LUND UNIVERSITY

SCHOOL OF ECONOMICS AND MANAGEMENT

Bachelor Programme in Economy and Society

The Effect of Economic Policy Uncertainty on Swedish Exports during the 2008 Financial Crisis

by

Andrea Wigert

andrea.wigert@hotmail.se

The thesis aims to answer the research question: To what extent was the increased Economic Policy Uncertainty during the Financial Crisis associated with the decline in Swedish exports from January 2007 to January 2010? During the 2008 Financial Crisis, Swedish trade fell by ten percentage points, slightly more than the world average. The thesis aims to investigate whether the increased EPU at the time affected the decreased exports. The thesis concludes that EPU does not seem to have had a statistically significant effect on exports during the crisis when controlling for the control variables inflation, GDP, and exchange rate. The lack of a relationship between the two variables could be because of Sweden's stable economy and institutions, its diversified economy and trade, its membership in the EU, and its lack of bank collapse during the crisis. However, the control variables, inflation and exchange rate, have a statistically significant relationship with the decreased exports during the Financial Crisis.

EOSK12
Bachelor Thesis (15 credits ECTS)
June 2023
Supervisor: Thor Berger
Examinator: Prince Aboagye
Word Count: 11 297

Key Words: Financial Crisis, Economic Policy Uncertainty, Sweden, Germany, the UK, the Netherlands, Exports

Acknowledgments

I would like to thank Thor Berger, my supervisor, for his guidance, support, and valuable insights throughout my bachelor thesis. His expertise and feedback helped shape the structure and content of my thesis. I am grateful to my friends and family for their support and encouragement throughout my writing process. I would also like to thank the faculty and staff at Lund University School of Economics and Management for providing me with the resources and opportunities to pursue my academic interests and goals. Their commitment to fostering a culture of intellectual curiosity and critical thinking has inspired me throughout my educational journey. I would like to express thanks to everyone who has supported me in any way during the writing of my bachelor's thesis. I am grateful for your contributions and thank you for your help and support.

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Acronyms

ECB = European Central Bank

EU = European Union

EPU = Economic Policy Uncertainty

GDP = Gross Domestic Product

IMF = International Monetary Fund

OECD = The Organization for Economic Cooperation and Development

SCB = Statistiska Centralbyrån

SEK = Swedish Krona

Definition of Fundamental Concepts

Uncertainty Shocks

The concept is defined as macroeconomic shocks to an economy, microeconomic events related to specific businesses, or even non-economic events like war (Bloom, 2014).

Economic Policy Uncertainty

Uncertainty shocks to an economy was visualized by developing an index where newspapers are tapped for words related to economic policy uncertainty, developed by Bloom, Baker, and Davis in 2016. Extended to Sweden by Armelius, Hull, and Stenbacka Köhler (2016).

Financial Crisis

The definition of a Financial Crisis is when financial instruments and assets decrease significantly in value affecting the global economy and resulting in a structural change in global economic institutions. (Frohm, 2020).

1 Introduction

The economic crisis that began in 2008 with the collapse of the Lehman Brothers, publicly known as the Financial Crisis, devastated the financial world. One of the crisis's most significant and costly consequences was its trade effects (Frohm, 2020). Compared to the Great Depression, industrial production fell twelve percent and trade volumes twenty percent in the year after April 2008 (Eichengreen & O'Rourke, 2010). The crisis struck Sweden, and the country's trade fell by ten percentage points in the coming year and has not recovered since (Frohm, 2020). In the aftermath of the Financial Crisis, Nicholas Bloom (2009) presented the term Economic Policy Uncertainty (EPU), which aims to measure uncertainty in a country before, during, and after a crisis. Bloom (2009) argues that uncertainty is essential to study as recent research has proven it to strongly affect a country's economy for the worse. Since 2009 the research has grown to include more countries and to study the effects of uncertainty further. The thesis will aim to broaden the academic research further by investigating the increased EPU during the Financial Crisis from January 2007 to January 2010 and its potential correlation with the decline in exports in Sweden during the crisis.

1.1 Research Problem

EPU and its effect on trade have not yet been studied to a large extent (Yayi, 2023). One of the first papers to discuss the topic was by Taglioni and Zavacka (2013). The authors argue that one of the main reasons for lowered trade during global crises is the affected confidence of consumers and investors. The authors conclude that domestic uncertainty strongly predicts import fluctuations but has little effect on exports. EPU has the most considerable effect on exports when its levels are exceptionally high (Taglioni & Zavacka, 2013), which they were during the Financial Crisis (Economic Policy Uncertainty Index, 2016). However, as can be seen in Graph 1, the levels of EPU were not as high in Sweden compared to Germany, the UK, and the Netherlands. Therefore, it is interesting to study whether EPU affected Swedish exports despite its relatively low levels.

The literature on EPU and trade is relatively scant, and the thesis could therefore add to the academic discussion. It is an important topic to study as international trade seems to be a volatile

variable compared to others (Novy & Taylor, 2019). If the reasons behind the volatility could be explained, countries could better prepare and stabilize their trade in times of uncertainty. In 2021 exports of goods and services accounted for 45.49 percent of the Swedish Gross Domestic Product (GDP) (World Bank, 2021). Which is higher than the UK, however, both Germany and the Netherlands had higher trade volumes as a share of GDP in 2021 (World Bank, 2021). To research the effect of EPU on Swedish exports a timeframe of relatively high uncertainty had to be chosen to see its potential effects on exports. Therefore, the thesis is limited to the Financial Crisis from January 2007 to January 2010 to capture a few months before and after the crash of the Lehman Brothers. In 2008, world uncertainty spiked in all countries, and even Sweden reached its highest levels during the period (Economic Policy Uncertainty Index, 2016). Further, Swedish exports declined by ten percentage points during the crisis (Frohm, 2020). The chosen timeframe should offer sufficient data to study EPU and its potential impact on Swedish exports.

1.2 Aim and Scope

The thesis aims to fill a research gap on the topic of EPU and its potential effects on Swedish exports. The aim is to offer a detailed analysis of EPU's effect on exports in a small open economy by answering the following research question:

To what extent was the increased Economic Policy Uncertainty during the Financial Crisis associated with the decline in Swedish exports from January 2007 to January 2010?

A quantitative method will be used to answer the research question. Sweden was chosen due to data availability alongside scant literature on trade and EPU. Also, Sweden is a small open economy meaning trade is an essential factor influencing the country's economy. EPUs' effects on trade have mainly been studied globally and, more specifically, in the US (Bloom, Ahir, & Furceri, 2019; Novy & Taylor, 2019; Yayi, 2023). Therefore, the thesis could contribute to the academic literature on the topic by filling a research gap. Germany, the UK, and the Netherlands were added to clarify whether Sweden's exports and EPU were high or low compared to other countries. Lastly, the two models, the Mishkin Model (1992) and the Real Options Approach (2019), will be used to further explain the results obtained in the thesis. The theories will be further presented in section four.

Furthermore, The Netherlands was chosen as the country is argued to behave similarly to Sweden in response to uncertainty shocks (Armelius, Hull, & Stenbacka Köhler, 2016). Germany was chosen because it was Sweden's top trading partner in 2008 and still was in 2020 (Swedish National Board of Trade, 2020). It is interesting to compare Sweden's exports and EPU to Germany's since trade between the two countries is high and, therefore, could behave similarly during times of increased EPU. The UK was chosen due to data availability, and in 2008 the UK's top export partner was the US, with which Sweden conducted relatively little exports with during 2008 (Office for National Statistics the UK, 2008). Since the UK had different trading partners than Sweden during the Financial Crisis, their exports and EPU might differ from Sweden's, which is an interesting comparison.

To account for other factors affecting Swedish exports, the control variables monthly Swedish GDP development, Swedish inflation, and exchange rate have been added to the dataset. GDP, inflation, and a country's exchange rate are three main factors affecting a country's export rate (ECB, 2016; OECD, 2016; Frohm, 2020). The control variables should therefore show to what extent they affected Swedish exports compared to EPU during the chosen period. As the research questions aim to answer the effect of increased EPU on Sweden's decreased exports during the Financial Crisis, the control variables have only been added for Sweden. Germany, the UK, and the Netherlands will not be added to the regressions to keep the scope of the thesis manageable. A more detailed motivation for the thesis and the dataset will be given in section 5.1.

1.3 Limitations

The scope of the thesis might come with limitations. Firstly, the timeframe is relatively short. However, it will still suffice to answer the research question as Swedish export levels and EPU stabilized rather quickly after the Financial Crisis (Frohm, 2020). The timeframe is sufficient since the thesis focuses on the short-term effects of EPU and its effect on exports. The period might need to be extended if one wants to investigate the long-term effects. Secondly, if one wanted an even more detailed analysis of EPU's effect on exports in a small open economy, other countries with similar characteristics to Sweden might need to be added to the dataset. However, for the thesis to be of a manageable scope, it has been narrowed down to focus on Sweden. Thirdly, other factors might affect the decline in exports besides EPU and the control variables.

However, the control variables account for some of the most prominent factors that might have affected the export decline. Fourthly, there is a risk of causality. There may be an observable effect between EPU and exports driven by omitted factors affected by EPU. Concluding, there are known limitations to the study. However, the author has kept them in mind, and the aim and scope of the thesis have been adjusted to cover the limitations. Limitations to the dataset are presented in section 5.3.

1.4 Outline of the Thesis

The thesis is organized as follows: In section two, context is given to the main concepts of the thesis, and a background of the research problem is presented. Section three is the literature review which presents previous research on the Financial Crisis and EPU. Section four presents the theoretical framework where the two models, the Mishkin Model and the Real Options Approach, are presented. Section five covers the empirical strategy of the thesis. Presenting the dataset and its construction, it explains the regression model used on the dataset and the possible limitations of the data. Section six, empirical analysis, is where the results will be presented. In section seven, a discussion of the results will be carried out. Finally, section eight aims to offer a summary and conclusion of the thesis.

2 Context

Section two presents why studying EPU's effect on trade is crucial and offers background knowledge on the topic. Studying the effects on EPU is essential as the world economy will always be hit by new waves of uncertainty. By limiting its effects, one can increase profits and stabilize societal uncertainty by decreasing unemployment and achieving macroeconomic stability.

The term EPU aims to capture the effect of uncertainty shocks on an economy (Bloom, 2009). Defining uncertainty is challenging as the concept can mean different things depending on economic factors (Yayi, 2023). It could depend on the consumers of the final product, the firm's managers, or the policymakers (Yayi, 2023). According to Baker, Bloom, Davis, and Wang (2013), EPU relates to four elements of economic policy decisions. Firstly, the economic policy decision-makers (Baker et al., 2013). Secondly, the authors mention the character and timing of the economic policy actions. Thirdly, the paper discusses the economic effect of previous, current, and future policy actions. Fourthly, uncertainty is related to policy in action (Baker et al., 2013). The concept of uncertainty itself is broad and could represent macroeconomic shocks to an economy, microeconomic events related to specific businesses, or even non-economic events like war (Bloom, 2014).

In 2016 Bloom, Baker, and Davis developed an index measuring uncertainty in different countries worldwide. Sweden was added to the index by Armelius, Hull, and Stenbacka Köhler (2016). The Swedish index was constructed by tapping the National Library of Sweden's online archives for four major Swedish newspapers: Aftonbladet, Expressen, Dagens Industri, and Svenska Dagbladet. The authors develop the index by mapping articles in the four newspapers that contain key Swedish terms on the economy, policy matters, and uncertainty (Economic Policy Uncertainty, 2023). The authors queried the archive for Swedish keyphrases corresponding to their English equivalents of 'economic', 'policy', and 'uncertainty'.

Another important reason to study factors affecting trade during a recession like 2008 is that international trade is highly volatile (Novy & Taylor, 2019). It tends to fall twice as much as a

country's GDP during a recession (Novy & Taylor, 2019). During the Financial Crisis, uncertainty shocks generated a drop in world GDP of around 2.5 percent (Bloom, Floetotto, Jaimovich, Saporta-Eksten, & Terry, 2018). Sweden's GDP dropped by 3.91 percent from January 2008 to January 2009 (Swedish National Board of Trade, 2008). Swedish trade fell around ten percentage points as a share of GDP, almost double the amount of GDP. Novy and Taylor (2019) argue that firms adopt a wait-and-see approach slowing their investment and hiring processes in times of uncertainty. Further, firms execute their inventory policy in uncertain times by cutting orders of foreign inputs much more than domestic ones (Novy & Taylor, 2019). Therefore, international trade could be argued to be more volatile than domestic trade and GDP (Novy & Taylor, 2019).

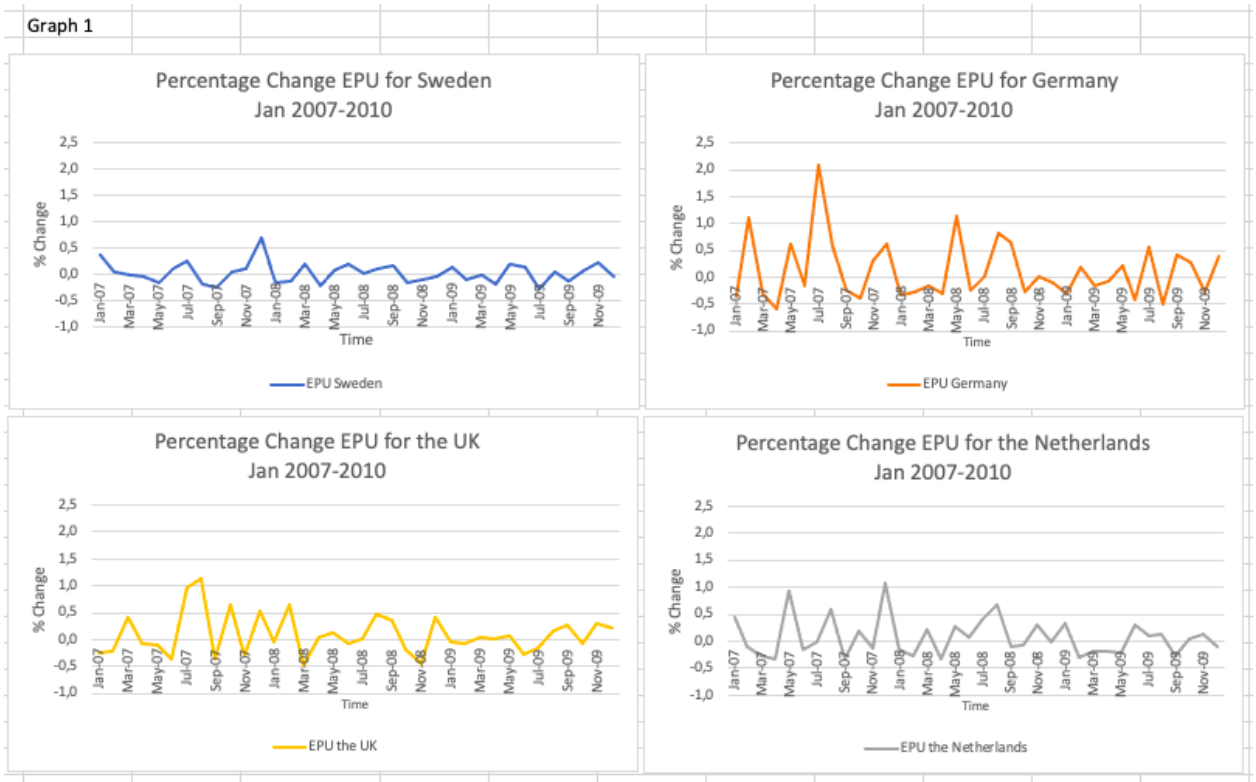
To conclude, section two has presented a motivation for why EPU's effect on trade, especially exports, is an important topic to study. EPU will always be something affecting the world economy, and it is still not a very understood concept and was only first discussed by Bloom in 2009. Therefore, the thesis will aim to contribute to the existing research gap.

3 Literature Review

3.1 Economic Policy Uncertainty

The effects of EPU and trade have not yet been studied to a large extent. In the following section, previous literature on the topic will be discussed. One of the first papers to discuss EPU and its effects on trade was by Taglioni and Zavacka (2013). The authors argue that one of the main reasons for lowered trade during global crises is the affected confidence of consumers and investors. The authors conclude that domestic uncertainty strongly predicts import fluctuations but has little effect on exports. EPU has the most considerable effect on exports when its levels are exceptionally high (Taglioni & Zavacka, 2013), which they were during the Financial Crisis (Economic Policy Uncertainty Index, 2016).

The levels of EPU have, for the sake of the thesis, been collected and portrayed in Graph 1:



Source: *Based on author's calculations. Data collected from Economic Policy Uncertainty Index (2016)*

As seen in Graph 1, Sweden's levels of percentage change in EPU were relatively low during the crisis compared to the UK, Germany, and the Netherlands. The highest levels were measured in December 2007, a few months before the Financial Crisis hit Sweden (Frohm, 2020). In December 2007, the levels of EPU for Sweden, Germany, the UK, and the Netherlands were respectively 91.78, 192, 112, and 177,26 (Economic Policy Uncertainty Index, 2019).

Taglioni and Zavacka (2013) find that the effects of EPU on exports are higher for trade relationships more intensive in durable goods. Sweden's top five export goods in 2008 were pharmaceuticals, paper and paper items, iron and steel, plastic and plastic articles, and wood (SCB, 2023). Pharmaceuticals, paper and paper items, and plastic and plastic articles are non-durable goods as these are bought and consumed during a relatively short period. Iron, steel, and wood, however, are considered durable goods as they can be consumed for a relatively long period.

Similar to the conclusion by Taglioni and Zavacka (2013) that domestic uncertainty strongly predicts import fluctuations but has little effect on exports, the paper by Yayi (2023) presents similar conclusions. The author concludes that in export-oriented countries like Sweden, only foreign EPU affects trade, while less export-oriented countries are affected by both domestic and foreign EPU. In a more recent paper by Novy and Taylor (2019), the authors combine the second-moment measure of uncertainty developed by Bloom in 2009. Similarly to Taglioni and Zavacka (2013), Novy and Taylor (2019) also conclude that EPU's effect on exports is more significant for durable goods.

One of the significant researchers on EPU is Nicholas Bloom (2009; 2013; 2014; 2016; 2019). The author first contributed to the literature with a paper from 2009, where he developed a theory on measuring economic uncertainty shocks. Bloom (2009) explains the term uncertainty shocks as when uncertainty in a country spikes after a shock, like the Cuban Missile Crisis. In his paper, intending to study their impact, he develops a model that simulates uncertainty shocks to the economy. Bloom (2009) concludes that the effect of the shocks is a drop and rebound in aggregate output and employment. Bloom (2009) goes on to explain why the drop occurs. He attributes the consequences of the uncertainty shock to less investment and hiring, lower

productivity growth, and higher volatility. Most of the papers published after 2009 build on the findings uncovered by Bloom (2009), and most conclusions drawn on EPU build on the index published by Bloom, Bakers, and Davis (2016).

Sweden was added to the index (Bloom, Bakers, and Davis, 2016) by Armelius, Hull, and Stenbacka Köhler (2016). Their paper aims to prove that uncertainty shocks affect a small open economy differently than a large open economy. The paper concludes that shocks to Swedish EPU generate a response in the same quarter to Swedish GDP and lowers Swedish GDP by slightly less than 0.2 percentage points. In contrast, foreign shocks to EPU impact the Swedish GDP with a one-quarter delay (Armelius, Hull, & Stenbacka Köhler, 2016). These findings contradict the results of Yayi (2023) and Taglioni and Zavacka (2013). The authors argue that export-oriented countries like Sweden only are affected by foreign uncertainty shocks. If Sweden is mainly affected by foreign uncertainty shocks, the analysis would expect higher EPU in Sweden during turbulent times abroad rather than domestically.

When discussing the impact of EPU on a country, most authors agree that the levels of EPU rather than fluctuations have the most significant impact on an economy (Armelius, Hull, & Stenbacka Köhler, 2016: Taglioni and Zavacka, 2013: Yayi, 2023). However, it depends on whether one is investigating the effects of EPU short- or long-term (Yayi, 2023). When EPU is at high levels for a prolonged period, it can result in declined economic growth, reduced consumer and business confidence, and reduced investment (Taglioni & Zavacka, 2013). However, if EPU fluctuates, it can increase short-term uncertainty, leading to delays in spending decisions and increasing economic volatility (Yayi, 2023). Overall, both high levels and fluctuations in EPU can harm the economy. However, since the thesis focuses on the short-term effects of EPU on exports, fluctuations are the most important for the analysis.

It has been determined that when a crisis like the Financial Crisis of 2008 hits the global economy, it is highly likely that global trade decreases as an effect of the crisis (Bloom, 2009; Mishkin, 1992; Yayi, 2023). Due to the crisis, Swedish trade as a share of GDP fell by ten percentage points between 2008 and 2009, slightly higher than world trade which declined by eight percentage points (Frohm, 2020). The question is whether EPU had any effect on the

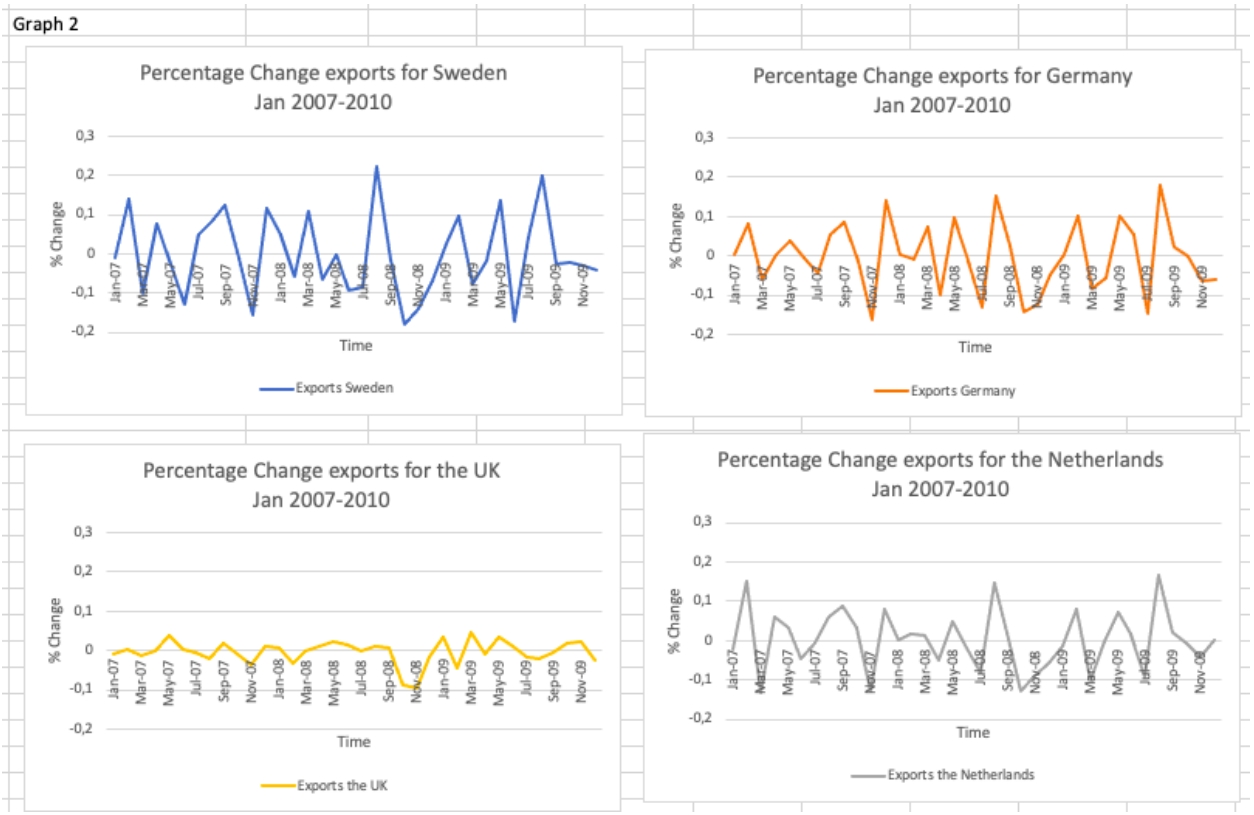
lowered Swedish exports. As previously mentioned, some leading causes of uncertainty are government policy changes, market fluctuations, political instability, natural disasters, war, and terrorism (Bloom, 2009). Sweden is a developed country with a relatively stable government, and most importantly, it has a working system (Frohm, 2020). The stableness of Sweden may explain the relatively low levels of EPU (Armelius, Hull, & Stenbacka Köhler, 2016). When EPU fluctuates in other countries, it remains relatively stable in Sweden as it has a well-functioning political and economic system to lean back on (Armelius, Hull, & Stenbacka Köhler, 2016).

To conclude, EPU was first discussed in academic circles 2009 when Bloom developed a theory on measuring economic uncertainty shocks. Sweden was added to the index (Bloom, Bakers, and Davis, 2016) by Armelius, Hull, and Stenbacka Köhler (2016). As can be seen in Graph 1, Sweden has a relatively low EPU compared to Germany, the UK, and the Netherlands. Therefore, the thesis could contribute to existing literature with new insight into the topic.

3.2 Trade and the Financial Crisis

The 2008 Financial Crisis is one of the most significant economic shocks to hit the world economy. World trade fell by volumes larger than during the oil shock of 1974-75, the inflation of 1982-1983, and the global recession of 2001-02 (Baldwin, 2009). Further, an interesting factor of the Financial Crisis was that almost all developed nations were hit, and almost all trade sectors declined rapidly from the third quarter of 2008 to the second quarter of 2009 (Yayi, 2023).

Graph 2 has been collected and portrayed to show Sweden's percentage change in exports from 2007 to 2010. The UK, Germany, and the Netherlands were added for reference.



Source: *Based on author's calculations. Data collected from Statistiska Centralbyrån (2023), Federal Statistical Office Germany (Destatis) (2023), Office for National Statistics in the United Kingdom (2023), and Statistics Netherlands (2023).*

As can be seen in Graph 2, all countries had high fluctuations in their export levels during the Financial Crisis. Compared to the other countries, Sweden had even more intense fluctuations, with a sharp decline in September 2008. The export fluctuations for Sweden, the UK, Germany, and the Netherlands are respectively 0.01056, 0.0009, 0.0078, and 0.0059, meaning Sweden had the most intense percentage fluctuation. Frohm's (2020) paper discusses Swedish trade during and after the Financial Crisis. Frohm (2020) wrote a staff memo for Riksbanken and presented statistics on the crisis's effects on Swedish trade. He concludes that when the crisis hit Sweden, it caused trade to fall by ten percentage points. Frohm (2020) argues that even today, Swedish and global trade is still sluggish.

The main driving force behind the Financial Crisis was the demand-side shock, even though it was a supply-side shock (Yayi, 2023). Other prominent reasons for the crisis were financial debts and constraints, working capital issues, and trade barriers (Bricongne, Fontagné, Gaulier, Taglion, & Vicard, 2013; Coulibaly, Spariza, & Zlate, 2013; Kee, Neagu, & Nicita, 2013). Bricongne et al. (2013) investigate the effects of the crisis in France. Due to the crisis, the authors conclude that small exporters did fall under financial constraints resulting in the need to reduce the range of destinations served or stop exporting altogether. Bloom (2014), as earlier mentioned, presents findings similar to these as a factor that affects EPU, arguing that microeconomic shocks to an economy increase EPU. However, Bloom (2014) and Bricongne et al. (2013) conclude that the main reason for the collapse is decreased export volumes from large exporters.

Coulibaly, Spariza, and Zlate (2013) use data from six emerging Asian countries to investigate the main reasons for the declined exports. The authors argue that trade credit, i.e., later payments for goods exported now, was one of the main factors that kept sales high in some corporations. However, export-intensive firms did not have the option of credit to the same extent as less export-intensive firms, contributing to their more significant sales decline (Coulibaly, Spariza, & Zlate, 2013). As mentioned earlier, Frohm (2020) wrote that Swedish and global trade is still sluggish even today. Kee, Neagu, and Nicita (2013) offer an interesting explanation of the statement by Frohm (2020). The authors write that some countries, like Russia and China, increased tariffs on primary imported goods during and after the crisis. At the same time, the European Union (EU) mainly relied on antidumping duties to shield domestic industries in favor of foreign industries (Kee, Neagu, & Nicita, 2013). Overall, the rise in tariffs and antidumping duties may have jointly caused global trade to drop by US$43 billion, meaning it explains around two percent of the world trade collapse during and after the crisis (Kee, Neagu, & Nicita, 2013).

The Mishkin Model (1992) was developed to research the correlation between uncertainty and its effects on trade. Since the topic of EPU and its effect on trade has not yet been studied to a large extent, few theories discuss EPU's effect on exports during a crisis. However, the Mishkin Model (1992) offers a sufficient explanation for uncertainty and its general consequences on a country's exports. Furthermore, the Real Options Approach (2019) explains why international trade is so

volatile in times of uncertainty. The theory will give a good foundation to the thesis analysis and could help support the conclusion of the thesis. Both models will be further discussed in section four.

To conclude, the Financial Crisis effect on global trade was extreme, with a 15 percent decrease in world trade between the third quarter in 2008 and the second quarter in 2009 (Yayi, 2023). The main reasons for the decrease were financial debts and constraints, working capital issues, and trade barriers (Bricongne, Fontagné, Gaulier, Taglion, & Vicard, 2013; Coulibaly, Spariza, & Zlate, 2013; Kee, Neagu, & Nicita, 2013). Many of the tariffs and policies implemented during the crisis remain today, which offers part of the explanation for why global trade still is sluggish (Frohm, 2020; Kee, Neagu, & Nicita, 2013).

3.3 Contribution to Existing Literature

As mentioned earlier, EPU and its potential effects on trade have not yet been studied to a large degree, especially not on the scale of a small open economy like Sweden. Therefore, the thesis could contribute to an existing research gap. So far, it has been concluded that EPU affects trade (Bloom, Baker, and Davis, 2016). However, EPU has also been concluded to have the most considerable effect on exports when its levels are exceptionally high (Taglioni & Zavacka, 2013). Sweden had high export fluctuations compared to the other countries, as seen in Graph 2. Graph 1 shows Sweden had the lowest EPU fluctuations of the four countries. The difference in exports and EPU in Sweden is interesting to study. It could help conclude if Swedish exports were affected by EPU even though the levels were relatively low or if other factors affected Swedish exports during the Financial Crisis.

The thesis is relevant for practice and policymakers if an effect of the higher EPU on Swedish export is concluded to exist between 2007 and 2010. Policymakers could then apply practical solutions and policies to minimize the consequences of a crisis and increase Swedish export profits to their capacity. The thesis is also relevant for theory as it adds to the already developed theory by Bloom (2009) and the index on EPU by Bloom, Ahir, and Furceri (2019). The paper aims to extend the research on EPU and its effect on exports to the small open economy of Sweden during the Financial Crisis.

4 Theoretical Framework

The following section will present two models which offer a further foundation for the topics discussed in the analysis. The Mishkin Model (1992) and the Real Options Approach (2019) were introduced in the literature review. They shall be the main focus of the theoretical framework as the theories aim to explain uncertainty and its role in an economy during a crisis. According to the Mishkin Model (1992) and the Real Options Approach (2019), the thesis should identify findings that EPU affected Sweden during the Financial Crisis. However, there might not be a direct link between the increased EPU and lowered exports.

4.1 The Mishkin Model

When a crisis like the Financial Crisis of 2008 hits the global economy, global trade will likely decrease due to the crisis (Bloom, 2009; Mishkin, 1992; Yayi, 2023). The reasons for the decreased trade are discussed by Mishkin (1992) in his paper Anatomy of a Financial Crisis. The paper laid the foundation for the Mishkin Model, which will be used in the thesis to explain the effects of increased uncertainty on decreased exports in a country during a crisis.

The Mishkin Model states that a common cause for a Financial Crisis is increased uncertainty resulting from the failure of major financial or non-financial firms (Mishkin, 1992). The Financial Crisis in 2008 is argued to have begun partly due to the crash of Lehman Brothers (Bloom, Floetotto, Jaimovich, Saporta-Eksten, & Terry, 2018). The increased uncertainty, the interest rate rise, and the stock market crash were some of the initial driving forces of the Financial Crisis (Bloom, 2009). The Mishkin Model states that another outlet for uncertainty is bank panics. A bank panic is when many individuals or institutions simultaneously attempt to withdraw their deposits from banks or financial institutions (Mishkin, 1992). When depositors rush to withdraw their funds, banks may experience a sudden liquidity shortage and might be unable to meet all the withdrawal demands. The liquidity shortage can lead to a vicious cycle of bank failures, as depositors lose confidence and withdraw their funds, leading to more bank failures and further withdrawals (Mishkin, 1992). These factors will inevitably affect global trade.

The Mishkin Model argues that the interest rate rise is one of the main factors for the trade decline after a crisis. The Swedish interest rate was raised from 4.25 percent in August 2008 to 4.75 percent in September 2008 and then to 5.25 percent in October 2008, a total increase of one percentage point over two months (Riksbanken, 2023). The Riksbank later lowered the interest rate in response to the deteriorating economic conditions, and by December 2008, the rate had been reduced to 2.0 percent (Riksbanken, 2023). Short term, when the interest rate increases, capital inflows tend to increase as foreign investors seek to take advantage of higher rates of return (Mundell-Fleming, 1992). The capital inflow can lead to an appreciation of the domestic currency, making exports more expensive and imports cheaper, meaning a country's exports may decrease (Mundell-Fleming, 1992).

In conclusion, the Mishkin Model (1992) explains why the Financial Crisis hit and aims to explain some of its global trade consequences. The Model (1992) argues that uncertainty is one of the main driving forces for a crisis like 2008. However, the model does not necessarily state that uncertainty directly correlates with decreased exports. Since the topic of EPU and its effect on trade has not yet been studied to a large extent, few theories discuss EPU's effect on exports during a crisis. However, the Mishkin Model (1992) offers a sufficient explanation for uncertainty and its general consequences on a country's exports. According to the Mishkin Model (1992), the thesis should identify findings that EPU affected Sweden during the Financial Crisis. However, there might not be a direct link between the increased EPU and lowered exports.

4.2 The Real Options Approach

The Real Options Approach was developed by Novy and Taylor (2019) to explain why international trade is so much more volatile in response to economic shocks. The authors developed the theory by combining the shock concept developed by Bloom (2009) with a model of international trade. The theory argues that firms adopt a wait-and-see approach slowing their investment and hiring processes in times of uncertainty. Further, firms execute their inventory policy in uncertain times by cutting orders of foreign inputs much more than domestic ones (Novy & Taylor, 2019). Therefore, international trade could be argued to be more volatile than domestic trade (Novy & Taylor, 2019).

The Real Options Theory (2019) argues that durable goods (materials) tend to be affected by uncertainty to a more significant extent compared to non-durable goods (capital). The reason behind the different effects could be that a significant fraction of international trade consists of capital goods or industrial machinery, goods that have had increasing importance in the global production system (Novy & Taylor, 2019). The authors aim to explain to what extent the theory can explain the trade collapse of 2008. They conclude that their theory can explain around half of the import collapse during the Financial Crisis. However, other factors have been involved in the collapse that is not captured by the uncertainty shocks (Novy & Taylor, 2019). Around 65 to 80 percent of the trade collapse could be attributed to changes in final expenditure in trade-intensive durable goods (Bems, Johnson, & Yi, 2011). 15 to 20 percent could be due to credit supply shocks (Bems, Johnson, & Yi, 2011). Lastly, inventory adjustments may account for 20 percent of the trade decline (Bems, Johnson, & Yi, 2011). Novy and Taylor (2019) conclude that the last factor, inventory adjustments, may be higher than 20 percent, according to their model.

To conclude, the Real Options Approach (2019) offers a sufficient explanation for the import collapse during the 2008 Financial Crisis. However, it can not explain all of the large decrease in exports during the same time. Arguably, it offers some explanation as to why trade is volatile, and it will give a good foundation for the thesis analysis. However, it is still to be concluded how exports correlated with uncertainty in Sweden during the Financial Crisis.

5 Empirical Strategy

5.1 The Dataset

The constructed dataset consists of the following variables: the four countries, Sweden, Germany, the UK, and the Netherlands, and the monthly exports in million Euros for the individual countries from January 2007 to January 2010. The data on Sweden's monthly exports were collected from Statistiska Centralbyrån (SCB) (2023). The export data from Germany was gathered from the Federal Statistical Office Germany (Destatis) (2023). The data for the UK was collected from the Office for National Statistics in the United Kingdom (2023). Lastly, the data on the Netherlands has been compiled from Statistics Netherlands (2023). The EPU data has been gathered from the index developed by Bloom, Baker, and Davis (2016) for the four countries. All export data has been collected in million Euros, meaning the data is comparable between the countries. For the analysis, the dependent variable is Swedish monthly exports, and the independent variable is Swedish EPU. ChangeExports and ChangeEPU represent exports and EPU and their monthly percentage change. The calculation was carried out by simply taking $((EPU_{t+1} - EPU_t)/EPU_t)$ and $((Exports_{t+1} - Exports_t)/Exports_t)$ (where t=months) for all the months in the dataset.

The following section will explain the motivation behind the dataset's time frame, countries, and different variables chosen and constructed. The time frame from January 2007 to January 2010 was chosen to portray EPU and exports during the Financial Crisis which hit Sweden in 2008 (Frohm, 2020). It is interesting to study EPU's potential correlation with the declining exports in Sweden during the Financial Crisis since EPU was relatively high at the time (Economic Policy Uncertainty Index, 2016; Frohm, 2020). Further, as earlier stated by Armelius, Hull, & Stenbacka Köhler (2016), foreign shocks to EPU impact the Swedish economy with a one-quarter delay. Therefore, the time frame should sufficiently capture the delayed effect of EPU on exports (Armelius, Hull, & Stenbacka Köhler, 2016).

Sweden was chosen due to data availability alongside scant literature on trade and EPU. EPUs' effects on trade have mainly been studied globally and, more specifically, in the US (Bloom,

Ahir, & Furceri, 2019; Novy & Taylor, 2019; Yayi, 2023). Therefore, the thesis could contribute to the academic literature on the topic by filling a research gap. Germany, the UK, and the Netherlands were added to clarify whether Sweden's exports and EPU were high or low compared to other countries. The Netherlands was chosen as the country is argued to behave similarly to Sweden in response to uncertainty shocks (Armelius, Hull, & Stenbacka Köhler, 2016). Germany was chosen because it was Sweden's top trading partner in 2008 and still was in 2020 (Swedish National Board of Trade, 2020). It is interesting to compare Sweden's exports and EPU to Germany's since trade between the two countries is high and, therefore, could behave similarly during times of increased EPU. The UK was chosen due to data availability, and in 2008 the UK's top export partner was the US, with which Sweden conducted relatively little exports with during 2008 (Office for National Statistics the UK, 2008). Since the UK had different trading partners than Sweden during the Financial Crisis, their exports and EPU might differ from Sweden's, which is an interesting comparison.

The control variables in the dataset are monthly Swedish GDP development, Swedish monthly inflation, and the monthly exchange rate between the Swedish Krona (SEK) and the Euro. The control variables were used to account for factors other than EPU that could have affected the decline in exports in Sweden from January 2007 to January 2010. The monthly Swedish GDP development data was collected from the International Monetary Fund (IMF) (2023). The data on inflation was collected from SCB (2023). The Euro-SEK exchange rate was accumulated from Riksbanken (2023).

GDP, inflation, and a country's exchange rate are three main factors affecting a country's export rate (ECB, 2016; OECD, 2016; Frohm, 2020). The control variables should therefore show to what extent they affected Swedish exports compared to EPU during the chosen period. As mentioned above, the control variables are monthly Swedish GDP development, Swedish inflation, and exchange rate. The exchange rate between the SEK and the Euro was chosen because Sweden's main trading partners lay within Europe during the Financial Crisis (Swedish National Board of Trade, 2008). As the research questions aim to answer the effect of increased EPU on Sweden's decreased exports during the Financial Crisis, the control variables have only

been added for Sweden. Germany, the UK, and the Netherlands will not be added to the regressions to keep the scope of the thesis manageable.

5.2 Regression Model

The approach for the thesis is quantitative, and the data has been investigated in Stata 16.1 and Gretl. The model used for the multivariate regression where exports are the dependent variable, EPU is the independent variable, and inflation, exchange rate, and GDP are the control variables are as follows:

$$Exports_t = \beta 0_t + \beta 1 EPU_t + \beta 2 Exchange\ rate_t + \beta 3 Inflation_t + \beta 4 GDP_t + \varepsilon_t$$

In the model, exports are the dependent variable, and $\beta 0_t$ is the intercept or constant term. $\beta 1_t$, $\beta 2_t$, $\beta 3_t$, and $\beta 4_t$ are the coefficients for EPU, exchange rate, inflation, and GDP, respectively. ε_t is the error term or residual, which captures the unexplained variability in the dependent variable not accounted for by the independent or control variables.

The model and variables were based on previous research with similar research questions and aims. The article by Yayi (2023) uses similar control variables in his paper which aims to investigate the effect of EPU on trade in 22 countries from 1997 to 2020 by applying the Trade Gravity Model by Andersen and Van Wincoop (2003). Yayi (2023) uses the control variables real GDP and stock market volatility, which also apply to the thesis. GDP is essential for the conclusion as it includes consumer demand, which also affects trade (Yayi, 2023). The papers by Bloom, Ahir, and Furceri (2019) and Novy and Taylor (2019), which test EPU's effects on global trade, also base their research and conclusion on similar variables. For instance, they use stock market volatility and log(consumer price index) variables. Further, Novy and Taylor (2019) write, "Many of our key variables are exactly as in Bloom (2009)" (pp.759), concluding that the variables chosen for the thesis are based on previous solid work.

Other than conducting a simple regression for exports and EPU and the multivariate regression mentioned above, more features have been made with the data to test for a possible correlation. Graph 1 shows the percentage change in monthly EPU for Sweden, Germany, the UK, and the

Netherlands, to give the reader a clearer understanding of how EPU changed during the Financial Crisis. Graph 2 portrays the same feature with exports instead of EPU. Graph 3 is a scatter plot of the percentage change of exports over EPU for all the chosen countries. With the meaning of making a potential correlation visible to the reader. Table 1 (Appendix A) gives the reader the critical summary statistics to broaden the understanding of the dataset. Graph 4 (Appendix B) is a Q-Q Graph (a method comparing two distributions of probability by plotting their quantiles against each other) conducted in Gretl, showing no problematic outliers in the dataset, indicating transparency and reproducibility of the analysis. Lastly, Tables 2 and 3 portray the numbers of the simple and multivariate regressions.

5.3 Limitations

The EPU index is relatively new and was developed only in 2016 (Economic Policy Uncertainty Index, 2016). However, the newness of the index does not have to be a limitation. The index is well-researched and peer-reviewed by trusted organizations. The dataset constructed does not suffer from low reliability as the numbers are direct evidence and not estimates. Further, the dataset has a satisfactory representativity. Since the dataset includes Germany, the UK, and the Netherlands, the representativity increases. However, it is difficult to have a high representativity when comparing two numeric variables. The validity of the data is high, as it is highly relevant to the research question. The chosen variables are the needed ones to be able to answer the research question. Another limitation is that there might be problems with the data. There is always the risk of data bias. However, the chosen export data for the thesis is collected from trusted governmental sources for all countries. The EPU data is also from a well-trusted index, and the same for data of the control variables, collected from SCB (2023), Riksbanken (2023), and the IMF (2023), all sources from trusted organizations. Lastly, there are conceptual changes to EPU. The index does not perfectly capture the term uncertainty, and some dimensions of the term might be missed. Moreover, the index may overlook subtle nuances and contextual variations crucial to understanding the actual depth of the term uncertainty. However, the index is still a sufficient proxy for uncertainty.

6 Empirical Analysis

The following section will present the results of the thesis. The result has been conducted with the dataset described under section 5.1, and the data has been analyzed in Stata 16.1 and Gretl. In conclusion, EPU does not appear to have significantly affected the decline in Swedish exports from January 2007 to January 2010. Instead, the control variables seem to have had a more significant impact on the decline in exports.

6.1 Results

As shown in Graph 3, the correlation between increased EPU and lowered Swedish exports does not seem particularly strong. The correlation coefficient for EPU and exports for Sweden is -0.0995. The correlation is stronger for the UK and Germany, while the data for the Netherlands behaves similarly to Sweden. Graph 1 shows that EPU was not as significantly high in Sweden as in the other countries. The lower levels of EPU could explain why Sweden's correlation between EPU and exports is not as strong as for the UK and Germany. However, Graph 2 shows that Sweden had relatively high export fluctuations from 2007 to 2010, meaning that some factor or factors affected exports during that time. The multivariate regressions may show that the control variables inflation, GDP, and the exchange rate have impacted Swedish exports more than EPU.

To begin, a simple regression was conducted in Stata 16.1. The results show a P-value of 0.558, meaning the null hypothesis can not be rejected. The null hypothesis is that there is no correlation between EPU and exports, meaning there is no statistically significant relationship between the two variables. The R-squared value is -0.0184, meaning that the proportion of the variance in the dependent variable that the independent variable can explain is deficient. The regression coefficient (slope) is -9.45, meaning there is a negative relationship. The regression coefficient value means that when EPU has a one-unit change, exports decline by 9.45 units. Lastly, the intercept value for the regression is 10 212.53, meaning that when EPU equals 0, the predicted value of exports is 10 212.53. The results are presented in Table 2.

Table 2	
	Exports b/se/t/p
EPU	-9.449384 15.97531 -.5914991 .5579874
_cons	10212.53 1328.432 7.687656 5.06e-09
N	37

Source: *Based on author's calculations. Data collected from Statistiska Centralbyrån (2023), Federal Statistical Office Germany (Destatis) (2023), Office for National Statistics in the United Kingdom (2023), Economic Policy Uncertainty Index (2016), and Statistics Netherlands (2023).*

A multivariate regression has been conducted in Stata 16.1 to show the relationship between exports and the control variables. The P-values for GDP, inflation, and exchange rate are 0.346, 0,027, and 0.047, respectively. Meaning the null hypothesis can be rejected for inflation and exchange rate. A rejected null hypothesis means a significant statistical relationship exists between fluctuations in inflation and exchange rate and changes in exports. The R-squared value is 0.74, meaning that the proportion of the variance in the dependent variable that the independent and control variables can explain is relatively high. The regression coefficients are 60.31, 280.88, and -1044.435 for GDP, inflation, and exchange rate, respectively. The relationship between GDP, inflation, and exports is positive, while it is negative for the exchange rate and exports. For every one-unit increase in GDP and inflation, exports are estimated to increase by 60.31 and 280.88 units, holding all other variables constant. For every one-unit increase in the exchange rate, exports are estimated to decrease by 1044.435 units, holding all other variables constant. Lastly, the intercept value for the regression is 18 873.14, meaning that when EPU and the control variables equal 0, the predicted value of exports is 18 873.14. The results are presented in Table 3.

Table 3	
	Exports b/se/t/p
EPU	4.741152
	10.9952
	.431202
	.6692126
GDP	60.30814
	63.04937
	.9565226
	.3459793
Inflation	280.8815
	121.1571
	2.318324
	.0269785
Exchange rate	-1044.435
	505.1524
	-2.067564
	.046847
_cons	18873.14
	4779.756
	3.948558
	.0004046
N	37

Source: *Based on author's calculations. Data collected from Statistiska Centralbyrån (2023), Federal Statistical Office Germany (Destatis) (2023), Office for National Statistics in the United Kingdom (2023), Economic Policy Uncertainty Index (2016), and Statistics Netherlands (2023).*

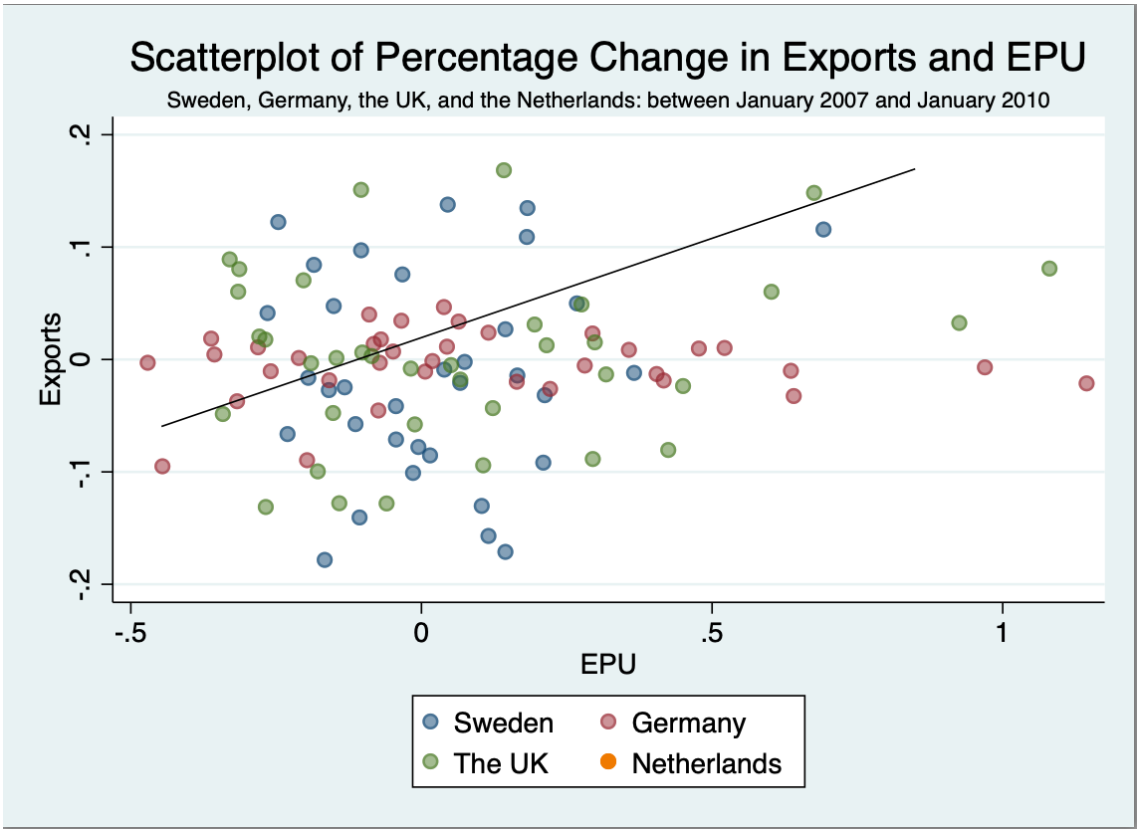
In conclusion, a simple regression was conducted on the dataset, which showed no significant correlation between increasing EPU and decreasing exports. The multivariate regression showed that the control variables inflation and exchange rate seemed to significantly impact the decline in Swedish exports between 2007 to 2010. The results will be further discussed in section seven.

7 Discussion

The following section will further present the thesis results discussed in section six. Section seven will aim to explain why the results appear as they do. EPU does not seem to have significantly impacted Swedish exports during the Financial Crisis. However, the control variables account for some of the lowered exports during the time. The reasons why EPU seems not to have affected exports could be because of Sweden's stable economy and institutions, its diversified economy and trade, its membership in the EU, and its lack of bank collapse during the crisis (Taglioni & Zavacka, 2013: The Mishkin Model, 1992: Novy & Taylor, 2019: Frohm, 2020).

To get a visible image of if there exists a relationship between EPU and exports in the countries Sweden, the UK, and Germany, Graph 3 has been developed in Stata 16.1 to make the relationship visible to the reader.

Graph 3



Source: *Based on author's calculations. Data collected from Statistiska Centralbyrån (2023), Federal Statistical Office Germany (Destatis) (2023), Office for National Statistics in the United Kingdom (2023), Economic Policy Uncertainty Index (2016), and Statistics Netherlands (2023).*

Graph 3 is a scatter plot portraying the relationship between EPU and exports. As can be seen, the relationship for Sweden and the Netherlands is not particularly strong. However, Graph 3 shows a more substantial relationship for the UK and Germany. Graph 3 was calculated by taking the variables ChangeEPU and ChangeExports, which show the percentage change month to month for the two variables.

One of the reasons why EPU seems to have not affected Sweden's exports could be that Sweden overall had a relatively low EPU during the Financial Crisis (Economic Policy Uncertainty Index, 2016). The low EPU could result from Sweden not being particularly affected by economic uncertainty overall. Bloom (2009) argues that countries with stable and strong institutions have less risk of being struck by uncertainty shocks. Sweden has a well-functioning government capable of responding quickly to economic uncertainty shocks (Frohm, 2020). Institutions like the Swedish central bank, Riksbanken, did in 2008 help keep monetary stability by implementing effective policies to address economic challenges (Frohm, 2020).

During the Financial Crisis, export sectors focused on durable goods experienced the most significant declines, and EPU seems to have the most negative effect on durable goods (Taglioni and Zavacka, 2013: Novy and Taylor, 2019). Sweden is a diversified economy with many industries with large export markets, such as technology, service, and manufacturing (Swedish National Board of Trade, 2008). A more diversified economy means Sweden would be less vulnerable to fluctuations in one sector, which can lessen the effects of EPU (Bloom, 2009). Further, Sweden partakes in international trade, and the country is argued to have a skilled workforce and high innovation and quality goods (Frohm, 2020). International trade may have helped Sweden avoid the effects of EPU by providing access to global markets and diversifying its sources of revenue (Frohm, 2020).

Sweden is a part of the EU, which provides access to a large market and a strong regulatory framework (OECD, 2016). The Union member countries absorb economic shocks, making the effects on individual countries smaller (OECD, 2016). The Union provides stability and predictability to its member countries (OECD, 2016). However, Germany, the Netherlands, and the UK were all part of the EU during the Financial Crisis. These countries all had higher EPUs than Sweden (Economic Policy Uncertainty Index, 2016), as seen in Graph 1. While being a member of the EU, Sweden is not a member of the European Monetary Union, meaning it still has its own currency (OECD, 2016). As discussed in section six, the null hypothesis could be rejected for the control variable exchange rate. Meaning it had a statistically significant effect on exports during the Financial Crisis. An explanation for why the exchange rate affected Swedish exports and not EPU could be that the EU absorbed some economic shocks. However, since Sweden has its own currency, the Union could not absorb the exchange rate fluctuations during the Financial Crisis, resulting in the exchange rate fluctuations affecting exports.

The null hypothesis could also be rejected for the control variable inflation. Inflation fluctuations could have affected Swedish exports through their effect on the exchange rate (Frohm, 2020). Inflation can lead to fluctuations in the exchange rate, which can impact the competitiveness of exports (Swedish National Board of Trade, 2008). Because if inflation is high in Sweden compared to other countries, Swedish exports become more expensive and less attractive for Sweden's trading partners (Swedish National Board of Trade, 2008). Further, inflation can increase the cost of production, which also would result in higher production costs and higher prices, leading to a less competitive export market (Novy & Taylor, 2019). Lastly, fluctuations in inflation can also affect the interest rate, which in turn affects the exchange rate and the cost of borrowing (Swedish National Board of Trade, 2008). High inflation may result in Riksbanken increasing the interest rate resulting in more expensive borrowing for Swedish exporters (Frohm, 2020).

EPU might affect countries differently depending on if they are export- or import-oriented (Taglioni & Zavacka, 2013). Domestic uncertainty impacts imports substantially, however, the correlation is not as strong for exports (Taglioni & Zavacka, 2013). The impact makes sense as imports are goods to be used by the country, meaning domestic uncertainty will affect

consumption patterns. Exports are goods for foreign markets that domestic uncertainty would not influence. Sweden is an export-oriented economy meaning it is more strongly affected by foreign uncertainty. The Financial Crisis began in 2008 with the macroeconomic shock of the collapse of the Lehman Brothers (Bloom, 2009). Armelius, Hull, and Stenbacka Köhler (2016) argue that foreign shocks to EPU impact the Swedish GDP with a one-quarter delay, meaning that Sweden's economy would decline in the third quarter of 2008, which can be seen to be the case for Swedish exports in Graph 2. At the same time, the Riksbank raised the Swedish interest rate from 4.25 percent in August 2008 to 4.75 percent in September 2008 and then to 5.25 percent in October 2008, a total increase of one percentage point over two months (Riksbanken, 2023). The Riksbank later lowered the interest rate in response to the deteriorating economic conditions, and by December 2008, the rate had been reduced to 2.0 percent (Riksbanken, 2023). The fluctuations in the interest rate might have affected the Swedish economy for the worst in the short term. However, short-term, it could also have helped keep the fluctuations of EPU low.

The Mishkin Model (1992), presented under section four, explains why a Financial Crisis like the one in 2008 happens in the first place. The Mishkin Model states that a common cause for a Financial Crisis is increased uncertainty resulting from the failure of major financial or non-financial firms (Mishkin, 1992). The Model (1992) further argues that the collapse of a major financial firm also leads to increased uncertainty. In 2008 the bank, the Lehman Brothers, crashed, causing bank runs all over the US, which then spread to the rest of the world (Bloom, 2009).

However, one important thing to mention is that Sweden did not see any bank collapses during the crisis (Frohm, 2020). In the early 1990s, Sweden had a banking crisis and took steps to prevent it from occurring again (Frohm, 2020). Sweden implemented stricter capital requirements for banks and established a government agency, the Swedish National Debt Office, to manage the country's debt and financial stability (Frohm, 2020). Further, when the crisis of 2008 hit Sweden, the government acted quickly to support banks during the crisis, including providing liquidity and guarantees for interbank lending (Frohm, 2020). As a result, the Swedish economy remained relatively stable throughout the crisis, and the country avoided widespread

bank failures and financial instability (Frohm, 2020). The fact that Sweden did not see any bank failures could be another reason for the low EPU in the country during the time.

The Real Options Approach (Novy & Taylor, 2019) offers a sufficient explanation for the import collapse during the 2008 Financial Crisis. However, it can not explain the significant decreases in exports during the same time. Arguably, it offers some explanation as to why trade is volatile. Swedish trade might be less volatile because of the country's relatively large share of international trade (Frohm, 2020). It may have helped Sweden avoid the effects of EPU by providing access to global markets and diversifying its sources of revenue (Frohm, 2020).

The possibility exists that EPU affects one of the control variables that, in turn, affect exports, which means that EPU might indirectly affect trade (Novy & Taylor, 2019). The indirect effect would significantly affect a country's economic performance (Novy & Taylor, 2019). Therefore, policymakers should aim to control the potential indirect effects. These potential effects could be interesting to study in future research.

To conclude, section seven aims to explain the results presented in section six. Swedish exports seem to have not been affected by the increasing EPU during the Financial Crisis. Some explanations are Sweden's stable economy and institutions, its diversified economy and trade, its membership in the EU, and its lack of bank collapse during the crisis (Taglioni & Zavacka, 2013: The Mishkin Model, 1992: Novy & Taylor, 2019: Frohm, 2020).

8 Conclusion

When the Financial Crisis of 2008 hit the world, it caused great harm to the world economy. The thesis has focused on the crisis effect on trade and especially exports in Sweden from January 2007 to January 2010 in the form of uncertainty. Due to the crisis, Swedish trade as a share of GDP fell by ten percentage points between 2008 and 2009, slightly higher than world trade which declined by eight percentage points. The thesis has aimed to prove if there might be a significant correlation between an increase in EPU during a crisis like the one in 2008 and lowered exports. It has been concluded that increased EPU seems to worsen world trade. However, the research has not been extended to a small open economy like Sweden. The thesis has aimed to fill that research gap in the literature.

At the beginning of the writing process, the thesis believed to confirm the theories presented regarding world trade and EPU, that increasing EPU would decrease Swedish exports. However, as the research was extended, scholars seemed to disagree on the actual results of uncertainty shocks on exports. Taglioni and Zavacka (2013), one of the first papers to study EPU's effect on trade, conclude that domestic uncertainty strongly predicts import fluctuations but has little effect on exports. EPU has the most considerable effect on exports when its levels are exceptionally high (Taglioni & Zavacka, 2013). As can be seen in Graph 1, Sweden's EPU levels were relatively low compared to the Netherlands, Germany, and the UK. EPU might not have had a statistically significant effect on Swedish exports because its levels were not exceptionally high, as Taglioni and Zavacka (2013) stated.

The thesis has concluded that EPU does not appear to have had a statistically significant relationship between EPU and exports. However, the control variables, exchange rate, and inflation seem to have a significant relationship. The main findings uncovered in the discussion regarding why EPU has not affected Swedish exports are the country's stable institutions. Countries with stable and strong institutions have less risk of being struck by uncertainty shocks. Furthermore, Sweden is a country with diversified international trade and economy. A more diversified economy means Sweden would be less vulnerable to fluctuations in one sector, which

can lessen the effects of EPU. Sweden's membership in the EU might also lessen the impacts of EPU, as the other member countries absorb some of the shocks.

The thesis leaves room for future research; some findings would need further investigation to conclude. Firstly, as seen in Graph 1, EPU levels in the Netherlands, Germany, and the UK are all higher than in Sweden. It could be interesting to study why these differences appear in future research. Country differences in institutions and trade patterns could explain the intercountry changes in EPU. However, that is something that still needs to be proven. Secondly, as Taglioni and Zavacka (2013) wrote, domestic EPU affects imports and consumption but not exports. It would be relevant to study Sweden's leading trade partners and their EPU and see the effect of foreign EPU on Swedish exports. Thirdly, when the effects of EPU hit an economy are still widely discussed, some argue six months (Novy & Taylor, 2019), and some argue one quarter of a year (Armelius, Hull, and Stenbacka Köhler, 2016). Therefore, studying the same research question but investigating different time frames could be interesting. Lastly, there may be a potential indirect effect of EPU on exports. EPU might affect one of the control variables, affecting exports. These potential effects could be interesting to study in future research.

In conclusion, the thesis has aimed to answer the research question:

To what extent was the increased Economic Policy Uncertainty during the Financial Crisis associated with the decline in Swedish exports from January 2007 to January 2010?

The answer to the research question seems to be that EPU has affected Swedish exports during the Financial Crisis to a statistically non-significant extent. However, the control variables, exchange rate and inflation, have been concluded to have affected Swedish exports. The thesis has opened up new questions that would be interesting to study in future research and has reached its aim of contributing to the existing literature on how a small open economy behaves in times of high uncertainty.

Reference List

Anderson, J. & Eric van Wincoop (2001). Gravity with Gravitas: A Solution to the Border Puzzle. [online] pp.1–32. Doi: https://doi.org/10.3386/w8079

Armelius, H., Hull, I. and Stenbacka Köhler, H. (2017). The timing of uncertainty shocks in a small open economy. *Economics Letters*, 155, pp.31–34. doi:https://doi.org/10.1016/j.econlet.2017.03.016

Baker, S.R., N. Bloom, S.J. Davis and Xiaoxi Wang, 2013. "Economic Policy Uncertainty in China," unpublished paper, University of Chicago.

Baldwin, R., ed., The Great Trade Collapse: Causes, Consequences and Prospects (London: Centre for Economic Policy Research, 2009).

Bems, R., R. Johnson, and K.-M. Yi, "Vertical Linkages and the Collapse of Global Trade," American Economic Review 101 (2011), 308–312. "The Great Trade Collapse," Annual Review of Economics 5 (2013),

Bloom, N., Ahir, H. & Furceri, D. (2019). New Index Tracks Trade Uncertainty Across the Globe. [online] IMF. Available at: https://www.imf.org/en/Blogs/Articles/2019/09/09/blog-new-index-tracks-trade-uncertainty-across-the-globe [Accessed 25 February 2023]

Bloom, N., Baker, S.R. & Davis, S.J. (2016). Measuring Economic Policy Uncertainty. *The Quarterly Journal of Economics*, 131(4), pp.1593–1636. doi:https://doi.org/10.1093/qje/qjw024

Bloom, N. (2014). Fluctuations in Uncertainty. *Journal of Economic Perspectives*, 28(2), pp.153–176. Doi: https://doi.org/10.1257/jep.28.2.153.

Bloom, N. (2009). The Impact of Uncertainty Shocks. *Econometrica*, [online] 77(3), pp.623–685. Doi: https://doi.org/10.3982/ecta6248

Bloom, N., Floetotto, M., Jaimovich, N., Saporta-Eksten, I. & Terry, S.J. (2018). Really Uncertain Business Cycles. *Econometrica*, 86(3), pp.1031–1065. Available at: https://www.jstor.org/stable/pdf/44955229.pdf?refreqid=excelsior%3A078758ca69c6a6192b28b4713c1efd3a&ab_segments=&origin=&initiator=&acceptTC=1 [Accessed 18 Apr. 2023].

Bricongne, J.-C., Fontagné, L., Gaulier, G., Taglioni, D. and Vicard, V. (2012). Firms and the global crisis: French exports in the turmoil. *Journal of International Economics*, 87(1), pp.134–146. Doi: https://doi.org/10.1016/j.jinteco.2011.07.002.

Coulibaly, B., Sapriza, H. and Zlate, A. (2013). Financial frictions, trade credit, and the 2008–09 global financial crisis. *International Review of Economics & Finance*, 26, pp.25–38. Doi: https://doi.org/10.1016/j.iref.2012.08.006.

ECB IRC Trade Task Force (2016).“Understanding the weakness in global trade – What is the new normal?”, Occasional paper series, No. 178.

Frohm, E. (2020). Staff memo Restrained foreign trade after 2009: discussion of possible consequences for Sweden. [online] Available at: https://www.riksbank.se/globalassets/media/rapporter/staff-memo/engelska/2020/restrained-foreign-trade-after-2009-discussion-of-possible-consequences-for-sweden.pdf [Accessed 27 February 2023]

Genesis.destatis.de. (2023). *Federal Statistical Office Germany - GENESIS-Online*. [online] Available at: https://www-genesis.destatis.de/genesis/online?operation=statistic&levelindex=0&levelid=1679472085325&code=51000&language=EN [Accessed 19 Apr. 2023].

International Monetary Fund. (2023). *Sweden and the IMF*. [online] Available at: https://www.imf.org/en/Countries/SWE.

Kee, H.L., Neagu, C. and Nicita, A. (2013). Is Protectionism on the Rise? Assessing National Trade Policies during the Crisis of 2008. *Review of Economics and Statistics*, [online] 95(1), pp.342–346. Doi: https://doi.org/10.1162/rest_a_00241.

Mishkin, F. (1992). Anatomy of a Financial Crisis. *NBER*. Doi: https://doi.org/10.3386/w3934.

Mundell, R. and Flemming, M. (1992). Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates. *The Canadian Journal of Economics and Political Science / Revue canadienne d'Economique et de Science politique*, [online] 29(4), pp.475–485. Doi: https://doi.org/10.2307/139336.

Novy, D. & Taylor, A.M. (2019). Trade and Uncertainty. *The Review of Economics and Statistics*, pp.1–50. Doi: https://doi.org/10.1162/rest_a_00885

OECD (2016), "Cardiac arrest or dizzy spell: Why is world trade so weak and what can policy do about it?", Economic Policy Paper, No. 18.

O'Rourke, K.O. & Eichengreen, B. (2010). *What do the new data tell us?* [online] CEPR. Available at: https://cepr.org/voxeu/columns/what-do-new-data-tell-us [Accessed 26 Feb. 2023].
Policyuncertainty.com. (2016). Economic Policy Uncertainty Index. [online] Available at: https://www.policyuncertainty.com/sweden_monthly.html [Accessed 27 February 2023]

Policyuncertainty.com. (2016). Economic Policy Uncertainty Index. [online] Available at: https://www.policyuncertainty.com/sweden_monthly.html [Accessed 27 February 2023]

Riksbanken. (2023). Exchange rate SEK-Euro January 2007-January 2010 Available at: https://www.riksbank.se/en-gb/statistics/search-interest--exchange-rates/monthly-average-exchange-rates/?y=2005&m=1&s=Comma&f=m [Accessed 12 March 2023]

Riksbank.se. (2023). *Riksbank rates*. [online] Available at: https://www.riksbank.se/en-gb/statistics/search-interest--exchange-rates/explanation-of-the-series/riksbank-rates/ [Accessed 19 Apr. 2023].

S, Baker., N, Bloom., S, J., Davis, & S, Wang. (2013). Economic Policy Uncertainty In China [online] *papers.ssrn.com*. Available at: https://static1.squarespace.com/static/5e2ea3a8097ed30c779bd707/t/5e3059cde0d1180621cc26b

5/1580227022322/Economic+Policy+Uncertainty+in+China%2C+January+2013.pdf [Accessed 12 April 2023]

Statistics Netherlands. (2023). *CBS Statline*. [online] Available at: https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83028NED/table?dl=7B02A [Accessed 19 Apr. 2023].

Statistiska Centralbyrån. (2023). *Sveriges export*. [online] Available at: https://www.scb.se/hitta-statistik/sverige-i-siffror/samhallets-ekonomi/sveriges-export/. [Accessed 12 April 2023]

Statistiska Centralbyrån. (2023). Total Exports Sweden January 2007-January 2010 [Accessed 12 March 2023]

Statistiska Centralbyrån. (2023). Total Inflation Sweden January 2007-January 2010 [Accessed 12 March 2023]

Swedish National Board of Trade. (2008). *Import and export*. [online] Available at: https://www.kommerskollegium.se/en/import--export/ [Accessed 19 Apr. 2023].

Taglioni, D. and Zavacka, V. (2013). Innocent Bystanders: How Foreign Uncertainty Shocks Harm Exporters. [online] *papers.ssrn.com.* Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2240185 [Accessed 12 April 2023].

World Bank. (2023). GDP US $ Sweden, Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=SE [Accessed 12 March 2023]

World Bank Open Data. (2021). *World Bank Open Data*. [online] Available at: https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS?end=2021&locations=DE-GB-SE-NL&start=2007 [Accessed 19 Apr. 2023].

www.ons.gov.uk. (2023). *UK trade: revisions – total trade exports - Office for National Statistics*. [online] Available at: https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/datasets/totaltradeexportsuktraderevisions [Accessed 19 Apr. 2023].

Yayi, C.L. (2023). Economic policy uncertainty and trade: Does export sophistication matter? *Applied Economics*, 0, pp.1–17. Doi: https://doi.org/10.1080/00036846.2023.2166672

Appendix A

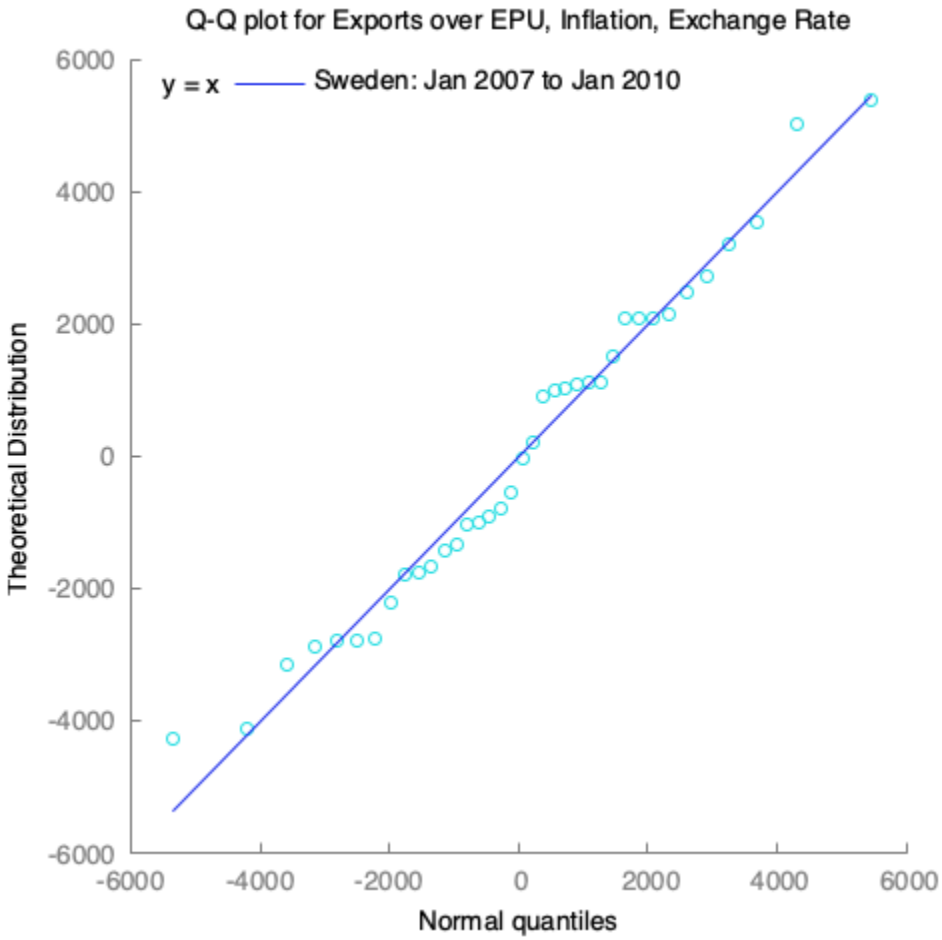
Table 1: Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Exports	148	38663,65	24866,8	6948,019	87384,07
ChangeExports	141	-0,005	0,073	-0,1783	0,1684
EPU	148	102,7733	46,463	27,213	250,07
ChangeEPU	143	0,0657	0,357	-0,5889	1,144
Inflation	37	1,695	1,883	-1,9	4,4
ChangeInflation	36	0,064	1,1133	-1,6	6
Exchangerate	37	9,839	0,654	9,08	11,17
ChangeExchangerate	36	0,0034	0,0199	0,057	0,061
GDP	4	1,15	4,51	-4,34	5,95

Source: Based on author's own calculations. Data collected from Statistiska Centralbyrån (2023), Federal Statistical Office Germany (Destatis) (2023), Office for National Statistics in the United Kingdom (2023), Economic Policy Uncertainty Index (2016), and Statistics Netherlands (2023)

Appendix B

Graph 4



Source: *Based on author's calculations. Data collected from Statistiska Centralbyrån (2023), Federal Statistical Office Germany (Destatis) (2023), Office for National Statistics in the United Kingdom (2023), Economic Policy Uncertainty Index (2016), and Statistics Netherlands (2023).*