that includes nation brand distance shows a strong explanatory power (average of 90%) both with and without MRT. Likewise for the import model for US exports, the explanatory power was 86% on average for both MRT and without MRT models. In order to be able to compare the results using different estimation methodologies, the OLS and PPML results were presented in details for each model in different tables. Overall, the hypotheses for the export model were supported by the results of PPML and partially supported for the import model by the results of PPML.

CHAPTER 6 : DISCUSSION

6.1 Introduction

The objective of this thesis is to identify how differences between the nation brand of two countries can affect the bilateral trade volume between the countries. For this research, a gravity model and OLS was developed to predict the trade volume between two countries based on various measures of distance between the partners as well as on the existence of bilateral Free Trade Agreements (FTAs). In addition, as highlighted in the literature review chapter, the hypothesis that nation brand can exhibit a moderating effect on international trade was shown to be intuitively attractive. Yet to date, nation brand has only been included in academic studies based solely on conjecture and subjective evidence. Many researchers have highlighted the need for a systematic study analyzing and measuring the statistical impact of nation brand on the volume of international trade. This thesis is designed to address this shortcoming in the literature by empirically assessing the relationships between nation brand distance and the related measures of both export volume and import volume between two countries. As a foundation for the research design, one of the workhorse models in the economic literature, the structural gravity model of trade, was employed. This chapter includes a discussion of the empirical findings in conjunction with the relevant literature connecting international trade with the nation brand concept. Finally, this section interprets the empirical results in light of the following research questions:

1.a. What is the relationship between geographical distance and export flows?

2.a. What is the impact of FTA on export flows?

3.a. What is the moderating impact of nation brand distance on the relationship between geographical distance and export flows?

4.a. What is the moderating impact of nation brand distance on the relationship between FTAs and export flows?

1.b. What is the relationship between geographical distance and import flows?

2.b. What is the impact of FTA on import flows?

3.b. What is the moderating impact of nation brand distance on the relationship between geographical distance and import flows?

4.b. What is the moderating effect of nation brand distance on the relationship between geographical distance and import flows?

As a basis for the empirical analysis, this research is based on data using the US as the country of origin and 36 countries from different regions in the world as countries of destination for trade flows for the years from 1993-2016. To organize this chapter, the empirical results for each of the dependent variables (export volume and import volume) are discussed separately in the following subsections detailing their respective relationship with the various measures of distance (as were included in this thesis), with the existence of an FTA, and with the related measure of nation brand distance developed in this thesis. The discussion of the empirical results related to the potential moderating effect of nation brand distance on trade volume as well as on the additional independent variables included in the model represents the unique contribution of this study to the academic literature. These empirical results have implications that can be used by both practitioners and academics. In the following detailed analysis, the summary results of the thesis will be highlighted and the key points generated by the research findings will be generated.

6.2 Discussion of Export Relationship Findings

6.2.1 The Relationship between Geographical Distance and Export Volume

In the last decade, the impact of geographical distance as a determinant of export volume has gained an increasing importance among economists. Most recently, it has been identified as a key factor for studying international trade flows, especially when gravity models are employed in the research design. To measure geographical distance, the usual method is to calculate a static measure of the distance between two points using latitude and longitude coordinates. This is convenient because this distance measure can be found from sources like the World Bank or it can be calculated manually. In general, the farther the country of destination is from country of origin, the harder it will be to trade and conduct business in that country. As previous empirical tests have generally confirmed, the relationship between the geographical distance between two countries is negative, i.e., the further that you go from the country of origin, the harder it will be to trade with the target country (Ghemawat 2001; Halaszovich & Kinra 2018). As noted by Leamer and Levinsohn (1994), this bilateral trade relationship with geographical distance as one of “the most robust and clearest empirical findings in economics”. Although this empirical result is well established, not many studies have systematically analysed this effect. (Disdier & Head 2008)

The findings of this study highlight a negative relationship between geographical distance and US export volume to target countries. This is consistent with the hypothesis:

H1.a. There is a negative relationship between Geographical Distance and Export Volumes.

A comparison of the results between the traditional gravity model and the structural gravity model shares the same significant negative sign, although the significance in the traditional gravity model varies between PPML and OLS estimates. The structural gravity result indicates that a 1% increase in the distance between the US and the country of destination will lead to a decrease of US exports

of up to 0.566%. The structural gravity model findings using OLS estimates show a highly significant negative relationship, which contributes to the overwhelming evidence that export flows tend to fall as geographical distance increases. On the other hand, when using the PPML estimates which account for zero trade values as well, the results suggest a lower coefficient power and a decreased p-value. This result is consistent with the conclusion indicating that the impact of nation brand distance reduces the distance effect, a result that is well documented in the international trade literature. In particular, estimates using the log of geographical distance when measuring the moderating impact show a lower statistical significance which suggests a less significant effect of the geographical distance on trade volume.

With reference to the theoretical background related to the effect of geographical distance on trade flows, the NEG extension of NTT by Krugman (1992) has incorporated the important concepts of location, region, and distance into economic models. In a further development, Krugman has proposed that transportation costs are a key determinant in international and interregional trade. This extension provides an explanation for the results of the current study which show that greater distance leads to higher costs and ultimately to lower exports to a distant country. The OLI paradigm also emphasizes the importance of location as part of the second advantage (L) where Dunning proposes that the location of the countries affects both the initial investor decision to enter a country as well as the entry mode. This paradigm predicts that firms will prefer to reduce exports to distant countries and instead acquire local businesses as a way to reduce transportation costs. Consistent with the predictions of the (L) advantage in OLI theory, the results of the current thesis support the conclusion that location impacts the decision of whether or not a country decides to export to trading partners.

The findings of this study build on the existing evidence supporting the hypothesis that less geographical distance between two countries can stimulate higher export volumes between these two countries. Frequently, geographical distance is used by researchers as a proxy for the additional

logistic and administration costs resulting from the increase in distance between two countries. For example, it is well known that increasing geographic distance will increase the cost of transportation and this will result in lower flows of products between the two locations (Daniels & von der Ruhr 2014). In addition to all of these measurable costs, the increasing rate of geographical distance will also lead to an increase in the level of perceived uncertainty and thus will lead to additional costs related to the internal control mechanisms (Sachdev & Bello 2014). As a further complication, geographical distance is directly related to the shipment time and the related impact on the perishability of the products which can include damage of the shipment due to weather conditions, spoiling organic materials, loss of the willingness to buy by the intended purchaser, and the increasing cost of synchronization of the product in case this product is important for the assembly. Another cost related to increases of geographic distance is the increase in communication costs (Krugman 2007). The hypothesis is that contact among sellers, customers and employees is crucial to complete the cycle of product sale and that these exchanges of information result in costs that increase as distance increases. An additional transaction cost relates to the establishment of trust and trading opportunities among the trading partners. Here again the hypothesis is that the greater the geographical distance, the lower the trade volume between countries.

But as the literature has developed, the various measures of distance between two countries have expanded to include many factors. For example, one hypothesis is that geographical distance increases whenever there is a lack of common border accesses, or of adequate transportation possibilities, or of substandard communication links. Further extensions of the geographical distance hypothesis propose multiple measures based on distance measures related to physical remoteness, to climate differences, to the physical size of the country, to the average transportation distance within a target country's borders, or to the general topography of the target country. The conclusion is that the effect of geographical distance is economically substantial because an increase in the physical

distance between two countries increases both the cost of transportation over longer distances as well as the cost of accessing information about foreign markets. In addition, establishing a relationship with a less distant country promotes trade by making it easier in terms of understanding business practices and customs in that country, resulting in lower transaction costs (Ghemawat 2001). This study is one of the few studies that looks at distance using the geographical distance measures obtained from the Dynamic Gravity Dataset (1948–2016) constructed by U.S. International Trade Commission in 2018 for which accounts for weighted distance that adjust for the economic centre of gravity in each country by population and location of the large cities rather than calculating distance between the capitals or the geographic centres of the two nations.

The analysis of trade flows is frequently based on estimation of the coefficients of a gravity model. In one recent study, Halaszovich and Kinra (2018) studied exports as one of the dependent variables in their multifaced study designed to estimate the relative importance of various possible determinants of trade flows. Their research findings showed a negative and mostly significant relationship between geographical distance and trade flows in sub-samples of Asian and non-Asian countries. However, when their full sample was analyzed, the results show a reversal of the signs.

Another recent study by Kristjánsdóttir, et al. (2020) emphasized the importance of geographical distance in international trade. For this study, the effect of geographical distance on UK trade volumes with its main partners was tested. They concluded that a 1% increase in $\ln(\text{DIS_GEO})$ can lead to a decrease in UK export volume by 0.52% with a high level of significance ($p < 0.01$) which is similar to the finding of this thesis. Another study that confirms these findings was conducted by Kouyaté and Taubadel (2016), where they found that each increase of 1,000 KM of distance reduces the probability of trade cointegration by 7%. This is consistent with the hypothesis that a larger distance results in higher trade costs and hence hinders the integration of two markets.

Based on the study results, they recommended that an understanding of the distance effect can help to identify better methods to facilitate trade and increase market integration. Similarly, Dimitrova, et al. (2016) used geographical distance as a control variable to measure the effect of a country's reputation on export volumes. Their findings are in line with those of this thesis since all of the estimation models show a negative correlation between geographical distance and export volumes. In another study, Byukusenge and Tuyishime (2016) tested exports from NAFTA countries to 176 trading partners. They found that geographical distance had a smaller negative influence on trade among NAFTA countries than in comparison with countries not included in NAFTA.

As the above studies show, the results fit the gravity theory in international trade where closer nations tend to trade more with each other than with distant nations. However, the geographical distance relationship is not a simple matter of how far the country is from the traders. It has long been known that in order to understand trade flows it is necessary to take into account other attributes such as country size, accesses to waterways and the physical size of the country (Ghemawat 2001). As some of these factors are considered in this paper, the combination with the nation brand moderator in the structural gravity model shows some interesting results. When using the PPML rather than pooled regression, the effect of distance is reduced when the nation brand distance moderation effect is included. Overall, the results for the distance variable provide strong support for the research hypothesis that distance has an important negative impact on export volume as the cost associated increases with higher distance.

6.2.2 The Relationship Between Free Trade Agreements and Export Volume

The impact of trade agreements on the international trade flows has been the focus of much research by economists and academics. A Free Trade Agreement (FTA) refers to either a bilateral agreement between two countries or a multilateral agreement between multiple countries that is designed to

promote the trade in goods and service. For example, the United States has signed 14 FTAs with 20 countries designed to implement the mutual elimination or reduction of tariffs on qualified products, to protect the intellectual property in the FTA partner country, or to ensure fair treatment of US investors in the FTA partner country among other topics. The purpose of these FTAs is to increase both export and import flows between the US and the respective trading partners. Although many studies in the literature have shown that trade agreements have a strong positive influence on trade flows between associated countries (Halaszovich & Kinra 2018; Baltagi et al. 2003; Nitsch 2000), this study has examined the trade flows between the US and trading partners from different economic blocks that have signed FTAs with the US. As a control variable, the trade flows between the US and trading partners that did not sign an FTA were also analyzed.

The results of this thesis demonstrate a strong correlation between the existence of an FTA and export volumes. Our results largely confirm the following hypothesis concerning export volumes:

H2.a. There is a positive relationship between FTA and Export Volumes.

Our results show that the FTA coefficient is positive and strongly significant for all estimates related to the US export model and has a range of 0.17% to 0.24%. Moreover, the inclusion of the MRT term in the prediction model showed an improvement in the effect of signing an FTA with the US. Based on the results of the export model, a 1% increase in MRT FTA_{ij} will lead to an increase of up to 0.248% in US exports.

The findings of this study emphasize the influence of the FTA on a country's export volume. The interpretation of having a positive and significant relationship between export volume and FTA is due to the many benefits that an FTA can bring to the economy. For example, consistent with the Internationalization (I) advantage in the OLI Dunning Paradigm, these FTAs can be viewed as tools designed to diminish trade barriers and stimulate investment. Moreover, these FTAs facilitate stronger ties between the participating countries that help their respective economies to grow faster.

The products traded will benefit from increases in manufacturing efficiency, quality and innovation which improve fairness in the rules-based system with lower or eliminated tariffs. The main goal of the United States when signing these agreements has been to reduce trade barriers and to create a stable and transparent trade environment with the FTA partner. The expected benefit was the opportunity for US companies to access the markets of the trading partner in order to export those US products that have a comparative advantage based on ease of manufacturing and cost. Based on an analysis of the historical data, the US goal to increase exported products was achieved. In general, the increasing number of unilateral and multilateral agreements between nations indicates that there is a recognition that FTAs have a clear positive impact on growing trade relationships and eventually higher exports from a practical point of view (Cipollina & Salvatici 2010).

This study extends the literature on New Trade Theory (NTT) by focusing on countries, rather than companies. Elaborating on the Krugman model of monopolistic competition, the Meltis Model (2003) is a new branch of NTT that addresses firm-specific differences. The model assumes that the choice between producing in the domestic market or exporting to the international market will be associated with some fixed cost. Only the most efficient producers will be able to reach out to both the domestic and international markets by minimizing the fixed costs. On the other hand, for those producers with some production efficiencies, the prediction is that their sales will be restricted to the domestic market. And for the least efficient producers, the prediction is that they will not be able to maintain production at all and will exit the industry. In the short run, countries which manage to reduce or eliminate tariffs by signing FTAs will create incentives for the most competitive firms that have not yet entered the international markets. When these trade barriers are removed, more products will be exported which will increase the competition among firms and eventually force countries to produce those products that have the best level of productivity that covers the fixed cost which will increase the country overall export.

The results of this study also emphasize the influence that an existing FTA has on a country's export performance. In the existing literature related to trade agreements, some empirical studies have shown how signing trade agreements stimulates exports, as these agreements reduce trade and customs costs and can replace domestic products in the trading partner market (Viner 1950; Meade 1955). On the other hand, in his analysis of trade agreements, Tinbergen (1962) indicated that 'average treatment effect' of FTAs on trade flows was economically insignificant. As evidence, he pointed out that the Benelux FTA as related to the British commonwealth is associated with only 5% higher trade flows. Since then, studies have shown various conflicting results regarding the impact of trade agreements on trade flows, including Aitken (1973), Abrams (1980), and Brada and Mendez (1983), who found that FTAs have a statistically and economically significant impact on trade flow among members of European Community. Other researchers have found insignificant effects to the same degree, including Bergstrand (1985), and Frankel, Stein, and Wei (1995). Some researchers have also found negative correlations between an FTA (covering the US and Morocco) and export flows (Lahrech, et al. 2018). However, as noted by the researchers, such findings might be spurious if, for example, the negative relationship stemmed from a weaker USA economy after a global financial crisis.

In one study that reported similar results to our research, Halaszovich and Kinra (2018) studied the impact of different measures of distance on the export and import flows of developing Asian countries. They found a positive and statistically significant correlation between Asian countries' export flows and the existence of bilateral FTAs. However, when they repeated the test using the total sample and the non-Asian sample they found insignificant results. In a similar study, Waheed and Abbas (2015) analyzed the correlation between Bahrain's exports and the existence of an FTA with trading partners and found a positive and significant relationship. Also, Nitsch (2000) used OLS and a fixed effect model to study the relationship between exports and FTAs and found a positive correlation. These study results are also in line with those of Baltagi et al. (2003). Based on an OLS

model with fixed effect, they found a positive and significant correlation between export flows and FTAs signed between the USA and EU countries. In a recent study, Jia et al. (2020) used a gravity model to study the impact of economic policy uncertainty on exports. Using FTA as a control variable together with a correction for the MRT effect, they found a strong positive correlation between export volume and signed FTAs.

The studies that focused on FTA as a main variable or as a gravity control variable in the literature have shown mostly a positive relationship with export volume. The aggregation of FTAs across different countries was a potential source of the difference in the correlation sign since some trade agreements did not have an influential positive effect on trade exports, while other types of FTAs were successful in achieving more exports for the studied economy. Also, by studying the total exports at the product level, it is possible to show more accurate results since some items like commodities show contradicting signs in relation with trade agreements. Overall, this study adds to the literature of export volume by contributing to the understanding of the MRT FTA result on increasing each unit of export.

6.2.3 The Moderation Impact of Nation Brand Distance on Export Volume Model

Any country has a compound set of contemporary and historical associations that can be viewed as a brand that markets the nation as whole. Nation brand can be considered as a measure of a country's competitiveness and ability to maintain sustainable GDP growth that also serves to stimulate export flows. Despite the plethora of research that is focused on the nation brand field, the concept is still divergent and fragmented as the research field is still under development. In response to this lack of unification, this thesis is designed to synthesize, analyze and discuss the moderation impacts of nation brand on the relationship between trade agreements, geographical distance and export flows. The nation brand distance can be defined as the difference between the nation brand of the country of

origin and that of the country of destination. The nation brand of a specific country can present the whole image of its political, historical, economical, environment and cultural aspects in the mind of international stakeholder. In this research, the nation brand was calculated based on the Country Brand Strength Index (CBSI) which consists of the relative statistical values per capita of five dimensions, including exports, tourism, foreign direct investment (FDI), immigration, and the government environment. Accordingly, the nation brand distance was measured as interval distance between the CBSI score of the trading partner and US CBSI score. The nation brand distance is a new concept that is further developed in this thesis with the objective of contributing to a better understanding of how differences in nation brand can impact export and import volumes. With that background, two hypotheses were formed as following: -

H3.a. *There is a positive moderation impact of Nation Brand Distance on the relationship between Geographical Distance and Export Volume.*

H4.a. *There is a negative moderation impact of Nation Brand Distance on the relationship between FTA and Export Volume.*

The key findings of this thesis are related to the moderation impact of nation brand on trade flows. The research results confirm that the H4 is supported as the results suggests that there is a positive and significant moderation impact of nation brand distance on the relationship between geographical distance and export volume. It implies that an improvement in nation brand distance will reduce the effect of geographical distance on US export volume in all estimation models. Accordingly, a reduction in nation brand distance by 1% will reduce the negative effect of geographical distance on US export volume by 0.027 % for the OLS model and 0.048% for the PPML model. The results suggests that countries with a similar nation brand (i.e., low nation brand distance) experience a reduction the negative effect of geographical distance on export volume.

For the second interaction term, the results reveal that there is a negative and significant moderation impact of nation brand distance (NBD) on the relationship between FTA and export volumes. This

means that a decrease of nation brand distance will increase the effect of FTA on trade flows. As the coefficient remained negative and statistically significant ($p < 0.01$) in all models, we concluded that there is a strong moderating impact on the relationship of FTA to US export volume such that a 1% decrease of nation brand distance will increase the positive effect of FTA on trade flow by 0.088% in the OLS model and 0.076% in the PPML model. In other words, the existence of NBD compensates for the absence of an FTA. In addition, it is noteworthy that, for both interactions, the export model that accounts for MRTs shows an improvement in predictive power compared to the model ignoring MRTs.

This result is in line with the monopolistic competition element included in New Trade Theory (NTT). A significant element in NTT is the expanded importance that firms play in the trade flow decisions. In monopolistic competition, companies compete on branding and not just on product pricing. Similarly, this thesis proposes that nations need to compete not just on the price of a single factor of production, but instead on all elements of the nation brand in order to score as high as possible to become the preferred country to trade with. This improvement in the nation brand score will enhance exports regardless of the negative effect related to geographical distance. In parallel, the improved nation brand score will serve to motivate countries with similar levels of nation brand to sign trade agreements with each other because they view each other as trust worthy partners.

Based on the Dunning OLI Paradigm, the internationalization advantage can also be used to explain the export option as a choice of entry mode which can be either direct to identified customers or indirect through cooperative trading agreements. This paradigm highlights how the uncertainty that is involved in entering specific new markets can constrain a firm's decision to export, especially for countries that are distant in terms of nation brand. The confidence that a country and its traders will respect the terms contained in the negotiated trade agreements provides a stimulus to enter into more trade agreements, which results in higher trade flows.

The results of this thesis demonstrated in the empirical finding chapter that the moderating effect of nation brand significantly extend the results of previous studies. The research design for this thesis included nation brand as a moderator for trade flows. This research design reduced the limitations of prior research, which focused only on one target country brand instead of comparing bilateral brand differences or which focused on nation brand as an independent variable rather than as a moderator.

For instance, a study by Dimitrova et al. (2016) suggested that the country reputation for products has a positive and statistically significant impact on export volumes. However, they find little support for their hypothesis suggesting that the country reputation of the exporting country is positively correlated to the total export volume, presumably because the consumers cared about the product, but not the country of origin. In both hypotheses, the researchers focused on the target country rather than bilateral trading parties, which distinguishes the notion of this research by having a holistic view of how nation brand of the bilateral countries is impacting their trade flow. In the same study, the moderation impact of the political governance distance between the exporter and the importer was tested in order to analyze the relationship between the effect of reputation on the export flow of this country. Their findings suggested that the effect of a country's reputation for products is stronger when governance distance between exporter and importer increases. The findings of these studies are not disputed here. Instead, it is argued that focusing on the governance distance effect on exports is only a narrow component of nation brand distance (NBD). The NBD concept is broader because it captures not only the governance distance between the countries, but also the related distances in GDP, FDI, tourism and migration.

Sun, Paswan & Tieslau (2016) is also one of the few studies which have discussed the country image as a moderator. The key finding of this study emphasizes that an existing nation image can impact the country's export. The country image that is measured by the perceptions of external observers for a specific country has a significant indirect impact on the relationship between exports and various

determinants. An improvement in the nation image can help to improve a country's exports as a result of improvements in its economic, political, and socio-cultural factors. This finding is consistent with our study where the positive moderation impact of nation brand distance moderates the strength of an effect between geographical distance and export. Our study supports the Sun, Paswan & Tieslau (2016) study by showing that nation brand has a moderation effect on FTA, geographical distance and export. For example, if a country like US has a similar nation brand score with a country like Japan, which lowers nation brand distance, our research indicates that nation brand serves to reduce the effect of geographical distance and increase the effect FTA on the US-Japanese export flow.

Confidence that a country and its traders will respect the terms in the negotiated trade agreements provides a stimulus to enter into more trade agreements, which results in higher trade flows. In this thesis, we propose that countries with similar nation brands will tend to have more trust in each other to follow the terms and conditions of the negotiated FTA with the result that trade flows will be higher between these two partners. Because this study includes a broad set of countries with different FTAs signed with the US (e.g., NAFTA, FTA Partner, DR-CAFTA), the results show that those FTAs seems to be ineffective when there is a significant gap in the nation brand distance between the member countries. The study's findings are supported by other studies that claim that the reputation of the country is associated with the exporters history of adhering to the agreed terms of the trade agreements. In this way, trade flows increase due to the strengthening of the exchange relationship (Dimitrova, Korschun, & Yotov 2017). On the other hand, some studies have discussed that a country's reputation also plays a role in countries with low formal institutions where the reputation of a nation serves as a mechanism for contract enforcement (Bigsten et al. 2000). Jones (2005) has also discussed that brand equity should adopt more holistic ways to be approached taking into account the relationships between corporate entities and countries that can have an effect the brand values.

Overall, the countries can use the findings of this moderation impact to enhance their export with the trading partners and accesses new market by enhancing better nation brand score.

6.2.4 Discussion of the Results relating the Control Variables with Export Flows

As demonstrated in the literature review of the gravity model, one of the principles of this model is that the bilateral trade between two countries is proportional to the size and distance between the countries, with size measured as the respective GDPs of each of the countries and distance measured as the geographic distance between the countries. The conceptual model of this thesis includes distance as one of the significant predictive variables and the GDP of a country as a proxy for size in order to implement the gravity model. The key prediction of the gravity model as it applies to trade is that the bigger the difference in size between two economies, the smaller will be the trade flows between these two countries. Conversely, if the economies between two countries are similar in size, the trade flows between the countries will be relatively larger. As distance has previously been discussed in detail for both export and import flows, this section will concentrate on the control variables that are used in the structural gravity equation. In addition to GDP, there are a number of additional variables that are customarily used as proxies for other factors that impact both the trade cost and the information cost. This study extends the existing literature employing the gravity model to analyze international trade by capturing the following additional proxies as control variables that apply in the context of this study: (1) GDP as a proxy for the relative size of each country, (2) population as a proxy for the relative size of each country, (3) the existence of a common border, (4) the existence of a common language, (5) the joint membership in WTO and (6) the joint membership in GATT. The common hypothesis around these control variables is that they are positively correlated with export flow.

The empirical results detailed in Table 5.13 shows that the control variables generally exhibit the expected signs, albeit they are not all statistically significant at the 5 percent level. With respect to the detailed results, starting with the GDP of the country of destination “ $\ln(\text{GDP}_{jt})$ ”, which is the variable that relates the US with its trade partners, the coefficient in the MRT model is positive and strongly significant at 1% for both the OLS and PPML models. The model estimates that a 1% increase in the destination country GDP will lead to an increase in US export volume by up to 0.88%. The coefficient related to the GDP of the country of destination matches the expectation of having a positive and significant impact on relation to export flows. The bigger the economy, the more it will consume products which means that it represents a good market for US products to be exported to. This result is widely confirmed in the gravity literature of international trade (e.g., Halaszovich & Kinra 2018; Lahrech et al. 2018; Zahniser, et al. 2002; Rahman, Shahriar & Kea, 2019; Cantore & Cheng, 2018). Another study (Greene 2013) focused on US exports and confirmed similar results at a high level of significance at 1% with positive sign. These results indicate that a positive relation to a partner’s GDP is consistent with a high level of consumption which is reflected in a higher export flows to this destination. Likewise, the coefficient of the population of the country of destination “ $\ln(\text{POP}_{jt})$ ” is highly significant at 1%, which is consistent with the study of Lahrech et al (2018) in both PPML and OLS; however, the negative sign contradicts the previous positive relationship shown in prior studies. However, this negative sign was consistent with the results of Greene (2013) that were based on a FEM regression to estimate US exports. This contrary result can be explained based on the concept of economies of scale. The larger the population of the trading partner, the more likely that the necessary economies of scale will be sufficient for local companies to satisfy local demand and the less will be the export flow from the US to these countries. It is important to note that many gravity studies combine the GDP with population using GDP per capita as an indication of size and economic development.

On the other hand, the coefficient for US GDP “ln(GDPit)” is not statistically significant in most of the estimation methods. The only exception exists for coefficients estimated using PPML with moderation models, which are significant and exhibit a negative sign. This result matches the study of Rahman, Shahriar & Kea (2019) where the GDP of the exporter country is negative and insignificant in PPML models. Some other studies contradict our results by showing a positive sign that is highly significant such as Cantore & Cheng (2018) and Lahrech et al. (2018). Moreover, the coefficient for the US population “ln(POPit)” confirms the expectation of being significant and having a positive sign when estimated with PPML on moderators. This result can be explained based on the higher population in the US, which lowers the cost of labour required to manufacture products and export them to the destination country (j). This cost advantage will be reflected in the prices of the goods exported and will eventually lead to higher export flows. This result of the population effect is in line with Lahrech et al. (2018) where the results based on a gravity model have population coefficients that are positive and significant (at 1%) only when estimated with PPML.

As a further result of our study, dummy variables such as common borders are included as control variables. These variables are usually used to reflect that distance inflates the transportation costs and that frequently neighbours with common borders have lower trade costs which leads to expectations of greater trade flows between them. As confirmation of this expectation, the coefficient of the MRT proxy for a common border in our results is consistent with the expectation of being both positive and statistically significant ($p < 0.01$) for both the OLS and PPML estimators. This result can be understood as a 1% increase in “MRT Borderij” will lead to a 1.698% increase in US exports to the trading country. These results emphasizing the importance of a common border in reducing trade costs and stimulating higher exports are consistent with the results of other gravity studies (Halaszovich & Kinra, 2018; Lahrech et al., 2018; Dimitrova et al., 2016; Cantore & Cheng, 2018).

Coming to the estimated MRT coefficient for the common language dummy variable between the US and the partner countries, the positive sign with high level of significance ($p < 0.01$) confirms the expectations. Based on the estimates of the coefficients, a 1% increase in “MRT Language_{ij}” will lead to an increase of up to 5.66% in US exports to the trading country(j). These results confirm the general result of empirical research that trade flows are higher between countries with a common language or with other relevant common cultural features. The results also indicate that adjacency and other relevant common cultural features between countries can serve as proxies for the costs related to information search. A fundamental assumption is that businesses trade more when they are likely to understand each other’s business practices better and know more about each other than firms that operates in less-similar environments. For the same reason, businesses tend to search for suppliers or customers in countries with business environments that are familiar to them. Similar results related to specific product groups are also found in studies of Lahrech et al. (2018), Cantore & Cheng (2018) and Dimitrova et al. 2016. In addition, in a study of the determinants of US exports, Greene (2013) found that the coefficient for a common language is significant and positive. Although frequently employed in the research literature, colonial ties are a significant cultural feature that is not used in this thesis because it is not relevant for the US, since the US does not have historical colonial ties with the sample countries.

In our study, the unilateral effects of WTO/GATT membership are found to be positive and statistically significant for US export flows. Being a member in WTO jointly with the US is statistically significant and positive with a higher coefficient than those obtained previously using estimation methods ignoring MRT. However, being a member of GATT only remains strongly significant at 1% for models using PPML estimates. These divergent results can be explained based on the aspirations of trading partners. When the trading countries are both in the process of joining WTO or GATT, the goal of free trade is usually aspired by members, although this binds them in an

international commitment in terms of using economic policy instruments that impact trade, access to markets, and support for selected industries. This aspiration of the potential trading partners stimulates export flows and encourages the trading partners to resolve trade disputes using fair methods. For these reasons, countries that are included as members of International Trading Agreements are assumed to conform with the policy requirements for such membership, which leads to increasing trade between the countries. These findings are consistent with many additional empirical studies such as Rahman, Shahriar & Kea (2019) and Zahniser et al. (2002). Although these control variables are not the main focus of this study, it is important to include these variables as proxies in order to ensure the general validity of the results and to be consistent with the conventional practices used in gravity models of international trade.

6.3 Discussion of the Results regarding the Import Relationships

6.3.1 The Relationship between Geographical Distance and Import Volume

As presented previously in this paper, the US is a net importer of goods and services that are produced by its main trading partners. In truth, the Net Import component is a fundamental part of the international trade that applies to any country with import volumes that exceed the export volumes. This experience is referred to as a “trade deficit”, i.e., a negative balance of trade. This study has not only focused on export volume as a dependent variable in the gravity model, but has also included import volume as a dependent variable in a separate model in order to ensure the evaluation of the nation brand variable from different perspectives. Further, this study is differentiated from some recent studies which tend to assess the sample period for imports separate from that used for exports. Studying both data for imports and exports gives a better understanding of the distance impact on the dependent variable that is predicted by the other proxies (Disdier & Head, 2008).

The following hypothesis is proposed to test the relationship between geographical distance and Net Import flows:

H1.b. There is a negative relationship between Geographical Distance and Import Volumes.

A summary of the findings of the import model used in this study reveals that the coefficient variable related to geographical distance (using OLS estimators) showed a statistically significant and negative sign. This result showed a statistically significant improvement when estimated from results obtained when MRT is ignored. On the other hand, none of the coefficients of the determinant “geographical distance” based on PPML estimates were statistically significant. The sign of the MRT geographical distance using OLS estimator can be interpreted as a 1% increase in the distance between the US and its trading partner will lead to a decrease of up to 0.396% in US imports from this specific country. Overall, the findings of the import model suggest a significant and negative relationship between geographical distance and import volumes based on OLS estimators, which is in line with the hypothesis.

In contrast, the import model based on PPML estimators show insignificant results with a negative sign, which reflects the finding that import flow is less affected by geographical distance than by export flows. With regard to the geographic distance impact on import flows to the US, the findings of this study are consistent with the theoretical prediction that a greater distance tends to restrain import flows because convenience favours closer sources and markets over those that are more distant. The cost of transportation is a main factor to consider when discussing why countries trade less with their distant partners. Many researchers claim that service and cross border equity is also affected by geographic distance because of the increase in the costs associated with the information infrastructure and with the communication costs (e.g., Aitken 1973; Bergstrand 1985 and 1989; Linneman 1966; Rose 2002; Ghemawat 2001).

This finding relates directly to the suggestion of New Trade Theory (NTT) that is presented in this study in the theoretical background. The NTT suggests that the critical factors determining international trade patterns are economics of scale and network effects. Furthermore, the NTT

extension by Krugman 1992, (NEG) has assessed the importance of concepts of location, region, and distance into economics. Krugman proposed that transportation costs play a key role for international trade and inter-regional trade. This explains the results of this study where higher distance led to higher cost and eventually less exports to that distant country.

The OLS result of this study supports the claim of Chi and Kilduff (2010) in their research that empirically investigated a wide range of factors impacting US import flows from 15 major trading partners between 1995 and 2006. For their study, they used estimates based on OLS regression under gravity model and concluded that the greater geographical distance between US and its trading partner significantly hindered its import flows. This result indicates that remote countries are still facing a significant hindrance from geographical distance to export products to the USA.

In addition, the OLS finding is also in line with Brun et al. (2005) who reported the panel gravity results of bilateral imports for 130 countries over the period 1962-1996 and concluded that the distance effect is not static. Instead, the negative effect of distance on trade flows is affected over time in relation to changes in the relative transportation costs. The PPML results of our study contradict those of Halaszovich & Kinra (2018). In their study, for the non-Asian sub-sample of country pairs, the coefficient for geographical distance was significant and negatively correlated with import flows. However, the same study also found that the coefficient for geographical distance for the Asian sub-sample was not statistically significant, which is consistent with the findings of our study. The changing importance of distance as a determinant of trade has been highlighted by Yotov (2012), who emphasized the “steadily falling distance effect in international trade”. He offered not only robust empirical evidence, but also an intuitively appealing solution to the distance puzzle in trade by relying on the structural gravity model and by measuring globalization in relation to an integrated international market. Many additional scholars have agreed on the apparent decreasing importance of geographical distance over time in connection with falling logistic costs. As one

example, the title of the book “The Death of Distance [...]” (Cairncross 1997) illustrates the widespread agreement with this conclusion. On the other hand, a significant number of other scholars take the view that “Distance is alive and Well” (Carrere and Schiff, 2005). In summary, most of the models estimated using the gravity model have found that the negative impact of distance on bilateral trade changes over time (e.g., Leamer & Levinsohn 1994; Frankel et al. 1997; Smarzynska 2001).

Not many studies have considered import flows in the nation brand model. This is understandable since the main concern of most economists and policy makers is how to increase exports rather than imports in order to increase the overall GDP of the country. The statistical insignificance of geographical distance in this study finding can be interpreted as implying that the association of nation brand distance with geographical distance in the predictive model is not as important a factor for imports as it is for exports. Countries like the US import from China which is a distant country due to demand for specific products that are not available in other trading partners at a competitive price or quality.

The NTT model explains how it is possible for two countries at a particular point of time to have no differences in opportunity cost, but still have production advantages due to economies of scale as a result of the specialization of one country in a specific product which results in high efficiency of production cost per unit. As a further complication, the NTT model includes elements of monopolistic competition. This model extension, captures that fact that firms do not just compete on the basis of price, but also on other factors such as product branding. In this study, we extend the monopolistic competition concept to include those nations that compete based on their nation brand in order to maximise their trade in the international market. This extension of the monopolistic competition model to include nation brand can explain why a country like the US which is producing many products is also importing similar product types from countries which are far away like China. For example, the US market imports the Huawei smart phone, which China has worked hard to brand

over the last few years. At that same time, the US is promoting the production of the Apple iPhone with enhanced quality of technology in China. Although the import model results for geographical distance using PPML estimation are contrary to the proposed hypotheses of this study, the discussion of the study empirical findings in comparison to other studies has helped to understand the multifaceted opinion surrounding the importance of the measure of distance. As a further contribution of this study, by taking the determinant of nation brand into consideration, an improvement to the NTT theory is suggested in this sub-section linking the monopolistic trade element to nation brand. This proposed extension of the NTT model leads to the conclusion that the importance of including the determinant of nation brand as a way to overcome geographical distance. This conclusion will be discussed further in the moderation section.

6.3.2 The Relationship between Free Trade Agreements and Import Volume

As previously mentioned, the literature relating to Free Trade Agreements (FTAs) and their impact on international trade flow is very rich in important studies. However, the focus of these studies tended to be on import flows without equally considering the effect of an FTA on export flows. The source of the issue is that an FTA is put into place in order to reduce trade and customs costs which make imports cheaper. However, in the host country, this can lead to a replacement of domestic products or to the crowding out of imports from different nations (Viner, 1950; Meade, 1955). The general expectation is that FTAs enhance the political and economic relationships between countries. As a result of this expectation, nearly all countries are motivated to sign bilateral or unilateral FTAs (Cipollina & Salvatici 2010; Clarete et al. 2003). For this thesis, the hypothesis relating import volumes and FTAs: -

H2.b. There is a positive relationship between FTA and Import Volumes.

which was largely confirmed by the results of this thesis. Surprisingly, the findings of the import model contradict this hypothesis assumption because the FTA variable shows a strongly negative

correlation with import volumes. The results of this study show that the predictive power of the variable capturing the existence of a free trade agreement ($MRT\ FTA_{ij}$) shows a negative sign in relation to US imports is more significant than the results ignoring MRT. The import model result suggests that a 1% increase in $MRT\ FTA_{ij}$ will lead to a significant decrease of upto 0.328 % in US imports. When an FTA exists, the US import volume of the products exported from the trading partners will be reduced.

For the main interpretation of the results of this study, it is important to understand that the sample includes major industrial economies which had not signed an FTA with US (such as China, Japan, Germany and UK). However, these countries are among the five most important nations for US imports. As is commonly known, China is the world's largest exporter. It has been described as dumping all sorts of products in the US market by competing with cheaper prices than any imported products from FTA countries.

As one application of the OLI Dunning Theory and the NTT Theory, the analysis of the possible advantage for China of a reduction in tariffs after signing an FTA with the U.S. shows that this was not sufficiently attractive because China already had significant economies of scale for a large number of products based on their cheap source of labor. This indicates that the general proposition in NTT theory of reduced costs for the importers after the signing of FTAs does not apply in all cases. This shows that although FTAs have been one of the driving factors behind increased imports and should have an impact on trade considerations, their effectiveness might depend sometimes on the specific importing country (i.e., the potential FTA partner). For example, Japan, Germany and UK are importing countries that have significant economies of scale for many products demanded in the US market due to their reputation for good quality and advanced technology. This empirical finding leads to the conclusion that nation brand is an important tool that a country can use to overcome the importance of an FTA as a way to access big markets (e.g., the U.S. market).

This study finding is consistent with the research of Kinzius, Sandkamp and Yalcin (2019) who studied how trade is impacted by non-tariff barriers (NTBs) in relation to FTAs. They found that the implementation of NTBs reduced imports by upto 12% for selected products. In a comparison of the import model results of this study with those of older studies, the results generally show a positive impact on import volumes and total trade. This result is consistent with Halaszovich and Kinra (2018), who found a positive and significant correlation between FTA and import flows in both the total sample of countries as well as in the Asian sub-sample. In another study by Fukao, Okubo and Stern (2003), using OLS and fixed effects to investigate how NAFTA is impacting the members imports between (1992–1998), the authors found that having an FTA might create a trade diversion effect. This effect tracks the net effect of the decreases in imports from some countries and the increases in imports from other countries based on the lowest cost effect from a tariff reduction with that specific country. Most of the studies included in the literature review focus on the impact on trade, without separating the import effect on FTA. Previous studies regarding the impact of trade agreements, including (Aitken 1973; Abrams 1980; and Brada & Mendez 1983) have found that the existence of an FTA has a statistically and economically significant impact on trade flows among members of the European Community. In contrast, other researchers have found insignificant effects to the same level of significance (e.g., Bergstrand 1985; Frankel Stein & Wei 1995).

In summary, the explanation for the negative correlation of FTA with US imports is that the sample includes major industrial countries such as China that have economies of scale that significantly greater than many U.S. FTA partners such as Bahrain, Costa Rica, Colombia and many other developing economies. The U.S. market demand for products produced by non-FTA countries due to lower prices represents a substantial quality change in the standard model of international trade based on comparative advantage. Sub-sampling of both countries might give a clearer vision on the impact of FTA on the trading partners over the years. Moreover, this study includes different regional FTAs:

NAFTA, FTA Partner, and DR-CAFTA. For each type of these FTAs, there is a potentially different impact on the U.S. economy. For future studies, it is recommended to separate the dummy variables for better consideration of each effect.

6.3.3 The Moderation Impact of Nation Brand Distance on Import Volume Model

Despite the fact that building a nation brand has increasingly become a significant strategy for nations to leverage export flows, especially for those countries in emerging economies with inferior country-of-origin (COO) images (He & Wang 2015- 2017; Wang et al. 2017), not much attention has been given to the impact of nation brand on the import model. The reason behind this neglect is that countries usually tend to market their products and country image to ensure that the products can be sold abroad where the importing decision usually depends on the demand in the local market. However, the local market can prefer to buy the same product from a country with superior COO image than from a country that is producing better quality products but which has a lower COO image. This notion results in the need to have the following hypotheses:

H3.b. *There is a positive moderation impact of Nation Brand Distance on the relationship between Geographical Distance and Import Volume.*

H4.b. *There is a negative moderation impact of Nation Brand Distance on the relationship between FTA and Import Volume.*

Building on the nation brand distance moderation effect discussed in the Export model, the measure for nation brand distance used in this study is based on the CBSI developed by Fetscherin (2010) to calculate the difference between the US nation brand (as the importer) and the trading partner country (as the country exporting to the US). For the CBSI measure, a country is characterized along five economic dimensions: exports, tourism, foreign direct investment (FDI), immigration, and government environment.

The import model results revealed that the interaction coefficient of $\ln(\text{GeoDist}_{ijt}) \times \ln(\text{NBDist}_{ijt})$ is positive and significant at a 10% level only when using PPML. The estimated coefficient indicates

that an improvement in nation brand distance by 1% will reduce the negative effect of geographical distance on US import volume by 0.046 in the PPML model. For the second interaction term ($FTA_{ij} \times \ln NBD_{ij}$), the coefficient remained negative and is only statistically significant for the PPML model. This model predicts that when a free trade agreement exists, a 1% decrease of nation brand distance (NBD) will increase the positive effect of FTA on trade flows by 0.059% in the PPML model. In other words, the existence of NBD moderates for the effect of an FTA. Thus, H4 & H5 are partially supported using the PPML estimation model. This is a good example of how the structural gravity model can capture the effect of variables that can not be noticed using other estimation methods.

Similarly, with respect to the direct effect of NBD on import flows, the results suggest that the moderation effect of nation brand distance is statistically less significant for import flows than for export flows. Nevertheless, it is still significant at 10% when using PPML as the estimation procedure. This result can be linked with the country-of-origin (COO) effect. For example, the World Advertising Research Centre statistics show that 81% of Americans prefer to buy Japanese products over the comparable Chinese products, which indicates that the imported goods from Japan should be higher than China. As Japan and the US are closer in nation brand than are US and China, the import flow should be higher between US and Japan. However, the real numbers show that China was successful with the strategy to flood the US market with low priced products that could compensate for the issue of the country-of-origin effect. Although neither this trade war between US-China nor the economic consequences of the imposition of tariffs to control trade flows are covered by this thesis, both of these issues can be integrated in future research to identify how tariffs can impact import flows combined with the potential moderating effect from nation brand.

As the link between the above studies and the New Trade Theory (NTT), the economic model of monopolistic competition is a vital component of NTT and suggests that companies regularly

compete on branding and not just on simple price. In this thesis, the branding effect is expanded to include a country competing on better nation brand to ensure that it gains the confidence of its partner country to engage in trade no matter the distance. Branding can also be used to explain why it is that countries can both export and import similar types of products based on the quality and market demand in different trading partners. With more trade in place, the nation brand can also have a positive effect on the tendency to sign trade agreements. Even though imports have less significance statistically than exports with respect to the moderating impact of NBD, the import model shows how important it is for countries that are targeting some markets to work on their nation brand. An increase in nation brand can lead to higher trade flows by moderating the negative effect of geographical distance and by encouraging the signing of more FTAs.

To compare the results of this thesis with previous studies, we refer to the NBD moderation impact studied by Sun, Paswan & Tieslau (2016) which emphasized that nation image can impact the country's export, but did not mention the impact on import flows. In their study, they discuss nation brand in relation to exports using random effect estimation on panel data of 24 countries over 12 years while considering key factors that affect trade (i.e., cultural, economic, product, industry, infrastructure, geographic, and political factors). Their key finding was that the nation image might indirectly affect export flows. They also emphasized that an increase in the favorable image of a country will lead the consumers to be willing to pay a premium price for products imported by that country (Koschate-Fischer, Diamantopoulos & Oldenkotte 2012). Similarly, there is evidence that consumers compare the COO of products and are less willing to pay a premium or to buy products from countries with lower or inferior nation brand (Giraldi Ikeda & Campomar 2011). These results explain the phenomenon of increasing imports by the US from countries with lower nation brand distance compared to those with rather high nation brand distance. Similarly, Dimitrova et al. (2016) studied the direct impact of nation brand on exports but not on imports without taking into account

the potential moderating effect that nation brand can have on other determinants of trade. The results indicate a significant and positive impact of nation brand on exports. There have been few other studies in the literature that have investigated the nation brand in relation to other variables using quantitative methods. One such study was recently published in the *International Journal of Economics and Finance* by Lahrech et al. (2020). This study highlighted that the relationship between FDI inflows and nation branding is positive and significantly correlated. These results can be tied to the results of this thesis because it suggests that the nation brand plays a significant role in attracting business to countries and eventually leads to higher imports.

6.3.4 Discussion on the Control Variables Results with Relation to Import Flow

As discussed in the export model, the control variables are needed as proxies for other components included in the model that have an impact on trade. They are included to ensure the validity of the findings, which is a common practice in the gravity literature. The detailed results for the main control variables in this study (i.e., 1. GDP for country pair i&J, 2. population for country pair i&J, 3. Common borders, 4. Common Language, 5. Being a member jointly in WTO, 6. Being a member jointly in GATT) are summarized and detailed in Table 5.14, which we refer to in our discussion of the results of the structural gravity model that includes MRT. The empirical findings indicate that the coefficients of the control variables generally have the expected signs, although not all of them are statistically significant at the 5 percent level.

According to these findings, the “lnGDPj” that represents the GDP of the country of destination has a positive relationship with the import flow and is significant at ($p < 0.01$). Our results suggest that a 1% increase in the trading country GDP leads to an increase in US import volumes of up to 0.778%. This finding indicates that greater GDP in exporting trading partners will create a larger production capacity that results in a greater supply and economy of scales for exports. This result is widely confirmed in the gravity literature of international trade (e.g., Halaszovich & Kinra, 2018; Chi &

Kilduff, 2010). Further, the population for the country of destination “ln(POPjt)” shows a positive and a high level of significance at 1% which matches the study of Chi & Kilduff (2010) for both PPML and OLS estimators. Our results indicate that a 1% increase in lnPOPjt leads to an increase in US imports by 0.099%. This result can be explained by the observation that the countries with greater populations are more likely to have a sufficient labour force and will be able to increase export competitiveness (Porter 1990).

On the other hand, the coefficient of US GDP “ln(GDPit)” is significant statistically and positively correlated with import flows. The results suggests that a 1% increase in US GDPit leads to an increase in US import volume by up to 2.614% which is in conformity with the previous studies that report a positive relationship between larger GDP and a greater demand for imports (e.g., Halaszovich & Kinra 2018; Chi & Kilduff 2010). With respect to the US population, “ln(POPit)” has a negative sign and significant relationship with import flows. This result suggests that with a lower population in US, the cost of labour will be more expensive than trading partners (j) which will stimulate more import flows.

Moving to the dummy variables, the independent variable for a common border (MRT Borderij) shows a slight improvement when MRT is included in comparison within the import model that ignores MRT. Based on our models, we conclude that a 1% increase in “MRT Borderij” leads to a 2.228% increase in US imports as reported in column 2 of Table 5.14. The common border is believed to be a significant enabler for bilateral trade as it reduces the trade cost between the trading partners. These results are similar to the ones published by Halaszovich & Kinra (2018) and Cantore & Cheng (2018). The control variable for common language means that two nations share a particular national language and mostly have a similar culture. This variable is also expected to have a positive impact on trade flows because it opens channels of communications between exporters and importers. The dummy variable tracking the common language (MRT Languageij) shows improvement with a

structural gravity approach in contrast to the traditional gravity approach, although the coefficient results are positive and statistically significant ($p < 0.01$) only for the OLS estimates. Our results indicate that an increase of 1% of MRT Languageij leads to an increase in US imports of up to 0.41%. This result is widely confirmed in the literature studying the efficiency of international trade (Frankel 1997; Glick & Rose 2002).

The dummy variable “Being a member in WTO and GATT jointly” is expected to have a significant and positive impact on countries that are members in these two important trade organisations. The positive relationship is expected because of the privilege that members have over those countries which are not members. The impact of WTO/GATT membership was found to be positive in most of the estimations and statistically significant for US import flow. These results indicate that being a member country in WTO/GATT will help in easing commodity movements between member countries and will give privileges to the business partners in the terms of trade. The results of this thesis indicate that trade relations between the US and its trading partners are critical and that the impact of being a member in an international trade organization increases the regularity of trade relations. For this study, the conclusion is that joint membership in an international trade organization spurred imports to the US from the partner country. These findings match many other studies in the field (e.g., Chi & Kilduff 2010). Overall, the import model has confirmed our expectations with respect to the control variables, which helps to ensure the validity of our results when other proxies are included in the model.

6.4 Summary

This chapter has discussed the main study objectives of our thesis and the findings of our research. It has clarified the convergence or divergence of our results in comparison to the findings of other studies in the literature. The results of the panel trade data related to the United States and to its 36 major trading partners from 1993 to 2016 using structural gravity model of international trade has

provided the basis for this discussion. In this chapter, the different signs of the relationships that exist in the gravity model have been discussed. The focus has been on the relationships between trade flows and several key determinants of trade (e.g., geographical distance, FTA) along with the measurement of the moderation impact of nation brand distance. The discussion has also highlighted the results of the control variables that can impact the validity of our findings. The nation brand field continues to evolve and as a result the related literature is expanding, although there is a lack of quantitative research that could be used for comparisons with the results of our research. Despite these challenges, this thesis has added to the existing literature and has helped to provide evidence related to the predicted hypotheses. In addition, this work can be viewed as an extension of the theoretical foundation of NTT by showing the monopolistic competition effect on countries rather than just firms.

The summary of the discussion shows that NBD influences both export and import volumes. For less distant countries in terms of nation brands, it is possible to overcome the negative effect of geographical distance which can stimulate mainly exports, but also imports to some extent. The results showing the impact of NBD on FTA and trade flows provides some interesting insights as there is a negative and significant moderation impact of NBD on the relationship between FTA and on both export and import volume, which suggests that a decrease of NBD will increase the effect of FTA on trade flows. The main outcomes of this discussion will be presented as the theoretical and practical contributions of this thesis in the next chapter together with recommendations for future studies. Overall, the results of our research generally supported our study expectations and found evidence that a lower nation brand distance between two trading partners will have a positive moderation impact mainly on export volumes, but also import volumes to some extent.

CHAPTER 7 : CONCLUSION AND CONTRIBUTION

7.1 Introduction

This chapter presents the conclusion of the thesis and how it can contribute to the theoretical and practical areas related to the impact of nation brand on trade. This summary includes concluding remarks showing how the key findings have achieved the main aims and objectives of the research.

Further, the theoretical contributions of the thesis to the existing literature and the related implications are demonstrated. In addition, the practical contributions and implications of the research findings will highlight how policymakers and stakeholders can stimulate their country trade based on the nation brand distance concept. In order to guide future research, this chapter will highlight the limitations of the study and recommend extensions for future studies based on the recommendation provided. Finally, a summary at the end of the chapter will give an overview of the main ideas presented.

7.2 Concluding Remarks

A country's image can play an important role in stimulating the country's GDP and economic growth. Improving nation brand on a global scale is an essential part of managing a nation, just as improving a strong positive corporate brand is an important part of managing a firm. Despite the plethora of research that is interested in studying this area, the concept of nation brand is divergent and fragmented because the field is still developing and lacks a coherent theoretical base. The absence of a solid and reliable measurement for nation brand was addressed in this thesis and identified as a gap that needs to be bridged.

The comprehensive literature review of both international trade and nation brand has helped to form a solid conceptual model by isolating the key variables that drive import and export flows. Based on this conceptual model, the hypotheses relating the key variables influencing trade flows within the context of international trade were formed. The extension of the New Trade Theory (NTT) to include countries rather than firms was a prominent part of this thesis. However, the work to combine the assumptions of NTT with the nation brand models was challenging due to a lack of a solid theoretical background of nation brands. The application of the NTT assumptions related to economies of scale and to a comparative advantage enhanced model that includes monopolistic competition have helped to explain both the negative relationship between geographical distance and trade flows as well as the positive relationship between FTA and trade flows. Moreover, it has been shown that the country-of-origin effect (COO), which refers to how national reputation can impact the buying of products originated in one country based on its image, can have a significant impact on trade flows. Finally, the gravity model helped to analyze each of the variables separately and in relation to multiple control variables (i.e., GDP and the population of the importer and the exporter, common border, common language and being a member jointly in WTO/GATT).

This thesis is based on a positivist epistemological assumption and a deductive research approach, which is widely used in marketing and international trade research to create knowledge based on the evaluation of research findings. With this basis, a suitable quantitative approach was adapted based on secondary data collected primarily from World Bank data using the United States as country of origin and its 36 major partners as the country of destination in a panel dataset for the period of 1993 to 2016.

To ensure the robustness of the methodology, multiple tests were conducted on the panel data and the structural gravity model (the new workhorse in the international trade literature) was employed in the research. This study employed a first-order Taylor approximation of multilateral resistance terms in

both the export and import model analysis using the estimation methods of Ordinary Least Square (OLS) and Poisson-Pseudo-Maximum Likelihood (PPML). The PPML estimation was included because it effectively handles the challenges coming from panel data such as the presence of heteroscedasticity and zero trade flows. These problems are present for results of models including MRT and ignoring MRT for estimations using OLS and PPML. An analysis using a cluster option and a robustness test showed that the methodology was robust and that the results were consistent with an improvement in cases including MRT/PPML.

Nation Brand Distance (NBD) is a new concept introduced in this thesis to highlight how nation brand scores that differ between trading partners can change their relative trade flow preferences. The calculation of the NBD score was based on the Country Brand Strength Index (CBSI) which consists of relative values per capita of the statistical data for five different areas included in the composite index. The five areas included in the index include the dimensions of exports, tourism, foreign direct investment, immigration, and government environment.

Our study claims to demonstrate a clear effect of nation brand distance on the export and import volume relations with the main trade determinants. We also have taken some steps to mitigate the risk of endogeneity that is present usually in international trade studies by employing advanced econometric model that cover control variable which are explaining more than 90 percent of trade variables. This control variable comprises all possible fixed characteristics of the country pair as exporter and importer (e.g. GDP, population, common border & language, member at WTO/GATT). The rather substantial of NBD effects are over and above those effects and are robust at the overall nation level.

This thesis has successfully accomplished its main aim by investigating the moderating impact of nation brand distance on the relationships between the country's geographical distance, the trade agreements and the trade flows between trading partners. The key findings give insights regarding

how the difference between the trading partners' image based on their different economic indicators that constitute the CBSI can reduce the negative affect of the geographical distance and motivate more FTA to be signed. As the predictive model for both exports and imports are fairly accurate for all the estimation methods, a high explanatory power of the model is indicated. In summary, the empirical results help to confirm the predicted hypotheses related to the export model and generally supported the predicted hypotheses related to the import model.

Regarding the further aims of this thesis, the research objectives were mainly achieved as demonstrated in the results and discussion chapters. Regarding the first objective, the objective was accomplished, i.e., the geographical distance relationship with export flows was assessed to be negative for all models. However, this result was not attained for import flows, especially when applying PPML models. These results suggest that even though geographical distance is still a cost indicator for exporters, the demand for products from certain countries can overcome the distance in some import cases. Regarding the second objective, by analysing the impact of FTA on US trade, the objective was achieved for the tests of the correlation between an FTA and export volumes. The key finding here emphasizes the positive influence of an FTA on a country's export volumes. The interpretation for this positive and significant relationship between export volumes and an FTA is based on the many benefits that an FTA can bring to the economy such as reducing tariffs in the destination country. On the other hand, the import model showed unexpected negative results for most of the model parameters. This result is mainly due to the fact that the sample included some significant global exporters that depend more on the US market demand than on a signed FTA. Regarding the third objective, by exploring the relationship between nation brand distance and trade flows, the objective was achieved. The findings suggest that the NBD might impact trade flows in some cases, especially when the moderating impact is applied together with using PPML estimation. Regarding the fourth objective, the results also indicate that this objective was achieved. When the

NBD moderation impact was investigated on both export and import volumes, the key finding suggested that less distant countries in terms of nation brand are able to overcome the negative effect of geographical distance, thus stimulating primarily exports, but also imports to some extent. The interpretation of this key finding is that, even though the cost of trade increases with distance, countries will target closer nation brand partners to trade with because they can more easily match each other's market expectations regarding quality, cost and most importantly the trust in the relationship with their trading firms. This last objective was also achieved when the moderation impact of NBD on FTA and trade was examined. This result provided some interesting insights as there is a negative and significant moderation impact of NBD on the relationship between FTA and on both export and import volumes. These results suggest that a decrease of NBD will increase the effect of FTA on trade flows due to the increased traders' confidence that the trade agreement terms will be fulfilled.

Overall, the results achieved the aims of the study and accomplished the related objectives. The findings supported most of the study expectations and found evidence that lower nation brand distance between two trading partners will indirectly impact primarily export volumes and import volumes to some extent. These empirical findings can be translated to both theoretical and practical contributions as the following section will present.

7.3 Theoretical Contribution and Implications

This thesis makes an important theoretical contribution in that the findings help to articulate that Nation Brand has not been sufficiently examined in the literature related to international trade. The thesis has also developed a new distance concept by calculating the difference between each country NB score to moderate the main variables that are known to affect trade. Hence, it has extended the literature on New Trade Theory (NTT) by focusing on countries, rather than on companies. It has

also elaborated the Krugman model of monopolistic competition (Meltis Model, 2003), which represents a new branch of NTT that addresses firm-specific differences where the firms are competing not just on price, but also on the branding of the products. In this study we extend the monopolistic competition concept to cover nations that compete on their nation brand in order to maximise their trade in the international market. Further, economies-of-scale can explain the trade among countries like the US and other developed countries that have similar technologies, similar production costs, and to some extent similar nation brand aspects. On the import side, the extension to include the monopolistic competition concept from (NTT) on nation brand can explain why a country imports product that have similar substitutes in the local market due to the reputation of the exporting country (COO) that is created with their economies of scale in such products. Moreover, it contributes to the literature by blending the monopolistic competition from NTT with the COO effect in order to understand how countries are competing to trade internationally rather than competing with firms domestically.

Much of the previous research in the nation brand field was based on conjecture and anecdotal evidence. It is intuitively appealing that the notion of having a well-constructed model of nation brand can contribute to the academic field. From the extensive literature review done in this research and supported by Hao et al. (2019) in their full review of the nation brand concept published in the *International Marketing Journal* under “Two decades of research on nation branding: A review and future research agenda”, there does not exist many quantitative studies that use international trade variables in combination with reliable sample data that make it possible to replicate the reported research findings and allow for further comparisons. This is the only study to our knowledge that empirically tests the relationship between nation brand distance and both export and import volumes using the structural gravity model of international trade, one of the most successful models in the economics literature.

The key finding of the moderating effect of nation brand distance on trade volumes contributes to the existing academic literature. This research is designed to bridge the gap found in the literature, which has focused only on one target country brand instead of comparing bilateral brand differences or which has focused only on nation brand as an independent variable rather than as a moderator. For future researchers, this study design can be applied to extend the study of the relationship of NBD with classifications of trade by industries or products in order to identify which type of industry is mostly affected by the brand of the COO. A further contribution to the literature is that this study considers both import flows in the nation brand model as well as export flows, a comparison that many economists have ignored when investigating how nation brand impacts both export and import flows. The recommendation for future research is to include imports as a significant key for the holistic analysis of trade flows.

7.4 Practical Contribution and Implications

This thesis provides government and public policymakers with insights on how they can improve their trade flows by improving their nation brand strategy. By reducing the gap in nation brand distance between the trading partners, the obstacles posed by geographical distance will be overcome and the result will lead to more efficient trade agreements with potential international markets. A further implication is that multinational businesses will be encouraged to use the nation brand distance to study feasible target markets abroad. As such, traders not only need to develop economies of scale related to production, but also need to work on all elements of the nation brand (i.e., economic, political, cultural, historical and social aspects) in order to stimulate trade flows.

From a practical perspective, the improvement of the country nation brand score (NBD) will enhance exports regardless of the negative effect related to geographical distance. In parallel, the improved NBD will serve to motivate countries with different levels of nation brand to sign trade agreements

with each other in order to ensure a common basis for the governance of markets and to establish a foundation for trust. These results show how the nation brand of a country can explain the volume of imported products for items that are similarly produced in the local market. This preference for imports is due to the consumer perception that the producing country image (i.e., the COO effect) can drive the product demand and consumer behaviour. In addition, the evidence shows that countries which manage to reduce the cost of transportation by providing better infrastructure or eliminating tariffs by signing FTAs will create incentives for the most competitive firms to enter international markets. When the trade barriers are removed, more products will be exported and imported which will increase the competition not only among firms, but also among countries to market their advantages to potential traders in order to attract more flows.

For practitioners, the case of China is a good example for how an improvement in nation brand improves access to markets like the US. Previously, the label 'Made in China' was not perceived positively in consumers' minds. Recently however, the Chinese news agency, Xinhua, has been actively working to change the perception by releasing a series of advertisements that promote the nation brand of China as a country (Lew & Sulaiman 2014). By improving the COO, there is a positive effect on trade due to the increased credibility that a nation acquires for delivering strong value propositions and for focusing on the production of high-quality products. This credibility eventually leads to an improvement in the excellence branding plan of individual businesses and increased exports. Even though the NBD moderation effect for imports is statistically less significant than for exports, the import model remains relevant because it shows how important the nation brand element is for countries that are targeting some markets in order to improve their total trade flows. The model shows that the NBD moderation effect helps to overcome the negative effect of geographical distance and encourage the signing of more FTAs.

This study emphasizes the practical implication that the effect of geographical distance is economically substantial because an increase in the physical distance between two countries increases both the cost of transportation over longer distances as well as the cost of accessing information about foreign markets. Policy makers have to understand that the trade flows of their countries are determined by geographical location, country size, access to waterways and the physical size of the country. The implication for policy is to recommend a clear strategic project to enhance the transportation infrastructure as a key element for improving the nation brand strategy.

When nation brands are similar, traders will be motivated to trade with each other in the knowledge that the individual country institutions are well established, that the risks are lower and that the governance environments are healthier. The markets that are closer in nation brand tend to trade with each other regardless of the geographical distance since their products are identified with their nation brand, thus allowing more demand in both markets. In addition, the countries with a similar nation brand are more likely to be in a similar stage of economic development, which makes the product prices comparable in the destination market. Conversely, for countries that differ significantly in nation brand distance (i.e., their nation brands have economic elements that are different), the need for an FTA will be higher. The confidence that a country and its traders will respect the terms in the negotiated trade agreements provides a stimulus to enter into more trade agreements, which results in higher trade flows. However, our results show that FTAs are not effective when there is a significant gap in the nation brand distance between the member countries.

7.5 Recommendations and Future studies

The results of this thesis provide a strong recommendation to both academic researchers and policymakers. These results are due to the construction of a new distance measure based on nation brand (NBD) combined with an objective composite index (CBSI). For researchers, the proposed

distance measure (NBD) should be considered as a starting point for additional extensive studies combined with more complex measurements of trade flows. For future studies, the Modified CBSI proposed by Lahrech et.al (2020) provides a promising extension of the composite index for researchers interested in constructing a more complex measure of NBD. With this extension, researchers can construct the NBD based on a new measurement that includes weights for multiple dimensions including longitudinal data, relative values and the addition of a Human Development Indicator (HDI) as new factors used to measure the cultural aspects of a country. Further, the NBD measure can serve as a basis for future studies designed to efficiently assess the brand strength of trading partners using economic data statistics rather than just primary data collected by consulting companies based on surveys that are both costly and limited to a number of countries and years.

This additional research is proposed in order to extend the existing solid theoretical foundation for the nation brand measurement by including less divergent and fragmented concepts. In addition, future studies can be expanded to include more recent annual data collected across an expanded range of countries included in the sample. This modified research design makes it possible to test bilateral trade data instead of just unilateral country flows between trading partners. Moreover, future studies can be designed to analyse aggregated FTAs across different economic blocs in order to investigate the effectiveness of those agreements on trade flows in relation to their nation brand. As a possible new variable to be introduced to the model, a tariff could be included as a control variable to gage the importance of the main variable. Another possible inclusion is a variable to measure total exports based on those product types that might not be impacted by nation brand.

For policymakers, this expanded research design can be used to evaluate the various components of the country brand in order to make informed strategic decisions based on institutional and economic factors, thus optimizing the support, development, and harnessing of the country brand. Countries can also use this distance measure to see their relative standing in the global market and to identify

changes required to improve their current position in new foreign markets. For both public and private organizations, the NBD can be used to improve the nation brand strategy by identifying fundamental changes required in the economic, political, social, institutional and legal systems. For national policymakers as well as for both public and private entities, it is important to be aware of the power that nation brand distance has to moderate trade, to reduce the perceived cost of distance and to increase the effectiveness of FTAs. Policymakers need to understand how to build, manage, improve and protect a well-established nation brand in order to coordinate the country branding efforts. The communication of the nation brand is a major undertaking for trading countries especially when initiating trade agreements and trying to access new markets.

7.6 Limitations of The Study

As with all research, there are some limitations of this study pertaining to the sample size, the dataset, the methodologies and the estimation methods. Regarding the sample size used in this thesis, it is limited to one target country (United States) and a number of its trading partners. Although the US is considered to be a significant trade partner in the international market, the choice of this country does limit the generalization of the results to developed countries or to the NAFTA trading block, with the applicability to emerging economies being questionable. With regard to the destination countries, the sample included data from more than 36 major US trading partners. However, some major countries like the UAE and Israel were excluded due to a lack of available data. In addition, our sample did not differentiate between large or small countries, city-states or island nations that might impact the nation brand (Fetscherin 2010).

The results of our study are based on estimates generated by a structural gravity model. Despite the fact that the Dynamic Gravity dataset issued by U.S. International Trade Commission produces estimates that are consistent with the structural gravity literature, there are some limitations of using

this database as a source for the control variables. Although there are more than 20 years of data in our sample, it is limited to the period from 1993 to 2016. The inclusion of the most recent trade data would provide a more comprehensive view of potential changes in trade patterns with the latest years in place. As for the common language variable, it was constructed in the referenced database by using the CIA World Factbook and cross-referencing languages. This limits the ability to identify the extent that similar languages are spoken in each country. A further limitation is the dependence on WTO data to obtain FTA data. This represents a considerable limitation as this database often lacks accurate information about when member nations enter or exit trade agreements (Gurevich & Herman 2018). As with all indexes, the CBSI that is used to measure NBD had some limitations as well. The CBSI lacks a weighting method to aggregate the different parameters contained in the compound index and instead just adds them equally. Also, the index needs to be modified to integrate other objective data in the model, such as measurements for historical, cultural, social, heritage, unique landscape and landmarks needed to provide a more holistic picture of nation brand. Other factors missing from the index include measures for globalization, public diplomacy, sustainable environments, mega events and cultural distance that might impact the image of the country in front of others (Fetscherin 2010).

Regarding the estimation method, reference is made to the literature highlighting some important limitations of the PPML model (Burger et al. 2009). One of the challenges is that the model is subject to excess zero flows. An additional challenge is that the dependent variable is vulnerable to the issue of overdispersion due to the presence of unobserved heterogeneity in trade flows that are not accounted for in the model. Although this issue might generate consistent estimates of trade flows, there is an overall inefficiency in the calculation method. Their study served to generate a general debate in the literature on alternative estimation techniques that can solve the inefficiency issue and still accommodate zero trade values at the same time. As one example, Monte Carlo simulation has been proposed as a solution that can include the zero inflated models. As a second example, the

Poisson pseudo-likelihood regression with multiple levels of fixed effects (PPMLHDFE) was recently proposed to be used in future research by Correia, Guimaraes and Zylkin (2019). This technique is claimed to be robust with respect to the statistical separation and convergence issues. However, Head and Mayer (2014) and Santos Silva and Tenreyro (2011) have suggested that there does not exist an estimation technique that is optimal for all research designs. Instead, the estimation technique should be chosen based on the research questions, the available dataset, and the existence of suitable robustness tests.

The gravity equation for international trade used in this thesis has played a central role in the trade literature and is considered to be one of the most successful empirical models in economics (Anderson 2011). As an extension of the model, many papers have examined the role of adding-up "multilateral resistance" indexes for exporters and importers and have proved that this generally appears to satisfy the constraints when analysing trade data (Fally 2015). Overall, despite some specification issues and model limitations that can be considered further in future studies, the results presented in this thesis and discussed above are comparable with findings from related existing studies. Based on these results, we conclude that the research objectives have been achieved.

7.7 Summary

This chapter has served to summarize the key findings and to illustrate how the research aims and objectives were accomplished. It has also highlighted the theoretical and practical contributions of the research and made recommendations suitable for implementation by policymakers. Moreover, it has proposed some recommendations for future studies as a result of the in-depth review of the literature and the detailed analysis of the key findings with relation to the related theories. Finally, the limitations of the study have been provided in order to give the reader an insight into the robustness of this research.

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CHAPTER 8 : APPENDICES

Appendices 1

Table 8.1: US Exporting and Importing countries

Year	Country (j) no	Country J Name	CBSI (j) Σ zscore (E+T+F+I+G)	US CBSI (i) Σ zscore (E+T+F+I+G)	Nation Brand Distance
2016	18	Japan	9.19	5.33	3.86
2016	31	Singapore	7.86	5.33	2.53
2016	20	Korea, Rep.	7.80	5.33	2.47
2016	32	Switzerland	7.22	5.33	1.89
2016	24	Netherlands	5.03	5.33	0.30
2016	6	China	4.78	5.33	0.56
2016	34	United Kingdom	3.86	5.33	1.47
2016	12	Germany	3.81	5.33	1.53
2016	21	Malaysia	3.21	5.33	2.13
2016	1	Australia	3.07	5.33	2.26
2016	4	Canada	3.06	5.33	2.28
2016	30	Saudi Arabia	2.78	5.33	2.55
2016	5	Chile	2.70	5.33	2.63
2016	16	Ireland	2.53	5.33	2.80
2016	11	France	2.46	5.33	2.88
2016	17	Italy	2.30	5.33	3.04
2016	28	Peru	1.64	5.33	3.70
2016	33	Thailand	1.49	5.33	3.84
2016	26	Oman	0.98	5.33	4.35
2016	13	Guatemala	0.98	5.33	4.36
2016	15	India	0.95	5.33	4.38
2016	9	Dominican Republic	0.54	5.33	4.80
2016	10	El Salvador	0.41	5.33	4.92
2016	22	Mexico	0.09	5.33	5.25
2016	29	Russian Federation	(0.19)	5.33	5.52
2016	2	Bahrain	(0.45)	5.33	5.78
2016	27	Panama	(0.48)	5.33	5.82
2016	3	Brazil	(0.55)	5.33	5.89
2016	23	Morocco	(0.60)	5.33	5.93
2016	25	Nicaragua	(0.81)	5.33	6.14
2016	8	Costa Rica	(1.88)	5.33	7.21
2016	19	Jordan	(2.35)	5.33	7.68
2016	14	Honduras	(2.59)	5.33	7.92
2016	35	Venezuela	(2.78)	5.33	8.12
2016	36	Vietnam	(5.45)	5.33	10.78
2016	7	Colombia	(5.62)	5.33	10.96

Appendices 2

Test of normality on panel data results

Table 8.2: Shapiro–Wilk Normality Test

Variable	Obs	W	V	z	Prob>z
lnExport _{it}	864	0.992	4.651	3.783	0.000
lnImport _{it}	863	0.983	9.300	5.489	0.000
lnGDP _{it}	826	0.972	14.767	6.615	0.000
lnPOP _{it}	792	0.969	15.595	6.737	0.000
lnNBDdist _{it}	862	0.934	36.527	8.856	0.000
lnGeoDist _{it}	864	0.928	39.703	9.062	0.000
agree_fta	864	0.995	2.520	2.275	0.011
commonborder	864	0.961	21.429	7.544	0.000
commonlang~e	864	0.997	1.828	1.485	0.069
member_wto~t	864	0.990	5.319	4.114	0.000
member_gat~t	864	0.994	3.255	2.905	0.002

Test of Linearity on panel data results

Table 8.3: Ramsey Reset Test

Variable	Obs	F	Prob>F
lnExport _{it}	864	21.00	0.0000
lnImport _{it}	863	24.85	0.0000

Test of homoscedasticity on panel data results

Table 8.4: Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity

Variable	Obs	chi2	Prob>F
lnExport _{it}	864	84.62	0.0000
lnImport _{it}	863	58.59	0.0000