SCHOOL OF ECONOMICS AND MANAGEMENT

Bachelor's Programme in Economy and Society

European Union and Trade Flows: The Case of Lithuania

Analysing the Impact of EU Integration on Trade Flows of New Member States

by

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Abstract:
This paper examines the impact of EU integration on Lithuania's direction of trade flows. Using a gravity model and bilateral trade data from 1995 to 2020, the study aims to understand changes in trade flows after joining the EU and provide practical implications for policymakers, businesses, and investors. The findings show that EU membership has positively influenced Lithuania's trade flows. The country experienced a realignment of trading partners and increased trade volumes after joining the union. However, this thesis also shows that the EU is not the only factor affecting trade. The core variables of the gravity model consisting of distance and GDP have a significant impact on determining the direction of trade flows. Other factors such as ties with former Soviet Union members also have a significant impact although this impact has diminished over time.

Keywords: trade, European Union, Lithuania, gravity model.

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1. Introduction

In today's interconnected global economy, countries strive to maximise their trade volumes and reap the benefits of economic integration. For many European nations, membership in the European Union (EU) represents a crucial step towards achieving these objectives. The EU, renowned as one of the most successful economic alliances in history, fosters deep economic integration among its member states, promoting free trade, harmonised regulations, and shared prosperity (European Union, 2023a). This paper delves into the fascinating realm of trade dynamics of Lithuania, a country that underwent a transformative journey by gaining independence from the Soviet Union in 1990 and joining the EU in 2004. Lithuania was chosen as a case study for this thesis because of its remarkable economic development since the beginning of its integration with the EU. It was even referred to as a "Baltic tiger" by The Economist (2003) because Lithuania was the fastest-growing economy in Europe at the time. It is also an Eastern country that can serve as an example for other eastern candidate states.

The fundamental question of this thesis is "To what extent did Lithuania's integration into the EU impact the direction of its trade flows?" To address this research question, the gravity model is employed, a widely recognised framework for analysing bilateral trade patterns. By examining the trade data of Lithuania and its trading partners during the 1995-2020 time period, the intricate relationship between EU membership and trade flows is unravelled. According to the theory of customs union, joining the EU should have resulted in a greater emphasis on intra-union trade for Lithuania (Lipsey, 1982). The expectation was that EU accession would lead to shifts in trading partners and potentially increase overall trade. Therefore, it becomes intriguing to examine the specific changes in Lithuania's trade following its EU membership and assess the impact it has had on the country's trade dynamics. Additionally, other factors that influence Lithuania's trade patterns are explored, shedding light on the multifaceted nature of international trade dynamics.

The findings of the thesis reveal compelling insights into the consequences of EU membership on Lithuania's trade performance. The analysis demonstrates a positive and statistically significant coefficient for the EU membership variable, indicating that joining the EU has a tangible impact on trade flows. This finding is reinforced by the presence of a clear positive trend in the figures depicting Lithuania's trade development. The broader significance of EU

membership for trade integration, economic growth, and investment prospects across member states is discussed by delving deeper into the implication of the results.

However, it is important to acknowledge that the benefits of EU membership may not be uniformly distributed among member countries. Factors such as economic size, geographical location, and sectoral specialisation can influence the extent to which individual nations benefit from trade integration. Smaller and less developed economies may face challenges in fully capitalising on the advantages offered by EU membership and might suffer from side effects such as emigration that leads to brain drain. Nevertheless, the consensus among scholars remains that EU membership has substantial positive effects on member economies and trade development.

1.1 Aim

Similar studies looking into the EU's impact on trade patterns have been performed before, however, the majority of them date back to the early 2000s (Laaser & Schrader, 2002; Laaser & Schrader, 2005; Mikutaitė, 2006; Paas, 2003). Lithuania officially joined the EU in 2004, thus it is important to analyse the trade patterns after the accession date to get more accurate results which this study is going to perform. The majority of the studies look at all three Baltic states together or the EU's impact on trade in general, therefore the pool of knowledge is very limited when it comes to a more detailed study of the impact of the EU's integration on trade development. This gap in the academic knowledge of the area allows for a great contribution to be made by the thesis.

The aim of this research is to find out what effects the EU integration has on the trade patterns of its new and potential members by using Lithuania as a case study. The most recent data is going to be collected into a dataset and analysed which will greatly contribute to the existing body of research on the subject. However, the EU is unlikely to be the only factor influencing the trade patterns of the chosen country, thus it is also important to look at what other external factors might have had an impact. Such factors might include the status of a former Soviet Union member, distance and common currency among others that will be included in the gravity model. The thesis aims to contribute to the existing research on the impact of economic unions and Free Trade Agreements (FTAs) on the trade patterns of countries. Additionally, it

aims to inform future political decisions of countries considering creating or joining a trading bloc, especially with the ongoing EU expansion eastwards.

1.2 Relevance

The EU represents one of the largest and most influential economic unions globally, making it essential to understand how its integration affects trade patterns and dynamics within its member countries. Analysing the EU's impact on trade provides valuable insights into the consequences of regional economic integration and its potential benefits or challenges for the candidate members. Understanding the EU's impact on the trade of its members helps policymakers make informed decisions regarding trade strategies and negotiations. By examining the experiences of other member states, potential member states can anticipate the potential advantages and challenges that may arise from deeper integration or policy changes. It provides valuable lessons and insights that can guide the state's approach to maximising the benefits and mitigating the risks associated with its relationship with the EU. Furthermore, studying the EU's impact on trade contributes to the broader understanding of regional integration processes and their effects on economic development. It helps policymakers, researchers, and analysts gain insights into the mechanisms through which integration influences trade flows, market competitiveness, and economic growth.

1.3 Outline of the Thesis

The thesis is structured according to the following order. The first section provided an introduction to the thesis topic, including its aim, research question, and relevance. The following section presents background information related to the topic including a history of international trade development and theories, and a short background on the EU and Lithuania. The third section is the literature review which discusses previous studies that are relevant to this thesis. It includes studies on the relationship between free trade and economic growth, studies analysing the EU impact on trade and literature on the gravity model. The fourth section discusses the theoretical framework of the thesis which consists of various trade theories including the gravity model. The fifth section presents the methodology of the thesis including descriptive statistics and gravity model specifications as well as the potential limitations of the research. The sixth section presents the findings and analysis which include figures and tables.

The following section discusses the results by answering two questions that are the basis of this thesis. Finally, the eighth section concludes and briefly discusses the potential for further research.

2. Background

2.1 International Trade

Trade has been a fundamental aspect of human societies since the earliest civilisations. It dates back to pre-historic times when modern currency did not exist, and barter was one of the forms of exchange. Even back then trade operated through the market that was driven by value maximisation and controlled by the supply and demand mechanism (Smith, 2008). The famous Silk Road was established around 130 BCE between China and the West and extended approximately 6437km across highly challenging landscapes (National Geographic Society, 2022). Merchants were motivated to take the risk by the potential profits created by the high demand for goods that another region was endowed with. In this case, these goods included spices, tea and silk among others from China and from the West weapons and horses (Mark, 2018). This long history of trade led to trade becoming a subject of significant academic research, especially in the field of economics and economic history.

A great number of significant trade theories have evolved over time. To begin with mercantilism through the 16th to the 18th century followed by the classical trade theories of Adam Smith and David Ricardo (Zhang, 2008). Eli Hecksher and Bertil Ohlin (Hecksher-Ohlin, 1993) contributed with another prominent theory in the 20th century. Followed by many other scholars along with their ideas and models, including the Gravity Model which is an important tool of this thesis and will be further discussed in the literature review and theoretical framework sections. These theories seek to explain the determinants of trade patterns, the distributional impacts of trade on different groups within societies and the effects of trade on economic growth and development.

The benefits of trade are widely acknowledged, including increased efficiency, access to a wider variety of goods and services, and the potential for increased economic growth and development. These potential benefits keep trade on top of the agenda of the world economies. This is reflected in the increased number of members in trade organisations and trade agreements. The World Trade Organisation (WTO) consists of 164 members since 29 July 2016 (World Trade Organization, 2023a) There were 355 Regional Trade Agreements in place as of 1 December 2022 (World Trade Organization, 2023b). Several of those agreements are FTAs which means that tariff and non-tariff trade barriers are generally abolished between the members of the agreement (Myers, 2016). The major FTAs include the North American Free

Trade Agreement (NAFTA), Southern Common Market (MERCOSUR) and ASEAN Free Trade Area (AFTA). A step further is a single market where members apply common trade policy to non-members and even allow the free movement of capital, goods, services and people. The major single market in the world is the European single market which includes the 27 EU members plus Norway, Switzerland, and Liechtenstein.

2.2 European Union

The EU was established on November 1, 1993, through the Maastricht Treaty with the aim of promoting peace, stability, and prosperity in Europe through economic and political integration (European Parliament, 2023.). Today the EU is the world's largest trading bloc with 440 million consumers (European Commission, 2023a). Its single market and customs union work as an engine for economic growth due to the free movement of important factors of production. In 2022 the EU stood as the third largest economy in the world with a total value of produced goods and services which is commonly referred to as the gross domestic product (GDP) of 16.6 trillion US dollars at current prices (IMF, 2023a). It is also the world's second-largest exporter after China, and it accounts for around 14 per cent of the trade in goods (European Union, 2023b). The single market and trade are just two of several factors contributing to the EU's economic power.

The other factors include high economic integration not only through the single market but also through the common currency (euro) and common domestic policies in agriculture and fisheries among others (European Commission, 2023b). Moreover, the EU has invested heavily in innovation and research through programs such as Horizon Europe and the European Research Council (European Commission, 2023c). These programs have helped to foster innovation and promote economic growth in the EU. The EU also has a strong social protection system that provides a safety net for its citizens (European Commission, 2023d). This helps to promote social stability and reduces economic inequality. Overall, the EU's economic strength is the result of a combination of factors, including a large and integrated market, economic policies promoting integration and innovation, strong social protection, and participation in international trade.

The factors listed above make EU membership sought after by many countries. The EU has been expanding eastwards with the most recent members being Croatia, Romania and Bulgaria

and candidate states being Albania, Serbia, and Ukraine, among others (European Commission, 2023e). In 2004 the largest EU expansion took place with ten new countries joining the union. One of those countries was Lithuania which is the case study of this thesis.

2.3 Lithuania and European Union

Lithuania, officially known as the Republic of Lithuania, made history as the first of the Soviet republics to declare independence in 1990 (Central Intelligence Agency, 2023). This declaration marked the beginning of a transformative period for the country, including its integration with the EU.

In 1991, just a year after Lithuania's declaration of independence, the PHARE program was extended to include all three Baltic states, namely Lithuania, Latvia, and Estonia (Vilpišauskas, 2019). The PHARE program, which stands for Poland and Hungary Assistance for the Restructuring of the Economy, served as the primary financial instrument utilised by the EU to support the accession process of Central and Eastern European nations (European Parliament, 1998). The inclusion of the Baltic states in the program demonstrated the EU's commitment to assisting these countries in their transition towards market economies and democratic governance.

Subsequently, Lithuania and the EU deepened their cooperation with the signing of the Trade and Cooperation Agreement in 1992, followed by the Free Trade Agreement in July 1994 (Vilpišauskas, 2019). These agreements laid the foundation for strengthened economic ties and enhanced trade relations between Lithuania and the EU member states. Lithuania formally submitted its application for EU membership in 1995, solidifying its aspiration to become a full-fledged member of the Union (EUR-Lex, 2007). After a rigorous accession process that involved meeting specific criteria and undergoing necessary reforms, Lithuania successfully joined the EU in 2004, along with several other Central and Eastern European countries. This historic moment marked a significant milestone for Lithuania, as it cemented its place as a member of the European community, embracing the shared values, principles, and opportunities that the EU offers.

With the support and assistance of the EU, Lithuania embarked on a path of profound political, economic, and social changes in the years following its accession. The country underwent a

comprehensive transformation, including the establishment of a market economy, the privatisation of state-owned enterprises, and the adoption of a new constitution (Vilpišauskas, 2014). These reforms aimed to align Lithuania's governance structures and economic policies with EU standards and practices, fostering greater integration and cooperation within the union. EU membership has had a profound impact on Lithuania, contributing to its economic growth, stability, and development (Kuokštis, 2014). It has provided access to the EU's single market, facilitating increased trade and investment opportunities. Furthermore, EU funding programs have supported infrastructure projects, regional development, and the advancement of key sectors, bolstering Lithuania's socioeconomic progress (Registrų Centras, 2023). While the advantages are clear there are also issues that came with the EU membership. Due to the free movement of people within the Schengen Area emigration and demographic changes are among the biggest issues in Lithuania that require attention and targeted policies to ensure balanced and sustainable development (Vilpišauskas, 2019; Thaut, 2009; Kuokštis, 2014). Overall, it could be argued that the benefits brought by EU membership outweigh the issues caused by emigration.

3. Literature Review

3.1 Free Trade and Economic Growth

Free trade, described as the absence of government-imposed restrictions on international trade, has been a controversial topic in economic policy debates. While free trade advocates argue that it promotes economic growth and development (Dollar, 1992; Sachs & Warner, 1995; Edwards, 1998). Opponents argue that it can have negative effects on domestic industries and employment (Rodrik, 1997, 2018; Rodríguez & Rodrik, 2000; Krugman, 1994). This part of the literature review examines the theoretical and empirical evidence on the relationship between free trade and economic growth. It is relevant for this thesis because the EU is a single market that promotes free trade and impacts the economic growth of its members and trading partners.

The theoretical foundations of free trade can be traced back to classical economists, such as Adam Smith and David Ricardo, who argued that free trade can lead to higher levels of efficiency and economic welfare. According to the theory of comparative advantage, countries should specialise in producing goods and services in which they have a comparative advantage and trade with other countries to obtain goods and services that they cannot produce efficiently (Ricardo, 1817). This leads to increased productivity and efficiency, which can lead to economic growth. These theoretical foundations will be further discussed in the theoretical framework section below.

Empirical evidence suggests that free trade can have a positive impact on economic growth. A study by Frankel and Romer (1999) found that countries that reduced trade barriers experienced higher economic growth rates than countries that did not. Moreover, a study by Dollar and Kraay (2004) found that countries that increased their share of trade in GDP experienced higher economic growth rates than countries that did not. Dollar (1999) in his other study finds that exporting is linked to numerous externalities that contribute to the long-term growth of open economies. Empirical evidence shows that exporting, together with the accessibility of imported inputs and machinery, speeds up technological progress in developing economies. Edwards (1999) employed a novel comparative dataset consisting of 93 countries to examine the robustness of the relationship between openness and total factor productivity growth. The author found that countries with greater openness have, in fact, encountered a more rapid growth in productivity. A paper by Sachs and Warner (1995) documents the process of

worldwide integration and evaluates its impact on the economic growth of the countries undergoing reforms. The authors found that in developing nations, there is a tendency for open trade to be linked with other indicators of a sound economy, such as macroeconomic stability and dependence on the private sector as the primary driver of growth. To a certain degree, the process of opening up the economy has facilitated governmental accountability in other domains (Sachs & Warner, 1995). As emphasised by Smith's followers, trade fosters growth through numerous channels, including increased specialisation, optimal distribution of resources based on comparative advantage, dissemination of international knowledge via trade, and increased domestic competition triggered by international competition.

However, the benefits of free trade are not evenly distributed, and some lose more than gain. Free trade can lead to the growth of industries that have a comparative advantage, while domestic industries that are not competitive can suffer. Moreover, free trade can lead to increased income inequality, as some individuals and groups benefit more than others (Harrison, McLaren & McMillan, 2010). Rodrik (1997; 1995) is one of the most prominent trade liberalisation sceptics. In his book “Has Globalization Gone Too Far?” he takes a straightforward and impartial view of the advantages and disadvantages of worldwide economic integration and censures mainstream economists for underplaying the possible risks. Furthermore, he presents an original and compelling argument that the "winners" from trade are equally exposed to the potential outcomes of social unrest as the "losers." The impact that trade liberalisation might have can be affected by several factors, especially the trade policy of the country.

The policy implications of free trade depend on the context and the specific economic conditions of each country. Governments can use various policies, such as subsidies and tariffs, to protect domestic industries from foreign competition. Rodrik (1995) and Krugman (1994) argue that advocates for openness and price liberalisation in developing countries depict the East Asian experience differently from East Asian specialists who studied the case. While the majority of economists highlight the 1960s trade reforms focusing on liberalisation, experts stress the importance of extensive government intervention in these nations' achievements. The successes of Asia illustrate that economies with reduced civil liberties and more planning than those typically accepted in the West can be highly successful (Rodrik, 1995; Krugman, 19949). However, these protectionist policies can lead to inefficiencies and distortions in the economy whereas trade liberalisation policies, such as the removal of trade barriers and the promotion of free trade agreements, can lead to increased efficiency and higher economic welfare

(Bhagwati, 2002). Thus, there is no consensus in the academic world on whether trade liberalisation brings positive effects, but it could be said that the outcome of these policies highly depends on the state.

Free trade has been a controversial issue in economic policy debates. The theoretical and empirical evidence suggests that free trade can have a positive impact on economic growth, but the benefits are not evenly distributed, and there can be winners and losers. Policy implications depend on the specific economic conditions of each country. Trade liberalisation policies can lead to increased efficiency and higher economic welfare and the EU is a great example.

3.2 EU and Trade

The European Union is a political and economic union consisting of 27 member states. Since its establishment, the EU has played a significant role in shaping trade policy not only for its member states but also for the global economy. This part of the literature review aims to provide an overview of the impact of the EU on the trade of its members by analysing various research studies and reports.

The EU has a significant impact on the trade of its members. Intra-EU trade accounts for approximately two-thirds of total trade for EU member states (Eurostat, 2023). This highlights the importance of the EU in facilitating trade among its members. Furthermore, the EU's single market, which allows for the free movement of goods, services, capital, and people, has been a driving force behind the increase in trade between member states. Several studies have analysed the impact of the EU on trade, and most have found that membership has a positive effect on trade. For example, a study by Glick (2017, p.197) revealed significant positive impacts of European Monetary Union (EMU) membership on exports, with a 40 per cent increase observed among the older EMU members. Additionally, it identified noteworthy independent effects of EU membership, ranging from a 70 per cent boost for the older members to nearly 300 per cent for the newer members. Another paper by Badinger and Breuss (2004, p.31) states that between 1960 and 2000, intra-EU trade saw remarkable growth, increasing by 1,200 per cent in real terms (6.7 per cent per year). By comparison, the growth in trade between the EU countries and the rest of the world during the same period was more moderate, at 730 per cent.

The EU's trade policy also plays a significant role in shaping trade among its members. The EU negotiates trade agreements on behalf of its members, and these agreements can help to reduce trade barriers and increase market access for EU exporters. As of today, the EU has trade agreements in place with around 80 countries (European Commission, 2023g). Péridy (2005) conducted a study on the trade impacts of the EU-Mediterranean agreements using the gravity model, revealing a significant increase in the exports of Mediterranean countries to the EU. The study estimates that gross trade creation resulting from the agreements accounts for around 20-27 per cent of actual exports. Consequently, the high proportion of Mediterranean exports to the EU (43.1 per cent of the total) is largely attributed to the influence of these agreements. Kepaptsoglou et al. (2009) also use the Euro-Mediterranean Free Trade Agreement (EMFTA) as a case study for analysing FTA effects on trade flows in the region. The researchers found that the agreement had a positive impact on almost every commodity category that was analysed. The authors also highlight the fact that trade flows are influenced by transportation costs to a great extent which confirms the gravity model.

In another study, Sarker and Jayasinghe (2007) utilised an extended gravity model with pooled data and generalised least squares methods to analyse trade creation and diversion effects of the EU on agri-food trade flows among its members during the 1985-2000 time period. Their findings suggest that such developments have significantly increased trade in agri-food products within the EU. However, some of this growth in intra-EU trade appears to have come at the cost of non-member countries, as the EU became less open to trade with non-members during this period and directed trade away from the rest of the world towards intra-EU channels. Another criticism is based on the fact that the benefits of EU membership on trade are not evenly distributed across all sectors and members. Swedish National Board of Trade (2015) looked into the economic effects of the European single market and found that the impact of the single market on the movement of services and people has been relatively limited. Current research does not provide strong evidence of increased trade in services among member states as a direct result of the single market. Additionally, there is a lack of indications regarding heightened competition or enhanced productivity within the services sectors.

So far, the discussed literature focused on the impact on all EU members, however for this thesis, one of the members is of greater importance. Thus, now the focus shifts towards Lithuania-specific literature. Following its EU membership, Lithuania experienced significant economic growth and development. The country transitioned from a planned economy to a market-oriented system, implementing various reforms to attract foreign investment and

promote entrepreneurship. Today, Lithuania is considered one of the fastest-growing economies in the EU (Vilpišauskas, 2019). Unfortunately, the number of studies looking specifically into Lithuania's case is limited and a large fraction of it is written in Lithuanian which greatly limits the impact of the studies. Kuokštis (2014) analyses Lithuania's economic development in the context of EU membership. The author concludes that Lithuania's remarkable economic growth was to a great extent affected by the increased trade flows. On the other hand, there is a greater number of studies analysing the impact of the EU on the trade patterns of the three Baltic states. Laaser and Schrader (2002) find that the trade patterns of the Baltic states changed after integration into the EU began with diminishing ties with the former Soviet Union members. Thus, this thesis will contribute greatly to the research body by providing a more detailed analysis of Lithuania's trade flow development in the EU context.

3.3 Gravity Model

As can be noted the papers discussed above share a similar method – the gravity model. This model has become one of the main tools used by researchers in the field of international economics (Shepherd, 2013; Kepaptsoglou, Karlaftis & Tsamboulas, 2010). The model was inspired by Newton's law of gravitation and applied to international trade by Tinbergen in 1962 (Mele & Baistrocchi, 2012). The mechanisms behind the model and its variables will be discussed more in detail in the next section.

This model has been applied to analyse the impact of regional integration and FTAs by numerous researchers (Grant & Lambert, 2008; Lee & Park, 2007; Baier & Bergstrand, 2007; Carrère, 2006). Grant and Lambert (2008) used to model to illustrate that the impact of regional trade agreements (RTAs) on the trade of member countries is primarily determined by three factors: the sector being analysed (agricultural or non-agricultural), the specific RTA being studied, and the duration of the phase-in period that is commonly associated with RTAs. Lee and Park (2007) apply the gravity model to RTAs and their application to East Asia. Their research findings validate that regional trade agreements (RTAs) involving countries with superior trade facilitation capabilities have a higher probability of promoting trade creation, a lower probability of trade diversion, and therefore, a greater likelihood of steering the global economy towards universal free trade.

Europe is a very attractive region among researchers when it comes to integration and trade due to the EU and its single market. Plenty of studies have analysed the trade patterns and the effects of integrating into the union (Kepaptsoglou et al., 2009; Bun & Klaassen, 2007; Nitsch, 2000). Bun and Klaassen (2007) analysed the impact of the on trade and confirmed that there is a positive effect, however, it is not as great as estimated before because the models used included upwards bias. Nitsch (2000) studied national borders' impact on international trade and found that on average across all EU countries, domestic trade is approximately ten times higher than trade with an EU partner country of equivalent size and distance. This pronounced preference for domestic trade implies that national borders continue to exert a significant influence on trade patterns even within the European Union.

Despite the strong empirical support for the gravity model, some researchers have raised concerns about its assumptions and lack of theoretical background. For example, Shepherd (2013) discusses two of the greatest limitations of the original model. The author acknowledges that the older 'intuitive' gravity model does not account for the concept of trade creation and diversion. Thus, the diminishing trade expenses on a particular bilateral pathway do not impact trade on other pathways, which contradicts the conventional economic theory. The basic model faces a second issue when we contemplate uniform modifications to trade expenses across all directions, including domestic trade. According to the model, this alteration would lead to proportional changes in trade across all bilateral pathways, including domestic trade. However, this outcome is not aligned with economic theory, as relative prices should remain unaltered despite the shift in trade costs. If relative prices stay constant, consumption patterns should remain unchanged for a particular level of total production.

Due to the popularity of the model the aforementioned issues have been overcome. Perhaps the most popular alteration was formulated by Anderson and van Wincoop (2003) in their famous work "Gravity with Gravitas". They introduce the concept of multilateral resistance into the gravity model. The authors state gravity model can be seen as a demand function, which has been shaped by the choice of the constant elasticity of substitution structure for consumer preferences. Consumers exhibit a preference for variety, indicating that their satisfaction increases when they consume more of a particular product type and when they consume a greater range of varieties without consuming more of any one type in particular. Thus, due to the popularity of the gravity model, the issues surrounding it are studied and solved.

4. Theoretical Framework

In this part of the thesis, the theoretical ideas presented and discussed in the earlier section on past research will be employed. Each of these concepts will be thoroughly defined and discussed in relation to their contribution and relevance to the research objectives.

4.1 International Trade

Trade, described as the exchange of goods and services between countries, has long been a topic of interest among economists and policymakers alike. Theoretical frameworks have been developed to analyse the impact of trade on economic growth, income distribution, and overall welfare. This section of the theoretical framework will draw on several influential theories to explain the mechanisms underlying the effects of trade on various economic outcomes and their relevance for this research.

One of the earliest and most widely cited theories is the theory of comparative advantage, developed by David Ricardo (1817). According to this theory, countries specialise in producing goods in which they have a comparative advantage, meaning that they can produce at a lower opportunity cost than other countries. By engaging in trade, countries can increase their overall welfare by obtaining goods at a lower cost than they would have been able to produce domestically. This theory emphasises the benefits of free trade and highlights the potential gains from specialisation and exchange. It is relevant for the research of this thesis since the EU has a single market that operates by the free trade principle and brings benefits to its members which is in accordance with the theory. The degree of specialisation on the other hand is a matter of discussion for other researchers.

More recently, the new trade theory has emerged to explain patterns of trade that cannot be explained by comparative advantage alone. This theory emphasises economies of scale, product differentiation, and imperfect competition as drivers of trade (Krugman, 1979). According to this theory, countries can benefit from trade even if they do not have a comparative advantage in a particular good, as firms can achieve economies of scale by specialising in particular product niches. This theory has been used to explain the growth of intra-industry trade, where countries trade similar but differentiated products.

4.2 Gravity Model

The gravity model of trade has become increasingly popular in recent years due to its ability to predict the bilateral trade flows between two countries based on their economic size and the distance between them (Shepherd, 2013). This model is based on the idea that trade is influenced by the distance between countries (a push factor) and the economic size of the trading partners (a pull factor) which are the core variables. Distance is used as a proxy for transportation costs thus according to the model countries that are geographically closer to each other are more likely to engage in trade. With time the model has been developed and more variables have been added to the equation, such as population, and GDP per capita. Dummy variables are often used to illustrate the effects of common borders, trade agreements, geographical position (landlocked or island), common language and any other factor that might have an impact on the dependent variable (van Bergeijk & Brakman, 2010). This allows to include in the gravity equation the effect of the EU membership, the same currency and other factors that might influence the trade flows of Lithuania.

One advantage of the gravity model is that it is relatively easy to use and can be applied to a wide range of trade data. The model can also be used to evaluate the effects of other factors on trade, such as exchange rate fluctuations, political instability, and changes in trade policies (Baldwin & Taglioni, 2006). On the other hand, one disadvantage of the gravity model of trade is that it assumes that the bilateral trade flows between countries are symmetric, which may not always be true. Asymmetry in trade flows can lead to biased estimates of the gravity model (Baier & Bergstrand, 2009). Thus, although the model is easy to use the results should be critically analysed.

The gravity model of trade has gained popularity in recent years as a tool for predicting bilateral trade flows based on the size and distance between countries. The model suggests that trade is influenced by the economic size of trading partners and the cost of transportation between them. The gravity model has been used to analyse the effects of trade agreements, such as NAFTA, EMFTA and APEC on trade flows (Kepaptsoglou, Karlaftis & Tsamboulas, 2010). While the model has some limitations, it provides a useful framework for understanding the mechanisms underlying international trade.

5. Methods and Data

The following section outlines the methodology employed in the study, elucidating the selected research design, chosen variables, and cases. The section concludes by acknowledging and discussing the possible limitations of this study.

5.1 Methodology

The methodology adopted in this study is guided by the theoretical framework and research objectives discussed in the preceding sections. The chosen approach to answering the research question is a quantitative one. The thesis will begin with descriptive statistics and then proceed to the gravity model.

5.1.2 Descriptive Analysis

This thesis will include several figures visualising Lithuania's economic growth and the trade data with its chosen trade partners. To relate back to free trade and economic growth topic discussed under literature review the first figure will display Lithuania's GDP growth rate. The following figures will illustrate trade flows with the chosen trade partners which include the Russian Federation in order to see if there was a decline in exports to Russia after the collapse of the Soviet Union. Another chosen trade partner is the European Union. The value of exported goods to the EU member states at the time will be summed and displayed to see the general trade pattern. However, in this case, the displayed trends might be deceptive since the volume of trade with the EU might have changed due to the change in the number of members. To account for that the last two figures will display the value of trade between Lithuania, Germany and the Slovak Republic (Slovakia). Germany was chosen because it was already in the EU before Lithuania joined, thus it will show if there was a change in trade between the two countries that could be related to Lithuania joining the union. Slovakia was selected as an exemplary nation due to its substantial trade relations with Lithuania prior to EU accession, as well as both countries joining the EU at the same time. This allows us to see whether accession to the EU had an influence on the trade patterns between the chosen countries.

This visualisation creates a better picture of the trends in trade and connects them to certain time periods and events that happened during those years. However, this approach does not test the validity of the relationship between integration into the EU and trends in trade, thus a more empirical approach needs to be applied and this thesis relies on the gravity model for that.

5.1.3 Gravity Model Specification

The primary tool used to analyse the trade patterns of Lithuania will be the utilisation of the gravity model of the trade-based approach. The fundamental gravity equation evaluated in the paper comprises the principal pull and push factors, or gravitational forces, that impact bilateral trade flows (Shepherd, 2013, p.9):

$$logX_{ij}^{t} = \beta_0 + \beta_1 logGDP_i + \beta_2 logGDP_j + log\tau_{ij} + \varepsilon_{ij}$$
$$log\tau_{ij} = log(distance_{ij})$$

Where X_{ij} are the exports from the country i to country j and GDP is the domestic product of each country. Next, τ_{ij} symbolise trade costs between the two countries and $distance$ is the geographical distance between them and is used as an observable proxy for trade costs. Finally, ε_{ij} is the error term.

As discussed earlier in the thesis, the model consists of pull and push factors in this case the main pull factor is the GDP which represents the size of the economy. Other measures such as GNP (Gross National Product), GDP (PPP) (Purchasing Power Parity) and GDP at MER (Market Exchange Rate) have been used to measure the size of the economy (Paas, 2002; Cornett & Iversen, 1998; Laaser & Schrader, 2002). However, GDP is a preferable measure in this case because it captures all the output of the economy whereas GDP (PPP) focuses on the well-being of the inhabitants which makes it less suitable for this thesis (Gros & Gonciarz, 1996). The main push factor is the distance between the trading partners which represents the trade costs in terms of transportation costs as well as other possible barriers such as language or culture.

Despite GDP being a convenient variable to include it is also useful to include GDP per capita difference between trading partners in order to avoid collinearity problems and gain benefits

of per capita measure. GDP per capita is a better indicator of a country's economic development because it shows the average income of an individual in the country which is a better indicator of living standards. These standards impact the population's consumption patterns which will have an effect on trade which is a substantial factor in this thesis. The difference part tests the Linder Hypothesis which is an economic proposition that suggests countries with comparable per capita income levels tend to have similar patterns of consumption, leading to increased trade between them (Borkakoti, 2017, pp.366–376).

Apart from the conventional gravitational forces that influence bilateral trade flows, there exist certain factors that also impact the level of trade intensity. These include regional agreements and institutions that facilitate trade relations, geographical position, as well as the historical background of trading partners, which leaves an imprint on their current trade relations through historical ties. These factors can be incorporated into the gravity equations via dummy variables.

The following is the entire gravity equation of trade determinants between Lithuania and its trading partners to be employed in the study:

$$logTRADE_{ij}^{t} = \beta_0 + \beta_1 log(GDP)_i^t + \beta_2 log(GDP)_j^t + \beta_3 log(DIST)_{ij} + \beta_4 log(GDPpc)_{ij}^t + \beta_6 EU_{ij}^t + \beta_7 CBO_{ij} + \beta_8 CCU_{ij}^t + \beta_9 CCO_{ij} + \beta_{10} BSR_{ij} + \varepsilon_{ij}^t$$

Some variables that were discussed under the theoretical framework section are not included in the gravity equation. Language variable is not included because Lithuania is the only country speaking Lithuanian so the dummy would not have any explanatory power. The island variable is not included because there are only two island states in the list of selected countries that will be discussed in the following data section.

All variables of the equation are explained in *Table 1.* below.

Table 1. Explanations of Gravity Model Variables

Variable	Explanation
$TRADE_{ij}^{t}$	Trade between country *i* and *j* in constant 2015 US dollars
GDP_{i}^{t}	Exporter GDP in constant 2015 US dollars
GDP_{j}^{t}	Importer GDP in constant 2015 US dollars
$DIST_{ij}$	Distance in kilometres between the capitals of the trading partners
$GDPpc_{ij}^{t}$	Exporter and importer GDP per capita difference in constant 2015 US dollars
EU_{ij}^{t}	Dummy variable, = 1 if both countries were in the EU in the year *t*, = 0, if not
CBO_{ij}	Dummy variable, = 1 if both countries share the same land border, = 0, if not
CCU_{ij}^{t}	Dummy variable, = 1 if both countries share the same currency in the year *t*, = 0, if not
CCO_{ij}	Dummy variable, = 1 if both countries were members of the Soviet Union, = 0, if not
BSR_{ij}	Dummy variable, = 1 if both countries belong to the Baltic Sea Region, = 0, if not
ε_{ij}^{t}	Error term

The dummy variable of the EU membership is critical because it captures the effect of the EU membership on the trade patterns of its members which is the purpose of this thesis. Common currency variable also plays an important role since the majority of the EU members adopt the euro after joining the union. Other variables influencing trade are included as control variables. These variables include distance, common border, 'coloniser' to account for the ties with former Soviet Union members, and the Baltic Sea Region countries because the sea is a natural resource for transport and be used to lower transportation costs.

The chosen variables will be analysed by not only using figures but also summary statistics and regression analysis. The summary statistics table will include the Variance Inflation Factor (VIF), mean, median, standard deviation, and maximum and minimum values of the variables. The examination of the summary statistics will provide a comprehensive understanding of the

distribution, variation, and potential issues related to the chosen variables, aiding in the interpretation and analysis of the results obtained through regression analysis.

For the analysis two regression models will be used and compared in order to achieve more credible results. In line with previous literature, the pooled panel ordinary least squares (OLS) model is going to be used as a baseline for comparing the performance of the two other models. However, due to the limitations of the pooled OLS such as the lack of individually specific effects, the real strength of this study comes from the use of panel data techniques. These techniques consist of fixed and random effects estimators. The choice of which estimator to use is determined by the Hausman test and in this case, the test determined that the fixed effects model is the appropriate choice. However, it is important to note that the fixed effects model emits all time-invariant variables such as distance, common border, coloniser and BSR but it keeps the EU dummy variable which is the critical factor in this thesis.

5.2 Data Set

A unique and meticulously compiled dataset forms the foundation for conducting a comprehensive analysis in this thesis, capturing the dynamics of trade patterns and their associated factors. A balanced panel data set with 884 observations consisting of 34 countries for the period of 1995 - 2020 was compiled by the author. The data set includes 23 EU members and 16 of them are in the eurozone and one European Free Trade Area (EFTA) member. The EU and EFTA countries were chosen because they are critical for answering the research question. Seven Commonwealth of Independent States (CIS) members and one former member are included in order to see if there was a change in trading patterns with former Soviet Union members after Lithuania declared independence and whether the trade flows were redirected to the West. The top ten biggest Lithuanian export markets are included to ensure the validity of the results. The complete list of countries included looks like this: Austria, Azerbaijan, Belarus, Bulgaria, Croatia, Cyprus, Czech Republic., Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Moldova, the Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Ukraine, United Kingdom, United States, and Uzbekistan.

The time period from 1995 to 2020 was chosen because important political and economic developments in Lithuanian and world history are covered during this time period. These

events include Lithuania's accession to the EU in 2004, into the Schengen area in 2007 and the eurozone in 2015. The choice of the beginning and end of the period was also based on the availability of reliable data. The value of goods exported Free on Board in US dollars data was taken from the International Monetary Fund's (IMF) Direction of Trade Statistics (DOTS) database (IMF, 2023b). The FOB price incorporates the value of goods along with transportation and insurance costs that arise within the Republic of Lithuania. However, the statistical value of goods excludes VAT or any other levies. For the import data, only the Cost, Insurance, Freight (CIF) data was available on DOTS IMF database. Export and import data was added together to create a total trade variable used in the equation. GDP and population data were sourced from the World Bank's World Development Indicators databank to calculate GDP per capita (The World Bank, 2023a). The EU's distance calculator was used to measure the geographical distance between the capital cities of the trading partners (European Commission, 2023f).

5.3 Limitations

Despite the valuable insights provided by this study, several limitations should be acknowledged, which may affect the interpretation and validity of the results.

Firstly, it is important to consider the distinction between causality and correlation. While the analysis establishes a relationship between EU membership and trade flows in Lithuania, it does not establish a causal relationship. Other unobserved factors and external variables may be influencing both EU membership and trade flows, leading to a correlation that does not imply causation. Future research could employ advanced methodologies, such as instrumental variables or natural experiments, to address the issue of causality and enhance the robustness of the findings. Another issue that must be considered is endogeneity. The bidirectional relationship between EU membership and trade flows raises the possibility of endogeneity. It is plausible that trade flows may influence the decision to join the EU, or there may be feedback effects between trade flows and EU membership. To mitigate this concern, future studies could employ econometric techniques, such as instrumental variables or panel data approaches, to address endogeneity and establish a more rigorous causal relationship.

Secondly, a significant limitation is that the gravity model employed in this paper is best suited for capturing short-term shocks such as entering an FTA of the EU, and thus, it may not capture

the long-run dynamics between EU membership and trade flows. Trade patterns and economic relationships can evolve and change over time, influenced by various factors such as policy developments, global economic conditions, and technological advancements (Baldwin, 1994). Therefore, caution should be exercised when extending the application of the findings beyond this analysis, as the long-term effects of EU membership on trade flows in Lithuania may differ from the observed patterns.

Lastly, the limitation pertains to the availability and quality of data. The findings are based on the data sources used, and potential measurement errors may exist. The data has been reported from the respective country's own records which creates an issue of potential biases and reliability. To lessen the potential issue the data was taken from IMF and World Bank databases which are considered to be highly reliable. Another factor is that the generalisability of the findings may be constrained to the specific context of Lithuania. The unique characteristics, institutional frameworks, and historical backgrounds of other countries or regions may influence the relationship between EU membership and trade flows differently. Caution should be exercised when extending the findings beyond the scope of this study.

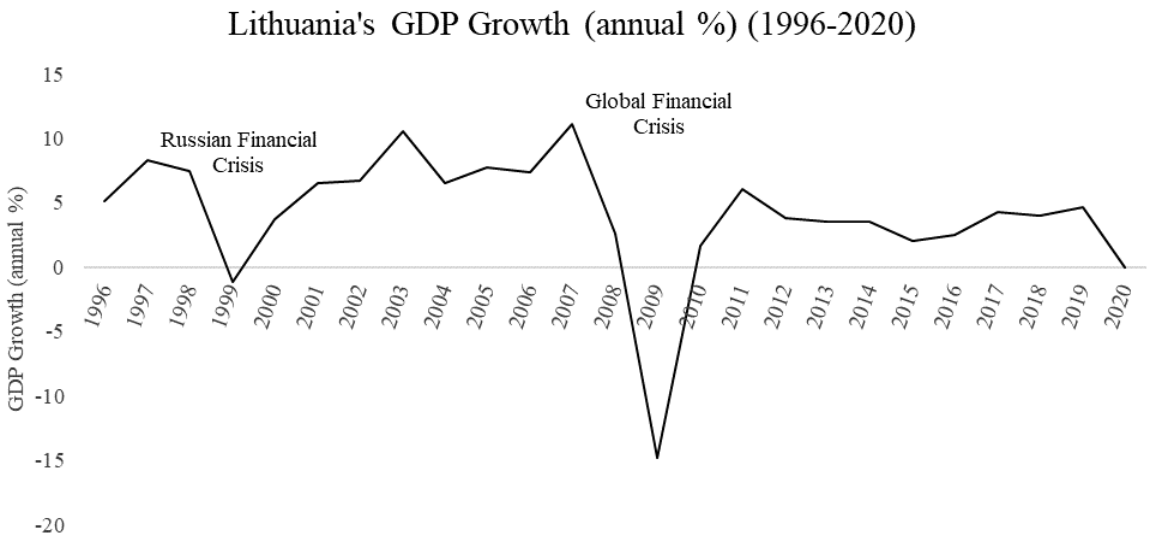
6. Findings and Analysis

This section presents and analyses the main findings. It consists of two parts: Part one analyses the trade flow development of Lithuania using descriptive and diagnostic analysis. Part two presents and discusses the gravity model results.

6.1 Analysis of Trade Flow Development of Lithuania

Trade is an excellent indicator of the economic conditions of the global economy. In general, a strong economy with stable growth, low inflation, and high employment tends to promote trade by increasing demand for goods and services, encouraging investment, and making it easier for businesses to access credit and other financial resources (The World Bank, 2023b).

Figure 1.

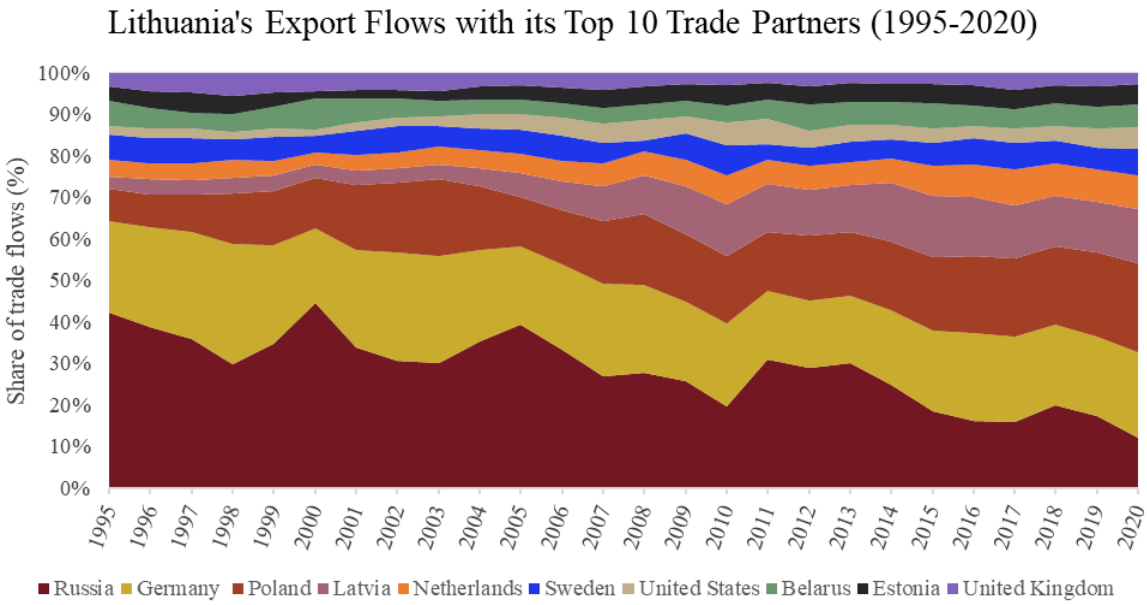


Note: Annual percentage growth rate of GDP at market prices based on constant 2015 USD.
Source: World Development Indicators (The World Bank, 2023a)

As can be seen in *Figure 1* Lithuania's economic growth has been positive and even remarkably high most of the time except for a couple of dips. The most severe fall in growth was caused by the 2008 financial crisis and the second fall was due to the 1998 Russian crisis. The average growth during the period of 1996 - 2020 was 4.2 per cent with the highest value of 11.1 per cent in 2007 and the lowest value of -14.8 per cent in 2009. The period starts in 1996 because the first year of available data is 1995, thus the growth rate is available only for the year after. Lithuania quickly recovered after the global financial crisis and maintained a growth rate of 3

to 4 per cent until recently. These trade fluctuations are reflected in Lithuania's export flow trends with the top 10 export markets of 2020 in the figure below.

Figure 2.

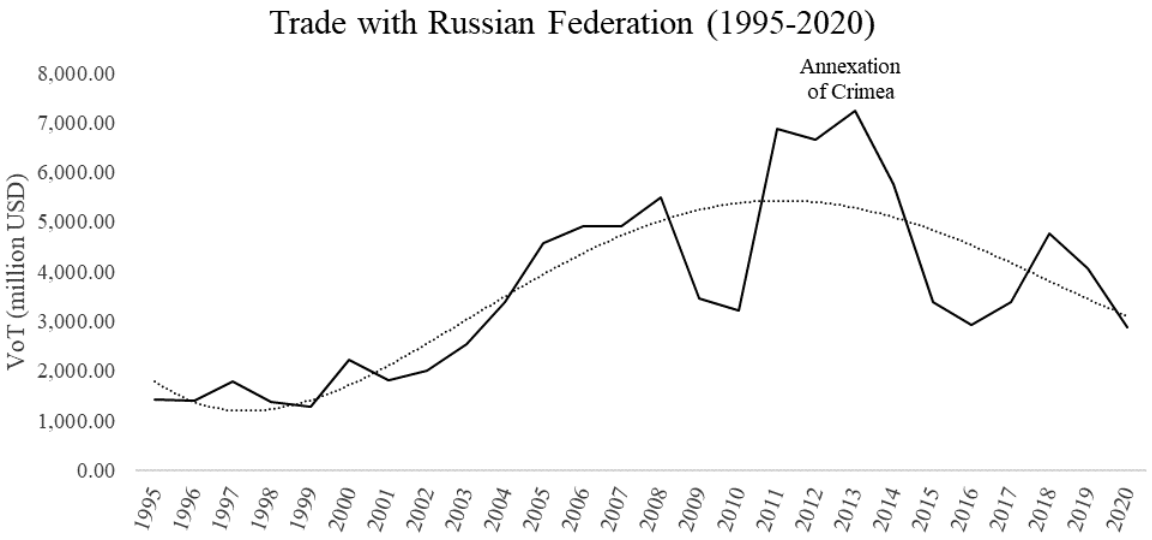


Source: DOTS (IMF, 2023b)

The figure displays a couple of trends. First of all, the relative importance of the Western partners has been increasing. The relative share of exports to Poland, Latvia and the Netherlands has clearly increased during this time period. The EU membership impact is not very clear, although the exports share to Latvia and the Netherlands seem to start increasing around 2003 - 2004 which is the year of Lithuania's accession into the EU. Although the United Kingdom and the United States make it to the list of the biggest export markets they are not as eminent as the rest of the list.

The most unmistakable trend is that of a fall in Russia's importance as a trade partner. The share of trade flows to Russia has been gradually decreasing from over 40 per cent in 1995 to just over 10 per cent in 2020. However, the decline in importance does not equal a decline in the volume of trade.

Figure 3.

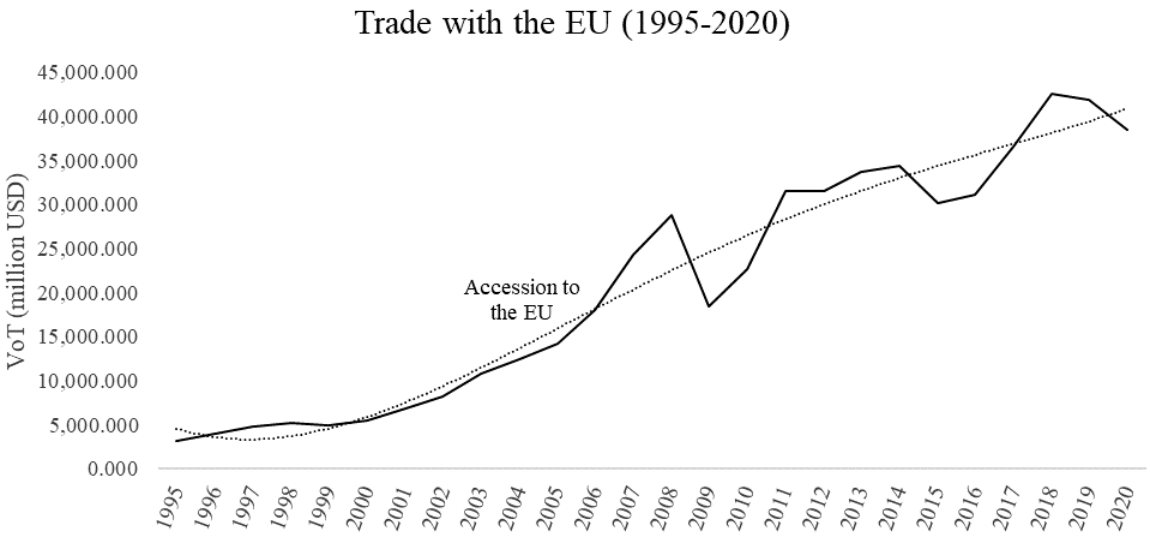


Source: DOTS (IMF, 2023b)

The figure displays the value of trade (VoT) with Russia and the dotted line is a polynomial trendline. Considering the way Lithuania regained its independence from Russia it is surprising that the trade with its former coloniser kept growing after Lithuania regained its independence even after it joined the EU. This suggests that the political determinants of trade play a significant role in the direction of trade flows.

Except for financial crises, the only other factor that led to a fall in trade with Russia was its aggressive actions towards Ukraine. The Russian military intervention in Ukraine began in late February 2014 and led to several governments imposing sanctions against Russian and Ukrainian officials, businesses, and individuals. The US, EU, and other countries and international organisations approved these sanctions (Council of the European Union, 2023). These sanctions included an embargo on exports to Russia of designated military and oil production equipment. As a response, Russia imposed sanctions against several countries, including a complete ban on food imports from the EU, the US, Norway, Canada, and Australia (Christie, 2015). These sanctions contributed to the depreciation of the Russian currency and the financial crisis that occurred in Russia during 2014-2015. Thus, the EU accession by itself did not lead to a significant fall in trade between Lithuania and Russia although on the other hand sanctions placed by the EU automatically included Lithuania which had a great impact.

Figure 4.



Source: DOTS (IMF, 2023b)

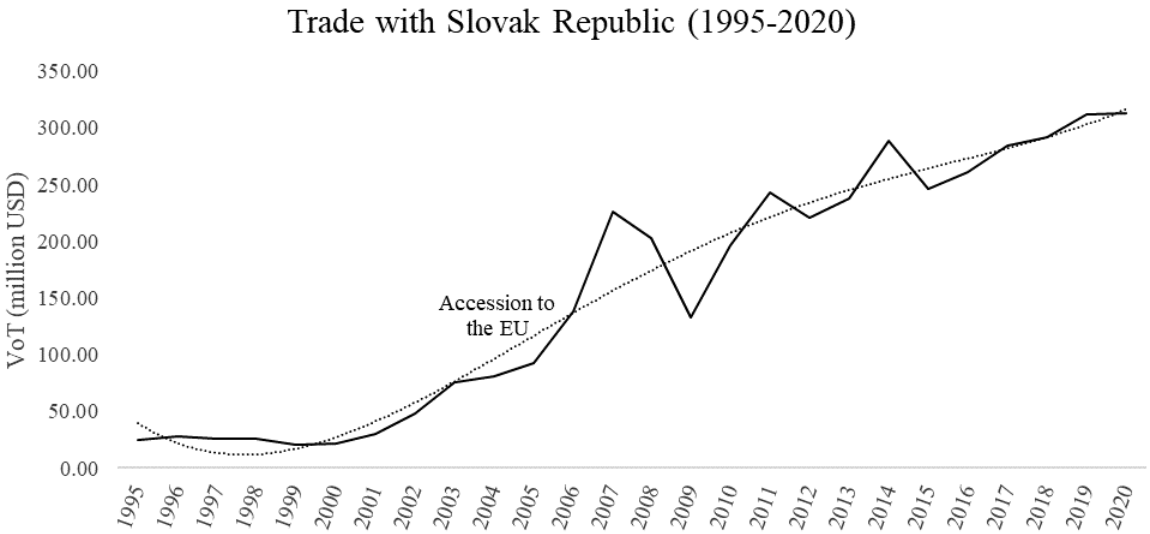
The picture is different when it comes to the EU. In *Figure 4* it can be seen that Lithuania's trade with the EU countries has been continuously increasing except for a couple fluctuations. Accession to the EU seems to have generated a noteworthy boost in trade. However, this growth might have been caused by the EU enlargement that took place in 2004 and not due to an actual increase in trade flows. Nine other countries joined the EU together with Lithuania which could have led to the increase in trade volume that is visible on the figure. In order to test this, we can look at Lithuania's trade development with one country that was in the union before and one that joined the EU at the same time, in this case, Germany and Slovakia are chosen as examples.

Figure 5.

Source: DOTS (IMF, 2023b)

Trade with Germany was relatively high from the very beginning which probably is due to the size of its economy. The trade flows continued to increase throughout the studied period and Germany maintained its position as one of the biggest trading partners of Lithuania as displayed in *Figure 2*. There is a steep jump visible after 2004 when Lithuania officially joined the union. This suggests that Lithuania's accession to the EU had a positive impact on trade with the older members. It is also interesting to see what impact it had on trade with countries that join the union at the same time as Lithuania, thus the figure below displays the trade with Slovakia.

Figure 6.



Source: DOTS (IMF, 2023b)

As can be seen, the trade with Slovakia was very low and it stayed this way until around 2000 when trade started to increase. The steepest jump occurred after the accession to the EU and the trend has been positive since then except for a few fluctuations due to economic conditions. It suggests that accession to the EU has a significant impact on the trade flows of its new members due to trade actually increasing and not only due to the EU expanding. However, to test the significance of the relationship more precise methods should be applied, such as the gravity model of trade.

6.2 Gravity Model Results

In this section, the results of the empirical analysis of Lithuania's trade patterns are presented using the gravity model of trade. The summary statistics on the data utilised in the gravity equation for this study are presented in *Table 2* below.

Table 2. Summary Statistics

Variable	VIF	Mean	Median	S.D.	Min	Max
Trade	-	5.37	5.65	2.03	-1.69	8.88
Distance	2.22	7.1	7.06	0.77	5.15	8.89
GDP Lithuania	2.28	24.19	24.27	0.3	23.61	24.60
GDP Trade Partner	2.56	25.86	25.92	1.84	21.71	30.62
GDP per capita difference	3.77	-0.33	-0.38	1.14	-2.47	2.75
EU membership dummy	2.41	0.45	0.00	0.5	0	1
Common border dummy	2.01	0.12	0.00	0.32	0	1
Common currency dummy	1.24	0.1	0.00	0.30	0	1
Common coloniser dummy	2.96	0.29	0.00	0.46	0	1
Baltic Sea Region dummy	1.47	0.18	0.00	0.38	0	1

Source: Author's calculations

VIF is a measurement for multicollinearity detection in regression analysis. According to the software used in this thesis (Gretl) values above 10 might indicate a collinearity problem. Since VIF is not larger than 10 for any of the independent variables it can be concluded that the multicollinearity of the regression and correlation between variables is low and will not have a significant impact on the results of the gravity model of trade.

In general, the mean values of the variables closely align with the median values, indicating a lack of significant outliers and a relatively symmetric distribution in the panel data. In the given context, the standard deviation of 2.03 suggests a moderate level of variability in trade. This means that the values of the variable tend to deviate from the mean by an average of approximately 2.03 units. The moderate standard deviation of GDP per capita difference indicates that Lithuania has a few significant trade partners with varying income levels. This to some extent contradicts the Linder hypothesis, which contends that trading partners should often have comparable income levels, however for a more significant conclusion regression analysis should be used.

The empirical results of the gravity model, encompassing trade flows between Lithuania and its 34 trading partners between 1995 and 2020 using two different methods, are presented in *Table 3* below.

Table 3. Gravity Model Results

Variable	Pooled OLS		Fixed Effects	
	Coeff.	T-value	Coeff.	T-value
Distance	-1.15	-23.33	e	e
GDP Lithuania	1.47	11.55	-	-
GDP Trade Partner	0.91	41.00	1.77	7.11
GDP per capita difference	-0.13	-2.97	1.34	5.38
EU membership dummy	0.73	9.14	0.44	7.26
Common coloniser dummy	2.07	21.56	e	e
Baltic Sea Region dummy	0.55	6.78	e	e
Constant	-46.65	-16.00	-46.20	-8.93

Note: All results have p<0.01; e stands for emitted and - means insignificant
Source: Author's own calculations

The initial regression analysis indicated that the inclusion of dummies for common border and common currency yielded statistically insignificant results, as evidenced by their p-values exceeding 0.05. This insignificance most likely occurs because Lithuania is a small open economy that has access to the markets of all neighbouring countries. This lack of importance and significance in common currency probably stems from the fact that Lithuania adopted the euro only in 2015 thus the period with the new currency analysed is relatively short. According to the pooled OLS model, the chosen variables in the gravity equation explain 86.22 per cent (R-squared 0.8622) of the variation in trade of Lithuania with the chosen trade partners which is rather high. The model used suggests that the most important factors affecting trade include distance, the GDP of the trade partner and the ties between former Soviet Union members.

Distance has a negative coefficient which means that as the distance between trading partners increases trade between the markets falls which is in accordance with the gravity model of trade. However, the regression results from both models showed that the dummy variable of the common border is statistically insignificant. On the other hand, BSR has been found to have a significant impact on trade which is expected considering the importance of seaports for international trade.

When it comes to the size of the economy, the GDP of the trade partner has a positive effect meaning that as the GDP of the partner increases so do the trade flows with that country which

is in accordance with the economic theory discussed in the literature review section. The GDP of Lithuania although significant according to the pooled OLS has been determined to have an insignificant effect on trade by the fixed effects model, thus no valid conclusions can bad drawn. The GDP per capita difference result showed mixed results thus the Linder hypothesis cannot be confirmed nor denied. The pooled OLS confirms the hypothesis since as the GDP difference increases the trade flows between these countries fall. However, the fixed effects model displayed a positive relationship indicating that trade grow as the gap between economies increases, which is against the Linder hypothesis. Overall, the GDP difference is a significant but not as important factor in determining the trade flows compared to other variables.

The common coloniser dummy was found to be significant and relatively important. The relative importance of having been part of the former Soviet Union is higher compared to being in the EU. It shows how strong the political and economic ties between the members were especially considering that the analysis period of this thesis commenced after the collapse of the Soviet Union. Another important result of this thesis is the significance of EU membership. Both models confirmed that EU membership has a positive effect on the trade flows of its members although its significance is questionable. This confirms the trend that was discussed in *Figure 4*, *Figure 5*, and *Figure 6*. It is in line with similar studies that also found that EU membership leads to trade creation among its members.

7. Discussion

7.1 Does the EU Membership Have an Effect on the Trade Flows of its Members?

Given the positive and statistically significant coefficient of the EU membership dummy variable as well as the clearly visible positive trend in *Figure 4*, *Figure 5*, and *Figure 6*, it suggests that the EU membership has a positive impact on its members' trade flows. This carries significant implications for both the economy and politics. Primarily, it indicates that a nation's choice to participate in a free trade agreement or pursue a more comprehensive economic alliance like the EU indeed influences the direction of its trade. This finding aligns with numerous empirical investigations that have yielded similar outcomes regarding other FTAs. Moreover, this conclusion holds particular importance for candidate states that are working on achieving EU membership.

However, it is important to acknowledge the existence of asymmetrical distribution of benefits among member states which is not reflected by the gravity model results. While EU membership generally promotes trade integration and economic growth, the extent to which individual member states benefit can vary. Factors such as the economic conditions of a state can influence the magnitude of trade effects brought by the EU. Smaller and less developed economies may face challenges in fully capitalising on the trade benefits offered by EU membership because they might face an emigration crisis that leads to brain drain as it was the case in Lithuania. Nevertheless, the general conclusion among scholars is that EU membership has significant positive effects on its member economies and trade development.

On the other hand, the euro does not bring the same growth in trade as the EU membership. Other researchers have looked into this effect and estimated the euro impact on trade of only three per cent (Bun & Klaassen, 2007). This explains why both econometric models used did not find this variable significant. Nevertheless, it is crucial to consider additional factors that may contribute to the diverse outcomes observed. For instance, while EU membership entails various economic benefits and trade advantages, the impact of the euro may be influenced by additional factors such as economic disparities, financial stability, or market integration. Future research could delve deeper into these aspects to gain a more comprehensive understanding of the complex relationship between the euro currency and trade growth within the EU.

7.2 Are There Other Factors That Affect Lithuania’s Trade Patterns?

Besides the EU membership variable, the gravity equation included several other factors that influence Lithuania's trade flows. In addition to the distance between Lithuania and its trading partners, the GDP of both parties plays a significant role in determining trade volumes.

The negative coefficient of the distance variable in the gravity equation aligns with the core assumption of the gravity model, indicating that trade costs have a diminishing effect on trade volumes between countries. This finding underscores the importance of reducing trade barriers and improving transportation and logistics infrastructure to foster increased trade flows. However, other variables related to distance showed mixed results. The dummy variable for the Baltic Sea Region was found to be significant whereas the common border dummy was found to be insignificant. This suggests that while distance remains highly significant and important, it is not the sole determining factor influencing Lithuania's trade patterns.

Regarding the size of the economies, both Lithuania's GDP and the GDP of its trading partners were found to be significant in influencing trade flows. The positive coefficients of these variables indicate that as the economies of trading partners grow, trade volumes between them also increase. This relationship is consistent with economic theory, as richer economies tend to engage in more extensive trade. Additionally, the relationship between trade and economic growth works in both directions, as increased trade can contribute to economic development. However, it is worth noting that Lithuania's own GDP has greater importance in determining trade flows compared to its trading partners' GDP. This suggests that Lithuania's economic performance, policies, and competitiveness play a significant role in influencing its trade dynamics. Policymakers should focus on fostering a favourable business environment, promoting innovation and productivity, and implementing measures to enhance Lithuania's global competitiveness.

The last variable that was included in the gravity equation is the dummy variable of the common coloniser to measure the impact of the Soviet Union. This factor was found to be significant, and its importance is noteworthy. This result can be explained by the high integration of the markets of the Soviet Union although its importance seems to be diminishing. This decrease in the importance of the former Soviet Union ties is reflected in *Figure 2* and *Figure 3* where the value of trade with Russia, one of Lithuania’s largest trade partners, has been drastically decreasing recently due to geopolitical issues. This indicates that although the

Soviet Union ties are strong, they do diminish over time and its former members gradually direct their trade to other partners which is in line with the literature.

While EU membership remains, a key factor influencing Lithuania's trade flows, other factors such as distance, the GDP of trading partners, and Lithuania's own GDP also contribute significantly. Whereas some factors like ties with the former Soviet Union members are diminishing over time. Enhancing trade requires a multi-faceted approach that includes reducing trade barriers, improving infrastructure, and fostering economic growth and competitiveness. The EU has accomplished a lot in these aspects which explains why joining the union can lead to a significant increase in trade of new members.

8. Conclusion

This paper aimed to examine the effects of EU membership on Lithuania's trade patterns. The research objectives were to analyse the impact of integration into the EU on trade flows and identify other factors influencing Lithuania's trade patterns. These objectives were achieved by compiling a data set that was presented in different figures, and tables and analysed by using the gravity model of trade.

The findings of this thesis contribute to a deeper understanding of the relationship between EU membership and trade dynamics. The analysis revealed a positive and significant impact of EU membership on Lithuania's trade flows, confirming the expectations of the customs union theory. This implies that joining the EU has increased Lithuania's trade flows with its Western partners. The study also shed light on the limited influence of the euro currency on trade growth within the EU, suggesting the presence of other significant factors at play such as distance and size of the economies which are the core variables of the gravity model of trade.

The practical implications of this research are noteworthy for policymakers, businesses, and investors. The positive impact of EU membership on trade indicates the importance of pursuing economic integration and participating in free trade agreements. It provides the candidate states an insight into potential benefits and challenges that might come with EU membership. Policymakers can leverage these findings to shape trade policies, foster inclusive development, and promote balanced growth. Businesses and investors can also utilise these insights to devise strategic plans, evaluate investment opportunities, and optimise trade partnerships within the EU.

While this study provides valuable insights, there are avenues for future research to explore. Further investigations can delve deeper into the complex relationship between the euro currency and trade within the EU. Studies with more variables and larger data sets could be conducted using more advanced methods to gain a more comprehensive understanding of the factors that influence trade flows and achieve more reliable results. Additionally, research can focus on understanding the evolving nature of trade ties with former Soviet Union members and how geopolitical factors impact trade dynamics in the region.

This thesis has achieved its aims and objectives and answered the stated research question by examining the effects of EU membership on Lithuania's trade patterns. The findings highlight the positive impact of EU accession on trade flows, emphasise the strength of the ties between

former Soviet Union members, the limited influence of the euro currency as well as identify other significant factors shaping Lithuania's trade dynamics.

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