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War in Ukraine: Is Europe's energy dependence on Russia a plausible explanation?

Prof. Santucci De Magistris
SUPERVISOR

Prof. Marshall Langer
CO-SUPERVISOR

Filippo Prevete 731781
CANDIDATE

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Abstract

The thesis investigates whether Europe's natural gas dependence with Russia has impacted the escalation of the Ukrainian conflict. Europe natural gas imports from Russia have risen in the past decade, along with tensions between Russia and Ukraine. The investigation complements existing theoretical and empirical frameworks. It does so by devising a new empirical approach which includes multilateral trade in desegregated trade analysis as well as focusing on strategic goods. Natural gas is considered a strategic good for both Europe and Russia given its relative importance especially for European industrial production. The results from the specification would clearly answer the research question of the thesis as well as have more profound implications for trade policy. Future work may help expand the role that trade has in conflict resolution as well as asses the impact of trade relations especially on non-democratic regimes.

Contents

Chapter 1

Introduction

The current war in Ukraine has highlighted Europe's dependence from Russia, particularly for natural gas. Although there has been growing political tensions, both partners have increased their dependence before the conflict started (Kustova 2015) [21]. Europe is, at the moment, still importing natural gas from Russia, although the two entities are indirectly in a dispute. The thesis argues that Europe's dependency has been an important factor in the escalation of the Ukrainian conflict. Europe's dependence has given Russia a deterrent against any hostile action from the European Union, potentially decreasing the risk perceived by Russia for intervening in Ukraine. Hence, the research question of the thesis: Is Europe's energy dependence a possible explanation for the current war in Ukraine?

Although disputes between countries may emerge for a variety of reasons, an example being institutional arrangements [1], the aim of the thesis is to analyse the impact of trade on the probability of starting a military conflict. There is extensive literature on the topic, both theoretical and empirical, analyzing multilateral and bilateral trade effects on the probability of war. However, the literature mainly looks at aggregated trade data. Given the suggestive evidence, a more desegregated approach to trade must be explored. Prior literature on sector level effects of trade is limited and it only looks at bilateral trade effects on conflicts. Given the current crisis in Ukraine, a framework that allows to quantify how both multilateral and bilateral trade in specific goods may impact the probability of conflict is required for a potential analysis. To this end, the thesis sets out an empirical framework aimed at analysing trade of strategic goods effects, both multilateral and bilateral, on the probability of war. Strategic goods are identified as goods with relative supply inelasticity (Yarbrough 1992) [43]. Natural gas is considered a "strategic good" given its importance in European-Russian relations. However, it may be not important for other relations. Therefore to ensure a robust number of observations, other strategic goods must also be considered.

[1] Democracies vs non-democracies.

The thesis first explores previous literature in order to establish both the empirical and the theoretical state of the art. It then moves to explore the relationship between Russia and Europe, their institutional differences and their trade flows, highlighting Europe's import trends prior to the start of the Ukrainian conflict. Import trends analysis is used to motivate the thesis as well as define the explanatory variables used in the empirical specification. Finally, the thesis concludes by presenting the empirical framework, devised using existing models and data, commenting its preliminary results. The results show the need of more recent trade-data, requiring additional resources. The recent Ukrainian conflict has highlighted the need for this type of analysis. Having clear empirical results on the topic would help asses the global impact of establishing trade relations, especially with non-democratic regimes.

Chapter 2

Literature Review

The relationship between trade flows and conflict has been extensively studied in the past, both theoretically and empirically. The aim of this chapter is to provide an overview of the literature. The chapter starts by providing the basis behind the theoretical models used. Namely, the schools of thought of trade theory. It then moves on to the frameworks devised for trade analysis, introducing the gravity model of trade, and explain its utility for the analysis of conflict. Finally, the review then focuses on disaggregated trade and its role in conflict analysis.

2.1 Schools of thought

In the literature, it is possible to identify two main schools of thought. The first is the liberal view, which claims that integration by trade reduces the possibility of war between countries. The second is known as the Neo-Marxists view, which claims that trade integration does not reduce the possibility of war and in some instances can even increase it.

Liberal view. The liberal view claims that trade integration reduces the probability of conflict between the interested partners. Liberal trade integration as a vector of peace has been studied extensively in theoretical models, namely in the field of bargaining theory. Fearon (1995) [10] identifies 3 possible explanations for the emergence of conflict:

1. State leaders are sometimes irrational.
2. Leaders who order conflicts enjoy personal gains without sharing the collective cost of war.
3. Rational leaders who consider the risks and costs of war may end up fighting nonetheless.

Following his third argument, Fearon postulates that rational leaders should always aim at reaching an agreement before a conflict erupts. However, a bargain may fail due to asym-

metric information and or commitment problems, which do not enable countries to reach an agreement. Fearon's bargaining argument has since been used to explain how certain affinities or relationships help reduce conflicts among countries. For instance, Gartzke (2000) [13] (2003) [12] argues that peace among democratic countries is explained by their shared goals and objectives. Given democratic countries similarities, it is easier for them to reach an agreement as they tend to "trust" more each other. Using a similar argument as the one proposed by Gartzke, commercial relations help preserve peace as trade aligns the objectives of trading partners. As trade increases, the disruption which may result due to war increases as well. Therefore, it is in both partners interest to reach an agreement before a conflict erupts [1] (Polachek and Xiang 2008) [29].

Neo-Marxist view. The Neo-Marxists view states that trade integration does not reduce the possibility of war and in some instances can even increase it. It is hard to theoretically motivate the Neo-Marxist view of trade (Hegre et al.2010) [27]. However, a possible explanation is provided by accounting for asymmetries in trade relations. There are trading relationships in which one partner mainly imports while the other exports. Tensions may arise as there is one trading partner which benefits more from the relationship. The higher the imbalance, the higher the risk of tensions, potentially resulting in an escalation [2] (Barbieri 1996) [2]. There are empirical results in the literature which align with the Neo-Marxists view of trade. In the next sections these results are illustrated in order to evaluate whether there is a definite empirical consensus in the literature.

2.2 Bilateral trade and war

There is a vast literature testing the liberal and Neo-Marxist views of trade. The specifications used for these analyses capture both trade and other control variables which may affect countries likelihood of conflict. Both trade and conflict are impacted by geographical and political characteristics. As a result, trade relationships are modelled following the gravity model of trade. The basis set out by the gravity model is generally used in more complex analysis of commerce, such as in this case. Understanding the specifications used to analyse trade and war requires basic knowledge of the gravity model. Therefore, this section starts by introducing the gravity model of trade. It then moves to present the framework used to capture bilateral trade effects on war and the empirical results coming from recent literature. Given that the vast majority of empirical results support the liberal view of trade (Martin et al. 2008) [25], the empirical discussion focuses on three papers which results are not in line with the former. The section explores the criticisms toward these three articles. These criticisms highlight the importance of a solid, well interpreted

[1] The opportunity costs resulting from economic interdependence decrease the equilibrium probability of war in an incomplete information game (Polacheck et al. 1999) [18].

[2] An example are Chinese and American commercial relations.

theoretical framework behind any empirical analysis of conflict as well as the need of variables that truly capture geo-political characteristics. These insights are used in the empirical specification devised in the thesis.

The gravity model and conflict. The gravity model of trade is a direct transposition, in economic terms, of Newton's law of gravitation. The model has been first formerly devised by Jan Tinbergen in 1962. Its logarithmic transformation, in its simplest form, takes the following shape (Ugurlu and Jindrichovska 2019) [42]:

$$log(Trade_{ij}) = \alpha + \beta_1 log(GDP_i) + \beta_2 log(GDP_J) + \beta_2 log(Distance_{ij}) + \varepsilon_{ij} \quad (2.1)$$

Bilateral trade flows are determined by the size of the economies of the two countries and their relative distances. Bigger economies and low relative distances are correlated with higher bilateral flows. Note, additional explanatory variables can be added into the equation. Common ones are dummy variables such as contiguity and common language. When two countries share a border or a common language these variables take value 1, otherwise they have values 0. Other variables can be added depending on the nature of the analysis [3]. The gravity model of trade is considered the most successful empirical model in economics (Anderson 1979) [1]. It has been mainly used for quantifying trade barriers among countries, useful when establishing the effects of free trade agreements [4]. It has proven useful also for industry-level analysis, particularly in establishing determinants of exports or imports in an industry [5].

Regression analysis used to estimate a gravity model can be employed to isolate the effects that different variables have on the probability of conflict. Many of the variables which affect trade, also affect the probability of conflict. As a result, specifications for conflict analysis share many of the explanatory variables used in gravity models. An example of such explanatory variables is country size. The size of a country affects trade, but also affects its likelihood of interstate war (Long 2008) [22]. A bigger country has a larger projection of its influence. It trades with more countries at a larger volume compared to smaller states. However, its interests are also affected by more countries, making it more likely that a dispute may arise. Another example is distance. A country is more likely to enter into a conflict, as well as trade, with its neighbors rather than distant countries. Unlike the gravity models, specifications for conflict analysis include "political" variables. These are variables which captures non-economic characteristics which likely impact the probability of conflict. An example of these variables are measures of military capabilities [6] (Mansfield 1992) [23].

[3] Another common dummy variable is FTA, that is whether the two countries are in the same trade union.

[4] An example is the paper by Andrè Sapir "Domino effects in Western European regional trade" (2001) [34].

[5] An example is the the paper by Sichei and Erero "An augmented gravity model of South Africa's exports of motor vehicles, parts and accessories" (2008) [17].

[6] The relationship between probability of conflict and military capabilities appears to have an inverted

Empirical overview. Note the common specification used in papers studying trade's impact on conflict:

$$C_{ij} = \alpha + \beta_1 trade_{ij} + \beta_2 A_i + \beta_3 A_j + \varepsilon_{ij} \tag{2.2}$$

C_{ij} measures conflict between two countries. $Trade_{ij}$ measures commercial exchanges between countries [7]. Finally, A_i and A_j are country specific attributes, such as military might (Polachek et al. 1999) [18].

Creating a variable which captures conflict has a number of challenges. For instance, there must be a common definition for what is to be considered a conflict. A common source for data on conflicts [8] is the Correlates of War (COW) project. The project was founded in 1965 by David Singer. It collects data on war from the Napoleonic times up to the present day. To collect scientific data on conflict, the project clearly defines what is considered a country and what precisely constitutes a war. These definition are formerly established in the work published by Singer "The wages of war" (1972) [38]. For instance, a militarized dispute is defined as a clear action involving threat, displays, or actual uses of military force. The project follows an index evaluating countries bilateral relations from a scale of 1 to 5. 1 denotes peace, 2 is threat to use force, 3 is display of force, 4 is use of force and 5 is war. Variables for empirical analysis are created out of this index. For example, the paper "Make trade and not war" by Martin et al. (2008) [25] sets a dummy variable for conflict with value 0 for disputes below 3 and value 1 for disputes from 3 on.

Most of the surveyed papers find that an increase in bilateral trade flows, decreases the probability of conflict between the interested partners [9]. However, there are 3 papers which stand out from the surveyed ones. These three papers are:

1. "Economic Interdependence: A Path to Peace or a Source of Interstate Conflict?" by Barbieri (1996) [2].

2. "Trade and Conflict: Proximity, Country Size, and Measures" by Ketshk et al. (2010) [31].

3. "The Classical Liberals Were Half Right (or Half Wrong): New Tests of the 'Liberal Peace', 1960-88." By Kim and Rousseau. (2005) [19].

These papers and their critics are explored in order to bring forward useful insights. Particularly, the importance of a solid, well interpreted theoretical framework as well as the need of reliable variables that capture geo-political factors. These will be used later on for the derivation of the empirical specification.

U-shape.

[7] This variable can be actual import or export or a more sophisticated measure of openness.

[8] For reference, look papers by Martin et al. (2008) [25] and Oneal et al. [28] (1999).

[9] To name a few: Martin et al. (2008) [25], Sarys (1988) [35], Reuveny and Kang (1998) [32].

The paper by Barbieri finds that economic interdependence increases the likelihood of an interstate conflict. Barbieri argues that her results are different mainly for two important changes in the approach.

1. The paper takes in consideration the pre-World War 2 period, an era which received little attention in other studies.

2. The paper accounts for the asymmetric nature of trading relations and considers it a possible source of tension among partners. It does so by employing a new ”openness” variable.

The paper by Barbieri finds that an increase in bilateral trade increases the probability of conflict among partners. However, It has been argued that this conclusion is a misinterpretation of the explanatory variable constructed by Barbieri (Gartzke and Quan 2003) [12]. Barbieri's approach accounts economic interdependence through bilateral trade share, ex. $\frac{Import_i}{Import_j}$, while usually it is captured via a different openness variable, ex. $\frac{import_{ij}}{gdp_i}$. The two approaches capture a different aspect of the same trading relationship (Gartzke and Quan 2003) [12]. Trade share captures lack of integration in comparison to ”classic” openness which does exactly the opposite. As a result, the two variables have an opposite relationship to conflict, explaining the discrepancies of the results. Barbieri has in reality found that lack of trade integration, increases the likelihood of conflict. Given this argument, the paper by Barbieri does not contradict the liberal view but rather has misinterpreted the results of the analysis (Gartzke and Quan 2003) [12].

The other two papers argue that single-equation studies, hence prior literature, are biased. In fact, conflicts also affect trade and treating the latter as exogenous may dismiss the validity of the results (Bussmann 2010) [3]. Both papers device an instrumental variable approach in order to resolve the endogeneity problem. The instrumental specification allows to consider simultaneously the reciprocal effects of trade and conflict. The approach requires the search for two efficient instruments. One that affects trade but not conflict and the other which does the exact opposite, that is it affects conflict but not trade. In these analyses, trade-barriers are used as instrument for bilateral trade flows, while differences in military prowess are used as instrument for conflict [10] (Ketshk et al. 2010) [31].

The results of the two papers are the following:

- Ketshk et al. (2010) found that trade increases the probability of interstate conflict.

- Kim and Rousseau (2005) report that trade does not have an impact on the probability of interstate conflict.

[10] The higher the imbalance, the higher the probability of conflict.

Both papers conclude that previous empirical results suffered simultaneity bias, undermining the empirical validity of the liberal view. However, subsequent studies of these two specifications dismissed these claims (Hegre et al. 2010) [27]. For instance, the paper by Ketshk et al. (2010) failed to integrate geographical proximity in the simultaneity equations. When these variables are added, the coefficient for bilateral openness turns negative, dismissing their claim (Hegre et al. 2010) [27]. The paper by Kim and Rousseau (2005) controls for geographical proximity. However, the specification in the conflict equation uses a dummy variable to identify global powers. A continuous measure of national prowess better suits these types of evaluations [11] (Hegre et al. 2010) [27]. The integration of the continuous variable results in the bilateral trade coefficient to turn significantly negative (Hegre et al. 2010) [27].

The liberal doctrine is well supported not only theoretically, but also extensively empirically. Papers which claim different results have either wrongly interpreted their variables or simply failed to correctly set their specifications. Fully understanding the construction of the openness variable is essential for the interpretation of the results. Furthermore, geographic and political variables should not be underestimated in these evaluations, as they play a crucial role in the validity of the results. Given the number of variables which affect both trade flows and war, missing or wrongly specifying any of these variables may result in the analysis being incorrect. The specification formulated in this thesis accounts for these shortcomings, building a robust empirical model used for the analysis.

2.3 Multilateral trade and war

The liberal view argues that an increase of trade flows decreases the probability of interstate conflict. Empirically, literature confirms the liberal view. However, when looking at pre-World War 2 data, the relationship between conflicts and trade is not a clear cut one (Martin et al. 2008) [25]. What if there is an aspect previously not taken in consideration? The paper by Martin et al. "Make trade not war" (2008) [25] tries to answer the following question, by devising a new theoretical and empirical framework. This section briefly gives an overview of the paper in order to highlight the importance of multilateral trade in conflict analysis.

The theoretical framework of the article is based on the rationalist view postulated by Fearon (1995) [10], countries will always prefer peace but asymmetric information prevents them from reaching a bargain. Unlike previous articles, this paper includes elements of the new trade theory model. The inclusion allows to account for the multiplicity of trade partners that a single country may have. More trade partners allow countries

[11] A continuous measures of a country's prowess allows to distinguish different global powers as well as capture a country's trend through time.

to diversify their imports, decreasing their dependence on a single country (Martin et al. 2008) [25]. The novelty of the approach is the inclusion of multilateral imports in the analysis of conflicts. The following creates two testable outcomes:

1. An increase in bilateral imports between two countries decreases their probability of conflict between each other.

2. An increase in multilateral imports, not accounting trades between the studied pair, increases the probability of conflict between each other.

The intuition for the second testable outcome is simple, high level of multilateral trade reduce the opportunity cost of conflict between two countries.

The COW project's data are used to create the conflict variable. The analysis takes data regarding MID, Militarize Interstate Dispute, between each country from 1950 to 2000. As mentioned before, the analysis considers MID_{ijt} to be equal 1 if in the database the conflict index is larger or equal to 3 and 0 otherwise. All country pairs are taken in consideration. Bilateral trade openness is constructed using the following specification:

$$Bil = \frac{M_{ijt}}{GDP_{it}} + \frac{M_{jit}}{GDP_{jt}} \tag{2.3}$$

The new multilateral variable is specified as an arithmetic average of the two countries imports over GDP but it excludes their reciprocal bilateral imports:

$$Multi = \sum_{h \neq j,t}^{R} \frac{M_{iht}}{GDP_{it}} + \frac{M_{jht}}{GDP_{jt}} \tag{2.4}$$

Finally the probability of MID between i and j at time t is specified via a logit model:

$$Pr(MID_{ijt}) = \beta_0 + \beta_1 controls_{ijt} + \beta_2 ln(Bil) + \beta_3 ln(Multi) + \varepsilon_{ijt} \tag{2.5}$$

M_{jht} denotes imports at time t. Controls include ones common to the gravity model of trade, such as colonial relationship or common colonizer [12]. Other controls are geographical variables, such as sum of countries areas or contiguity [13], data on cross-sectional serial correlation of wars [14] and variables which account pairs political affinity [15]. The specification faces a number of drawbacks (Martin et al. 2008) [25]:

1. Endogeneity; conflicts affect trade, mainly Bilateral trade flows.

2. Measurement Error; Bilateral trade is likely going to be misreported for countries engaging into conflict.

[12] Historical relationships are crucial in determining conflicts.
[13] It is more likely that a country engages into a conflict with neighbors.
[14] Other wars might affect the probability of bilateral war or trade.
[15] Ex. same military alliance, democratic,non-democratic.

To alleviate these problems, trade variables are lagged by 4 years as to ensure that trade data is not directly impacted by the start of conflicts. However, the paper still expects the coefficient for bilateral trade to be biased toward 0. As a result, the paper conducts also another regression using instrumental variables to account for endogeneity and test the degree of the bias [16].

The results of the logit regression are clear, an increase in bilateral trade decreases the probability of bilateral conflict while an increase in multilateral trade increases the probability of bilateral conflict. The results are stronger for proximate country pairs. With regards to the instrumental approach, the analysis shows results close to that obtained by the non-instrumented regression. However, it confirms the bias that bilateral trade has towards zero.

The article by Martin et al. (2008) complements the frameworks previously devised in the literature by including multilateral trade. This specification better suits geo-political analysis of modern wars as they comprise not only the conflicted countries but also a wider array of partners. The decision of a country to enter into a conflict is also affected by its partners not directly involved in the dispute. The cost of war is lower if the interested country can count on trade coming from other partners as it compensates bilateral trade loss arising from war. The article fits the context of the Ukrainian conflict. Russia's cost of war in Ukraine decreased as European trade flows expanded, increasing the probability of conflict with Ukraine.

2.4 Strategic resources

Aggregate trade analysis and their effects on countries relationships enjoys a vast literature. However, this literature does not take into account that trade flows in certain industries might make a country more dependant to another and vice versa. The current war in Ukraine highlights the relationship between strategic dependence and conflict. European countries more dependant on Russian gas imports are also the ones taking a softer stance against the Kremlin. The following section investigates whether trades relationship with conflict changes when taking into account separate sectors, looking both from an historical and theoretical/empirical point of view.

Why are some goods more vital than others? A contemporary example are semiconductors. For instance, the recent semiconductor shortage has greatly impaired the post-covid recovery of European countries [17] (Attinasi et al. 2021) [9]. Semiconductors can be defined as strategic, as they are essential for the industrial production of modern

[16] The instruments used for bilateral and multilateral trade are the Generalized System of Preferences (GSP) and an index of economic remoteness of the two countries. They are used to single out conflicts effect on trade.

[17] Particularly, countries with an extensive automotive industry.

economies. Semiconductors are a relative new strategic good. For instance, There is a macro area of goods which have always been considered vital for industrial economies, that is goods for energy production. Starting in the early days of the industrial revolution with coal, to petrol in the 20th century (Clark and Jacks 2007) [6], energy flows have been the fundamental building block of Industrial economies (Stern and Kander 2012) [40].

But how do strategic resources relate to the likelihood of war? Historically, a few examples can highlight how crucial they are in determining bilateral relations. The war in the Pacific between Japan an the United States is one of such examples. Before 1941, most of the Japanese imports of petroleum were coming from the United States (Marshall 1995) [24]. Prior to the start of the war, the United States had ceased oil exports to Japan following Japan's aggressive expansion in the pacific. This is considered a turning point, which resulted in the subsequent attack on Pearl Harbor [18] (Marshall 1995) [24]. Without the oil from the United States, Japan could not fuel its industrial production. As a result, Japan had to further expand in the Pacific, making a war with United States unavoidable (Marshall 1995) [24]. Another historical example is the European carbon and steal community. Robert Schuman proposal had a clear goal, make war impossible between its members. Carbon and steel were the primary resources used in military-industrial production. Imposing a common market for these resources allowed each member to virtually control each others armaments (Birchfield et al . 2017) [20].

Historical events highlight the importance that certain resources have in bilateral relations. However, can the following be quantifiable? This requires a clear theoretical framework which explains why some countries may consider some goods more important than others. Theoretical literature on the topic focuses on comparative costs of the goods (Schelling 1958) [36]. Trade has an impact on conflict depending on how hard it is for a country to substitute the traded good, the costlier it is to substitute it, the higher the pacifying effect (Reuveny and Kang 1998) [32]. There are two main sources which increase the opportunity cost of a traded good (Yarbrough 1992) [43]:

1. Elasticity of supply and demand; is the good easy to find elsewhere?

2. Asset specificity; How hard is it to adjust without these good?

The following allows to theoretically explain why oil or high-technology industries are considered more important than other traded goods (Sayrs 1988) [35].

Empirical analyses of conflicts at lower level of trade aggregation are limited. Available literature highlights the presence of an heterogeneous effect among sectors (Dorussen 2006) [8]. Dorussen's article "Heterogeneous Trade Interests and Conflict: WHAT YOU TRADE MATTERS" (2006) [8] sets outs the methodology used in disaggregated analyses. The article uses COW data on conflict to conduct a panel logit analysis. To capture

[18] The US had ceased oil exports in July 1941. In November 1941, Japan attacked Pearl Harbor.

the composition of trade, different variables are created according to their relative sector data, separated via their SITC code. SITC stands for Standard International Trade Classification and it is a standardised way of classifying goods devised by the United Nations. The sectors taken in consideration are: Non Manufacturing, food and kindred, manufacturing. The explanatory variable is constructed via the following specification:

$$SECTOR = \frac{exports_{ij}^{SECTOR} + imports_{ij}^{SECTOR}}{totaltrade_{ij}} \tag{2.6}$$

Trade data are lagged by 2 years to mitigate endogeneity. Food and kindred is chosen as reference sector to avoid collinearity. The article concludes that, compared to kindred products [19], increasing trade in manufacturing goods reduces the likelihood of conflict while it is insignificant for non manufacturing products. The article points out that these results are difficult to reconcile with common theoretical assumptions [20].

Analyzing the relationship of trade at a lower level of aggregation highlights how some goods are considered more "valuable" by countries. Elasticity of supply is an indicator for the importance that a good may have on bilateral relations. A good with higher elasticity should have a lower impact on the probability of conflict compared to a good with a lower elasticity. Approaches such as the one used by Dorussen bring important insights on the viability of the empirical approach. However, Dorrusen's article is incomplete for the objective of the thesis. The approach does not focus on the difference between strategic and non strategic goods as well as not accounting for multilateral trade. The aim of the thesis is to expand these two shortcomings.

[19] As they were chosen reference group.

[20] One would expect the opposite as non manufacturing products are less elastic.

Chapter 3

Europe's Dilemma

This chapter motivates the need to further explore the link between trade and conflicts by providing suggestive evidence that has recently emerged in the context of the Ukrainian conflict. It does so by exploring trade flows between Russia and the European Union, comparing them at a product level.

Europe has had in the last two decades close trading ties with Russia. Considering The Ukrainian war as the conflict of reference, the analysis of European and Russian affairs could be analysed as a "proxy" for multilateral trade effects on probability of conflict. Europe is chosen as reference as it is Russia's main trading partner. As a result, the chapter analyses specific Russian goods imported by Europe and their trends in relation to the Ukrainian conflict.

Before looking at trade relationships, the chapter explores the institutional differences between Russia and Europe. Given their political divergences, since the 2000s there has been growing political tensions between the two partners. Nevertheless, their interdependence has also grown in the mean time. Their inability to take stronger actions against each other is attributed to their relative interdependence. Although the interdependence is mainly accredited to natural gas, other non-manufactured goods flows have also increased, especially prior to the start of the operations in Ukraine. Given the descriptive evidence, the chapter argues that trade in strategic goods, both bilateral and multilateral has a stronger effect on the probability of bilateral conflict.

3.1 The Russian oligarkhía

In order to contextualize Europe's trade relations with Russia, the Russian political landscape must be explored. Although the Russian federation is officially a democracy, it is better described as an oligarchy (Trenin 2007) [41]. The different political structure between Europe and Russia eventually lead to the rise of frictions.

The Russian federation was born in 1991, when the Soviet Union ceased officially to

exist. In its stead, 14 new sovereign states emerged as independent entities. Although Russia tried to retain its former soviet influence with organizations such as the Commonwealth of independent States (CIS) (Porter and Saivetz 2010) [30], the newly formed Russian government had little political and economical power. Under president Boris Yeltsin, Russia started a decade of partnership with the West, especially with the European Union, although in a position of relative weakness (Casier and Debardeleben 2018) [4].

As explained by Graham (2006) [15], the Kremlin was weak as it was unable to control the country up until Putin's election in 1999. The relative weakness was due to the uncontrolled corruption plaguing Russian institutions. Given the country's liberalization efforts and weak rule of law, emerging businessman/oligarchs [1] needed political connections for their investments to be successful. The country was essentially run by the oligarchs, pushing their own economic agenda through politics. Putin regained control by aligning the countries interests with the ones of the oligarchs, on the condition that they stayed loyal to him (Trenin 2007) [41]. As a result, from the early 2000s, the Russian government has been consolidating strategic assets into state holding groups with goals established by state policies (Nurgozhayeva 2022) [26]. Dealing with Russian enterprises means dealing indirectly with the Russian government.

Vladimir Putin changed Russia's attitude toward the west. The reasons for these change were mainly three (Casier 2011) [5]:

- Economic growth. After the financial collapse of 1998, Russia saw a revival of economic growth.
- Nato expansion. Nato expanded to the east, admitting countries that were once in the soviet sphere of influence. Furthermore, Nato intervened in Yugoslavia, taking hostile actions against Serbia, an historical ally of Russia.
- European Union expansion. Europe's expansion to the east brought into the the single market countries economically close to Russia, such as the ones of the Baltic regions.

With Putin's election, Russia started to portray itself as a global power, justified in projecting its influence in its "near abroad" [2] (Trenin 2007) [41]. Interventions, such as the one in Georgia in 2008 are the clearest example of such change of pace (Casier 2011) [5], with the current war in Ukraine being simply the culmination. The Russian oligarchy wants to retain the former soviet connections, as it means accessing resources and investments without western competition (Trenin 2007) [41]. Although Russia's objectives

[1] The Soviet Union always had "entrepreneurs" thanks to its flourishing black market (Graham 2006) [15].

[2] Countries in the near vicinity, former soviet republics.

and means are divergent to that of a liberal democracy, the European Union has nevertheless continued to increase its trading flows with Russia up until the start of the Ukrainian conflict.

3.2 Europe's dependence

Both Europe and Russia tried to achieve their objectives via their trading policies. Given their different institutional arrangements, each had its own goals to achieve. Natural gas allowed both countries to achieve their respective objectives. However, their institutional differences eventually resulted in frictions. The European-Russian relation may serve as template for other relationships, highlighting the role that strategic resource may play in them.

Russia's trade relationship with Europe is not a recent affair. Countries such as Italy and West Germany have always had a special relationship with the USSR. West Germany particularly, mixed its trade policies with its diplomatic objectives (Bosch 2014) [11]. West German efforts had the goal of keeping good relations with the eastern counterpart, even if they angered the likes of the United States and UK. With the discovery of gas reserves in the 60s in Russia and the subsequent oil crisis in the 70s, growing demand of alternative sources of energy started to rise in Western Europe. As part of its efforts to keep good relations with the USSR, West Germany started to import Russian natural gas, with the first gas pipelines constructed in 1976 (Stent 1985) [39].

With the fall of the Soviet Union, Europe started to increase gas imports following Russia's liberalization efforts. At the time, given the weakness of the Russian institutions, the geo-political implications of the growing dependence were not part of the public debate (Casier 2011) [5]. There was an inherent optimism that the growing relations with Russia would help its democratization, following the liberal doctrine of trade (Casier 2011) [5]. The hopes of expanding European ideals through gas imports were however replaced by worries in the 2000s. Europe in the following decade had in fact greatly increased its gas dependence toward Russia mainly for two reasons (Rutland 2008) [33]:

1. Green transition; Europe started the transition towards environmentally sustainable sources of energy [3].

2. The Joining of Eastern countries, such as Poland and the Baltic's states, which were fully dependent from Russian energy grinds [4].

These worries were considered secondary as the public debate centered on climate change. The European energy transition has been the focus of the European Union in the recent

[3] Especially countries which were dismantling their nuclear power plants.
[4] A token of their socialist past (Rutland 2008) [33].

decade (Perez et al. 2019) [37], with natural gas regarded as crucial in achieving short-term emission goals (Gursan and Gooyert 2021) [16]. The strategic implications of a growing dependence have been eclipsed by the climate concerns as the easiest way to achieve climate/emissions goals was by furthering Russian gas trade [5]. Russia was regarded as a necessary partner, even though there was already evidence in early 2010s that Russia used its position as energy supplier to exert political pressure (Kustova 2015) [21].

Europe and Russia have significant differences In their energy market structure. Europe follows a liberal model, while Russia has a nationalised system (Kustova 2015) [21]. Russia's energy policy has always been in tandem with its strategic decisions (Rutland 2008) [33]. Not only did the economic gains from the energy sector help Russia recover from the financial debacle of 1998, they also helped Russia take back part of its influence, especially in its "Near Abroad". Given that most of the infrastructure is soviet made, the energetic infrastructure of ex-soviet states is linked to Russia. As a result, Russia controls the strategic resources of its neighbors (Rutland 2008) [33]. Disputes between the ex-soviet republics, with repercussions also felt in Europe, arose in the 2000s. An example is the dispute Gazprom/Russia had with Ukraine and Belarus over energy prices in 2007. Prior to 2007, these two countries faced "friendly" prices compared to the global one. To exert pressure, Gazprom temporarily shutdown the pipelines passing through these two countries. These lines were also responsible for bringing gas into the EU (Goldthau 2015) [14], resulting into shortages in European countries.

3.3 Graphical analysis

Time series graphs of European union's [6] imports from Russia are presented. The graphs cover yearly moving averages of the imports, starting from January 2002 and ending in March 2022. The graphs serve to contextualize Europe's energy dependence in relation to political events, such as the Russian annexation of Crimea or the recent covid pandemic. The imports are reported in Euros.

Shown in figure 3.1, Russian gas imports, denoted by SITC code 34, have steadily grown up until the occupation of Crimea, represented by the vertical red line. The occupation of Crimea is taken as reference due to the fact that the European union imposed sanctions in response to the Russian aggression. The red line serves to account the possible impact that sanctions [7] had on imports. For instance, after the Russian occupation of Crimea, gas imports have at first decreased, only to increase again from 2017 on wards, reaching almost the levels pre-Crimea. After the covid pandemic in 2020, natural gas

[5] The infrastructure was already present and had to be simply expanded.

[6] Eu 27 (2004).

[7] The sanctions were mainly financial, restricting financial movements of Russian entities in European capital markets (European Commission 2014) [7].

imports have seen an exponential rise. The increase is attributed to the unprecedented recovery that ensued after 2020. Industrial facilities all around Europe started production virtually at the same time, resulting in an exponential demand for energy. Given the current emission goals set by the European Union, natural gas has been used as the main energy source for industrial production (Gursan and Gooyert 2021) [16]. Europe's demand for natural gas comes mostly from Russia. Following the framework postulated by Martin et al. (2008) [25] it can be assumed that Russia expected no strong economical or military repercussions from Europe due to its deterrence on natural gas. The deterrence decreased Russia's expected cost of war with Ukraine, incentivising the start of the war. As gas imports increased, Russia's cost of war decreased. Note, gas imports are at this moment, still ongoing as Europe is unable to diversify its imports in the short run. This further highlights the strategic relevance of natural gas in EU-Russian relationship.

In order to better grasp the link between imports of strategic goods and the probability of conflict, it is useful to evaluate the magnitudes vis a vis other goods Imported by EU from Russia. The comparison starts with SITC code 7, machinery and transport equipment. SITC code 7 is used as reference for manufactured goods. Manufactured goods are relatively more supply elastic than goods such as natural gas (Dorussen 2008) [8]. As a result, it is expected that their trend differs from the one seen with natural gas, especially prior to the start of the conflict. The logic is simple, since the good is relatively more supply elastic, Europe should be able to diversify its imports of machinery equipment more easily. As a result, trade flows of machinery do not affect EU-Russian relationship as much as natural gas flows. Graph 3.2 shows both natural gas and SITC 7 scaled flows [8]. The aim is to highlight trend tendencies between the two categories. Trade volumes of SITC 7 are reported in the y-axis to the right. Machinery and transport equipment flows increased up until 2014. However, after 2014, the flows tend to flat out. From 2019 on wards, Machinery's import flows decreased, highlighting a major difference from natural gas imports. While machinery imports decreased with the growing tensions, natural gas did not get affected at all. The inference coming from this graph is that trade in manufactured commodities does not have the same importance for Russian and European relations to the extent natural gas has, highlighted by the difference the two traded goods had before the escalation of the conflict. Compared to natural gas, machinery imports should have a lower impact on the escalation of the conflict in Ukraine.

Note that natural gas is not the only good which has exponentially risen prior to the start of the Ukrainian conflict. For instance, European food and living stock imports from Russia, denoted with SITC code 0 have followed a similar trend. Both Russia and Ukraine are crucial producers of cereals and their derivatives. Recently, the start of the war resulted in the emergence of a food crisis. In fact, many Middle eastern and African

[8]The flows are scaled as natural gas imports volumes are bigger than SITC 7 imports.

countries depend on both Russian and Ukrainian wheat. Europe mainly imports agricultural derivatives, like oil seeds, crucial in the food industry. Graph 3.3 shows both natural gas and SITC 0 scaled flows. As seen in the graph, after 2014 food imports steadily increase. Given that industries related to food production were not affected by the covid restrictions, the trend kept rising. Like gas imports, flows rose exponentially with the post-covid recovery. Generally, essentials for European industrial productions follow the same trend. These goods are for the most part non-manufactured goods. However, even though they follow a similar pattern, there are important differences between each of these products:

1. Different trade volumes. For instance, gas imports are larger than food imports.

2. Different elasticity. Gas imports are relatively less supply elastic than food imports.

Russian manufactured goods seem to have a lower impact on conflict given their drop prior to the start of the Ukrainian war. This indicates that they are not an important determinant in Euro-Russian relations. Following martin et al. (2008) [25] framework, these translates in the cost of war being impacted less by manufactured products commerce. Other non-manufactured goods follow the same import trend as gas imports. The sheer volume of natural gas traded by Europe and Russia clearly sets it as the most important good traded. However, in other trading relations it is not necessarily the case.

Since the following are just graphical evidences, the objective of the paper is to try establish a framework which allows to determine the effects of strategic trade flows, both multilateral and bilateral, on probability of conflict. Given the past literature and trade data, the aim is to create a specification for a cross sectional time series analysis.

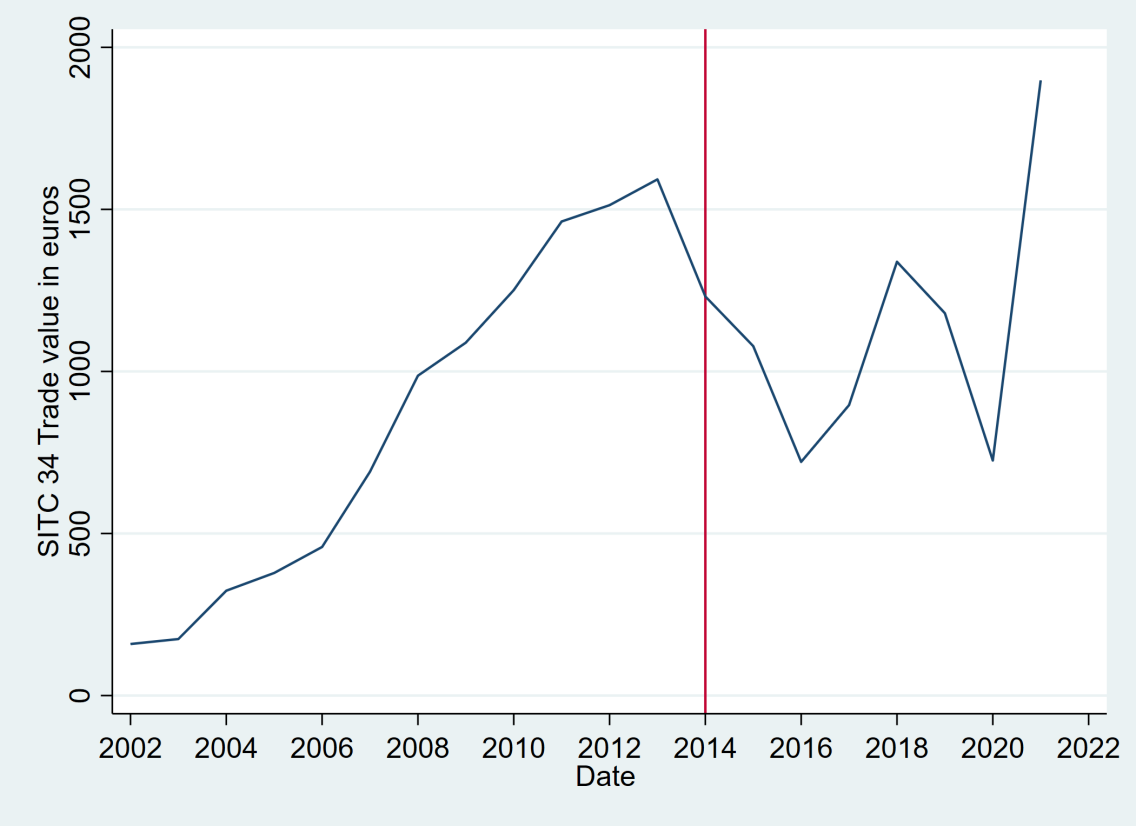

Figure 3.1: Eu 27 (2004) yearly moving average of SITC code 34 (Natural gas) imports from Russia. Data from Eurostat.

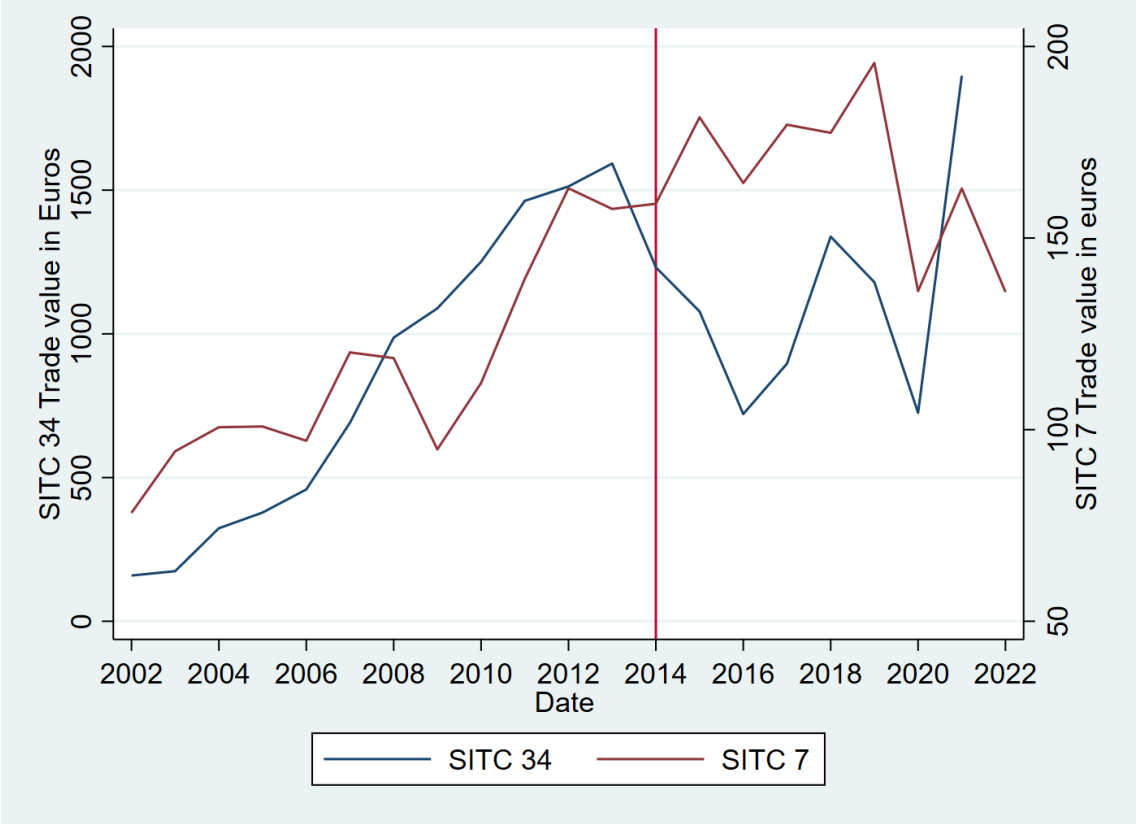

Figure 3.2: Eu 27 (2004) scaled yearly moving average of SITC code 34 (Natural Gas) and SITC code 7 (Machinery and transport equipment) imports from Russia. Data from Eurostat.

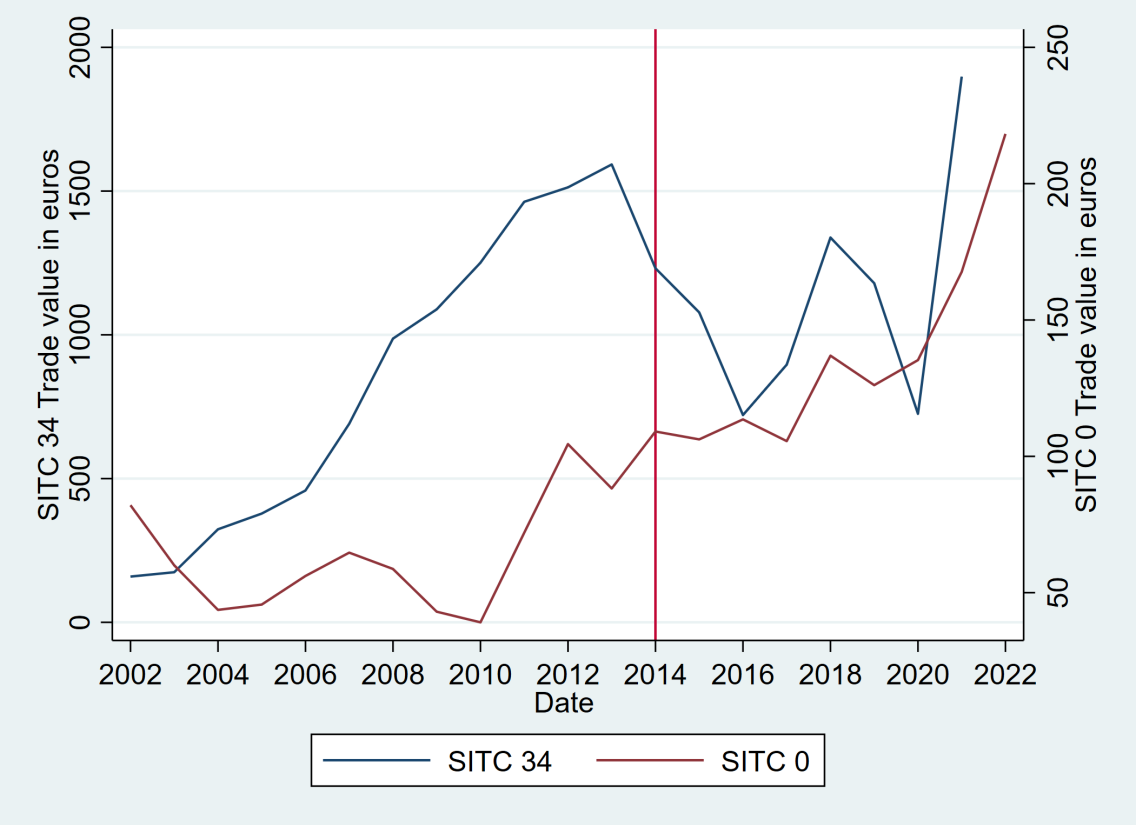

Figure 3.3: Eu 27 (2004) scaled yearly moving average of SITC code 34 (Natural Gas) and SITC code 0 (Food and living stock) imports from Russia. Data from Eurostat.

Chapter 4

Empirical Analysis

The thesis defines a testable empirical strategy for the effects of trade of strategic goods, both multilateral and bilateral, on the probability of conflict. Past literature highlights the need of vast numbers of observations for this type of analysis. As a result, a fairly large time-frame is selected which considers all bilateral conflicts occurring in that period. Note, there are differences in what is considered "strategic" depending on the time frame selected. During the cold war, mainly non-manufactured goods are considered strategic given their relative supply inelasticities, especially goods such as petroleum (Clark and Jacks 2007) [6]. However, with the advent of digitalisation and globalization, manufactured goods such as semiconductors also become crucial for industrial production.

4.1 Framework

The aim of the thesis is to set the foundation for multilateral and bilateral trade analysis of strategic sectors and their role on conflict. Prior literature on the topic only considers bilateral trade and does not focus on "strategic" goods. Given the current geo-political setting, in order to truly have results which are relevant for policy making, multilateral trade must be included in the analysis.

The framework devised in the thesis follows an hybrid approach, mainly inspired by two articles previously explored in the literature review, that is Dorussen's "What you trade matters" (2006) [8] and Martin et al. "Make trade not war" (2008) [25]. Dorussen's framework is used to set out the desegregated trade analysis, while Martin et al. framework is used to account for multilateral openness. Following Dorrusen's approach, trade encompasses both exports from country i to j as well as imports from country j to i. Trade data are divided in two blocks. Trade of strategic goods and trade of non-strategic goods. Non-strategic data is taken as reference to avoid collinearity. The effects of bilateral and

multilateral strategic goods are captured by the following openness formulas:

$$Multi^{Strategic} = \sum_{h \neq j,i}^{R} \frac{Imports_{iht}^{Strategic} + Exports_{jht}^{Strategic}}{Totaltrade_{ijt}} \tag{4.1}$$

$$Bil^{Strategic} = \frac{Imports_{ijt}^{Strategic} + Exports_{ijt}^{Strategic}}{Totaltrade_{ijt}} \tag{4.2}$$

Trade data are lagged by 4 years to account for endogeneity. The two formulas capture bilateral and multilateral interdependence of strategic goods compared to non strategic ones. The openness variables are analysed following Martin et al. specification with its respective controls [1]:

$$Pr(MID_{ijt}) = \beta_0 + \beta_1 ln(Bil^{Strategic}) + \beta_2 ln(Multi^{Strategic}) + X_{ijt} + \varepsilon_{ijt} \tag{4.3}$$

The dependant variable of the model is probability of MID [2]. The novelties of the approach are the multilateral openness specification and the classification of aggregated data into strategic and non strategic goods. A positive coefficient for multilateral openness would indicate that an increase in multilateral trade of strategic goods increases the probability of war with respect to non-strategic products. The model would directly answer the question posed by the thesis, as a positive coefficient would imply that indeed Europe's energy dependence had a role in the escalation of the Ukrainian conflict. Note that the devised specification rests on existing theoretical and empirical framework not specifically designed for this type of analysis. Given the sensibility that these approaches have, the framework may fail to truly capture or isolate strategic trade effects on probability of conflict as the building frameworks were constructed for other types of analysis (Hegre et al. 2010) [27] (Gartke and Quan 2003) [12].

4.2 Data description

Given the nature of the analysis, a fairly large time frame is selected in order to ensure a vast number of observations for the analysis.

The thesis considers the same time frame as Martin et al. (2008) [25], that is 1950-2000. The devised analysis uses data already provided by the article. Particularly, the same data set for control variables. As a result, the analysis conducted in this thesis can be considered a direct extension of Martin et al. model, aimed at the analysis of strategic goods trade effects. Given the time frame, aggregated goods are divided into two blocks based on whether they are manufactured or non-manufactured products. The

[1] Controls are denoted by X_{ijt}.

[2] MID, Militarized interstate dispute.

analysis considers non-manufactured goods as strategic while manufactured products are non-strategic. As noted before, non-manufactured goods are relatively supply inelastic compared to manufactured goods (Clark and Jacks 2007) [6]. Therefore, they should have a larger pacifying effect as they are costlier to substitute (Reuveny and Kang 1998) [32]. Blocks are constructed following the definitions for manufactured and non-manufactured goods illustrated in SITC Revision 3 by the United Nations Statistics Division:

- Manufactured goods include SITC codes: 5-6-7-8, Excluding 68 and 667 from macro group 6.
- Non-manufactured goods include SITC codes: 0-1-2-4-68-667.

The difference should theoretically result in a country being more dependant to another if it trades non manufactured goods, affecting the relations between each other and other countries.

The conflict variable (MID) is modelled from the COW project data, just like Martin et al. analysis. The index is from 1 to 5. Conflict is captured via a dummy variable which takes value 1 when MID is from 3 on and 0 otherwise. Control variables used are from the dataset utilised by Martin et al. analysis. These control variables account for facilitating factors or impediments for trade and war. Variables accounting for geographical characteristics and colonial relationships are taken from the CEPII bilateral distance database. Data on trade agreements are obtained from the World trade organization database. Trade data has been derived independently in order to account for strategic goods effects. The data used for deriving the explanatory variables are bilateral data from 1962 to 2000. The data are retrieved from the World Integrated trade solutions (WITS) which records trade data by country and, most importantly, by commodity. The following software, allows users to retrieve specific sector data, depending on the SITC code of the commodity. Given the trade data time-frame, the analysis covers the year from 1962 to 2000, unlike the article by Martin et al. which analysis is from 1950 to 2000.

4.3 Results and implications

Since the analysis can be considered an extension of martin et al. framework, as it utilises the same controls, the thesis follows its analogous regressions. Very simple estimates are presented which test the validity of the framework. Given the preliminary results, further robustness checks are not conducted.

The thesis conducts three basic regressions. The first regression examines contiguous pairs. The second considers pairs whose distance is less than 1000 km. The aim of these first two regressions is to restrict the analysis to those countries which are more likely to enter a dispute, that is countries which are closer to each other. The third regression uses

the full sample and an interaction term between trade and distance. Note, it is expected that the bilateral openness coefficient takes a negative value while the multilateral openness coefficient takes a positive value. An increase in bilateral trade of strategic goods should decrease the probability of war while an increase in multilateral trade should increase it. As shown in table 4.1 the coefficients are not in line with what is expected. The first and third regression's coefficients of interest do not have the expected sign. The second regression does show the expected duality of the two coefficients, However results can not be interpreted. The results clearly show problems relating to the analysis, namely the limited numbers of observations. The data used needs to be of sufficient volume to effectively carry out these types of analysis. However, the obtained data leaves lots of bilateral relationships without relevant trade information.

To this end, an analysis which considers a more recent time period could solve the limited observations problem. Recent trade data are more detailed and consider a wider array of partners (Martin et al. 2008) [25]. However, an analysis accounting a recent time frame can not consider non manufactured products as proxy for strategic goods. The digital age and globalization have created a new class of manufactured products which are, at the moment, relatively supply inelastic. A modern trade analysis of strategic goods effects on probability of conflict has to take in consideration these new set of strategic products. Semiconductors have been used as an example as their shortage recently made the headlines. However, there are other manufactured products which may be considered strategic as well. As a result, in order to carry out analysis which considers a recent time-frame, a new framework needs to be devised to classify goods into strategic or non strategic. The new classification could be based on an elasticity threshold below which goods are considered strategic, complemented by accounting also the importance that some goods have in the production of other products. Nevertheless, an in depth analysis of cross-sectional data across multiple trading relations is needed in order to evaluate any approaches used for the classification, requiring additional resources.

Future work on the topic should develop both a theoretical and empirical framework, accounting both goods elasticises and differences between multilateral and bilateral trade. Given the need of detailed-high volume data, the analysis should include more recent trade statistics. However, additional research should be first devoted for a new classification of "strategic goods". This new classification needs to account the role that digitalisation and globalization had in the global supply chains, requiring an in depth analysis of industrial production across countries.

	Dependent variable: MID		
	(1)	(2)	(3)
	mid	mid	mid
bil_op	9.773	-310.4	-1.233
	(19.80)	(325.2)	(10.15)
multi_op	0.129	0.121	-0.0252
	(0.670)	(0.820)	(0.0401)
peace	-0.0279***	-0.0193*	-0.0487***
	(0.00812)	(0.00858)	(0.0142)
ldis	0.441	1.119	-0.249
	(0.251)	(0.787)	(0.208)
muldis			-0.105***
			(0.0223)
bildis			0.0266**
			(0.00929)
contig			1.382**
			(0.488)
_cons	-5.339**	-9.921	-1.765
	(1.851)	(5.179)	(1.377)
N	835	602	26146

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 4.1: Impact of trade on military conflict (benchmark results).

Chapter 5

Conclusion

The study of multilateral and bilateral trade flows of strategic goods should be expanded in future studies. The role of trade in countries relationship has generally been underestimated. Particularly, trade of strategic goods and their impacts on conflicts has only recently been discussed due to the conflict in Ukraine. Looking at European trading relations with Russia, natural gas has economically intertwined the two partners, influencing their political decisions. Existing literature analysing trade effects on bilateral conflict mainly explores aggregated trade data. These papers show that multilateral trade flows increase the probability of conflict while bilateral trade flows decrease it. Multilateral trade, by reducing dependence with a single country, reduces the costs of war with that country. Bilateral trade does the exact opposite, increasing the cost of war between the two partners. The analysis of Europe's imports from Russia shows evidence of common trends between strategic goods right before the start of the Ukrainian conflict. The thesis claims that it is evidence of the larger effects that strategic flows have on the probability of conflict, in this case natural gas given the traded volume, motivating further studies in the field. The novelty presented by the thesis is an empirical specification which allows to test strategic trade flows effects, both multilateral and bilateral, on probability of conflict. The devised specification allows to test the following 2 hypothesis:

1. Multilateral trade of strategic goods increases the probability of conflict more than non-strategic goods.

2. Bilateral trade of strategic goods decreases the probability of conflict more than non-strategic goods.

The thesis conducts a preliminary analysis of the devised approach, using existing data retrieved by Martin et al. article "Make trade not war" (2008) [25]. The results show the need of more recent trade data, requiring additional resources. Note, The results arising from this specification would answer directly the research question posed by the thesis. For instance, a significant positive coefficient for the multilateral openness variable

would indicate that Europe's growing dependence on Russian natural gas had indeed an impact on Russia's decision to intervene in Ukraine. Future work may help expand the role that trade has in conflict resolution. For instance, trading in certain goods may be used to mitigate tensions among countries with divergent goals, just like the European coal and steel community did after world war two. Additionally, Future work may be used to analyse the impact of trade with specific non-democratic regimes, namely China or Turkey, assessing commerce role in their foreign policies objectives.

Bibliography

[1] James Anderson. “A Theoretical Foundation for the Gravity Equation”. In: *The American Economic Review* 69.1 (1979), pp. 106–116.

[2] Katherine Barbieri. “Economic Interdependence: A Path to Peace or a Source of Interstate Conflict?” In: *Journal of Peace Research* 33.1 (1996), pp. 29–49.

[3] Margit Bussmann. “Foreign direct investment and militarized international conflict”. In: *Journal of Peace Research* 47.2 (2010), pp. 143–153. DOI: 10.1177/0022343309354143.

[4] T. Casier and J. DeBardeleben. *EU-Russia relations in crisis : understanding diverging perceptions*. 2018.

[5] Tom Casier. “The Rise of Energy to the Top of the EU-Russia Agenda: From Interdependence to Dependence?” In: *Geopolitics* 16.3 (2011), pp. 536–552. DOI: 10.1080/14650045.2011.5208.

[6] G. Clark and D. Jacks. “Coal and the Industrial Revolution, 1700–1869”. In: *European Review of Economic History* 11.1 (2007), pp. 39–72. DOI: 10.1017/S1361491606001870.

[7] European Commission. “Consolidated FAQs on the implementation of Council Regulation No 833/2014 and Council Regulation No 269/2014”. In: *European Commission press release* (2014).

[8] Han Dorussen. “Heterogeneous Trade Interests and Conflict WHAT YOU TRADE MATTERS”. In: *JOURNAL OF CONFLICT RESOLUTION* 50.1 (2006), pp. 87–107. DOI: 10.1177/0022002705283013.

[9] G. Attinasi R. De stefani E. Frohm V. Gunella G. Koester A. Melemenidis and M.Tòth. “The semiconductor shortage and its implication for euro area trade, production and prices”. In: *Economic Bulletin Boxes, European Central Bank* 4 ().

[10] James Fearon. “Rationalist Explanations for War”. In: *International Organization* 49.3 (1995), pp. 379–414.

[11] Bösch Frank. "Energy Diplomacy: West Germany, the Soviet Union and the Oil Crises of the 1970s?" In: *Historical Social Research / Historische Sozialforschung* 39.4 (2014), pp. 165–185.

[12] E. Gartzke and Li Quan. "Measure for Measure: Concept Operationalization and the Trade Interdependence-Conflict Debate." In: *Journal of Peace Research* 40.5 (2003), pp. 553–571. DOI: 10.1177/00223433030405004..

[13] Erik Gartzke. "Preferences and the Democratic Peace". In: *The International Studies Association* 44.2 (2000), pp. 191–212.

[14] Andreas Goldthau. "Assessing Nord Stream 2: regulation, geopolitics energy security in the EU, Central Eastern Europe the UK". In: *The European Centre for Energy and Resource Security (EUCERS)* (2016).

[15] Thomas Graham. "From Oligarchy to Oligarchy: The Structure of Russia's Ruling Elite". In: *DEMOKRATIZATSIYA* (2006).

[16] C. Gursan and V. Gooyert. "The systemic impact of a transition fuel: Does natural gas help or hinder the energy transition?" In: *Renewable and Sustainable Energy Reviews* 2 ().

[17] M. Sichei J. Erero J. "An augmented gravity model of South Africa's exports of motor vehicles, parts and accessories". In: *South African Journal of Economic and Management Sciences* 11.4 (2008), pp. 209–222. DOI: 10.4102/sajems.v11i4.284.

[18] S. Polachek J. Robst J. and Y. Chang. "Liberalism and Interdependence: Extending the Trade-Conflict Model". In: *Journal of Peace Research* 36.4 (1999), pp. 405–422.

[19] H. Kim and D. Rousseau. "The Classical Liberals Were Half Right (or Half Wrong): New Tests of the 'Liberal Peace', 1960-88 ." In: *Journal of Peace Research* 42.5 (2005), pp. 523–543. DOI: 10.1177/0022343305056225..

[20] V. Birchfield J. Krige and A. Young. "European integration as a peace project". In: *The British Journal of Politics and International Relations* 19.1 (2017), pp. 3–12. DOI: 10.1177/1369148116685274.

[21] Irina Kustova. "EU–Russia Energy Relations, EU Energy Integration, and Energy Security: the State of the Art and a Roadmap for Future Research". In: *Journal of Contemporary European Research* 11.3 (2015), pp. 287–295.

[22] Andrew Long. "Bilateral Trade in the Shadow of Armed Conflict". In: *International Studies Quarterly* 52.1 (2008), pp. 81–101.

[23] Edward Mansfield. "The Concentration of Capabilities and the Onset of War". In: *The Journal of Conflict Resolution* 36.1 (1992), pp. 3–24.

[24] Jonathan Marshall. *To Have and Have Not: Southeast Asian Raw Materials and the Origins of the Pacific War*. University of California Press, 1995. ISBN: 9780520304765.

[25] P. Martin T. Mayer and M. Thoening. "Make Trade Not War?" In: *Review of Economic Studies* 75 (2008), pp. 865–900.

[26] Roza Nurgozhayeva. "Corporate governance in Russian state-owned enterprises: Real or surreal?" In: *Oxford Law Faculty* (2022).

[27] H. Hegre J. Oneal and B. Russet. "Trade does promote peace: New simultaneous estimates of the reciprocal effects of trade and conflict." In: *Journal of Peace Research* 47.6 (2010), pp. 763–774.

[28] J. Oneal and B. Russet. "Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict". In: *Journal of Peace Research* 36.4 (1999), pp. 423–442.

[29] S. Polachek and J. Xiang. "How Opportunity Costs Decrease the Probability of War in an Incomplete Information Game." In: *International Organization* 64.1 (2010), pp. 133–144. DOI: 10.1017/S002081830999018X.

[30] B. Porter and C. Saivetz. "The Once and Future Empire: Russia and the "Near Abroad"". In: *The Washington Quarterly* 17.3 (2010), pp. 75–90. DOI: 10.1080/01636609409443409.

[31] O. Ketshk R. Reuveny and B. Pollins. "Trade and Conflict: Proximity, Country Size, and Measures." In: *Conflict Management and Peace Science* 27.1 (2010), pp. 3–27. DOI: 10.1177/0265659009352137.

[32] R. Reuveny and H. Kang. "Bilateral Trade and Political Conflict/Cooperation: Do Goods Matter?" In: *Journal of Peace Research* 35.5 (1998), pp. 581–602.

[33] Peter Rutland. "Russia as an Energy Superpower". In: *New Political Economy* 13.2 (2008), pp. 203–210. DOI: 10.1080/13563460802018547.

[34] Andrè Sapir. "Domino effects in Western European regional trade, 1960–1992". In: *European Journal of Political Economy* 17.1 (2001), pp. 377–388.

[35] Lois Sayrs. "Reconsidering Trade and Conflict: A Qualitative Response Model With Censoring". In: *Conflict Management and Peace Science* 10.1 (1988), pp. 1–19.

[36] Thomas Schelling. "The Strategy of Conflict . Prospectus for a Reorientation of Game Theory". In: *Journal of Conflict Resolution* 2.3 (1958), pp. 203–264. DOI: 10.1177/002200275800200301.

[37] M. Perez D. Sholten and K. Stegen. "The multi-speed energy transition in Europe: Opportunities and challenges for EU energy security". In: *Energy Strategy Reviews* 26 (2019).

[38] David Singer. *The wages of war 1816-1965: A statistical handbook*. John Wiley and Sons, 1972.

[39] Angela Stent. *Economic Relations With The Soviet Union American And West German Perspectives*. 1985. ISBN: 9780367155735.

[40] D. Stern and A. Kander. "The Role of Energy in the Industrial Revolution and Modern Economic Growth". In: *The Energy Journal* 33.3 (2012), pp. 125–152.

[41] Dmitri Trenin. "Russia Redefines Itself and Its Relations with the West". In: *The Washington Quarterly* 30.2 (2007), pp. 95–105. DOI: 10.1162/wash.2007.30.2.95.

[42] E. Ugurlu and I. Jindrichovska. "Estimating Gravity Model in the Czech Republic: Empirical Study of Impact of IFRS on Czech International Trade." In: *European Research Studies Journal* 22.2 (2019), pp. 265–281.

[43] B. Yarbrough and R. Yarbrough. "Cooperation and governance in international trade: The strategic organizational approach". In: *Journal of International Economics* 35.4 (1993), pp. 3–12.