

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Trade and Finance (FEM)



Master's Thesis

**Structural problems of the EU trade relations with the
UK after Brexit**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

Rahul Dinkar Kamthe

Business Administration

Thesis title

Structural problems of the EU trade relations with the UK after Brexit

Objectives of thesis

The broad objective of the thesis is to explore current trade agreements in the UK domestic market and identify tariff and non-tariff barriers and issues in trade between UK and EU. There are many problems expected in the sphere of structure, logistics, trade policy, standardization etc. Their identification and impact measurement form qualitative and quantitative aspects.

Methodology

The thesis research focuses on analyzing the theoretical ideas in the parameters of the literature review. This is conducted to evaluate the fundamental concepts of the study, which describe the structural issues between the UK and EU and their trade relation after Brexit. This part will represent the qualitative research methodology used for the follow-up analysis quantitative analysis.

In the next part, the author should do a comparative analysis of foreign trade statistical data before and after Brexit and identify their impact and consequences for trade. The thesis will be based on a secondary data collection approach. The secondary data will be collected from academic articles, journals, as well as available statistical publications.

The proposed extent of the thesis

70 stran

Keywords

Brexit impact, Trade agreements, UK government trade policy, logistics, changes in trade structure

Recommended information sources

- Ahmad, S., Limão, N., Oliver, S. and Shikher, S. (2020). Brexit Uncertainty and its (Dis)Service Effects. [online] National Bureau of Economic Research. Available at: <https://www.nber.org/papers/w28053>.
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Declaration

I declare that I have worked on my master's thesis titled "Structural problems of the EU trade relations with the UK after Brexit" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 30.11.2023

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I would like to thank **doc. Ing. Lubomír Cívín, CSc., MBA** for his valuable advice and support during my work on this thesis.

Structural problems of the EU trade relations with the UK after Brexit

Abstract

This thesis investigates the impact of Brexit on EU-UK trade dynamics. It delves into historical collaboration within the EU framework and examines post-Brexit structural changes in trade agreements, customs arrangements, and regulatory standards. Special focus is given to non-tariff barriers and the Northern Ireland Protocol's implications. Utilizing both quantitative and qualitative methods, the study assesses economic repercussions across sectors.

The research also explores potential solutions, including policy recommendations and collaborative frameworks, to enhance the EU-UK trade relationship. By shedding light on these structural challenges, the thesis contributes valuable insights to inform policymakers, businesses, and academics about the complexities of post-Brexit trade dynamics and provides a foundation for future research in international trade and diplomacy.

Keywords: Brexit impact, Trade agreements, UK government trade policy, logistics, changes in trade structure.

Strukturální problémy obchodních vztahů EU se Spojeným královstvím po brexitu

Abstrakt

Tato práce zkoumá dopad brexitu na dynamiku obchodu mezi EU a Spojeným královstvím. Zabývá se historickou spoluprací v rámci EU a zkoumá strukturální změny v obchodních dohodách, celních ujednáních a regulačních normách po brexitu. Zvláštní pozornost je věnována netarifním překážkám a důsledkům Protokolu o Severním Irsku. S využitím kvantitativních i kvalitativních metod studie hodnotí ekonomické dopady napříč odvětvími.

Výzkum rovněž zkoumá možná řešení, včetně politických doporučení a rámců spolupráce, která by měla posílit obchodní vztahy mezi EU a Spojeným královstvím. Tím, že práce osvětluje tyto strukturální problémy, přispívá cennými poznatky k informování tvůrců politik, podniků a akademiků o složitosti obchodní dynamiky po brexitu a poskytuje základ pro budoucí výzkum v oblasti mezinárodního obchodu a diplomacie.

Klíčová slova: Dopad brexitu, obchodní dohody, obchodní politika vlády Spojeného království, logistika, změny ve struktuře obchodu

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1. Introduction

Brexit, the United Kingdom's (UK's) decision to depart from the European Union (EU), has impacted the nature of trade relationships between the United Kingdom and the European Union. In this thesis we will examine the structural difficulties assessing by huge preference which have considerably impacted trade relations between the EU and the UK. Therefore, to fulfill the given objectives and the research aim, some research questions are set to attribute the research analysis for further. This report will gain an in-depth understanding of the intricacies underlying the EU's trading ties with the UK after Brexit by analyzing the study's origins, objectives, questions, rationalization, and significance. The following chapters will offer a framework for systematically assessing and dealing with such challenges.

The EU and the UK had a strong economic connection before Brexit, which had been defined by efficient trade flows, without tariffs market access, and a unified regulatory structure. Yet, an array of structural issues emerged as a result of the United Kingdom's choice to exit the EU, influencing trade relations between both nations.

Supply chain interruption is one of the most serious issues. Almost half of the UK's total trade was with the EU, which makes it a major trade partner. The UK gained from the free flow of people, goods, services, money, and investment as an EU member. Customs and regulatory examinations have been introduced as a result of Brexit, which resulted in inefficiencies and increased expenses for businesses that engage in trading across borders. Also, uncertainty around possible trade deals resulted in volatility and complex investment choices. Companies are concerned about future trading situations while the EU and the UK are in the process of maintaining a new trade deal. This has postponed economic growth and decreased foreign direct investment (FDI).

Trading customers are yet another significant variable impacted by Brexit. The conditions of trade among the two parties have shifted as a result of the UK's exit from the Customs Union and Single Market of the EU. Non-tariff challenges, such as differing rules and regulations and more records, make it more difficult for UK enterprises to enter the EU market. Businesses within the EU have run into difficulties while attempting to enter the UK marketplace. This has resulted in decreasing trade volumes and restricted commercial opportunities for both sides. Growth in the economy and possible benefits from global trade have been restricted by decreased foreign trade and investment possibilities.

Brexit has influenced the UK's rate of unemployment, especially in companies with strong ties to EU trade. Future agreements on trade are unresolved and trade barriers have been put in place, which has constrained investment and interfered with supply chains, which has led to decreased employment in some industries. Further, businesses have been forced to reduce or relocate activities as a result of increasing costs and difficulties reaching the market. Initial reports imply that Brexit has led to higher rates of unemployment in businesses that are highly reliant on EU trade, however, the full amount of the effect on unemployment remains to be assessed.

Brexit, a decision by the United Kingdom to quit the European Union, has had an important effect on the trade relationship between the UK and the EU. Major structural shifts have resulted, in influencing many facets of trade, particularly regional trade relationships, restrictions on trade, and the business culture for both EU and non-EU companies that operate in the UK. This study requires to give an in-depth review of these effects and provides insight into the key issues driven by Brexit.

Second, comprehending the challenges noticed by firms and the general viability of the UK home market requires an in-depth analysis of the tariff and non-tariff impediments between the UK and the EU. Barriers to trade, such as regulations and customs processes, can impede access to markets, disrupt the chain of supply, and increase prices.

This research will give helpful knowledge into the techniques used by non-EU companies in establishing the post-Brexit trade climate by assessing these aspects. The purpose of this study is to present a thorough and current review of the effects of Brexit on business relationships between the EU and the UK. The results of this study will be helpful to politicians, companies, and researchers who attempt to understand the potential and challenges given by Brexit and create plans to reduce its impact on trade and financial stability.

It will be interesting to study what and how the world's largest geographical and financial event took place, which has simply not changed Europe's geography but also made significant impact on Global trade and perhaps changed the financial landscape of the World.

2. Objectives and Methodology

2.1 Objectives

The objective of this thesis is

1. To examine the subtleties of structural problems and how they affected trade between these two entities.
2. To determine the fundamental problems and impacts on the trade relations of the UK due to Brexit challenges in the pre-post era.
3. To discuss the strategic impacts of the entire EU trade due to post and pre-Brexit challenges.
4. To pinpoint key challenges for the Republic of Ireland, an EU member, with Northern Ireland as an integral part of the UK, particularly in the aftermath of Brexit.

2.2 Methodology

The methodology used in this thesis involves a mixed research approach of qualitative and quantitative methodology which involves mainly secondary data collection from academic research papers, journals, government publications and statistical data provided by global large institutions.

Research Aims

The aim of this study is to evaluate how Brexit would affect the UK's trade with regional ties whilst looking at the underlying issues that have developed in trade relations with the EU. Further, the research intends to examine the impact of non-tariff barriers and tariffs on the durability and flexibility of the UK domestic market within the UK and the EU. By measuring factors such as business accessibility, market access, and possible advantages in the new trading situation after Brexit, the research also intends to assess the potential and difficulties faced by non-EU businesses working via the UK.

Research design

The research design in this paper is primarily based on secondary research data method. The qualitative research design framework is mainly focused on impacts of Brexit which has created challenges and on what extent these structural problems affected the trade relations between the UK and the entire EU territory. As the UK, one of the most developed

country on the global map has also reported significant trade disruptions as a reflection of the pre-post-Brexit. This paper highlights those impacts which were converted to trade challenges for the EU and the UK. Therefore, the given research work followed the qualitative design approaches.

Research Strategy

The given research paper analyses the structural challenges and problems of trade faced by both the EU and the UK due to Brexit. The analysis of empirical studies, literature reviews, and case studies done by global financial institutions adds privilege to this dissertation. Strategic approach helps to contrast the pre and post-Brexit impact on trade relations between EU territory and the UK regions.

Research method

This research focused on understanding the changes caused by Brexit. It used a mix of qualitative and quantitative methods to analyze the challenges and structural issues related to Brexit in both the UK and EU trade areas. The study looked at how Brexit affected trade between the United Kingdom and the European Union. To assess current trade flows, quantitative data obtained from secondary sources during the analysis phase of the research is used.

Data collection method

Due to limited time constraints, the secondary research data collection method is used i.e. different secondary sources of journals, articles, websites, etc. The Brexit referendum also creates protection laws for data safety regulation (GDPR), for which this research paper followed the secondary data collection methods. Due to data protection regulations and laws, this research work also followed the secondary research analysis process.

The present research work also analyzes the statistical positions, and financial conditions for detecting the trade relations and barriers for some popular firms of Tesco, Sainsbury, and Walmart by collecting the secondary data set of financial statements, etc. from authentic relevant journals and articles on Brexit referendum in the UK.

Research Questions

By solving these research issues, the study strives to offer perspectives on how Brexit will affect the UK's trade with regional connections, examine the tariff and non-tariff obstacles impacting the UK-EU trade connection, evaluate the effect on access to markets and ease for conducting company, and evaluate the strategies enterprises will use to survive the post-Brexit commerce circumstances. Therefore, this research paper will address to the following questions to reach the bottom of the topic.

1. Taking into consideration of the pre and post-Brexit conditions, how has Brexit affected the EU - UK's trade relationships?
2. Did the independent trade policy of the UK after brexit succeeded in replacing the missing trade of the EU trade by newly opened trade with ohter countries of the world?
3. What are the present non-tariff and tariff obstacles prohibiting the UK from competing with the EU?
4. How has Brexit affected carrying out businesses in the UK, especially for companies abroad of the EU?
5. How have trade relations and contracts changed and what does it imacted for marketplace access?
6. What challenges and issues arised for the Republic of Ireland, especially regarding Border issues?
7. How the Northern Ireland, perhaps the UK responded to these challenges?

3. Literature Review

This chapter helps to gather the relevant information and problems associated with the Brexit and mainly challenges for the United Kingdom. Analysing of different types of empirical studies, and research articles will help to understand the cohesive summary of how the UK trade relation faced huge challenges and in what extent of structural problems has emerged after Brexit.

Comprehending the effects of Brexit on the UK's local trade relationships and the structural problems that have occurred in EU trade relations relies significantly on this study. The results of this research will add to the body of information currently available on the financial implications of Brexit and offer insights into the prospects and problems the UK will encounter in the post-Brexit trading climate.

The 1980 to 2010 could be seen as a euroscepticisum period which forced the leadership of the UK to eventually take this issue for a public debate over national sovereignty, immigration, and economic issues. Figure 1 briefly explains the timeline which took place during the entire Brexit process. In January 2013, the ruling conservative party leader and the then Prime Minister of the UK Mr. David Cameron announced a plan to hold an in-out referendum on EU membership. On June 23, 2016 the UK officially holds referendum on leaving the EU and 51.9% of voters choose to leave. The next important step was to trigger Article 50 which took place on March 29, 2017 by the then PM of the UK Theresa May which was the officially beginning the withdrawal process. The deal negotiations saw two prime ministers of the UK and finalised by the UK and the EU in October 2019. The UK officially leaves the Union on January 2020 with a effect of ending the transtion period and coming with new trade deals.

First, politicians and trade negotiators must comprehend how Brexit would affect the UK's trade with regional relationships. Policymakers can decide on trade pacts and partnerships by carefully assessing modifications in patterns of trade and quantities. In order to optimize trade among regional links and future trade regulations and discussions, this research will give empirical information.

For companies and sectors that operate in the UK, it is crucial to analyze both non-tariff and tariff obstacles between the UK and the EU. Businesses could develop plans for adjusting to the new trade climate by investigating these obstacles and how they influence the adaptability and adaptability of their markets in the UK. It will help businesses find

probable barriers to trade, optimize supply chains, and research change markets to decrease risks and take advantage of possibilities. Also, both domestic and non-EU companies will gain from a study of the ease of doing company, accessibility to sectors, and potential advantages under evolving trade conditions following Brexit. It can help domestic firms to evaluate their competitive position, highlight areas for enhancement, and examine potential benefits resulting from policy variance.

By providing direct evidence of the effects of Brexit, the study will also help members of academia. It will add to the body of information on global commerce, regional trade pacts, and the monetary implications of political choices. This study can serve as an outline for more research on the prospective effects of Brexit on trade and financial stability. Finally, this study's significance also pertains to businesses and the general public. Understanding how Brexit will affect international trade is crucial for firms, consumers, and people. Brexit has attracted a lot of public attention.

3.1 Empirical studies

Kalaitzake (2021), discussed the impact of Brexit challenges on the financial growth analysis. The author describes how the changes in structural interdependence play a major role in identifying political power and withdrawal negotiations for UK-EU trade relations. The author describes that Brexit has a contingency power that influenced the financial performances and policy implications for the UK trade relations. The author also focused on the factor of the capacity of the financial substantial's for protecting from trade legislations. The author also discussed how Brexit creates a major threat to the financial economics of UK-EU trade relations. The author also highlights the year of the financial crisis of 2007-09 that became a focal point for analysing the Brexit referendum situation. The author also found a diminishing power of the financial power that is found post Brexit situations. The high level of contingency nature of political power from different financial sources is also highlighted by analysing the Brexit referendum situation.

The author followed the qualitative research approaches and divided the entire discussion into some parts. The article also discussed the situations of the high financial dependency situation of the economy of the UK, which creates a lot of challenges to overcome the financial crisis. It is also found that almost 11% of total GDP growth, and 7.3% of total revenue shares from employment were highly affected during 2018. The author also described the relevance of the analysing of different types of growth models of privatized Keynesianism, and Anglo-liberal models for identifying the impact of the Brexit

referendum on the entire UK economy. The author also highlights some alternative solutions for recovering from the financial crisis faced post Brexit referendum. The UK-EU negotiation situation is also recognized for analysing the financial situation and the trade relations after the Brexit referendum.

The author also highlights the interdependent recognition by recognizing the opinion of Brexit negotiators and identified that financial fragmentation is considered for both financial development and the general protection of European cities (Whyman & Petrescu, 2020). The author also highlighted the elaborate descriptions of the contingency planning during the first move planning from the announcement of the European Commission. Finally, the author concluded that policymakers effectively play a vital role in making any no-deal Brexit disruption situation, based on EU contingency plans (Glencross, 2021). The author also highlights that political power from financial resources remains salient. The key structural factors of complex interdependencies of both the EU and the UK are responsible for explicit policymaking policies.

3.1.1 Impact of the Brexit referendum on the local markets of the UK

According to Vigani *et al.* (2021), elaborately describes the policy implications of the post-Brexit situation and the resilient features of the financial growth of England. The author describes how the post-Brexit situation affects the financial performance of local markets of the farming sectors. The authors also highlight the associate's resilient risk that threatening the resilience and viability features of the financial growth of the agricultural sectors. The author also highlights the uncertain trading relationship in 2016 that creates major concerns for the farm payments under the agricultural policy of EU trade Unions. The author also discussed some positive impacts of the Brexit referendum.

The author also describes how Brexit help to improve the potential opportunities for public goods and public money in the entire UK region (Vigani *et al.* 2021). The author also describes the scenario of 2019 where it is clearly identified that intense negotiation between the EU and the UK creates the scenario of a no-deal situation between these two areas. The local markets or the farming sectors have to negotiate the associated risk from the Brexit-referendum situation.

The authors followed the mixed research approaches for finding the impact of Brexit on the local markets of UK-EU. For the primary research survey, the author collects the

survey respondents from a total of 200 farmers in 2018. The long-list types of risk management policies were also identified through the survey analysis.

Table 1.: Post-Brexit scenarios of multi-stakeholders of the local agricultural form in the UK

	No Deal (ND)	Extream Free Trade (EFT)	UK-EU free trade Agreement (UFTA)
	No deal with EU, WTO rules, following. Reduction in Support payment reduced by 75% Restrictions on migration labour.	Unilateral trade agreements, No trariffs on EU imports Increased competition from imports. Reduction in support paymet by 50%	Brexit deal of EU/UK, FTA with 0% tariffs. Policy, regulations, & trading regulations. Policy and regulation on EU trade remains state of affiras.
Impact on Resilience	Negative income for farmers due to non support from Govt. High pressure on non efficient farms.	Substantial falls in farm businesses.	5% increased cost due to trade friction Rise in prices where UK is importer (milling wheat). Decline in price where UK is exporter (feed barley). Farm businees income falls.

(Source: Vigani *et al.* (2021))

The above figure describes how the post-Brexit situation faced huge challenges in managing the multi-stakeholders of the UK agricultural sectors. The author divided the Brexit-referendum situation into three main categories of No-deal situation, the extreme situation of free trade, and the free-trade agreement situation between UK-EU. The author also highlights the results of the Brexit referendum situation (Vigani *et al.* 2021). The authors also highlight a lot of challenges that create major problems in the local market of the agricultural sectors. The author identified that the import cost from the trade friction almost increased by 5%. The import price for the UK increased and the export values of the UK decreased which have a major impact on the entire UK economic situation. The income situation of the firm business also falls that have a major impact after the situation of post-

Brexit. The firm business also faced huge challenges due to substantial falls in the incomes of the farmers.

Finally, the author critically discussed some recommendations and policy implications that might help to develop the situation of the Brexit referendum policies. According to Smith, (2019), discussed the scenario of the global arena and the European Union after the scenario of the post-Brexit situation. The author highlights the impact of the Post-Brexit situations faced during the international trade development of the EU. The author used the role theory and the discursive analysis for identifying the Brexit implication on trade situations of the EU territories.

The author focuses on the close analysis of the relationship between the UK and the EU for identifying the evaluations for taking external action between EU-UK trade relations. The author also highlights the impact of globalization on addressing foreign policies. The author mainly highlights the three main areas of transatlantic relations, development and trade situations, and defense and security policies (Smith, 2019). The author strictly followed the qualitative research methodologies that might help to identify the theoretic analysis for identifying the impact of the trade relations and the Brexit impact on analysing the trade relation between EU-UK. Finally, the author concludes that the Brexit situation creates a major impact on the financial factors of the UK trade sectors.

The EU territories also faced another major challenge due to impact of the Brexit impacts. Different types of policies like defense and security policies, transatlantic relations, different types of development and trade policies etc. for mitigating the crisis of trade relations for the entire EU-UK. The author also discussed how globalization plays a vital role in the foreign trade policies for EU territories (Wincott, 2020). The author also describes that the EU and the UK both play a vital role in developing influential and distinctive policies for the entire analysis of the significance of the Brexit referendum. It is also identified that the UK also achieved the middle power of changing international trade policies (Billing *et al.* 2020). The EU plays a major role in the establishment of trade roles. The author concluded that the EU was highly impacted due to the development of continuous trade policies and growing reinforcements of the trade policies in the UK after the post-Brexit situation.

3.1.2 Disintegration differentiation in the European Union after Brexit

According to Figueira, & Martill, 2021, differentiation in integration in the European Union studies has mirrored the prospects for new questions and scenarios that arise and are imagined for the Union. This review inspects the effect of limited judiciousness on the Brexit exchanges and clarifies why England neglected to completely grasp the European Association (EU) during this unpredictable cycle. Limited reasonableness implies dynamics under mental imperatives, where people improve on complex issues because of restrictions in data and mental limits. The authors centered on the Brexit dealings, a diverse and high-stakes occasion, to investigate what mental restrictions meant for Britain's comprehensive policymakers might interpret the EU. The exploration is grounded in conducting financial matters and global relations hypothesis, especially as far as how mental predispositions and educational shortages can prompt sub-par results in discussions.

The exploration of the study distinguishes a few key mental inclinations that obstructed England's grip on the EU's position and goals. Tendency to look for predetermined feedback assumed a part as policymakers would in general search out data that affirmed their previous convictions, prompting a slanted understanding of the EU's situation. In addition, carelessness predisposition made English moderators misjudge the intricacy of EU guidelines and the troubles of untangling from the association.

The authors likewise feature the effect of deficient data on the discussions. Because of time requirements and perplexing EU processes, British moderators missed the mark on exhaustive comprehension of different EU systems and guidelines. This enlightening deficiency further compelled their capacity to go with informed choices, eventually affecting the exchange results. This review adds to the study by revealing insight into the basic connection between limited objectivity and exchange disappointments. By analyzing the instance of Brexit, the analysis highlights the significance of perceiving and moderating mental predispositions and data holes in high-stakes discussions. The discoveries have suggestions past Brexit, filling in as a useful example for policymakers participating in complex global dealings.

Thus in all, this study provided important experiences into the job of limited judiciousness in molding the result of the Brexit talks (Figueira, & Martill, 2021). Their exploration features the impact of mental inclinations and inadequate data on direction, eventually prompting England's inability to appreciate the EU's position completely. The review's interdisciplinary methodology, drawing from conduct financial aspects and global

relations, advances how the interpretation of the discussion cycles and highlights the requirement for a more prominent consciousness of mental limits in such settings

4. Practical part

The practical part is the most significant chapter of any research analysis, which helps to find out the structural problems faced by the UK after post Brexit situations. The entire United Kingdom suffered from the high trading cost with the host countries. Both the European territories and the entire UK suffers from increasing tariff cost on imported items, and nontariff barriers. It is also found that in the transition phase, the UK-EU trade decreased by approximately 15%. The entire UK mainly suffers from the imports rather than the exported items. Therefore, this chapter discusses the structural problems associated with trade relations among the EU-UK.

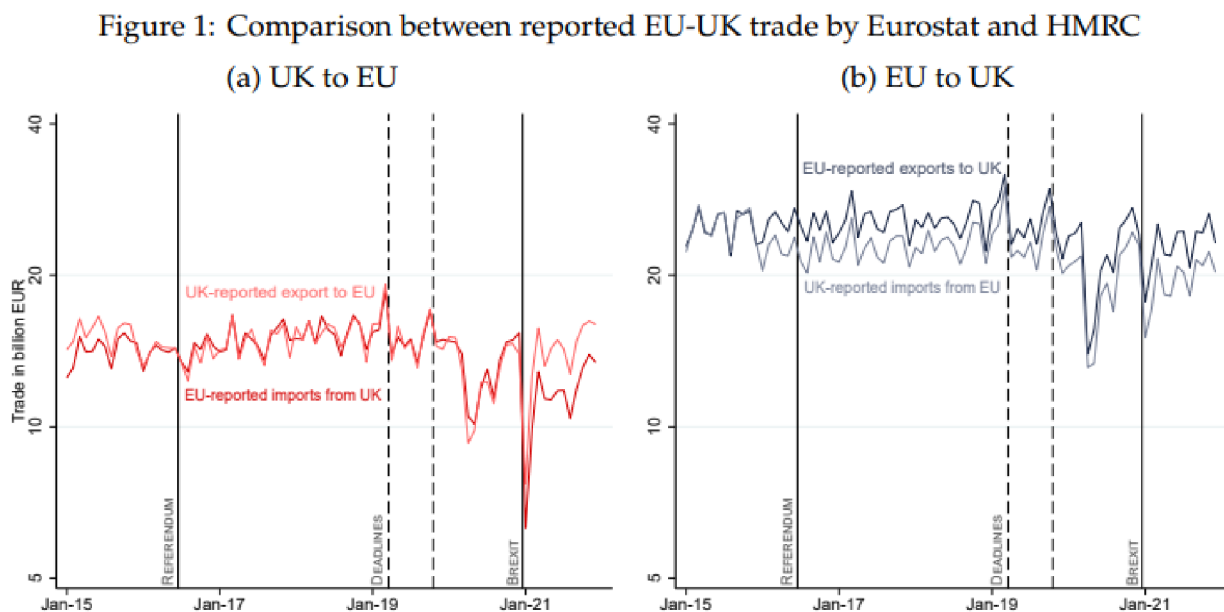
4.1 Impact on the EU-UK trade

Primary data source for assessing the impact of Brexit on goods trade between the EU and the UK is Complex, the official trade database for the EU is mainly taken from Eurostat. This dataset provides information on trade flows for each of the 27 current EU member states with over 200 partner countries and territories. The data is recorded mainly on monthly and spans from January 2015 to December 2021. Trade information is involving approximately 9,500 unique products traded by the EU each month. For computational reasons, analysis often aggregates members' trade to EU27 memberstate trade. However, it's essential to note that both the UK and EU statistical agencies made changes to data collection methods when the UK departed from the EU Single Market. This departure led to the UK exiting the EU's internal trade reporting system (Intrastat), which compiles data from VAT returns in each member state. Consequently, trade flows from the EU side transitioned to being collected through the Extrastat system, employed for non-EU member states.

The Extrastat system, in contrast to Intrastat, gathers data from customs forms and employs a lower threshold for trade declarations on imports from outside the EU. Importantly, it defines import trade within the EU on an origin basis, where the import source is recorded as the last country where a change was made to the goods (ownership, repackaging, or further processing). This change in definition directly impacts Eurostat's measure of UK to EU trade, excluding goods previously consigned through the UK from the figures.

4.1.1 Effect on trade of the EU member state

Figure 1. Comparison between the UK and EU trade (Bill. €)



Source: ESRI Working Paper No. 735

After Brexit, the European Union (EU) becomes the UK's largest trading partner, while the UK becomes the EU's third-largest trading partner, following the United States and China. Some EU member states, such as Belgium, Cyprus, Ireland, Germany, and the Netherlands, are more affected by the economic consequences of Brexit. The Republic of Ireland is especially sensitive due to its shared land border with the United Kingdom and its close ties in agribusiness with Northern Ireland. The reintroduction of a customs border would have been harmful economically and politically for both the UK and the EU. This was particularly concerning because a physical border posed a risk to the peace process in Northern Ireland.

Despite efforts to maintain goodwill, it was unclear how border controls could be avoided without a Customs Union between the UK and the EU. Following negotiations in October 2019, the UK and EU revised the Northern Ireland Protocol to keep the Irish border open while establishing a customs border between the island of Ireland and the island of Great Britain. This arrangement essentially left Northern Ireland in the EU Customs Union in certain aspects. The sectors in the EU most impacted by the UK's withdrawal include motor vehicles and parts (as the UK heavily relies on EU parts), electronics equipment, and processed foods. The export of raw materials from the Ruhr valley in Germany would also be affected.

4.1.2 Institutional changes

Until 2017, the UK was home to two important European agencies, the European Medicines Agency and the European Banking Authority. However, because EU agencies couldn't be located outside the Union, a process began to find new host cities for these agencies. Many cities competed to host these agencies, not just based on objective criteria but also for political reasons. In November 2017, it was decided that the agencies would move to Amsterdam and Paris. Additionally, due to Brexit, the backup data center for the security of the Galileo satellite navigation system, which was initially in the UK, was relocated to Spain. The UK had 73 seats in the European Parliament out of a total of 751 (European Parliament 2020). When the UK left in 2020, those seats became empty. Out of these, 27 seats were given to other countries, and the remaining 46 were set aside for potential new member states. This reduced the total number of Members of the European Parliament (MEPs) to 705.

Usually, the seats would be distributed among the remaining countries based on a standard formula. However, there were alternative suggestions. The European Parliament initially proposed redistributing 22 seats and reserving the other 50 for new members or a special list of MEPs elected from across the Union to enhance direct democratic links. This proposal had support but faced opposition due to legal uncertainties around Brexit. Ultimately, on January 23, 2018, it was decided that 27 of the UK's seats would be redistributed, and 46 would be reserved for new member states and special lists. On February 7, 2018, MEPs approved the redistribution of 27 seats but rejected the idea of introducing special lists. All British MEPs left their seats on January 31, 2020, and the redistribution process began on February 1, 2020. Regarding European Commissioners, after the Von der Leyen Commission, the number of Commissioners was reduced from 28 to 27 (euobserver, 2020).

4.1.3 Restrictions on free movement of EU citizens to the UK

The biggest impact of Brexit was on Eastern European countries, which had about 1.2 million workers in the UK by the end of 2015. The largest groups were from Poland, Romania, and Lithuania. A year after the Brexit vote, the number of people coming to the UK dropped by 106,000, mainly because EU citizens left for other countries. The largest decrease was among those from Western European states. The Polish government is trying to get its young emigrant workforce to return, but many may stay in the UK or move to other

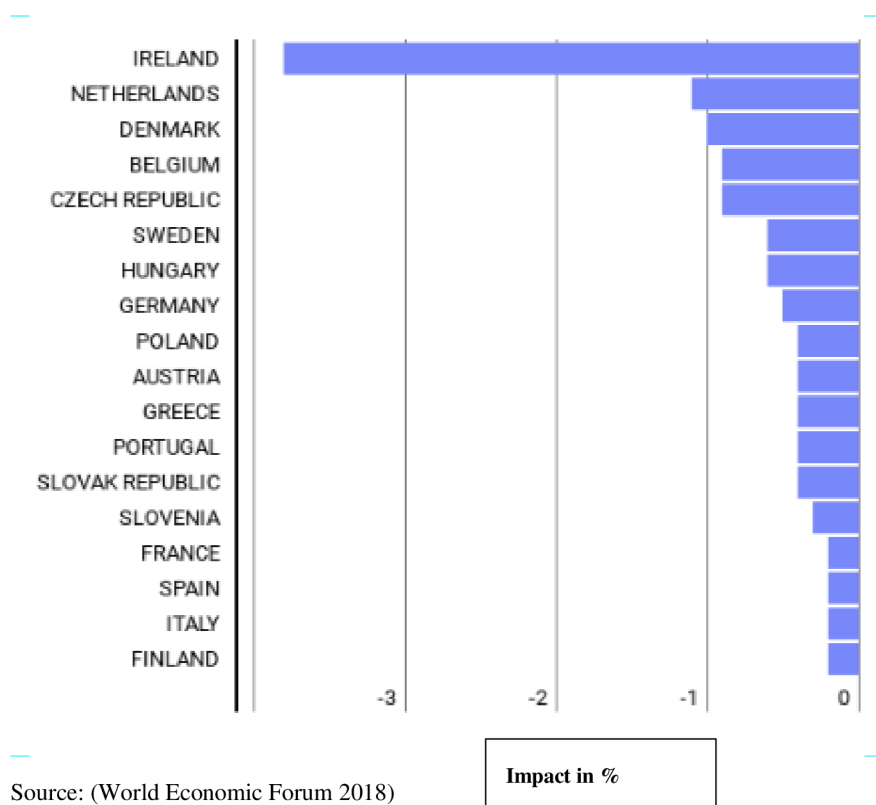
Western cities. Other Western European countries may see more people coming from Eastern states in the future. While this influx of workers could help countries like Germany economically, it could also cause political issues (the guardian 2021). In October 2019, the Romanian government encouraged Romanian workers to go back home, offering incentives like grants and loans. At that time, 4,452 Romanians worked for the NHS, and Eastern European workers made up 67% of seasonal workers in British agriculture. A significant impact occurred in May 2021 when EU nationals, mostly young women from countries like Spain, Italy, France, Bulgaria, and Greece, were detained, sent to immigration detention centers, and expelled for violating post-Brexit travel terms.

4.1.4 Effect on EU companies after Brexit

Unlike the UK, there is less data available for the impact on EU companies collectively. But individual member state has its own data. Study done on the German companies suggests that the Brexit has created challenges for German-British business, and the Trade and Cooperation Agreement only helps to some extent (IHK business survey 2021). On top of this, the impact of the Corona pandemic has made things even more difficult for German companies doing business in the UK. Currently, 60 percent of companies feel that their business situation in the UK is not good, and 57 percent expect it to get worse in 2021. About three out of four companies are dealing with or expect additional customs bureaucracy. Problems with logistics, legal uncertainties, and an increase in trade barriers due to the UK's exit from the European single market are the most common issues faced by businesses. Furthermore, 15 percent of companies are thinking about moving their investments from the UK to other countries, with Germany and other EU countries being the primary choices.

Samelike this was on French companies if there are no free trade agreements, France could be one of the six countries most affected by Brexit. According to Euler Hermes, French companies might face up to €3.2 billion in export losses. This would impact various sectors like the car industry, agriculture (since the UK is a significant customer for France), and fishing. However, there are also some opportunities with Brexit. As the UK exits Europe, France becomes the top country with the most breweries on its land, having 1,600 in 2018 according to the Brewers of Europe.

Figure 2: Brexit impact of regional companies of the EU member states



If the UK and the EU reach a Free Trade Agreement (FTA), it's projected that the long-term impact on the EU-27's real output would be a 0.2 percent reduction compared to a scenario where there is no Brexit. Among EU countries, Ireland would face the largest income decline (about 2.5 percent less than the no-Brexit scenario), followed by the Netherlands, Denmark, Belgium, and the Czech Republic. In a more challenging scenario where there is no agreement (default to WTO rules), the impact worsens. The EU-27 would experience a 0.5 percent reduction in output, and Ireland would face a substantial 4 percent output loss. This significant impact on Ireland is attributed to the substantial increase in both tariff (taxes on imports) and non-tariff barriers (other restrictions on trade), making trade more difficult and costly. The above figure it can be seen that the impact on most sevar is on Irland with a changes in trade shows -3 % total, where as the Netherland counts on second position with a nagetive effect of more than 1%.

4.1.5 Covid 19 effect on EU trade with the UK

In spring 2020, the European economy's openness was seen as a vulnerability during the pandemic, leading to supply difficulties and shortages of critical products like masks. The global lockdown and the dominance of digital players highlighted Europe's challenges in crucial economic areas. While globalization and technological progress may be considered a solution, the ongoing crisis suggests the European Union needs to prepare for a post-globalization era. The common trade policy is being questioned, and initial decisions show the EU's responsiveness. The EU might shift towards a more assertive protection of its interests without embracing protectionism. The question remains: are these changes temporary or a fundamental shift?

4.1.6 Changes in Euro Currency Value due to Brexit

The movement of the British pound (GBP) after Brexit has been characterized by fluctuations and shifts, reflecting the uncertainties and challenges faced by the United Kingdom during this period. Here's a more detailed explanation: Post-Brexit Initial Movement (February 2020 - March 2020). Following the official departure of the UK from the European Union (Brexit) in January 2020, the Euro initially became weaker in February 2020. This could be attributed to initial optimism, relief, or market expectations. In March 2020 however, the euro has increased significantly. This downturn could be linked to the increasing uncertainties surrounding the global economy due to the onset of the COVID-19 pandemic. Two Years Later (March 2022) in March 2022 the euro experienced a fall as compared to Pound, declining to a rate of against the pound in March 2022. This could be influenced by various factors, including economic data, monetary policy decisions, and market sentiment regarding the post-Brexit landscape. Recent Trading figures in October 2022 shows the euro has been trading at around 1.13 against the pound. This level suggests ongoing volatility and perhaps a degree of uncertainty in the currency markets. Various factors, such as economic indicators, geopolitical events, and the ongoing impact of the COVID-19 pandemic, can influence currency valuations. Other factors Contributing to Currency Movements suggests the COVID-19 pandemic impact which has introduced considerable economic uncertainties, impacting global markets and currencies. Brexit Trade Deals, Negotiations and developments in trade deals between the UK and the European Union post-Brexit could have influenced the euro's value.

- The pound's journey post-Brexit reflects the dynamic nature of currency markets, responding to a mix of economic, political, and global factors. Volatility during this period suggests that traders and investors are navigating the evolving landscape of the UK's economic relationships and the broader challenges posed by the pandemic.

In short, the movement of the Euro since Brexit has been marked by a combination of optimism, challenges, and responses to global events, illustrating the complex interplay of factors influencing currency markets.

4.2 Impact on the UK-EU trade

Starting from January 2021, the UK adopted a new system for collecting trade data with the EU as it was no longer part of the Intrastat system. This change affected how data on exports from the UK to the EU was collected, utilizing customs documentation. Import data, however, continued to be collected in the same manner as before Brexit. Researchers, such as Freeman et al. (2022), used this new UK data source to analyze the impact of Brexit on trade with the EU compared to trade with the rest of the world, using data from the EU and the USA for comparison. It's normal to observe some differences when comparing a country's reported exports to a partner country with that partner country's reported imports. This is because exports are typically valued at factory-gate prices, while imports include additional costs like transport, insurance, and charges. Before January 2021, the differences in reported trade flows between the EU and the UK were relatively small. However, a more significant gap appeared in January 2021. In the data, the panel shows trade flows from the UK to the EU, and panel (b) shows trade from the EU to the UK. Over time, there has been a consistent gap in the data for EU to UK trade, but this gap didn't change much in January 2021. On the other hand, there was a noticeable increase in the gap for UK to EU trade in 2021. UK-reported exports were notably higher than EU-reported imports. This difference is attributed to the EU's changed definition, where only goods originating in the UK are considered as imports. Before this change, goods consigned from UK wholesalers but produced elsewhere would also have been counted as trade from the UK.

The month-on-month based analysis of the total trade of the UK with the EU has been projected through the above that has been adapted from the journal. The control group is essentially the non-EU, OCED, BRICS countries that also trade in the same market as the European Union and as a preference of the EU. The graph shows the performance of the

control group to be better than the performance of the EU from 2017 to 2020. Further, the grip of the non-EU, OCED, BRICS countries over the trading environment of the European market could also be recognized. However, the paper outlines potential advantages that the UK could gain from recently discovered trade adaptability and independence. The authors feature the opportunities for the UK to arrange its trade concurrences with non-EU countries, possibly diversifying its trade portfolio

The authors additionally talk about the job of computerized arrangements and innovative technologies in mitigating a portion of the trade-related issues post-Brexit. This literature further digs into the policy reactions initiated by the UK government to address the evolving trade landscape. The authors scrutinize the adequacy of these strategies in minimizing disturbances, promoting sends out, and ensuring financial strength. Also, the paper points out the meaning of collaboration between the UK's lapsed administrations and the focal government in crafting lucid trade systems (Ayele, *et al* 2021). Therefore in all, this research paper illuminates the intricate snare of challenges and opportunities that have emerged in the domain of UK trade following Brexit. The authors' thorough audit of existing literature highlights the requirement for versatile approaches that balance financial interests, administrative changes, and international relationships. This work fills in as a valuable resource for policymakers, researchers, and stakeholders seeking a more profound understanding of the post-Brexit trade landscape

4.2.1. The impact on UK-EU trade

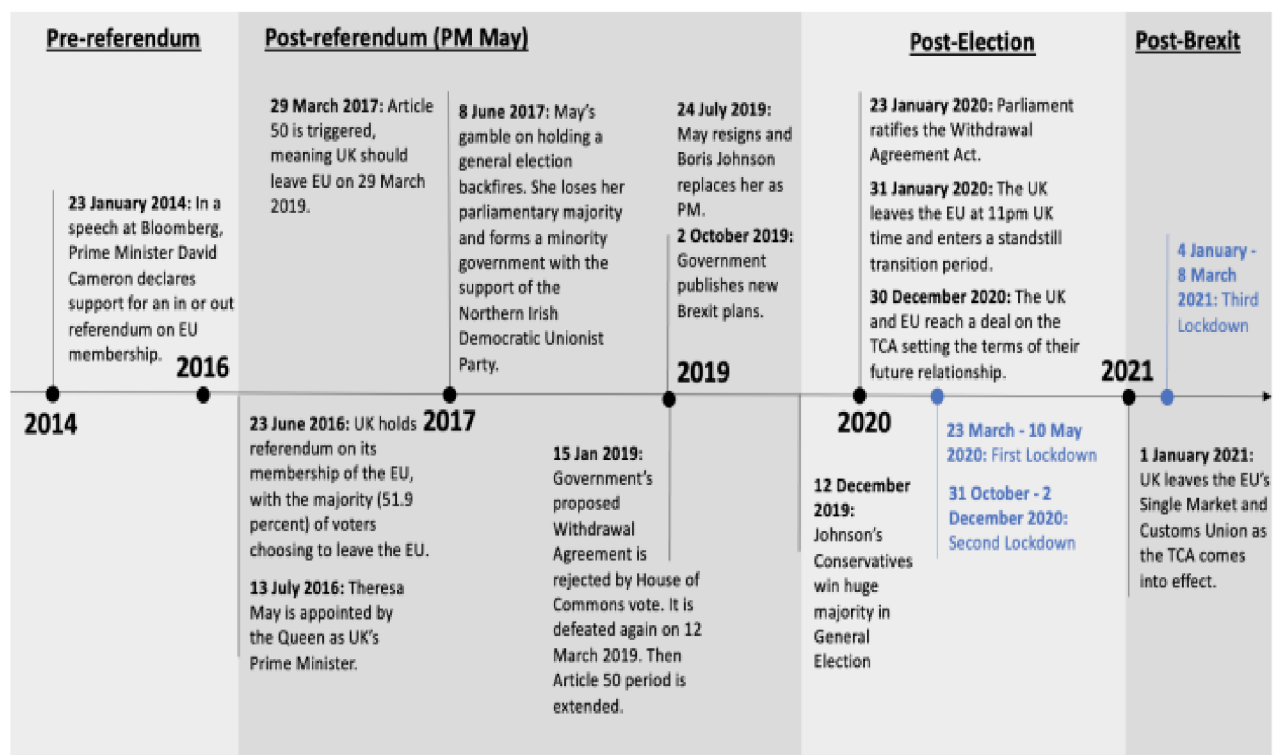
The Brexit referendum had a huge impact on the EU-UK trade relations. The first research question tried to determine the effect of the Brexit referendum on the entire UK trading relations by considering both post and pre-situations (Chaban *et al.* 2020). It has been found that the EU accounted for 50-55% of the entire UK exports in 1999-2007. However, the Brexit referendum has had an adverse effect on trade relations for which the exported amount fell by approximately 42%. The smaller businesses are mostly affected by the Brexit challenges and face a huge challenge to export the items to the different locations of the EU. The entire UK economy also suffers due to the Brexit referendum situation. The inflation rate in the entire UK economy suddenly increased which also had a negative impact on - EU trade of the entire UK.

4.2.2. Obstacles from tariff and non-tariff

The imposition of regulations, formalities, and requirements in the form of non-tariff regulation affected the trade relations in the entire UK countries after the post-Brexit referendum situation. The non-tariff Barriers help to implement various policies for international trade in the EU countries (Breinlich *et al.* 2020). The EU economy is considered as one of the trading blocks that took the initiative to eliminate the tariff barriers in international trade situations. Therefore, the UK also integrated with the entire EU economy . During the pre-Brexit era, the UK imports 53.4% of goods from the entire EU. In particular, the volume of imports for the food products (77.5%) was higher for the various food products.

But, in 2016, the UK decided to leave the trading relationships with the EU and no such relationship was built until 2021

Figure 3: Timeline of Brexit Referendum



(Source: Bakker *et al.* 2022)

The timeline of this referendum period and eventual separation are shown in the timeline of the above figure. It is also found that the non-trade barriers (NTB) in the EU were approximately 13.1% in 2018 but the volume of average tariff was approximately 1.8%.

It is also found that the NTB have a huge impact on trade relations. The NTB highly affected domestic consumers. The entire UK left the trade relations with the EU in 2020 (Dhingra, Freeman, and Huang, 2023). The trading relationship between EU-UK is governed by the TCA. The TCA helped to ensure quota and tariff-free trade (TFT). But in recent decades the volume of NTB increased. The analysis of the trade relationships between consumer products and the NTB helps to understand the net welfare impacts on the economies (Vigani *et al.* 2021). The UK also faced an increase in price during imports from the EU. Therefore, the UK economy faced a high increase in the import volume. The EU union also increased the food price by 3% to 6% within two years. Similarly, the “Global Trade Analysis Project (GTAP)” found that the volume of the ad-valorem equivalent (AVE) also increased for each product. For the food products, of bovine animals, fresh meat, faced a higher rate of NTB and AVE. The reason for the higher amount of NTB is due to the technical properties of frozen parts. Similarly, the AVE for normal food products like broccoli, onions, and carrots is 0. Therefore the price of the food products faced high NTB during the trading times. The rate of the NTB also increased by approximately 50%-80%. The effect of Brexit has a direct impact of non-tariff barriers on food items and reduced welfare impacts. The value of households cost increased by 210 billion GBP, while the gains from the domestic product increased by 4.78 billion (Billing *et al.* 2021). There exists a huge difference between low-income and high-income households and the “cost of living” increased by 52%. Hence the UK importer faced high NTBs from the high level of consumer prices. The importers and the producers also faced the challenges of these trade barriers challenges. COVID-19 also has a huge impact on disruption in consumption and global production levels. The Brexit referendum also reduced the relative prices of consumer goods. The relative price of the non-EU imported items decreased the consumer prices in the EU territories. The high NTBs were the direct source of a rise in the prices paid by consumers for the items that were the direct effect of the high NTBs. Therefore, both importers and exporters in the UK were forced to contend with a significant rise in prices as a direct result of the increase in the Brexit vote.

4.2.3. Effect on various UK companies

The Brexit referendum has had a huge impact on the entire economic situation. More or less every industry faced the potential changes due to the Brexit referendum situation. Most of the industries faced huge challenges due to international trade barriers and financial services. The European suppliers and the continental business in Europe faced huge challenges due to

the Brexit referendum (Kalaitzake, 2021). The Brexit referendum creates different challenges across different regions. Different organizations face different types of challenges. The majority of firms in the UK were confronted with enormous difficulties due to disruptions in their supply chains, labour forces, border traffic, laws, other economic concerns, and intellectual property rights (Tetlow, and Pope, 2020). On the other hand, some of the most significant difficulties that Brexit poses for EU commerce are as follows.

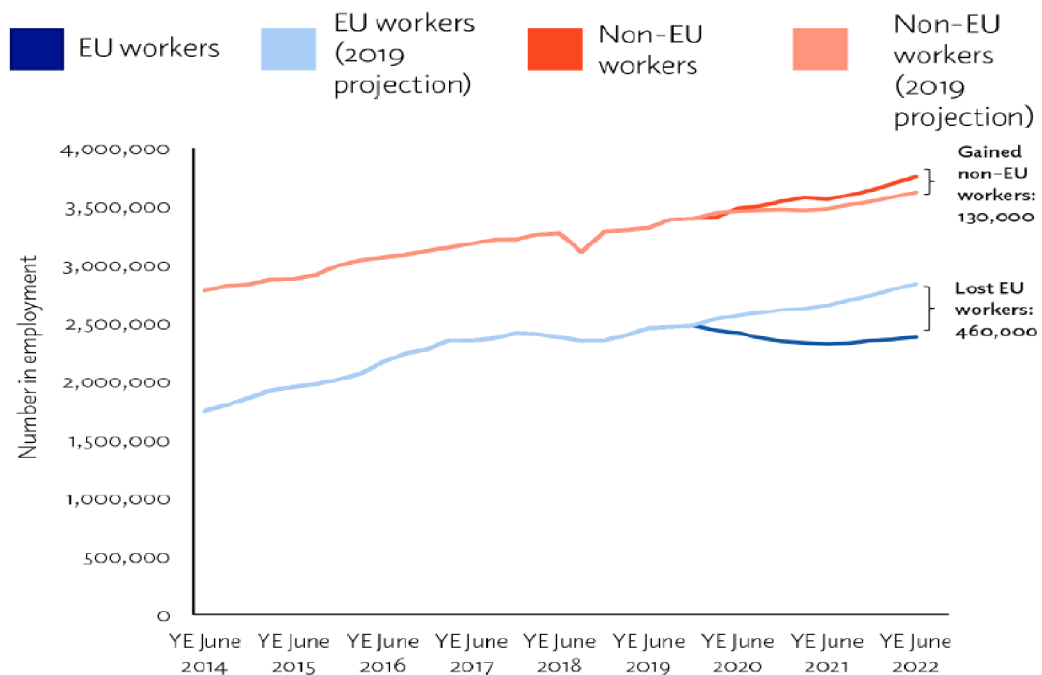
a) Supply chain

The Brexit referendum increased the input material cost for which the suppliers failed to reach adequate supply chain volumes. The international supply chain highly affected the business profitability and growth reduced after the Brexit referendum challenges. The Brexit referendum increased the different trade challenges (Nakamura, Yamada, and Tan, 2019). The Brexit referendum increased agility and the visibility of the logistics and supply chain units. It also affected the trade barriers and the uncertainty from the trade relations.

b) Workforce challenges

The net workforce also suffers due to Brexit challenges. The volume of net loss from the labor force reduced by approximately 1%.

Figure 4: The effect on the EU and non-EU labor force in 2019



(Source: <https://ukandeu.ac.uk/the-impact-of-brexit-on-the-uk-labour-market-an-early-assessment/>)

The above trend line shows the impact on the labor force market in EU and non-EU workforce engagement during 2019. The net loss in the labor workforce was approximately 330000. The non-UK workers faced a large amount of shortfalls from the skilled laborers (Wachovia and Zulia, 2022). The wholesale workers, manufacturers, administrations, and storage of all types of workers faced huge challenges after the post-Brexit referendum situation

c) Customs tariffs

The Brexit challenges highly impacted on the customer tariffs. The Brexit scenario also increased the associated costs for goods and services due to tariff barriers. The customers have to face the high tariff barriers for food prices. Food prices also increased by 6% due to the negative impact of the Brexit referendum on consumer prices (Moradlou *et al.* 2021). The overall living cost for the consumers increased by approximately 1.1%. The customers are also highly affected due to the adverse effects of the Brexit referendum. The customers also faced high challenges due to the replacement of orders or placing any returns.

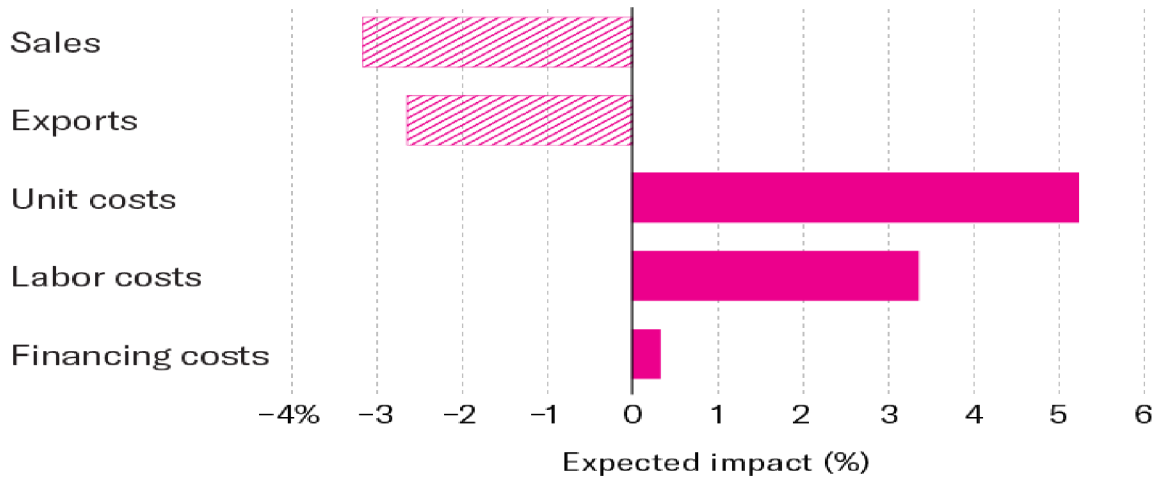
d) Regulations

The UK trade faced potential and enormous Brexit regulations in different regions of the EU territories. The entire UK trade relations faced the new regulations in the trade regulations. The volume of the GDP, inflation, and trade relations are also affected by the Brexit challenges.

e) Economic issues

The Brexit situation highly increased the level of inflation rates and highly affected trading relationships. The level of stagnation and economic deflation was created due to the invasion of Russian-Ukraine (Gupta *et al.* 2023). The level of the energy price increased due to a sudden Brexit impact along with the invasion of Russia-Ukraine. Figure 7 reflects how the Brexit has significantly decreased the direction of the UK-EU trade directions. It has also seen increased political conflicts, legal barriers, uncertainty, and disruptions in the supply chain and logistics units (Smith, 2019). The UK businesses faced potential challenges due to the Brexit referendum. The level of the export volume from the EU to the different regions of the UK fell by 2.1%. However, the export volumes for the non-EU countries rose by approximately 6.1%. The UK trade faced challenges due to increasing material costs, skill and labor issues or shortages in the logistic and supply chain units. The trade performance of the UK faced considerable challenges due to the Brexit referendum challenges.

Figure 5: The effect of Brexit on the UK business



(Source: <https://hbr.org/2019/03/brexit-is-already-affecting-uk-businesses-heres-how>)

4.2.4. Changes in trade relations and impact on marketplace access

Following the formal departure of the United Kingdom from the European Union in 2020, the phenomenon of Brexit has indeed engendered noteworthy alterations in the trade dynamics among the UK and the EU, yielding noticeable repercussions within the marketplace (government.nl, 2021). Brexit had a significant effect on the trade relations between the UK as well as the EU which has also led to substantial barriers over trade, cash flows, and the labor market.

The extant empirical data indicates that Brexit has resulted in a decrease in bilateral commerce between the UK and the EU, with estimates of the trade fall ranging from 10% to about 25%. The data shown in figure 6, illustrates a significant decrease in exports related with the EU to the UK and exports from the UK to the EU, over the time frame from 2018 till Q4 of 2019 and prior to the onset of “the COVID-19 pandemic”. In contrast, exports to the majority of other global destinations had a comparatively smaller reduction. All data indicate a decline in commerce during the duration of the COVID-19 pandemic (Buigut and Kapar, 2023). In the aftermath of the COVID-19 lockdown measures, there has been an observable increase in the volume of exports originating from the EU and the UK to destinations outside their respective regions. Additionally, there has been a notable surge in exports from the UK to the EU. The decline in exports from the EU to the UK persists. The exports of the EU to both the UK and other global destinations have seen a decline since the

first quarter of 2021. The aforementioned statement applies similarly to the exports conducted by the United Kingdom to both the European Union and other nations. The UK along with the EU signed a commerce and Cooperation Agreement to manage commerce. Despite paying tariffs and quota-free trading in most commodities, the deal imposed customs inspections and administrative obstacles that were absent under the UK's accession to the EU. Such emerging trade frictions have caused obstacles to borders and company expenditures (Fontanelli, 2023). Customs paperwork and trade tension, ensured quality, package labeling, and product origins regulations, “Value Added Tax (VAT)” categorizing and sharing of costs, the EU equivalents classification for monetary services, the unrestricted transfer of data, and a lack of accessibility for the Single Market and the open transit for products and services have resulted from Brexit. In the aftermath of Brexit, the UK reliance on the EU as a trade partner has diminished (ecb.europa.eu, 2023).

By the year 2022, it is projected that the EU will account for 29% of the UK's financial services exports, a decline from the 37% share seen in the year 2019. Furthermore, it is worth noting that the financial services industry in the UK, which has significant importance for the economy, has seen the loss of its privileged access to markets inside the EU. The fragmented market in the EU was a consequence of the need faced by many financial businesses located in the UK to create subsidiaries inside the EU. This strategic move was necessary in order to maintain ownership of EU consumers (amchameu.eu, 2023).

4.3 Analysis

4.3.1 The impact of Brexit on UK - EU trade

The vote to leave the European Union has a significant effect on economic ties. Multiple causes, such as Covid-19 and Russia's invasion of Ukraine, contributed to a disruption in the commercial relations of the United Kingdom. When all of these elements are considered together, the Brexit vote has a significant influence on both the long-term and short-term commercial connections. The most proportional shares were accepted by the regions of Northern Ireland (NI), Scotland, Wales, and the North East, all of which are located in the United Kingdom (Hoffmeister, 2022). Since 1999, the value of the percentage of imports originating from nations inside the EU has likewise fallen. When compared to the years 2019-2021, the value of exports coming from nations both within and outside of the EU was much lower in 2022

4.3.2 Obstacles from tariff and non-tariff

The commercial ties between the EU and the UK are significantly influenced by the existence of both non-tariff and tariff obstacles. Additionally, it was observed that the rate of inflation had a 10% rise during the third quarter of 2022. The escalating inflation rate has a significant impact on both consumer pricing and the trade dynamics between the territories of the EU and the UK (Feldmann and Morgan, 2021). The UK had a range of consequences, both advantageous and disadvantageous, as a result of its withdrawal from the EU. Non-tariff barriers have substantial economic importance. The removal of tariff barriers was also seen in the context of EU-UK ties. Hence, it may be argued that “non-tariff barriers (NTBs)” have a substantial influence on the economy (Xu, and Zhai, 2022). After the introduction of the “Trade and Cooperation Agreement (TCA)”, the UK saw an increase in inflation rates pertaining to imported food commodities. A majority of enterprises in the UK saw an increase in import expenses throughout the year 2021.

4.3.3 Effect on various UK companies

The third research question tried to find out the impact of the Brexit effect on the UK business. It is found that the UK business faced a high level of uncertainty due to Brexit challenges. The investment level was almost reduced by 6% after the imposition of the situation of Brexit referendum (Kordos, 2019). The employment level increased by 1.5% in the employment situation. The future productivity of the UK business is also reduced by 0.5%. It has been also found that the business anticipation almost increased the input cost and reduced the sales volumes. The uncertainty volumes also increased from 9%-23%. The foreign sales and the domestic sales volumes also suffer due to Brexit challenges. The business sales volumes were approximately reduced by 3%. The impact on the export volumes was also negative. However the labor cost, unit costs, and financing costs all tend to increase simultaneously.

4.3.4 Changes in trade relations and its impact on marketplace access

The data and statistics in figure 7 demonstrate the significant effect that Brexit has had on the commercial relationship between the UK and the EU. After the official withdrawal in 2020, there has been a significant decrease in bilateral commerce, with decreases varying between 10% and 25%. The graphical representation of export value

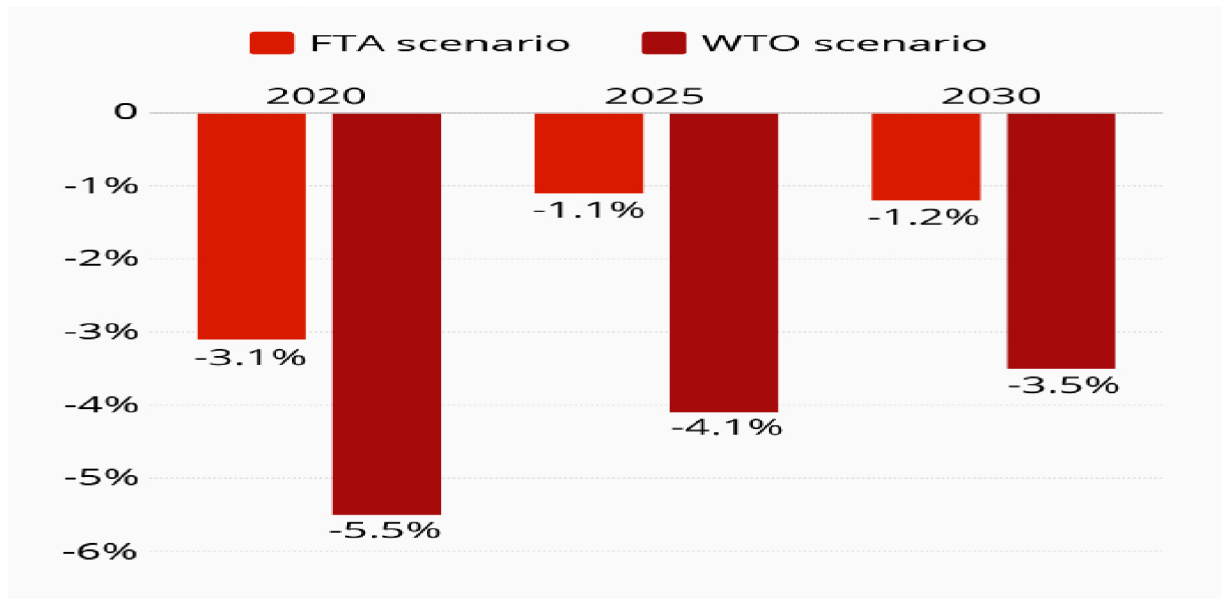
indicates a decrease in these numerical values. Despite the observation of increased exports to non-EU countries and a rise in UK exports inside the EU subsequent to the closure, the challenges were further exacerbated by “the COVID-19 pandemic”. The Commerce and Cooperation Agreement (CCA) between the UK and the EU includes provisions for administration and customs inspections, resulting in a heightened financial burden for enterprises, despite its primary objective of mitigating trade interruptions (Du, Satoglu, and Shepotylo, 2023). The enactment of regulations pertaining to the transmission of data, the labeling of products, and the category of VAT. Significantly, predictions foresee a drop in the exporting of monetary services to the EU, which suggests a lessening in the reliance that the UK has on the EU as a trade partner (Hix *et al.* 2023). As a direct result of the reduction in the degree to which the financial industry was granted privileged access to the markets of the EU, a number of financial corporations have established operations in those nations

In addition, the flow of commodities and products between the UK and the EU has encountered challenges due to the imposition of both tariff and non-tariff barriers. As a consequence of this phenomenon, expenditures have seen an increase for both individual consumers and corporate entities, particularly within the food sector, hence contributing to the escalation of inflation rates. The dynamics of commerce in the UK have been once again altered due to shifts in trade relationships. Despite the UK's efforts to diversify its economic links, the EU remains a significant influence, even if its exports of financial services have seen a decline.

4.4 Impact of Brexit on the Economy of the UK

Figure 7 explains two different approaches of FTA and World Trade Organisations (WTO) most-favoured nation status. Since the Brexit referendum in 2016, the UK economy has encountered fluctuations and uncertainties, impacted by the process of disengagement from the European Union. While the full economic implications are ongoing and multi-faceted, certain key regions highlight the impact.

Figure 6: Economic Impact of Brexit on the United Kingdom



(Source: <https://www.statista.com/>)

Trade: After Brexit, UK-EU trade relations went through changes. In 2020, UK commodities to the EU diminished by 13%, adding up to £294 billion, while imports from the EU fell by 11% to £374 billion, impacted by new traditions and methods and non-tax hindrances.

Employment and Labor Market: Employment misfortunes and labor market uncertainties arose in specific areas (Malik, *et al.* 2019). Even though employment levels have given indications of recuperation, uncertainties about movement, work market access, and future exchanging connections have affected these patterns.

Inflation and Consumer Prices: Cost ascends in specific items have been seen. In 2021, consumer prices flooded, especially in food and drink classes, driven by expanded transport and organization costs because of new trade competition strategies.

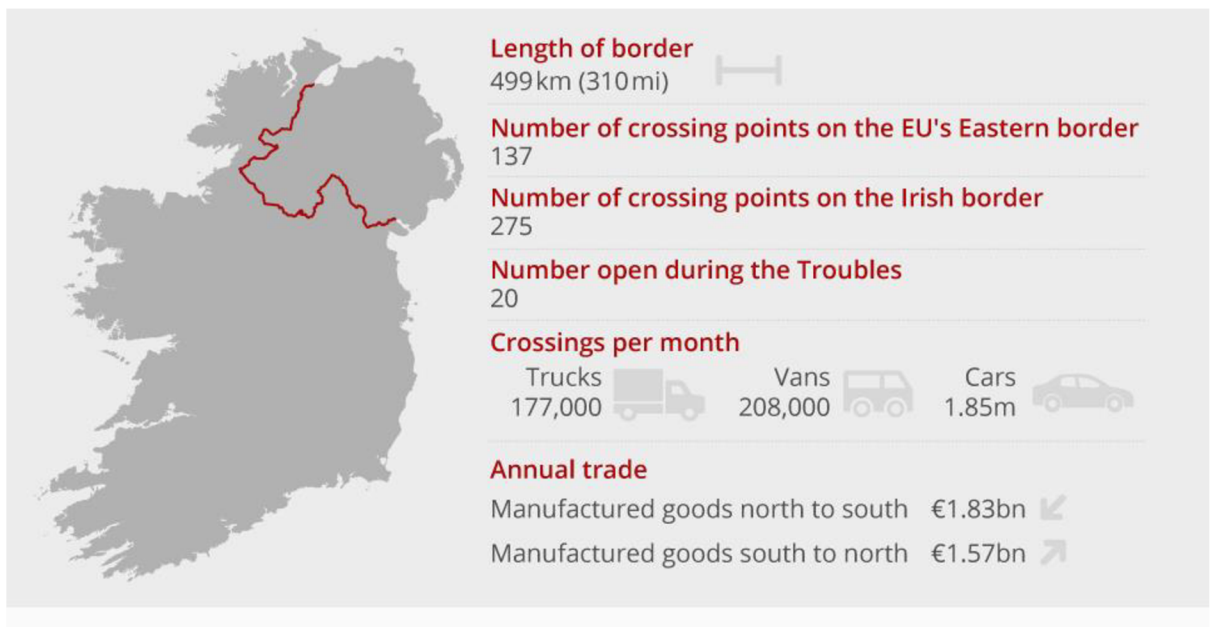
Economic Growth: The economy faced difficulties post-Brexit, intensified by the impacts of the Coronavirus pandemic. In the principal quarter of 2021, the UK's Gross domestic product was 8.7% beneath its pre-pandemic level, even though it developed by 4.8% in the subsequent quarter. Different evaluations propose that Brexit adversely affects economic growth.

Investment: Vulnerability encompassing Brexit prompted diminished business investments. Unfamiliar direct investment (FDI) inflows to the UK tumbled from £49.7 billion in 2019 to £28.5 billion in 2020, mirroring a 43% decay. In synopsis, Brexit has brought about movements and disturbances across trade, investment, employment, and inflation, developing the economic scene of the UK. While certain areas experienced difficulties, others adjusted or tracked down new opportunities (McGrattan, & Waddle, 2020). The full economic repercussions of Brexit are probably going to keep developing and impacting different parts of the UK economy in the years to come.

4.5 Impact of the Border Issue in Northern Ireland with the UK on Trade

The impact of the border issue with Northern Ireland post-Brexit has been a point of convergence in EU-UK trade relations, introducing intricacies that resonate across political, economic, and social aspects. The Northern Ireland Protocol, a vital part of the Brexit withdrawal agreement, is expected to forestall a hard border on the island of Ireland. In any case, it has brought about challenges, especially trade disturbances and uplifted strains.

Figure 7: Key facts about the border in Ireland, now the only border sharing area with the EU



Source: https://www.statista.com/chart/12012/brexit-flashpoint_-the-irish-border/

Mathematical Analysis:

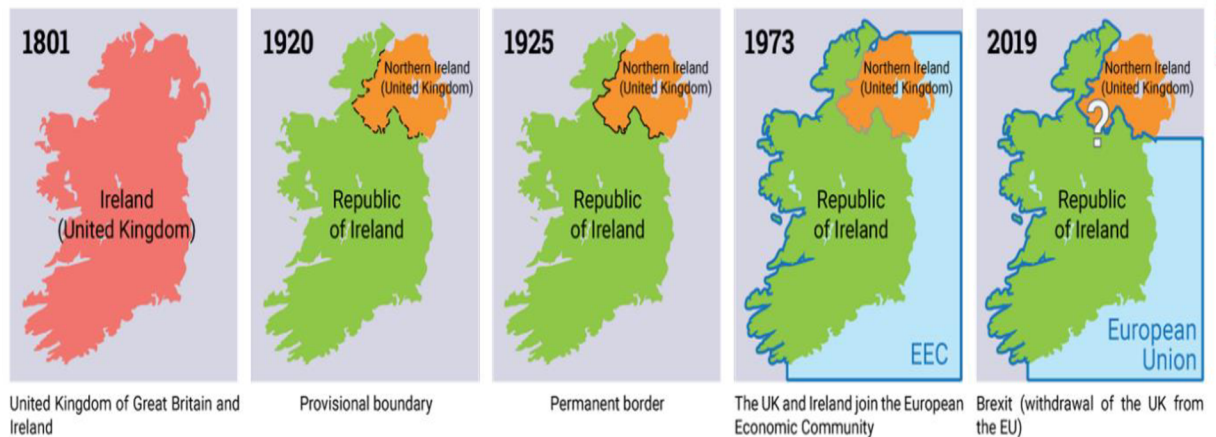
- **Average Crossings per Day:**
 - Trucks: $177,000/30 \approx 5,900$ trucks per day

- Vans: $208,000/30 \approx 6,933$ vans per day
- Cars: $1,850,000/30 \approx 61,667$ cars per day
- **Trade Balance:**
 - Net manufactured goods flow (North to South): €1.83 billion - €1.57 billion
= €260 million surplus for the North
- **Average Value of Goods Traded Daily:**
 - North to South: $1.83 \text{ billion}/30 \approx \text{€}61 \text{ million}$ per day
 - South to North: $1.57 \text{ billion}/30 \approx \text{€}52.33 \text{ million}$ per day
- **Ratio of North to South Trade Value to South to North:**
 - $1.83 \text{ billion}/1.57 \text{ billion} \approx 1.17$
 - This suggests that the value of manufactured goods moving from North to South is about 17% higher than the value moving from South to North.

The foundation of keeping an eye on products moving between Northern Ireland and the remainder of the UK has prompted commonsense hardships for businesses, contributing to delays and increased costs (Kalaitzake, 2021). This has implications for supply chains and the seamless development of products, affecting both Northern Ireland and mainland UK. , the protocol has created political pressures, with differing perspectives on its execution and its impact on the locale's political dependability. The border issue intersects with more extensive cultural worries, as seen in irregular incidents of common turmoil. The discontent highlights the awareness of the matter, with implications for trade as well as for the social texture of Northern Ireland. Navigating the intricacies of the border issue remains an ongoing test, requiring discretionary finesse and cooperative answers to guarantee economic security and cultural amicability in the area post-Brexit (onlinelibrary.wiley.com, 2023).

The trading implications associated with the Northern Ireland border dispute after Brexit, namely in regard to the performance of the “Northern Ireland Protocol”, have had a significant influence on UK trade. However, the stated objective of the Convention was to prevent the establishment of a physical border on Irish soil, a de facto border emerged between Northern Ireland and the rest of the United Kingdom.

Figure 8: Northern Ireland Border with the United Kingdom



(Source: <http://geoconfluences.ens-lyon.fr/programmes/dnl/dnl-hg-anglais/irish-border>)

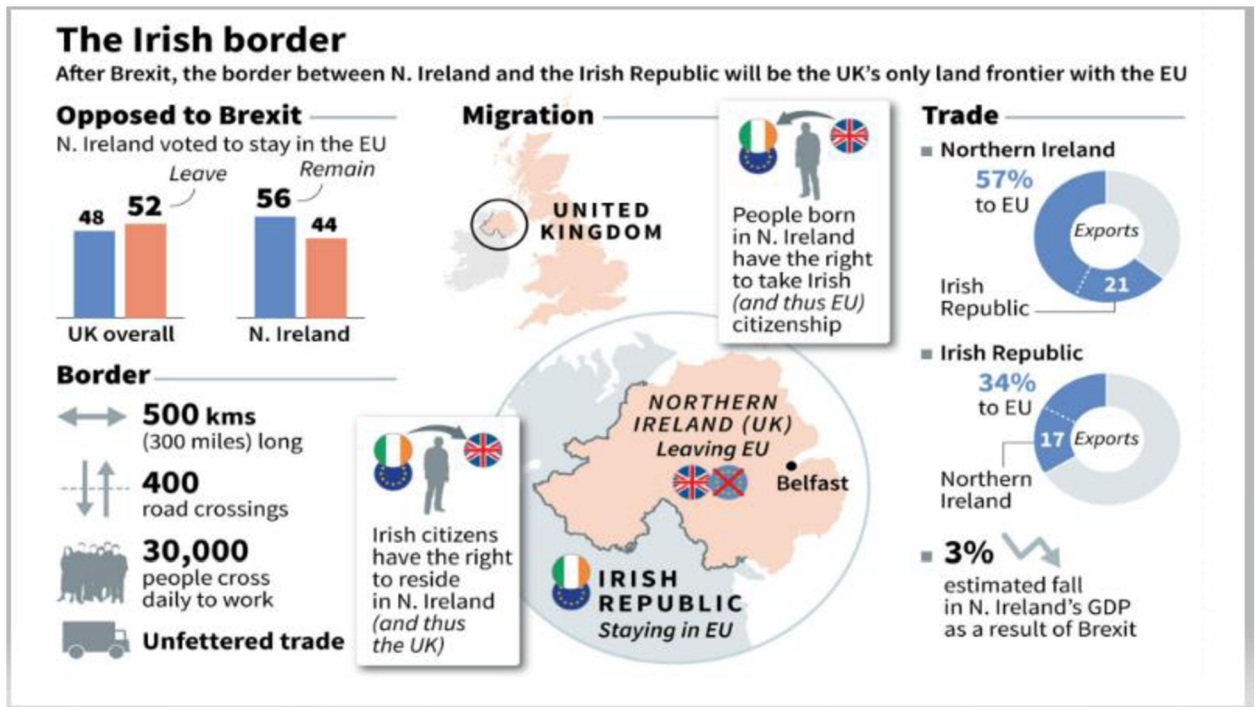
The trading implications associated with the Northern Ireland border dispute after Brexit, namely in regard to the performance of the “Northern Ireland Protocol”, have had a significant influence on UK trade. However, the stated objective of the Convention was to prevent the establishment of a physical border on Irish soil, a de facto border emerged between Northern Ireland and the rest of the United Kingdom.

Trade Disruption: The execution of the Convention has prompted interruption in exchange streams between “Great Britain (GB)” and Northern Ireland. Initiating from January till August 2021, there were around 300,000 statements expected for products moving from GB to Northern Ireland, creating setbacks and managerial weights.

Reduced GB-NI Trade: The exchange between GB and Northern Ireland saw a downfall. During January and June 2021, the all-out worth of commodities from GB to Northern Ireland diminished by around 20% contrasted with a similar period in 1020, dropping from £8.5 billion to £6.8 billion.

Impact on Business and Consumers: Organizations confronted expanded regulatory weights and expenses, influencing supply chains and the accessibility of specific items (Hayward, 2020). Furthermore, customers experienced potential cost climbs and decreased item decisions because of the progressions in exchange elements.

Figure 9: Impact of Irish Border Issue



(Source: <https://theglobepost.com/2019/04/29/brexit-irish-border/>)

Supply Chain Challenges: Areas like agri-food, retail, and drugs were altogether impacted. Supply chain disturbances, uncertainties, and inflated costs increased challenges in the maintenance of consistency for the accessibility of goods and services.

Uncertainty and Adaptation: Progressing uncertainties regarding the Convention's requirement and the potential for additional trade disturbances have made hesitance among organizations and required transformation to agree with new policies.

The Irish border dispute is a huge dispute because the border is 500 kms long and thereby, it has almost more than 30,000 people crossing the border daily for work purpose. This has been interrupted by the border issue and therefore, the easy communication and flow of work in the states has decreased. Further, it has been estimated that there has been a 3% fall in the GDP of Northern Ireland as a result of the Brexit.

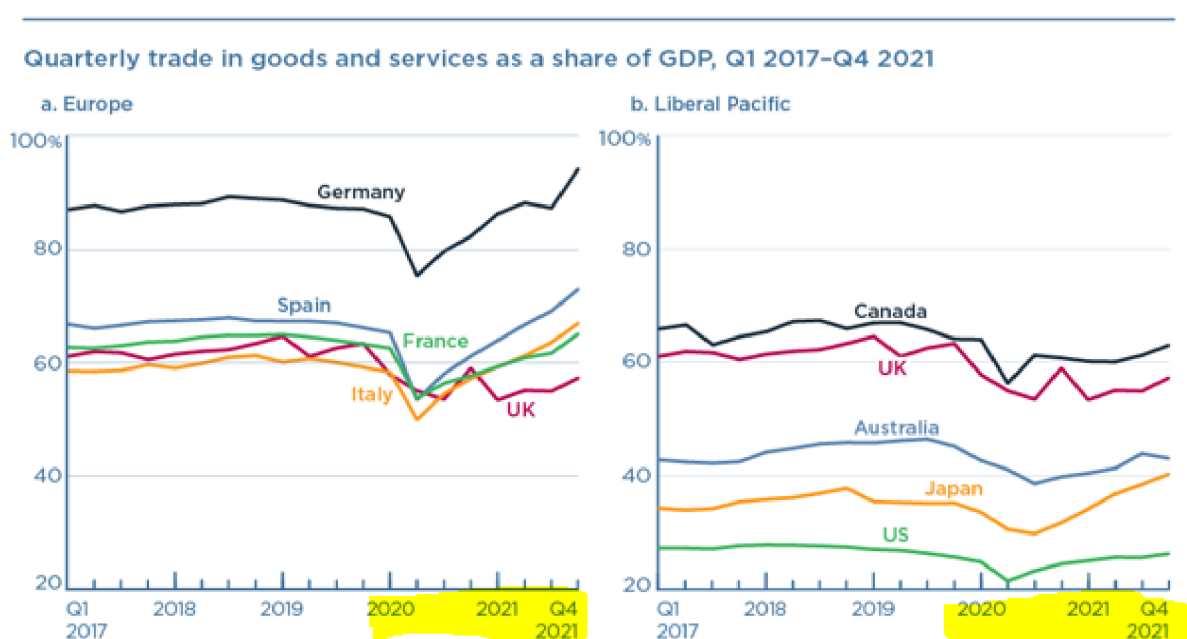
The trade challenges coming about because of the border issue between GB and Northern Ireland have produced feasible and financial disturbances for organizations, purchasers, and supply chains (Garry, *et al.* 2021). Tracking down goals and components to smooth out the trade cycle between these districts remains fundamental to reducing further disturbances and guaranteeing smoother trade flows in the future.

4.6 Covid-19 Impact on the Trade Volume of the United Kingdom

The COVID-19 pandemic made significant disruptions to the UK's trade volumes, influencing the two imports and exports as financial exercises were hampered by lockdowns and worldwide supply chain aggravations

- **Impact on Exports and Imports:** The UK experienced huge vacillations in trade volume because of the pandemic. Exports and imports were disturbed, impacted by diminished worldwide demand, supply chain interferences, and lockdown measures.
- **Reduced Trade Volumes:** In 2020, UK exports dropped by 14.8% contrasted with 2019, adding up to £535 billion. Imports likewise diminished by 14.6%, adding up to £669 billion. This decline was overwhelmingly credited to diminished monetary exercises and worldwide trade limitations.
- **Specific Area Impacts:** Different areas were impacted in an unexpected way. Businesses intensely dependent on global trade, for example, car, apparatus, and aerospace, confronted prominent declines (Allas, *et al.* 2020). Alternately, certain areas like drugs and food items experienced expanded demand and trade action
- **Trading Disruption Impact:** The pandemic likewise affected the UK's trade with explicit nations and locales. While trade with the EU diminished, trade with non-EU nations was somewhat stronger, however not secured to disruptions.

Figure 10: Impact of COVID-19 on Trade in the United Kingdom



(Source: <https://www.piie.com/research/piie-charts/uk-and-global-economy-after-brexit>)

- **Impact of Covid-19 and Brexit on the Economy of the United Kingdom**

De Lyon and Dhingra investigated the interlaced impacts of Coronavirus and Brexit on the UK economy during the early long periods of 2021. This literature review digs into their discoveries and features key bits of knowledge from their exploration.

The authors research how the assembly of Coronavirus and Brexit has prompted extraordinary difficulties for the UK economy. The Coronavirus pandemic, described by lockdowns and interruptions to worldwide exchange, fundamentally affects different areas. Enterprises like accommodation, the travel industry, and retail experienced sharp decays, with limitations on development prompting decreased consumer spending. This was highlighted by the authors' examination of gross domestic product constriction and increasing unemployment rates during the pandemic.

Brexit, in the short-term, presented its own arrangement of disturbances. Changes in economic deals, customs systems, and guidelines impacting supply chains and exchange streams between the UK and the EU. The authors shed light on the underlying disturbances in cross-line exchange, reflected in expanded transportation postponements and expenses. These difficulties were especially articulated in ventures vigorously dependent on frictionless exchange with EU part states.

This study uncovers how the joined impacts of Coronavirus and Brexit have brought about complex monetary elements. For example, the authors distinguish occurrences where organizations battling with the pandemic additionally confronted vulnerabilities from new exchange courses of action. The synchronous shocks intensified the challenges, making a "one-two punch" situation for specific areas.

Also, the authors investigate strategy reactions to relieve the monetary effects. Legislatures executed financial upgrade measures to help organizations and families impacted by the pandemic, while likewise laying out systems to address Brexit-related disturbances. The authors evaluate the adequacy of these approaches in balancing out the economy and supporting recuperation.

Regardless of the difficulties, the concentrate likewise reveals pockets of strength and variation. A few ventures gained by changing shopper ways of behaving, like the ascent of online business, to counterbalance misfortunes (De Lyon, & Dhingra, 2021). In addition,

the authors accentuate the significance of adaptability and development in exploring these questionable times.

Thus, the analysis of the study reveals insight into the multifaceted exchange between Coronavirus and Brexit in forming the UK economy in mid-2021. The literature highlights the requirement for versatile approaches and techniques to address the diverse difficulties emerging from these phenomenal occasions. As the UK keeps on wrestling with the continuous impacts of these elements, further scrutiny is justified to analyze the drawn-out suggestions and expected pathways to recuperation.

4.7 Recovery Trend and UK's New trade adaptation policies:

As lockdowns facilitated and financial activities continued, trade volumes gave indications of recovery in 2021. Exports and imports expanded bit by bit, showing a halfway recuperation from the huge downfalls experienced in 2020.

The COVID-19 pandemic significantly affected the UK's trade volumes, causing critical interruptions and declines across different enterprises and worldwide business sectors (Vidya, & Prabheesh, 2020). While indications of recuperation were obvious in the resulting years, the enduring impacts of the pandemic on trade keep on affecting the UK's monetary scene.

In a changing situation on Global market landscape, the UK is also changing its policies to cope with the trade deficit caused by the Brexit aftermath. The UK is adapting new trade policies by more focusing on resilient supply chains. The newly introduced Electronic Trade Documents Act (ETDA) aims to provide cost cutting measurements which will provide the paperless and hassle free documentation. According to trade minister of the UK, Mr. Nigel Huddleston, his government is engaged in dialogues with many Indo-Pacific countries to expand its market for UK goods

4.7 Impact on the British Pound (GBP) V/S Euro

The foreign exchange (Forex) market fills in as a worldwide platform where currency forms are exchanged, and changes in cash values are impacted by different elements, including international events. The British Pound (GBP) and the Euro (EUR) have been huge players in this unique market, with the fallout of Brexit presenting another layer of intricacy to their trade rates. Before the historic Brexit mandate in 2016, the British Pound was in many cases seen as a steady and powerful currency. The choice to leave the European Association (EU)

had significant ramifications for the Pound, prompting expanded instability. In the pre-Brexit period, the Pound was an area of strength for the Euro, mirroring the financial ties and steadiness inside the EU. Post-Brexit, notwithstanding, the Pound experienced significant changes. The vulnerability encompassing the provisions of the UK's flight and the future exchange relationship with the EU added to a devaluation of the Pound. Financial backers and brokers firmly checked dealings and political turns of events, responding quickly to any indications of progress or misfortunes. The Pound's worth frequently reflected the rhythmic movement of these exchanges, establishing an environment of elevated responsiveness in the Forex market.

The outcome of the Brexit outcome, finished toward the finish of 2020, brought some lucidity, however challenges endured. The understanding illustrated the UK's new relationship with the EU, including arrangements for exchange and participation. Notwithstanding this, the Pound kept on confronting vulnerabilities connected with financial changes, administrative changes, and the more extensive worldwide currencies scene.

The Euro, then again, showed flexibility during the Brexit interaction. While the Eurozone had its own arrangement of difficulties, the Euro kept a moderately steady situation against the Pound. The Euro's exhibition was impacted by Brexit advancements as well as by interior financial elements inside the Eurozone. The Forex market, especially the GBP/EUR pair, went through huge changes right after Brexit. The Pound's excursion from dependability to instability and the Euro's strength in the midst of vulnerabilities exhibited the multifaceted connection between international events and currency values. Dealers and financial backers confronted a difficult scene, adjusting methodologies to explore the developing post-Brexit situation in the continuous mission for financial profits in the Forex market.

The value of the British Pound has gone down sharply as compared to the Euro during the Brexit referendum result. It had seen 16 %, quite a huge fall in the value of GBP as compared to the Euro during the 4-month period of the Brexit referendum. It was also seen the straightforward fall of 6 % on the day of result. The range of the GBP to Euro rate has been monitored most of the historical time between 1.10-1.20 Euro (Andrew Gibson, 2023). Following the Brexit vote, the Pound experienced a gradual recovery against the Euro, interrupted by a sell-off triggered by the Corona virus. However, in 2022, the Pound faced renewed challenges as elevated inflation and political instability eroded confidence, leading to a decline in its value. The year 2015 began at 0.73, had a high of 0.78, a low of 0.69, and closed at 0.74, reflecting a decrease of 5.07% where in the year 2016, it started at 0.82 and

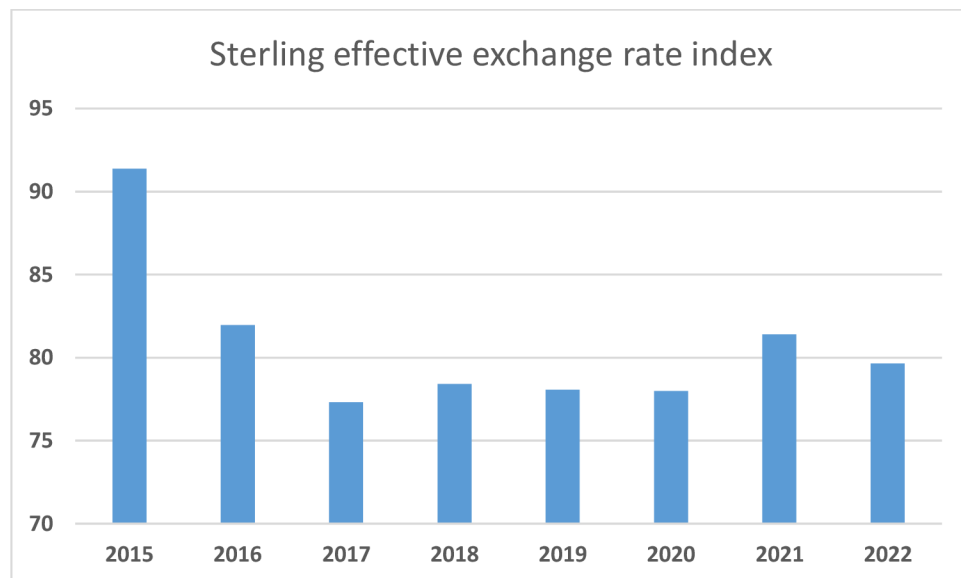
reached a high of 0.91, a low of 0.73, and closed at 0.85, showing a significant increase of 15.81%. When we see the figures of the year 2021 after official exit of the UK from the EU, undoubtedly shows the decline in the value of GBP. The year began at 0.86, reached a high of 0.91, a low of 0.84, and closed at 0.84, reflecting a sharp and adverse impact shows a decline of 5.75%.

Table 2: Exchange rate between euro and sterling index (2015 -2022)

Series	2015	2016	2017	2018	2019	2020	2021	2022
Sterling effective exchange rate index	91.38	81.95	77.30	78.41	78.06	77.99	81.40	79.65
	13	31	65	93	49	60	07	27
Euro	1.378	1.223	1.141	1.130	1.140	1.125	1.163	1.173
	2	3	3	5	5	0	3	2

Source: ONS, trade publication tables (2023)

Figure 11: Sterling effective ex rate(2015 - 2022)



Source: ONS data (2023)

1. Sterling Effective Exchange Rate Index:

- The Sterling effective exchange rate index measures the value of the British Pound against a basket of other currencies, weighted according to their importance in the UK's trade. A higher index value shows an appreciation of the Pound, while a lower value shows depreciation.

- **Analysis:**
 - The index fluctuated over the years but generally showed a decreasing trend from 2015 to 2017, showing a depreciation of the Pound.
 - In 2018, there was a slight increase in the index, followed by fluctuations in 2019 and 2020.
 - The index increased in 2021 but decreased again in 2022.
2. **Exchange Rate (GBP to EUR):**
- The exchange rate shows how much one British Pound is worth in Euros. A higher value suggests a stronger Pound, while a lower value suggests a weaker Pound.
 - **Analysis:**
 - The exchange rate between the Pound and the Euro showed a decreasing trend from 2015 to 2017, showing a depreciation of the Pound against the Euro.
 - In 2018, the exchange rate remained relatively stable.
 - Fluctuations occurred in 2019 and 2020, with a slight decrease in 2021.
 - The exchange rate increased in 2022.
3. **Comparison:**
- There is an inverse relationship between the Sterling effective exchange rate index and the exchange rate with the Euro. When the effective exchange rate index decreases, the Pound tends to depreciate, and the exchange rate with the Euro increases.
4. **Factors Influencing Exchange Rates:**
- Exchange rates are influenced by numerous factors, including economic indicators, interest rates, inflation rates, political stability, and market sentiment.
 - Fluctuations in exchange rates can affect international trade, inflation, and the overall economic competitiveness of a country.
5. **Economic Implications:**
- A depreciating currency can make a country's exports more competitive but may also lead to higher import costs.

- A strengthening currency can help consumers by reducing the cost of imports but may make exports more expensive.

6. 2020 and COVID-19 Impact:

- The fluctuations in 2020 may be influenced by the economic disruptions caused by the COVID-19 pandemic, which had widespread effects on global financial markets.

7. 2021-2022 Reversal:

- The increase in the exchange rate with the Euro in 2022, despite a decrease in the effective exchange rate index, could be influenced by factors specific to the GBP-EUR exchange rate or changes in the composition of the currency basket.

In summary, the data illustrates the dynamics of the Sterling effective exchange rate index and the GBP-EUR exchange rate over the specified period, providing insights into the relative strength of the British Pound in international markets and its relationship with the Euro. The analysis suggests the impact of various economic and global events on currency movements.

4.8 Analysis of trade volume growth

Table 3: Statistics of trade (2017-2022)

Seri es	Directio n	Commodi ty	Are a	2017	2018	2019	2020	2021	2022
Trade in goods	Exports	All commodit ies	EU [not e 1]	£1,65,2 27	£1,74,7 86	£1,72,1 76	£1,48,4 09	£1,57,3 52	£1,96,6 39
Trade in goods	Imports	All commodit ies	EU [not e 1]	£2,58,3 43	£2,67,8 93	£2,70,1 16	£2,32,9 94	£2,37,6 24	£3,06,9 54
Trade in goods	Balan ce	All commodit ies	EU [not e 1]	- £93,11 6	- £93,10 7	- £97,94 0	- £84,58 5	- £80,27 2	- £1,10,3 15

Source: ONS Data, 2023

Figure 12: UK Import/Export changes (mill GBP)



Source: ONS, Trade publications(2023)

Certainly, let's analyze the provided trade data for goods between the UK and the EU for the years 2017 through 2022:

1. Trade in Goods (Exports, Imports, and Balance):

- Exports: The value of goods exported from the UK to the EU increased steadily from £1,65,227 million in 2017 to £1,96,639 million in 2022.

- Imports: The value of goods imported by the UK from the EU also showed a general increasing trend, rising from £2,58,343 million in 2017 to £3,06,954 million in 2022.

- Balance: The trade balance (exports minus imports) is negative, indicating that the UK has consistently imported more goods from the EU than it has exported. The trade deficit increased over the years, reaching -£1,10,315 million in 2022.

2. Yearly Changes:

- Both exports and imports generally increased each year, reflecting a growing volume of trade between the UK and the EU.

- The trade balance, however, saw fluctuations. While the trade deficit generally increased, there was a substantial jump in 2022, indicating a significant increase in imports relative to exports in that year.

3. Trends and Factors:

- The increasing values in both exports and imports suggest a deepening economic relationship between the UK and the EU during this period.

- The widening trade deficit might be attributed to various factors, including changes in consumer demand, fluctuations in currency exchange rates, or shifts in production and supply chains.

4. Context and Considerations:

- Economic and geopolitical events, such as Brexit and the COVID-19 pandemic, likely played a role in influencing these trade dynamics. For example, disruptions related to Brexit could have affected trade patterns.

5. Currency Impact:

- The values are given in GBP (£), and fluctuations in the exchange rate between the pound and the euro can influence the recorded values in terms of trade.

6. Policy Implications:

- The persistent trade deficit may raise considerations for policymakers in terms of trade policies, economic strategies, and efforts to balance trade.

7. Forecasting:

- The substantial increase in the trade deficit in 2022 may warrant further investigation to understand whether it's a short-term anomaly or part of a more significant trend.

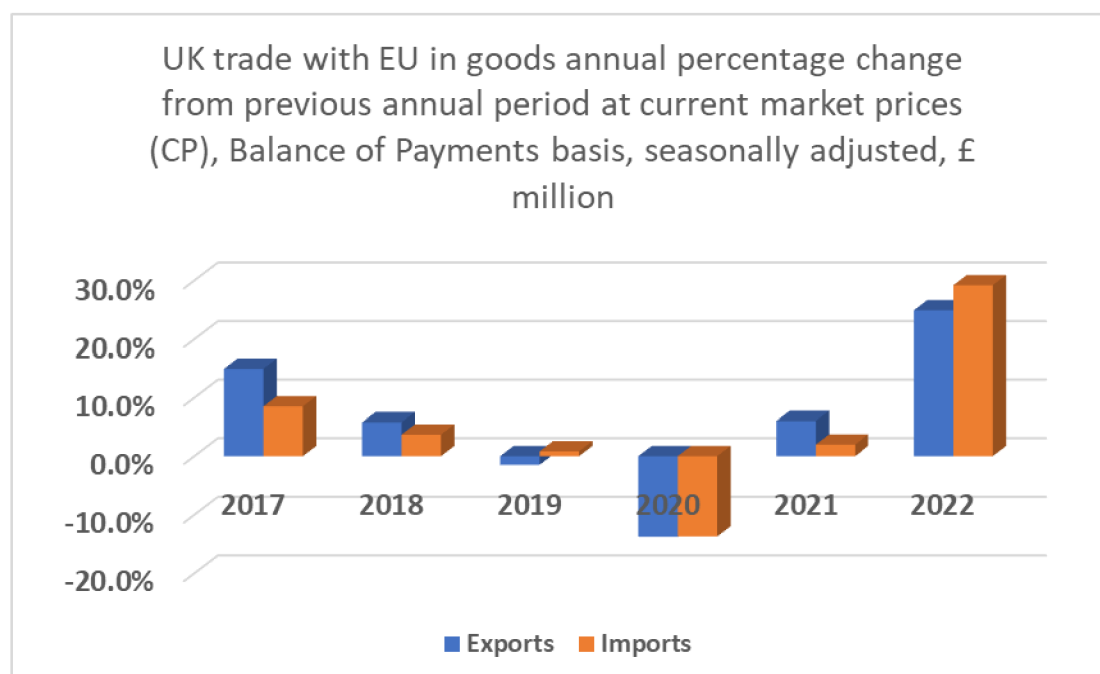
In summary, the provided data illustrates the trends in UK-EU trade in goods over the specified period, highlighting changes in export and import values and the growing trade deficit.

Table 4: Annual growth rate in % of EU trade with the UK

Series	Direction	Commodity	Area	2017	2018	2019	2020	2021	2022
Trade in goods	Exports	All commodities	EU	15.0%	5.8%	1.5%	-	6.0%	25.0%
Trade in goods	Imports	All commodities	EU	8.5%	3.7%	0.8%	-	2.0%	29.2%
Trade in goods	Balance	All commodities	EU	-1.3%	0.0%	5.2%	-	5.1%	37.4%

Source: ONS November 2023.

Figure 13: Annual Growth rate of trade of the EU with the UK



Source: Ceated in MS Excel based on ONS data stats

1. Trade in Goods (Exports, Imports, and Balance Percentage Changes):

- **Exports Percentage Change:**

- The percentage change in exports to the EU shows considerable fluctuations over the years.
- There was a notable increase of 15.0% in 2017, followed by a decrease in 2018 (5.8%) and a later negative change in 2019 (-1.5%).

- In 2020, there was a significant decline of -13.8%, likely influenced by numerous factors, including the economic impact of the COVID-19 pandemic and potential Brexit-related uncertainties.
- However, exports rebounded in 2021 with a positive change of 6.0%, and there was a substantial increase of 25.0% in 2022.
- **Imports Percentage Change:**
 - The percentage change in imports from the EU also experienced fluctuations.
 - There was a positive change in 2017 (8.5%) and 2018 (3.7%), followed by a smaller positive change in 2019 (0.8%).
 - Similar to exports, imports showed a significant negative change in 2020 (-13.7%), reflecting the impact of the pandemic and other factors.
 - Imports rebounded in 2021 with a positive change of 2.0%, and there was a substantial increase of 29.2% in 2022.
- **Trade Balance Percentage Change:**
 - The percentage change in the trade balance reflects the relative change between exports and imports.
 - The trade balance percentage change was negative in 2017 (-1.3%) and 2018 (0.0%), turning positive in 2019 (5.2%).
 - There was a significant negative change in 2020 (-13.6%), showing a larger decrease in exports compared to imports.
 - The trade balance percentage change remained negative in 2021 (-5.1%), but there was a substantial increase of 37.4% in 2022, suggesting a notable improvement in the trade balance.

2. Interpretation:

- The percentage changes in exports and imports highlight the volatility and sensitivity of trade between the UK and the EU to various economic factors.
- The rebound and substantial increase in exports and imports in 2022 show a potential recovery from the challenges faced in 2020, likely influenced by the ongoing effects of the COVID-19 pandemic and adjustments related to Brexit.

- The notable positive change in the trade balance in 2022 suggests an improvement in the relative strength of exports compared to imports.

3. Considerations:

- Added analysis could involve exploring specific sectors or industries to understand the drivers behind these percentage changes.
- Economic and geopolitical events, such as Brexit and the pandemic, likely contributed to the observed patterns.

1. Exports Percentage Change:

- Calculate the average annual growth rate for exports:

$$\text{Average Growth Rate (Exports)} = \frac{\text{Total Percentage Change}}{\text{Number of Years}}$$

- Average Growth Rate (Exports) = $(15.0\% + 5.8\% - 1.5\% - 13.8\% + 6.0\% + 25.0\%) / 6$
- Average Growth Rate (Exports) $\approx 4.58\%$

2. Imports Percentage Change:

- Calculate the average annual growth rate for imports:

$$\text{Average Growth Rate (Imports)} = \frac{\text{Total Percentage Change}}{\text{Number of Years}}$$

- Average Growth Rate (Imports) = $(8.5\% + 3.7\% + 0.8\% - 13.7\% + 2.0\% + 29.2\%) / 6$
- Average Growth Rate (Imports) $\approx 4.42\%$

3. Trade Balance Percentage Change:

- Calculate the average annual growth rate for the trade balance:

$$\begin{aligned} \text{Average Growth Rate (Trade Balance)} \\ = \frac{\text{Total Percentage Change}}{\text{Number of Years}} \end{aligned}$$

- Average Growth Rate (Trade Balance) = $(-1.3\% + 0.0\% + 5.2\% - 13.6\% - 5.1\% + 37.4\%) / 6$
- Average Growth Rate (Trade Balance) $\approx 3.83\%$

4. Interpretation:

- The average growth rates supply a smoothed perspective on the overall trends for exports, imports, and the trade balance.

- A positive average growth rate for exports and imports shows general growth, while a positive average growth rate for the trade balance suggests an improvement in the relative strength of exports compared to imports over the period.

5. Comparative Analysis:

- Comparing the average growth rates for exports and imports supplies insights into the balance of trade. In this case, both exports and imports show similar average growth rates, suggesting a relatively balanced growth pattern.

6. Future Considerations:

- These average growth rates can be used as benchmarks for future analysis, helping to assess whether the trends saw in the data continue or change over time.

Mathematical analysis, in this context, supplies a quantitative understanding of the average growth rates, aiding in the interpretation of trends in exports, imports, and the trade balance between the UK and the EU. Keep in mind that these calculations are based on the provided percentage change data and assume a linear growth model. Actual economic dynamics may involve more complex factors.

5. Results and Discussion

5.1 Discussion on Findings

The phenomenon of Brexit has been hugely taxing on both the United Kingdom and the European Union. The regulations in the operational policies and tariffs introduced due to Britain's retrieval from the European Union have impacted the business organizations' smooth operations between the United Kingdom and the rest of Europe. Thus, this research thesis emphasizes the structural problems that have been enforced on the trade relations of the United Kingdom and the European Union after the act of Brexit. As of the year 2021, the trade relations between the United Kingdom and the European Union are regulated by the Brexit withdrawal agreement and the EU-UK Trade and Cooperation Agreement. Moreover, this has caused adverse social impacts as well, like loss of rights, increased hate crimes, immigration and labor market impacts, etc.

The previous chapters of this thesis have introduced the topic and thereby, the various aspects of research that have been followed for conducting the research to present the reviews of existing literature and methodology for data analysis that has been collected from secondary sources and are quantitative. Thus, the analysis part of the thesis has analyzed the various objectives that have been established in the initial chapter of this thesis. This chapter aims to discuss the findings of the analytical chapter and thereby, present significant insights into the trade relations between the United Kingdom and the European Union

5.2 Discussion on Analysis

Analysis done in previous chapters of this study confirmed that the impact of Brexit was asymmetric i.e. had more negative consequences for UK than for the EU countries.

5.2.1 Impact on trade of the UK with the EU

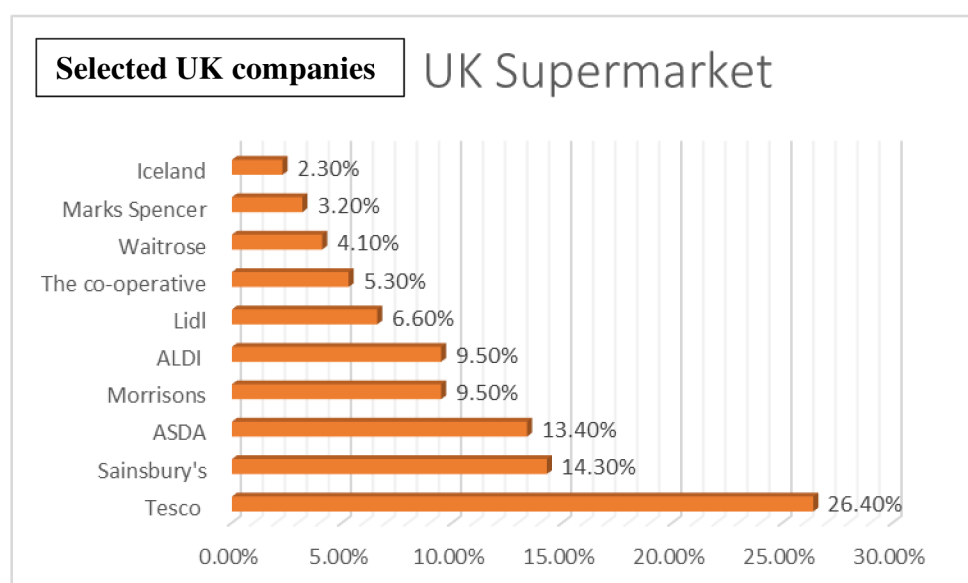
The Brexit referendum impacted the trade relations between the EU and the UK immensely. The regional business has been severely affected due to the increase in the production costs of the business sales abilities. Brexit has imposed many regulations and taxation laws. This disrupted the smooth acquisition of the raw materials and other essentials that are required for the smooth running of the business in the region of the United Kingdom. Thus, the supply chain and the import of the goods have been adversely affected (Dardanelli, & Mazzoleni,

2021). Regional trade of both the United Kingdom and the European Union depends on each other for the uninterrupted flow of labor and supply

a. Impact on the selected companies of the United Kingdom

This theme has focused on showcasing the performance of the companies residing in the UK. The Brexit phenomenon has been proved to be harsh on the trading capacity of Britain. This is because the cost of production of the goods has increased due to the increased taxation regimen imposed on the exports and imports of goods. Supermarket companies like Tesco, Sainsbury, Waitrose, Marks and Spencer, Iceland, etc. are facing severe labor issues and supply chain disruptions (Egan, 2019). The routes are blocked and thereby, there has been a mark of territory that implies border issues. Therefore, the swift flow of labor and supply of material has been disrupted.

Figure 14: Brexit impact on selected UK companies (supermarkets)



(Source: <https://sruvayacul.wordpress.com/>)

Tesco continues to be the leader in the sector of its operations in both the pre-Brexit and post-Brexit scenarios. The supermarket sector is involved in the fast-moving consumer goods sector that involves the selling of perishable goods as well with a particular shelf life. Therefore, the trade in this sector between the EU and the UK has somewhat decreased.

b. Change in Trade Relations and Impact on Marketplace Access

This theme has been included in the thesis because of the trade relations between the EU and the UK. The stipulations imposed on the agreements of the marketplace. The territorial division caused by Brexit imposes hardships on the distribution of goods in the rest of

Europe. The contracts were revised and established in the year 2021 which are now followed for the maintenance of peace trading relationships between the UK and the EU (britishchambers.org.uk, 2021).

Figure 15: Impact of Brexit in the United Kingdom Regions only.

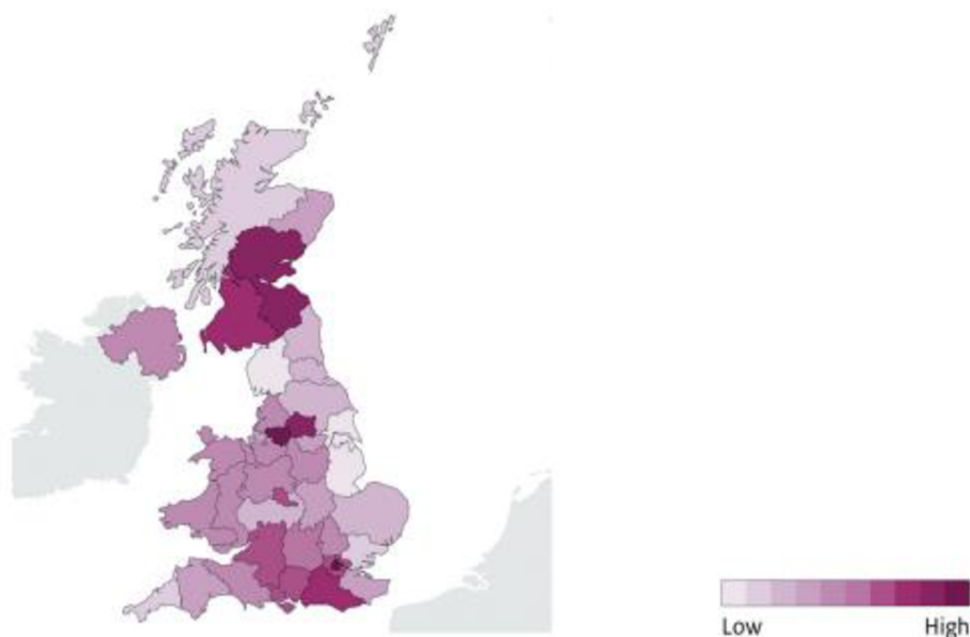


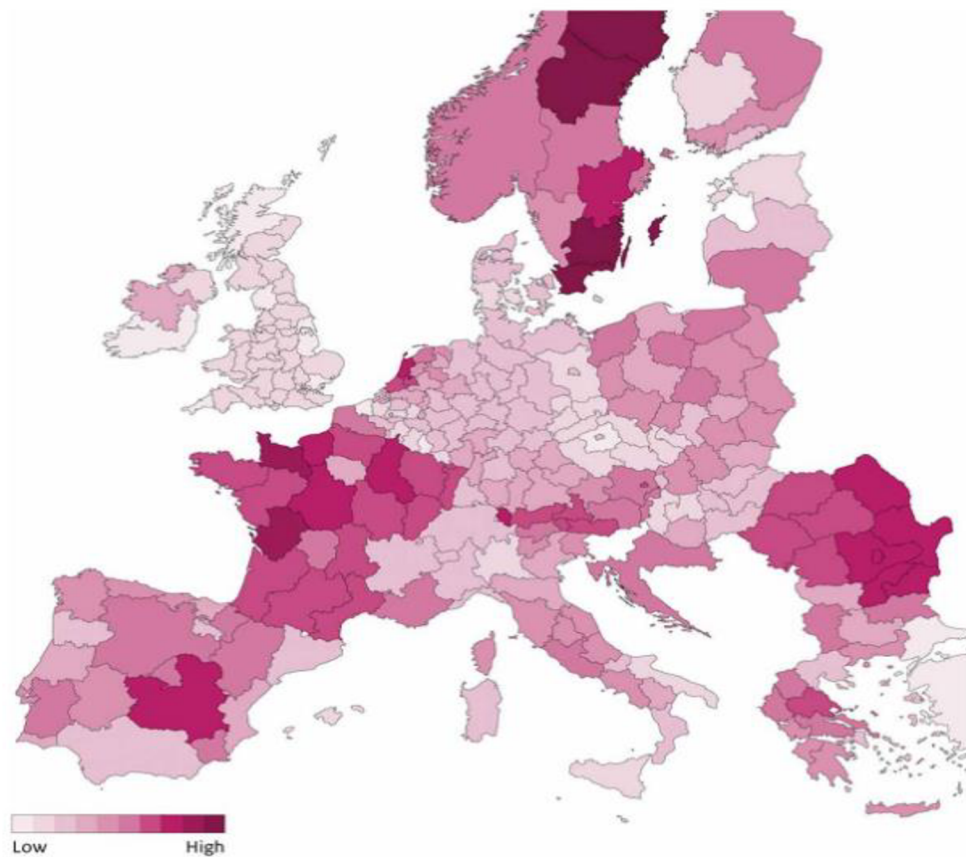
Figure 4. Sensitivity to Brexit scenario in UK regions only.

The impact of Brexit has been too severe in the regions of London, Wales, the West Midlands, the Northeast, and the Southeast. This is because these are the coastal regions of the United Kingdom that draw most of its income through hospitality and as a result of Brexit and the Covid-19 pandemic the business in these regions has witnessed severe lows. Moreover, due to the act of Brexit, the United Kingdom has decreased its economy to 2.5% and a significant fall in the public finances. However, the United Kingdom in terms of both international and regional trade is facing a reduction in the generation of revenue and market share captivity the country is far from collapsing due to the act of Brexit (James, & Quaglia, 2020). Thus, this theme helped in the identification of the condition of trade in the regional territory of the United Kingdom, which is witnessing growth at a lower rate

The below figure number 19 shows the impact of the brexit on European Union and European Economic Area region, hwich shows he clear indication of the severity of the impact on diffrent membar states of the EU. As per it Regional and Sectoral Impact of Brexit

on regional and sectoral levels indicates that, the UK's largest affected areas, along with Germany, are not highly sensitive to the specific post-Brexit trade agreement design.

Figure 16: Impact of Brexit on EU region.



Sensitivity to Brexit scenario in European regions

(Source: <https://www.tandfonline.com/>)

Regardless of the agreement specifics, adverse economic effects are expected to be significant in the UK. In the UK, major cities like London and larger northern cities (Manchester, Liverpool, Edinburgh, Glasgow) exhibit relatively higher sensitivity and uncertainty regarding Brexit's implications, while more peripheral regions are more certain, anticipating generally negative effects.

In contrast, regional economies in France, Scandinavia, Spain, the Netherlands, and Eastern Europe, particularly those specialized in agriculture or traditional manufacturing, show

sensitivity to the Brexit scenario's design. However, Belgian, Danish, and German regions display lower sensitivity to the design. To comprehend the regional competitiveness implications of Brexit fully, it's essential to consider Figures 2, 3, and 4 together, comparing the competitiveness impact with the certainty of these implications (ECONOMIC GEOGRAPHY2020, VOL. 96, NO. 5, 397-421).

This comparison shows that the EU is still dominants on the UK trade

By 2020, the European Union will have been the country of origin for 51.6% of all British imports and 53.0% of all British exports. In light of the fact that the EU's proportion of the world's GDP was decreasing, one of the primary justifications for Britain's decision to leave the EU was the belief that the country needed to adjust its trading policies and engage in a more significant amount of international trade. It is debatable whether or not the United Kingdom's enhanced capacity to trade with the United States, as well as its rising trade with rapidly developing Asian nations and members of the Commonwealth, will be a suitable replacement for membership to the European Single Market. In the short term, Brexit will have a significant influence on the trade of food. Recent studies have shown that more than one in four people who shop for groceries in the United Kingdom are initially from another country in the European Union. The European Union (EU) is a significant supplier of fruits and vegetables to the United Kingdom, and beef from the EU is one of the country's primary imports.

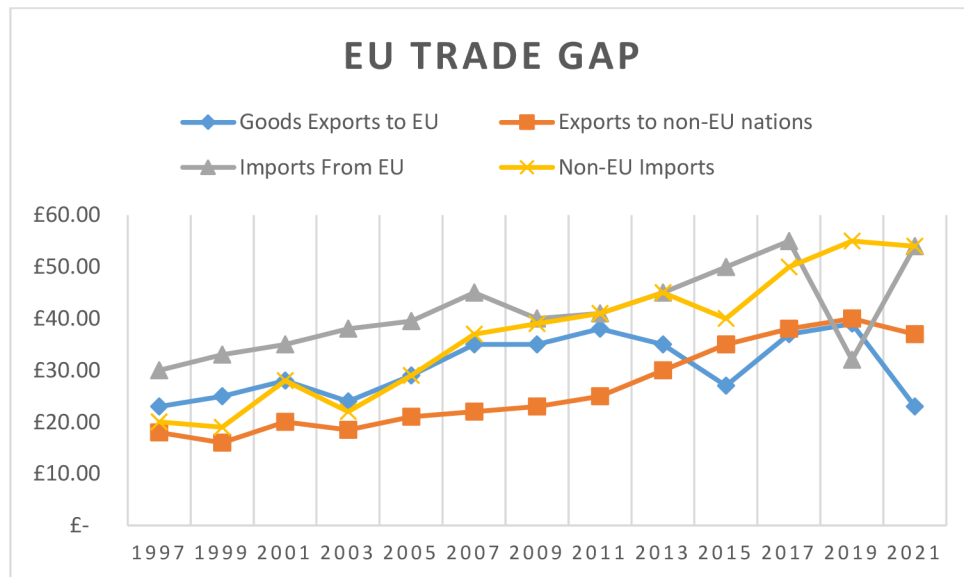
5.3 Hindrances of Tariffs and Non-tariffs

The tariff imposition essentially indicates the increased tax regiments on the import and export of goods. The non-tariff hindrances mainly highlight the dysfunctional supply chain and flow of labor. This theme has been incorporated in the analysis part of this thesis because the limitations on these factors of trade signify serious problems faced by the business organizations of the country due to the limitation of scope in terms of the acquisition of materials and expansion of business. The Brexit phenomenon has been very adverse because it included the incorporation of several changes in the contract of trade relations between the United Kingdom and the European Union.

However, the international trade of the United Kingdom has been affected majorly because of its retrieval from the European Union. The impact of the tariff and non-tariff has not been too heavy on the business organizations of the United Kingdom (De Ville, & Siles-Brügge,

2019). Thus, it can be seen that as of 2021 the most adverse impact on trade was due to the pandemic and not Brexit alone. However, the exports fell by 6.1% and the imports increased by 7.5%. The pre-Brexit era has a 53.4% import of goods from the EU.

Figure 17: Limited Impact Traiff on the Trade of the United Kingdom



(Source: <https://www.bloomberg.com/>)

5.4 Change in Trade Relations and Impact on Marketplace Access

This theme has been included in the thesis because of the trade relations between the EU and the UK. The stipulations imposed on the agreements of the marketplace. The territorial division caused by Brexit imposes hardships on the distribution of goods in the rest of Europe. The contracts were revised and established in the year 2021 which are now followed for the maintenance of peace trading relationships between the UK and the EU (britishchambers.org.uk, 2021).

The trade relations between the UK and the EU have gone under severe tests during the phase of Brexit but have come out strong. This is because of the interdependency of the trading culture between the UK and the rest of Europe. This theme thereby, helps to identify the factors that prove the interdependency of trading relations between the UK and the EU (Kordos, 2019). The imports from the EU have increased in the post-Brexit phase. The export to the EU have decreased whatsoever. Moreover, the overall trade relation with the world has reached new rights and thereby, the UK could establish a stronger relationship

with Australia and Germany. The regional trade is facing a severe loss of market share in the European market. The European market has embraced the EU more than the UK. This is because the initiative to exit from the Union was taken by Britain.

5.5 Discussion on Objective Analysis:

- **Impact of Brexit on the EU Economy**
In the EU-UK Trade Dynamics of Post-Brexit condition, the EU becomes UK's largest trading partner, while the UK is the EU's third-largest after the United States and China. Certain EU member states, notably Ireland, face heightened economic challenges due to shared borders and agribusiness integration. The Northern Ireland Protocol is revised to keep the Irish border open while establishing a customs border between Ireland and Great Britain.
- **Impact on EU-UK Trade:** The primary data source for assessing Brexit's impact on goods trade between the EU and the UK is Comext, the official EU trade database produced by Eurostat. The dataset covers trade flows for each EU member state from January 2015 to December 2021, involving approximately 9,500 unique products each month. Notably, both UK and EU statistical agencies made changes to data collection methods post-Brexit, shifting from the Intrastat to the Extrastat system.
- **Institutional Changes:** European Medicines Agency and European Banking Authority relocate from the UK to Amsterdam and Paris due to EU agency location rules. Backup data center for Galileo satellite navigation system moves from the UK to Spain. European Parliament Seats. UK's 73 seats in the European Parliament become vacant, with 27 redistributed and 46 reserved for potential new member states. The Von der Leyen Commission reduces the number of European Commissioners from 28 to 27.
- **Restrictions on Free Movement:** Eastern European countries, especially Poland, Romania, and Lithuania, see a decline in workers in the UK post-Brexit. Romanian and Polish governments encourage workers to return, facing challenges due to regulatory or political reasons. Effect on EU Companies. German companies, for example, face challenges in the UK post-Brexit, exacerbated by the COVID-19 pandemic. Businesses report poor current situations, anticipate further deterioration, and grapple with additional customs bureaucracy, logistics issues, and legal

uncertainties. Covid-19 Effect on EU Trade: Spring 2020 highlights vulnerabilities in the European economy's openness during the pandemic. The EU faces challenges but demonstrates responsiveness, prompting a potential shift in its trade policy.

- **Changes in Euro Currency Value:** Euro experiences fluctuations against the Pound post-Brexit, influenced by factors like economic data, monetary policy decisions, and ongoing uncertainties. Ongoing volatility reflects the complex interplay of global events impacting currency markets.

In summary, Brexit has reshaped EU-UK trade dynamics, prompted institutional changes, and impacted free movement, EU companies, and the Euro's value, with ongoing implications for the broader economic landscape.

- **Post Brexit trade of Goods in the UK.**

According to Ayele, *et al* 2021, the first quarter of the Trade and Cooperation Agreement (TCA) after Britain's exit from the European Union has witnessed sharp deductions in the trade of UK-EU. The impact has been such that it caused a 15% reduction in the exports from the UK to the EU and imports from the EU to the UK by 32%, this impact was caused before the exit of the British market from the EU. This study dives into the multi-layered impacts of the UK's exit from the EU on its trade in goods. The authors expect to take apart the challenges, opportunities, and policy reactions that have arisen directly following this monumental change

The paper drives the readers to notice the intricacies surrounding the reconfiguration of trade relationships between the UK and its conventional EU partners, as well likewise with the remainder of the world. It reveals insight into the disturbances brought about by the introduction of customs checks, new administrative systems, and diverging standards. These progressions have prompted delays at borders, impacting supply chains and trade streams. The authors contend that these disturbances have monetary consequences as well as more extensive geopolitical and strategic consequences.

The month-on-month based analysis of the total trade of the UK with the EU has been projected through the above that has been adapted from the journal. The control group is essentially the non-EU, OCED, BRICS countries that also trade in the same market as the

European Union and as a preference of the EU. The graph shows the performance of the control group to be better than the performance of the EU from 2017 to 2020. Further, the grip of the non-EU, OCED, BRICS countries over the trading environment of the European market could also be recognized. However, the paper outlines potential advantages that the UK could gain from recently discovered trade adaptability and independence. The authors feature the opportunities for the UK to arrange its trade concurrences with non-EU countries, possibly diversifying its trade portfolio

The authors additionally talk about the job of computerized arrangements and innovative technologies in mitigating a portion of the trade-related issues post-Brexit. This literature further digs into the policy reactions initiated by the UK government to address the evolving trade landscape. The authors scrutinize the adequacy of these strategies in minimizing disturbances, promoting sends out, and ensuring financial strength. Also, the paper points out the meaning of collaboration between the UK's lapsed administrations and the focal government in crafting lucid trade systems (Ayele, *et al* 2021). Therefore in all, this research paper illuminates the intricate snare of challenges and opportunities that have emerged in the domain of UK trade following Brexit. The authors' thorough audit of existing literature highlights the requirement for versatile approaches that balance financial interests, administrative changes, and international relationships. This work fills in as a valuable resource for policymakers, researchers, and stakeholders seeking a more profound understanding of the post-Brexit trade landscape

- **Impact of Brexit on the UK Economy:**

The Trade and Cooperation Agreement's initial quarter post-Brexit witnessed significant trade reductions between the UK and the EU. Exports from the UK to the EU decreased by 15%, while imports from the EU to the UK dropped by 32%, even preceding the formal exit. This study delves into the multifaceted impacts on UK-EU goods trade, addressing challenges, opportunities, and policy responses. The analysis sheds light on disruptions caused by customs checks, new administrative systems, and divergent standards, leading to border delays and broader economic and geopolitical consequences.

Key Points could explain what structural shift in UK-EU trade relations have posed challenges, especially affecting cross-border industries. Customs checks and regulatory barriers increased operational costs for businesses engaged in imports and exports. Financial

services sector, vital to the UK economy, faced challenges accessing EU markets without passporting rights.

Uncertainty about post-Brexit regulations contributed to a cautious business environment, impacting investment decisions.

The divergence in regulatory standards between the UK and the EU has implications for item accreditations and congruity appraisals. Industries that recently stuck to orchestrated standards presently face the intricacy of navigating different regulatory frameworks. The economic impact of Brexit on the UK envelops disturbances to supply chains, challenges in the financial services area, and intricacies arising from regulatory misalignment. A complete understanding of these challenges is critical for navigating the evolving landscape of EU-UK trade relations post-Brexit (euronews.com, 2023)

5.6 Impact of Border Issue with Northern Ireland

The impact of the border issue with Northern Ireland post-Brexit has been a point of convergence in EU-UK trade relations, introducing intricacies that resonate across political, economic, and social aspects. The Northern Ireland Protocol, a vital part of the Brexit withdrawal agreement, is expected to forestall a hard border on the island of Ireland. In any case, it has brought about challenges, especially trade disturbances and uplifted strains.

The foundation of keeping an eye on products moving between Northern Ireland and the remainder of the UK has prompted commonsense hardships for businesses, contributing to delays and increased costs (Kalaitzake, 2021). This has implications for supply chains and the seamless development of products, affecting both Northern Ireland and mainland UK. , the protocol has created political pressures, with differing perspectives on its execution and its impact on the locale's political dependability. The border issue intersects with more extensive cultural worries, as seen in irregular incidents of common turmoil. The discontent highlights the awareness of the matter, with implications for trade as well as for the social texture of Northern Ireland. Navigating the intricacies of the border issue remains an ongoing test, requiring discretionary finesse and cooperative answers to guarantee economic security and cultural amicability in the area post-Brexit (onlinelibrary.wiley.com, 2023)

5.7 Adverse effect of pandemic on the Trade Volumes of the UK

The impact of COVID-19 on the trade volumes of the UK has been a diverse test, compounding the intricacies arising from Brexit. The pandemic upset worldwide stockpile

chains, causing a significant decline in trade exercises. Lockdowns, travel limitations, and economic uncertainties prompted diminished demand for labor and products, affecting the UK's commodity and import elements. Directly following the pandemic, the UK experienced disturbances underway, coordinated operations, and work accessibility, influencing trade volumes across different sectors. The uncertainty surrounding the length and seriousness of the pandemic exacerbated the challenges faced by businesses participating in international trade. The economy provoked shifts in purchaser conduct, impacting the demand for certain items and changing trade designs.

The interplay between the economic repercussions of Covid-19 and the structural changes achieved by Brexit established a dynamic and challenging climate for UK-EU trade relations (Wachowiak, & Zuleeg, 2022). The requirement for flexibility and versatility became principal for businesses navigating these simultaneous challenges. Analyzing the nuanced impacts of Covid-19 on the United Kingdom's trade volumes is fundamental for a complete understanding of the more extensive structural issues in EU-UK trade relations post-Brexit.

5.8 Changes in the Trade and Cooperation Agreement

Changes in the Trade and Cooperation Agreement between the EU and the UK post-Brexit have introduced a change in outlook in their economic relations. The agreement, haggled to define the provisions of their future cooperation, reflects a launch from the close connections made during the EU membership of the UK. Key changes include modifications in trade guidelines, and customs procedures, and the foundation of another framework for coordinated effort (Felbermayr, *et al.* 2022). Trade elements have been reshaped, with the introduction of taxes and non-duty barriers affecting the progression of labor and products between the UK and the EU. The agreement outlines arrangements for regulatory divergence, impacting sectors like finance and services. Changes in the fishing industry have been a point of convergence, with modified admittance freedoms and portions.

The agreement resolves the intricate issue of Northern Ireland, establishing explicit protocols to maintain an open border on the island of Ireland while placing a regulatory border in the Irish Sea. This has significant implications for businesses and networks, necessitating transformation to new trading real factors. As the trade landscape develops, the gatherings involved face challenges in adapting to these changes, with businesses having to explore a complex regulatory environment (Wincott, 2020). The impacts of these modifications on the

economic relations between the EU and the UK remain a subject of ongoing perception and investigation.

5.9 Impact on foreign exchange rate of GBP:

Impact was observed on both economies, before Brexit, the value of the British Pound (GBP) and the Euro (EUR) fluctuated based on market sentiment and economic indicators. The uncertainty surrounding Brexit negotiations led to periods of volatility.

After the Brexit referendum in June 2016, the GBP experienced a significant decline against the Euro and other major currencies due to concerns about the economic consequences of the UK leaving the EU.

The actual Brexit process, especially key negotiation milestones and announcements, also influenced currency movements.

The impact on GBP/EUR exchange rates was notable, reflecting the evolving economic and political landscape. It is essential to consult real-time financial sources for the latest and most accurate information on currency movements, as exchange rates can be influenced by various factors, including economic data, geopolitical events, and market sentiment.

6. Conclusion

Perhaps the research questions which this study has put for the answers will briefly address to it as follows,

Q1: Taking into consideration of the pre and post-Brexit conditions, how has Brexit affected the EU - UK's trade relationships?

Answer: Yes, Brexit has affected the EU-UK trade relationship from geographically, economically, politically.

Q2: Did the independent trade policy of the UK after Brexit succeed in replacing the missing trade of the EU trade by newly opened trade with other countries of the world?

Answer: Partially, the UK has made strides in establishing new trade agreements with countries like Canada, India, Australia.

Q3: What are the present non-tariff and tariff obstacles prohibiting the UK from competing with the EU?

Answer: Presently, the UK faces non-tariff obstacles such as regulatory misalignment, customs complexities, and divergent standards, which hinder its competitiveness with the EU.

Q 4: How has Brexit affected carrying out businesses in the UK, especially for companies abroad of the EU?

Answer: Brexit has introduced operational challenges for businesses in the UK, particularly those outside the EU. Increased regulatory barriers, customs complexities, and changes in market access have impacted the ease of conducting cross-border business.

Q 5: How have trade relations and contracts changed and what does it impact for marketplace access?

Answer: Brexit has reshaped trade relations and contracts, introducing new regulations and trade barriers that impact marketplace access. Changes in customs procedures, regulatory standards, and the renegotiation of trade agreements have influenced the dynamics of accessing markets.

Q 6: What challenges and issues arised for the Republic of Ireland, especially regarding Border issues?

Answer: Brexit has posed significant challenges for the Republic of Ireland, notably in terms of border issues. The introduction of a land border with Northern Ireland has raised concerns about economic disruptions, regulatory disparities, and potential impacts on the Good Friday Agreement.

Q 7: How the Northern Ireland, perhaps the UK responded to these challenges?

Answer: The UK has implemented the Northern Ireland Protocol and to minimize disruptions by keeping Northern Ireland within the EU's single market for goods. There are ongoing negotiations and discussions with the EU to address issues related to border management and trade.

In conclusion, the structural problems emerging from EU trade relations with the UK after Brexit have manifested in multifaceted ways, impacting regional trade, introducing tariffs and non-tariff hindrances, affecting British companies, altering marketplace access, and making challenges in the context of the Northern Ireland border issues. The economic repercussions, compounded by the uncertainties of the COVID-19 pandemic have prompted disruptions in supply chains, financial services, and regulatory standards. The progressions in the Trade and Cooperation Agreement endeavoring to address these issues, present ongoing challenges for businesses and communities has incresed on larg scale. Exploring these challenges requires vital reactions to encourage economic cooperation and address the structural changes in post-Brexit EU-UK trade relations. As the two sides adjustment to the evolving landscape, constant perception and investigation are fundamental to grasp the drawn-out suggestions and guarantee a versatile and commonly gainful future relationship.

The introduction of customs checks, and regulatory barriers led to disruptions in the flow of goods between the UK and the EU. Some businesses experienced delays in shipments and increased complexity in logistics. Initial data suggested a decline in the volume of trade between the UK and the EU. The increased friction in trade, as a result of new customs procedures and regulatory requirements, contributed to this reduction. Businesses faced additional costs associated with customs declarations, compliance with new regulations, and potential tariffs on certain goods. The increased cost of doing business with the EU had an impact on both imports and exports. The Brexit deal primarily focused

on goods rather than services, which form a significant part of the UK economy. Some sectors, such as financial services, faced challenges in maintaining the same level of access to EU markets. Some industries, particularly those closely tied to EU trade, experienced job losses and economic uncertainty. This was evident in sectors such as manufacturing, where supply chain disruptions and increased costs affected businesses. Concerns about the future relationship between the UK and the EU influenced investment decisions. Some businesses delayed or reconsidered investments due to uncertainty about the economic landscape.

British residents in the EU lost their European Citizen rights due to Brexit, but they are otherwise not greatly affected thanks to the Withdrawal Agreement. However, as of June 2020, around 23 EU member states had not yet implemented systems to document the future rights of the estimated 1.2 million British citizens living in the EU. These citizens are uncertain about their future rights and obligations. In contrast, the UK launched a system for EU citizens in March 2020, with more than 3.3 million people granted pre-settled or settled status to remain in the country after Brexit.

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10. List of Abbreviations

Brexit: Britain Exit European Union

EU: European Union

UK: United Kingdom

TCA: Trade and Cooperation Agreement

FDI: Foreign Direct Investment

GDPR: General Data Protection Regulation

OECD: Organisation for Economic Co-operation and Development

FTA: Free Trade Agreement

BRICS: Brazil Russia India China South Africa (Organisation)

ND: No deal

EFT: Extream Free Trade

UFTA: United Kingdom-Euroean Union Free Trade Agreement

NTB: Non-Trade Barriers

TFT: Tariff Fre Trade

GTAP: Global Trade Analysis Project

AVA: Ad-Valorem Equivalent

GBP: Great Britain Pound

COVID-19: Coronavirus Disease

GDP: Gross Domestic Product

VAT: Value Added Tax

CCA: Commerce and Coop[erative Agreement

WTO: World Trade Orgnisation

ETDA: Electronic Trade Document Act (UK)

Forex: Forieng Exchange