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Individual perception of the euro as a national currency in Estonia

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Abstract

Over the past decade there has been debate amongst the Estonian populous about the effects of the euro adoption and the role of the ECB regarding national sovereignty. Most data suggests that the euro had no large-scale and long-lasting negative effects regarding inflation. Despite this there was still opposition to the adoption of the currency in Estonia. This raises the question whether or not this sentiment towards the euro is still present after 11 years and if so what influences it? This paper discusses individual perception of the euro in Estonia and its causes. This study uses Multiple Linear Regression to analyse how different socioeconomic, demographic, and financial factors influence the individual perception of the euro in Estonia.

Keywords: euro, individual perception, Euroscepticsm, EU monetary policy, eurozone, perception of the government

Table of Contents

Introduction

Since its creation in 1999 the euro has been a relatively stable currency with increased volatility only during economic downturns. Today euro is the second most traded currency worldwide accounting for over 40% of international cross-border trades (European Comission, 2022). Over the past 23 years a total of 19 EU member states have adopted euro as their currency. Strict rules regarding eurozone membership (e.g ERM ii) and extensive information campaigns from the government have helped the changeover process go through with minimal outcry from the public. A recent poll found that 78% of eurozone citizens have a favourable view towards the currency (European commission, 2022).

Regardless of the euro's success over the years, there have always been those who are against its adoption and enlargement of the eurozone. The reasons for animosity towards the euro vary, but most of the criticism stems from fear of euro changeover-related inflation, concerns for national sovereignty and Euroscepticism. Despite concerns for inflation most data suggests that the perceived changeover-related inflation is high even if the changeover has a modest effect on inflation (Ehrmann, 2011). There have also been studies that indicate a presence of euro changeover-related inflation, but this inflation is mostly sectoral and hard to detect (Meriküll and Rõõm, 2015). Neverheless more empirical research is needed to understand what influences public opinion on the currency.

The purpose of this paper is to investigate what influences Individual opinion of the euro in Estonia 11 years after its adoption. The primary research question to be answered is whether or not individual perception of the euro is derived from adequate economic knowledge or alternative factors. The method of research implemented in this paper is multiple linear regression using „Opinion on the euro as the national currency of Estonia" as a dependent variable and an array of socio-economic, demographic and financial factors as independent variables. The independent variables will also include certain viewpoints and beliefs related to national sovreignity and trust in government.

This paper is divided into 5 chapters. The first chapter (introduction) goes over the history of the euro, its origins, historical strength and the process of joining the eurozone. The second chapter (theoretical framework) goes over how Estonia adopted the euro and the reasoning behind the adoption. The chapter then covers Euroscepticism in Estonia and provides historical background to the phenomenon. This also includes what influences individual perception of the euro in Estonia and what has influenced individual perception of it internationally. Lastly the chapter covers euro changeover related inflation and what may cause it. The third chapter (data and methodology) explains the methods used for the research and the descriptive statistics of the gathered data. This chapter covers the function of multiple linear regression (MLR) and its application in this paper.

The fourth chapter (empirical analysis) covers the gathered empirical results and their significance. The final chapter (conclusion) provides an overview of the findings.

The results show that negative perception of the euro is still present in Estonia 11 years after its adoption. Some of the socioeconomic and demographic variables produced a similar relationship in this study as they did for studies about Euroscepticism. However, this was not always the case. This means that Euroscepticism and the perception of the euro are distinguishable and should not be looked at as one and the same in Estonia. Furthermore, the data from MLR shows that trust in general government heavily influences the individual's perception of the euro. Finally, the results indicate that economic knowledge and knowledge regarding financial institutions does not affect the individual perception of the euro.

Literature review

This chapter goes over the relevant existing literature on the euro adoption process and the perception of euro. The first subchapter provides a brief overview of the history of euro, the eurozone and the historical strength of the currency. The second subchapter goes over the euro adoption in Estonia and reasons behind it. The third subchapter will dwell into Euroscepticism and anti-euro sentiments in Estonia. The fourth subchapter gives insight to what has influenced the perception of euro in the past and what has influenced it in Estonia. The fifth and final chapter will go over euro-related inflation across the eurozone and in Estonia.

1.1 Origins of the euro

The idea of a common currency for all of Europe is an old one, dating back to the end of World War ii. It was theorized that in addition to the common market, a universal currency was necessary to ensure the economic strength of Europe. It was not until the fall of the Berlin wall in 1989 that the idea started to progress into reality (Firoz et, 2015). The first big step towards a monetary union was the signing of the Maastricht Treaty (Treaty on European Union). This treaty established the first steps needed for a common currency, these included a fixed inflation rate, a cap on long-term interest rates, obligatory balanced budget and a D/GDP under 0.6 (Treaty on European Union, 1992). After a period of 7 years the euro was finally adopted. On the 1st of January 1999 the euro was launched by the ECB, and it became the currency of more than 300 million Europeans in 11 member states. At first the euro was invisible for three years, used only for accounting purposes and electronic payments. Cash notes of the currency were not introduced until the 1st of January 2002 (Greece had also joined the eurozone by then), when it replaced the old currencies at a fixed exchange rate. Today 19 out of 27 EU member states use the euro as their official currency and two more member states (Bulgaria, Croatia) have joined ERM ii as a step towards adopting the euro (European Central Bank, ECB 2022).

1.1.1 The process of joining the ERM ii and the eurozone

The exchange rate mechanism (ERM ii) was created on the 1st of January 1999 as a successor to ERM. It acts as the main convergence criteria for entry into the eurozone where each potential eurozone country must be compatible with ERM ii regulations for at least 2 years before joining the eurozone. The primary function of Erm ii is a fixed exchange rate mechanism that ensures low fluctuation between euro and the national currency. After a country chooses to enter ERM ii, the ECB and the respective member state agree on strict central rate for the currency that may fluctuate up to 15% (ECB, 2022).

During the trial period of 2 years both the ECB and the European Commission monitor the member state's implementation of eurozone policies. If both institutions give a positive verdict, the member state may opt to join the eurozone. After euro adoption the member state's central bank becomes a part of the Eurosystem, which is comprised of the ECB and all eurozone central banks. In this system only the ECB has control over the monetary policy (ECB, 2022). This means that eurozone members can no longer appreciate or depreciate their currency and instead must rely on budgetary policies to manage their economy. Although this arrangement is good for trade and stability it takes away an important aspect of national sovereignty form the eurozone members.

1.1.2 Historical strength of the euro

Historically the euro has been a success in terms of credibility and stability. The eurozone is intact and no members have expressed a desire to leave. To this day the eurozone is expanding through ERM ii (Croatia, Bulgaria). Even during the worst financial crisis of the 20th century, the eurozone and the European common market demonstrated exceptional stability. Today euro is the second most traded currency in the world after the U.S dollar (USD). In 2019 the euro amounted to 20% of foreign exchange reserves, which is still small in average compared to the USD that amounted for 60%. The same year the euro also accounted for 22% on outstanding international debt (Trichet, 2018). There is no denying that by volume and market share, the euro is one of the most dominant currencies on the world stage.

The ECB has maintained this stability and credibility through strict regulations and directives. The average inflation of the euro from 1999-2019 was 1.75%, which is an improvement on the 2% set by the ECB (Trichet, 2018). There have been times when the annual inflation far exceeded the 2% mark. This was the case for 2011, (the year Estonia joined) when the average inflation in the eurozone was 2.7%. However, the annual EU inflation in 2011 exceeded that of eurozone's by 0.4% (EC, 2011). The euro can also significantly boost trade between eurozone members. A study conducted in 2008 found that euro adoption boosts trade by up to 10% within the eurozone (Berger, Nitsch, 2008). This means there is an increased incentive for countries that are in the EMU (European Monetary Union) but not in the eurozone to adopt the euro as their currency.

1.1.3 States and territories outside of the eurozone who have adopted the euro

Four states in the EU, which are technically not a part of the eurozone may also use the euro as their currency. These states (Andorra, Monaco, San Marino and the Vatican) are considered microstates and have relatively small economies compared to the rest of EU. The ECB has special agreements with each of these states under which, the microstates have the right to use the euro as their currency and issue a small number of euro coins. There are also two territories in Europe who are not a part of the EU but use the euro as their currency (Montenegro and the Serbian province of Kosovo). These territories have no capability to issue the currency (Lehmann, 2019).

1.2 Euro in Estonia and reasons for its adoption

The Estonian kroon joined the European exchange rate mechanism (ERM II) on the 28th of June 2004. With this step the Estonian government and the ECB fixed the euro-kroon exchange rate and gave it a fixed rate of 15.64 Kroons to 1 euro (ECB, 2022). On the 1st of January 2011 Estonia adopted the euro as its official currency and since the 14th of January 2011 all financial transactions were completed using the euro (Estonian Bank, 2022). The Estonian Kroon seized to exist as a financial instrument. The agreed fixed rate still applies to old bank notes of the Estonian Kroon when changing them for euros.

Estonia adopted the euro at a time when the European economy was still recovering from the 2008 financial crash. The global economy witnessed the biggest crash of the 21st century, but the eurozone had to deal with another issue on top of it – the European sovereign debt crisis. This crisis saw eurozone countries with large sovereign debt such as Greece unable to fulfil their debt obligations (Pagoulatos, 2020). During the period of 2009-2012 the euro saw increased volatility and depreciation. Although studies found that the ECB and the EU reacted competently to the crisis and lowered the volatility of the euro (Ehrmann, et 2014), the sovereign debt crisis resulted in large scale demonstrations against the euro and the EU (Roose,et 2017). These demonstrations called for an end to the austerity measures imposed by the national governments with accordance to the EU. Despite these events taking place Estonia still opted to join the eurozone in the middle of the European sovereign debt crisis in 2011.

After joining the EU in 2004 Estonia enjoyed noticeable economic growth until the 2008 crash averaging around 8.4% rise in GDP per year (Eurostat, 2019). A sizeable amount of this growth came from the housing boom. In addition to this Estonia heavily relied on foreign investments and exports meant that the financial crash was even more severe. The 2008 crash saw Estonia experience increased private and external debt (Darvas 2011). From 2008-2011 the GDP of Estonia fell on average 5.9% (Eurostat 2019). This economic downturn also had a negative effect on the kroon's volatility. Companies and individuals who were indebted in a foreign currency had to pay their debts with the weak and volatile kroon. The euro also saw volatility during this period, but it had stronger economies such as Germany and France backing it. This made the euro less likely to depreciate and fluctuate. Therefore, the euro was the better option for paying back foreign debt.

Most EU states outside of the eurozone experienced a strong decline in economic growth, exports and foreign investment during the years of the sovereign debt crisis (Lane, 2012) and Estonia was no exception. Estonia felt this economic shock exceptionally hard, due to the fact its small economy heavily relied on foreign investments and bank loans (Dandashly & Verdun, 2020). This effect was less impactful in eurozone countries because exporters, foreign banks and venture capital firms heavily favour investing in countries with fixed exchange rate currencies due to the stability this system brings (Subacchi, 2015). The notion that a fixed exchange rate currency could boost desperately needed foreign investment is one of the primary reasons why Estonia chose to join the eurozone during the ongoing European sovereign debt crisis.

The last thing to consider when looking at Estonia's currency changeover is political credibility. Since joining the EU in 2004 Estonia has made a commitment to European integration and has pursued close ties with Brussels (Dandashly & Verdun 2020), joining the eurozone was a mature part of this. Backing out after 2 years of successful participation in ERM ii would have been a mature hit towards Estonia's credibility within the EU and might have been an obstacle in the future when reapplying for eurozone membership.

The only institutional obstacle on Estonia's path to the eurozone was its constitution, which had clear framework for the national currency. The 1992 constitution had an amendment that stated the Bank of Estonia is the sole institute that can issue and control the supply of the national currency (Dandashly & Verdun, 2020, §111 of the Estonian Constitution). The constitution remained unchanged because of fears that the opposition would veto it. The government turned to the Constitutional review chamber which determined that Estonia may join the eurozone because it had agreed to the monetary policy terms set by the EU when joining (TLÜ, 2022).

To sum up Estonia had seen rapid economic growth in real GDP during the years of 2004-2008 (Eurostat, 2022) and it had gone through great lengths in order to join the eurozone. Even after taking a mature hit to its economy during the financial crisis of 2008, mostly in the export sector and foreign investment, Estonia chose to go through with euro adoption. This is due to the fact that the benefits of joining the eurozone far outweighed to cons. It was theorized that joining the eurozone would bring with it much needed foreign investment and revitalize Estonia's struggling export sector. Estonia is constitutionally bound to a balanced budget (§116 of the Estonian Constitution) and its government's prudent fiscal policies over the years meant that Estonia had room to manoeuvre towards a balanced budget, even during a time of crisis (Staehr 2015). A balanced budget and relatively low levels of debt meant that the European sovereign debt crisis would have a negligible effect on the country after joining the eurozone. It is also important to note that Estonia had already bounced back from the financial crisis by the time of euro adoption in 2011. The real GDP growth was 2.3% in 2010 and 7.9% by the end of the year in 2011 (Eurostat, 2022).

1.3 Euroscepticism in Estonia

The majority of the Eurosceptic groups and individuals in Estonia are classified as soft Eurosceptics (Veebel, 2017). Unlike hardliners such as the Brexit Party of UK most of the Estonian Eurosceptics are not against the idea of EU membership, but rather advocate for a less centralized EU and greater member state sovereignty within the union. Since 2011 the Estonian government has regularly conducted surveys to measure the public sentiment towards EU membership, which have generally been positive, with a peak of 84% in 2014 (Veebel, 2017). A Eurobarometer study conducted in the spring of 2021 found that more than 63% of Estonians lean towards trusting the EU. This may sound low, but it is also important to note that trust in the national government of Estonia was even lower, with only 49% of respondents saying they had trust in the national government (Eurobarometer, spring 2021).

During the last decade there has been a surge of Euroscepticism within the EU and the eurozone. This is mostly due to factors that question the credibility and function of the EU, such as the

European sovereign debt crisis, the Syrian refugee crisis, Brexit and the ongoing Ukraine crisis. In 2016 trust in EU unionwide was only 36% and 44% in Estonia (Eurobarometer, 2016). Estonia has always been above the EU average when it comes to supporting EU membership and trusting the EU, but the downward trend of the last decade has also affected Estonia. However, this trend has not affected Estonia's view towards the monetary union (eurozone, ERM ii) and free movement of people as core the principles of the EU. In 2021 95% of Estonians were in favour of free movement of people and 89% were in favour of the monetary union (Eurobarometer, spring 2021).

1.3.1 Factors that have driven up Euroscepticism in Estonia

Estonia saw increased Euroscepticism during the European sovereign debt crisis. In 2011, fresh off euro adoption, Estonia witnessed one of the lowest ratings for trust in the EU at 34% (Eurobarometer, autumn 2011). This can be explained by the fact that many in Estonia felt that they were suffering because they had to pay off other nations' debts. The criticism was mainly directed at Iceland and the Mediterranean eurozone countries, especially Greece (Veebel, 2017). Estonia had to some degree recovered from the 2008 financial crisis, but now found itself financing eurozone debt.
The Syrian refugee crisis that started in March 2011 has seen 6.6 million Syrians flee Syria and another 6.7 million internally displaced. Most (92%) of these refugees escaped to neighbouring countries such as Turkey and Lebanon (UNHCR, 2021). However, some of these refugees found their way into Europe. The EU at the time was very divided on how to react to the crisis and many criticized the open borders policy of western Europe. The 2015 Eurobarometer survey shows that 40% Estonians tend to trust and 46% tend to mistrust the EU. When asked what the most important issue facing the EU was 54% of Estonians said immigration as opposed to the 38% EU average (Eurobarometer, 2015). Euroscepticism that stemmed from this issue was most prominent among nationalists and Russian speakers. For the most part the Russian-speaking population of Estonia has a stronger anti-immigrant stance than the Estonian-speaking population (Veebel, 2017).

A lot of Euroscepticism in Estonia rises from certain EU-related and funded public projects and their effect on the local populous. These projects are usually mutually funded by the member state and the EU, the most prominent of these in Estonia is Rail Baltica. Rail Baltica is a trans-Baltic railway system proposed by the EU that would cost ca 6 billion euros of which up to 85% is covered by the EU (Rail Baltic Estonia 2022). Many Estonians including prominent politicians, opinion leaders, economists and cultural leaders have all denounced the project (Veebel, 2017). The project would take up a lot of land that would be expropriated against the will of the owners (Rail Baltic Estonia 2022) and many question its effect on the local economy. Local experts have criticized the scale of the project because of the relatively small population of the Baltics, saying that the proposed railway is going to be built on the assumptions of illogical passenger volumes and cargo shipments.

1.3.2 The Estonian political parties most critical of the EU

Currently there is no mature mainstream political party or organization in Estonia that actively advocates for dismantling or leaving the EU. There are however major political parties that have

soft Eurosceptic stances. The stances vary, but most issues are on the topic of national sovereignty and opposition to a federalized EU. The most prominent of these are the right-wing EKRE (Conservative People's Party of Estonia) and the center KE (Center party). Support for these parties and their Eurosceptic stances can to a certain degree be explained by demographic background, socio-economic situation and national identity. EKRE and KE differ a lot in their political stances on economics and social policy, but their voting base is strikingly similar. These parties enjoy widespread support from voters who are conservative, distrustful of the government and Eurosceptic (Trumm, 2018).

1.4 Individuals most prone to Euroscepticism

Modern Euroscepticism (post 2004 Lisbon treaty), for the most part, stems from animosity towards the political institutions of the EU and increased EU integration (Wessels, 2007). Historically Euroscepticism was also directed at the Monetary Union and the common EU market, where some governments felt the costs of the common market were greater than the benefits. This Eurosceptic sentiment became a minority stance in the 1990s, during which the EU (and its predecessors) shifted from a primarily economic union into a political one. The "anti-political Union" stance has remained the prominent Eurosceptic stance, even during times when the monetary Union has gone through crises. This was the case during the 2008 financial crisis and the following European sovereign debt crisis (Serrichio et, 2013).

Data has also shown that demographic and socio-economic factors play a significant role in attitudes towards the EU and EU integration (Serrichio et, 2013). The primary factors that influence individual Euroscepticism are gender, age, education and national identity (Allen, 2017). Support for Eurosceptic ideas and stances is greater within individuals who are employed in insecure or low-paid positions and have a pessimistic view for the economy (Arzheimer, 2009). A 2006 study, conducted in Estonia right after Estonia joined the EU, found that the most Eurosceptical individuals tended to be middle aged people while older people had a more favourable stance towards the EU. Furthermore, the individual's personal financial situation did not produce a linear relationship, but people with above average pay were most optimistic towards EU membership (Szczerbiak, 2006).

Individual Euroscepticism and animosity towards EU integration may be highly situational and explained through external geopolitical events and personal beliefs. Events such as European Sovereign debt crisis and the Syrian refugee crisis have been followed by a spike in Euroscepticism (Trumm, 2018). This means that individual's attitude towards the EU is not always constant and support for the Union may be influenced by external factors. Another aspect to look at is a strong national identity. Individuals who harbour strong nationalistic beliefs and do not perceive themselves as EU citizens are more likely to be Eurosceptical (Serrichio et, 2013). This phenomenon can best be observed in the recent Brexit referendum, where the primary reason for leaving the EU was not the economic or monetary union, but the increasing federalization of the EU (Bell, 2020). This trend of federalization on EU level and further enforcement of the supremacy of EU law (§17, Lisbon treaty) means that Euroscepticism will most likely increase among nationalistic individuals.

1.4.1 Individual perception of euro adoption

There are several characteristics that can explain individual sentiment towards euro adoption. A study conducted in the Czech Republic found that people who see a federalized Europe as a protector of "European values" such as equality, democracy, justice, rule of law and cooperation tend to welcome the euro (Čábelková et, 2015). This also means that individuals who perceive their local government as more incompetent and corrupt will more likely be in favour of euro adoption. Another thing to consider is national identity and left-wing politics. Individuals who perceive themselves EU citizens before member state citizens tend to welcome the euro (Kerem et, 2013). Individuals who are left-wing or lean to the left also tend to favour euro adoption, as they see European integration as positive force for the local economy (Čábelková et, 2015).

Individuals may also associate the member state currency with freedom and independence. Through time this can build up a strong attachment to the currency. This is especially the case for former Soviet and Eastern Bloc countries where the national currency is seen as a symbol of independence and sovereignty. In Estonia it was found that the association between freedom and the Estonian kroon had a significant impact on the perception of the euro at the time of its adoption (Kerem et, 2013). Lastly, individuals judge the euro based on their own experience, but also on available information (Otrachshenko et, 2016). This means adequate information about the currency should be easily accessible and available to ensure a better individual assessment.

1.5 Concerns for the euro and euro-related inflation

Since its adoption 1999 there has been a general belief among new eurozone populations that the changeover to euro drastically increases prices (ECB, 2002). In a study conducted in 2004, 95% of respondents felt that changeover to the euro has supported rising prices in household goods. These concerns are mostly unfounded since there is little to no statistical evidence to support the claim that the euro brings with it widespread price hikes (Ehrmann, 2011). On the other hand, euro changeover related inflation was detected in specific sectors and business models in Estonia (Meriküll & Rõõm, 2015).

The primary reason why people detect changeover related inflation is that consumers are not able to process all the available information, but instead only focus on certain pieces, this phenomenon is called 'rational inattention'. This means decision making when buying goods or services becomes increasingly more difficult because people have a hard time grasping the rampant change. For that reason, consumers generally rely on past experiences and familiarity instead of exact calculations (Meriküll & Rõõm 2015). Therefore, consumers are unaware of the actual price and cannot correctly convert it into the old currency.

Another factor to consider is consumer conversion inaccuracy. Eurozone countries where consumers experienced greater conversion inaccuracy initially showed a lower level of mismatch and therefore lower criticism of price inflation (Ehrmann, 2011). To combat conversion inaccuracy

and initial price gouging Estonia enforced retailers to display prices in both euros and kroons for 6 months after the euro changeover (Euroveeb, 2011). It is also important to note that the conversion rate matters greatly when looking at conversion inaccuracy. Countries with simple conversion rate (lower than 100 to 1 eur) experienced lower inflation. In contrast countries with high conversion rates saw increased inflation due to price inaccuracy. The Estonian kroon had a conversion rate of 1 eur 15.64 kr and was therefore considered a complex rate, which in theory would see less changeover related inflation. Conversion inaccuracy is particularly bad for low-priced everyday items and was hence observed more in food and clothing retail (Ehrmann, 2011).

Euro changeover related inflation may also come from hidden costs that are often sectoral and temporary. Companies can incur extra costs from accounting, price conversion, labels and advertising. This problem is foremost apparent in physical retail (not online), where owners have to spend money to relabel old prices, remake ads and rework info technology. Retailers may offset this loss in revenue by raising prices or rounding up prices to so called attractive prices that end with 0,5, 9 or zero (Meriküll & Rõõm, 2015).

While most retailers approach currency changeover related pricing with caution, there is also an incentive to profit from the temporary public ignorance. This is especially apparent in countries where the euro has more value than the old currency. Since the new prices tend to appear lower because of their value there is an incentive to raise them (Meriküll & Rõõm, 2015). On the other hand, currency changeovers may pressure retailers to keep prices low, because of elevated consumer awareness (Eife, 2006). This practice is usually implemented by large retailers who have the funds and capacity to keep prices artificially low. There is also incentive for bigger chains and online stores to uphold their public image and not become a scapegoat for rising prices. This was the case for Estonia, where it was found that bigger stores and chain markets have experienced lower levels of inflation (Meriküll & Rõõm, 2015).

Last thing to consider is the public perception of a constant rate when converting euros to the old national currency. As mentioned before Estonia had a central rate of 15.64 krs to eur and dual prices had to be displayed for 6 months after euro adoption (Euroveeb, 2011). This meant that consumers still converted prices to the constant kroon rate even months after euro adoption. Therefore, a lot of the consumers associated new prices with euro adoption and did not take inflation into consideration. There was only one major fiscal change from the Estonian government that affected prices at the time. In January 2011 right at the time of euro adoption the Estonian government raised taxes on alcohol and tobacco, which was in some cases perceived as euro related inflation (Meriküll & Rõõm, 2015).

2. Methodology and data

This chapter explains the methodology and how it is implemented in this research. This chapter also covers the methods used for gathering data and gives a brief overview of the sample data descriptive statistics.

2.1 Methodology

The method used in this study is Multiple Linear Regression (MLR). MLR is a statistical technique that illustrates the linear relationship between a dependent variable and 2 or more independent variables (Fabozzi et 2014). In simpler terms regression measures if certain independent variables have a connection to the dependent variable. The primary assumption when conducting a regression analysis is that there is a linear relationship between the dependent variable and independent variables. It is also important that the dependent variable and the independent variables are not highly correlated (Fabozzi et 2014).
MLR formula:
$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon$
y = dependent variable
β_0 = constant intercept
x_1 = independent variable 1
x_2 = independent variable 2
x_3 = independent variable 3
x_n = number corresponding to the independent variable
$\beta_1, \beta_2 \beta_3$ = regression coefficients corresponding to each independent variable
ε = model error

Regression functions as a way to test the level of influence independent variables have on the dependent variable. R^2 (coefficient of determination) is a measurement of how much variation in the dependent variable can be explained through the independent variables (Fabozzi et 2014). In simpler terms the value of R^2 is the percentage of influence that independent variables have on the dependent variable. It is important to note that R^2 is a descriptive statistic for the whole model and therefore cannot be used to determine how much each independent variable influences the dependent variable.

P-value is used to determine if the observed linear relationship in the sample also corresponds to the whole population and whether or not the independent variable is statistically significant at a given confidence level (90% for this study). P-value has an inverse relationship with significance which means that low p-values (0.1 and smaller) indicate that the independent variable is statistically significant. The null hypothesis (H_0) is accepted or rejected based on the p-value at the given confidence level (Fabozzi et 2014).

This study was conducted by using Excel spreadsheets for data processing and Gretl for regression and correlation models. The dependent variable in this study is the individual opinion of the euro ("Opinion on the euro as the national currency of Estonia). This dependent variable is measured

on linear scale of 1-10. The independent variables in this study are an array of different demographic and socio-economic factors. There are also 2 combined independent variables (Economic knowledge, Trust in government). Economic knowledge (finlit in tables) is derived from 3 different variables. These variables (Understanding of money supply, Understanding of the ECB, Understating of interest rates) all have a value on a scale of 1-10. All 3 values are then added up and averaged to get the final value for Economic knowledge (finlit). This concept is also used for Trust in government (trustgov in tables). The 3 different variables (Perception of government transparency, Perception of righteous tax money allocation, Perception of government intentions) that make up Trust in government (trustgov) also have a value on a scale of 1-10 and are averaged to a single independent variable.

2.2 Sample data

This section includes the data gathered from questionnaires, descriptive statistics and the methods used for gathering data.
Appendix 1 (see appendix 1) shows the array of independent variables and the dependent variable. The total number of independent variables was 22 although through trial and error some independent variables were left out of the final regression analysis due to their persistent statistical insignificance and multicollinearity. Some of the omitted variables were also merged to achieve a compact variable such as “finlit” or “trustgov”. The table (see appendix 1) also includes the questions used for the corresponding variables. The final sample which consisted of 157 participants (n = 157) was gathered using two non-probability sampling methods (convenience and snowball sampling). The population for the study consisted of all Estonian citizens who were older than 16. The sample data was gathered between the 4th and 27th of May 2022.

The final sample was diverse in terms of demographic and socio-economic factors. The mean age of respondents was 36.22 with a standard deviation of 12.33 and ranged from 16 to 68 years old (see Table 1). The sample also produced close to an ideal gender makeup of 46.5% women to 53.5% men. Majority of the respondents lived in urban areas (68.2%), which is very similar to the actual proportion of Estonia’s urban population of 69% (The Worlds Bank, 2020). The level of income was slightly skewed towards the upper quartile where 60.8% of respondents earned more than the average monthly salary of 1756 euros (Statistikaamet, December 2021). The education level of the respondents was also skewed upwards, 68.4% of the respondents had some type of higher education (Bachelor’s, Master’s or Doctoral degree).

Table 1 (see Table 1 below) shows the descriptive statistics of age, the dependent variable (Euro_op) and four independent variables that were measured on a scale of 1-10. All three variables that measure perception of the euro and EU have a very high level of skewness (less than -1 or bigger than 1). This means that most of the responses were either overwhelmingly negative or overwhelmingly positive. This was not the case for knowledge of economic principles (finlit) and general trust in the government (trustgov). Both economic knowledge and trust in government had a moderate mean and median with a low level of skewness, which indicates a normal level of distribution.

Table 1: Descriptive statistics

	EUR_op	*EURO_threat*	*EU_threat*	*fin.lit*	*trustgov*	*age*
Mean	8.11	2.63	3.09	5.81	5.84	36.22
Standard Error	0.19	0.20	0.22	0.20	0.18	0.98
Median	9.00	1.00	2.00	6.00	6.00	33.00
Standard Dev	2.37	2.50	2.80	2.50	2.21	12.33
Sample Variance	5.62	6.27	7.85	6.27	4.90	151.94
Skewness	-1.40	1.64	1.34	-0.27	-0.15	0.69
Range			9			52
Minimum			1			16
Maximum			10			68
Count			157			

Source: author

2.3 Independent variable correlation matrix

The correlation matrix for independent variables (see appendix 2) only produced one slight multicollinearity. This was between the perceived threat form euro and general trust in government with a coefficient -0.56. The rest of the independent variables only show a low to medium level of correlation (0.0 – 0.5). Since the perceived threat of euro and trust in government are both key factors none of them were be removed from the final regression analysis. It is also important to note that the -0.56 coefficient is considered barely strong when considering that these variables are closely related.

3. Empirical results

3.1 Multiple linear regression analysis

The final regression model (see table 2) consists of 9 variables, 6 of which are socioeconomic or demographic and 3 cover individual assessment. A total of 13 independent variables were removed from the final regression model due statistical insignificance and multicollinearity. These included all education levels, rent, unemployment and all 4 levels on income. The language independent variable was removed due to a skewed sample, where only 2 out 157 respondents said Estonian was not their first language. Furthermore, the perceived threat of EU and the perceived threat of the euro were very highly correlated, therefore only one could be used. The perceived threat of euro to national sovereignty (EURO_threat) was chosen for the final regression model.

The table below (see table 2), shows the regression statistics. The regression statistics indicate to what extent the dependent variable variance could be explained by the independent variables. This is displayed through adjusted R-squared, which is 0.654 in this model. This means 65.4% of the variance of individual opinion on euro could be explained by the chosen independent variables.

Table 2. Regression statistics

Mean dependent var	8.11	S.D. dependent var	2.37
Sum squared residue	285.57	S.E. of regression	1.39
R-squared	0.67	Adjusted R-squared	0.65
F (9, 147)	33.84	P-value(F)	0.00
Log-likelihood	-269.73	Akaike criterion	559.47
Schwarz criterion	590.03	Hannan-Quinn	571.88

Source: Author

The table below (see table 3) shows the results of the regression analysis. A total of 5 out of 9 independent variables proved to be statistically significant ($p<0.1$). Out of these two had a negative relationship and three had a positive relationship with the dependent variable. Urban living had the strongest coefficient of 0.93. This means that living in an urban area has a positive effect on

the perception of euro and increases it roughly by one (scale of 1-10). The two negative coefficients of -0.57 for public sector employment and -0.5 for perceived threat of the euro show a negative relationship. This means opinion on the euro tends to decrease by 0.57 points for public sector employees and 0.5 points for people who perceive the euro as a threat to Estonian national sovereignty. Age is also shown to matter with a coefficient of 0.05. This means for every year a person gets older the perception of euro tends to rise by a factor of 0.05 (0.5 for a decade). General trust in the government has a coefficient of 0.33 meaning, the perception of euro goes up by 0.33 for every 1 point (1-10) it does on trusting the government. Lastly there were four independent variables that were not statistically significant. These were knowledge of financial literature, gender, healthcare access and studying.

Table 3: Multiple Linear Regression, observations 1-157, dependent variable: EUR_op

	coefficient	St dev error	t-ratio	p-value	
const	4.71	0.95	4.98	1.74E-06	***
trustgov	0.33	0.06	5.20	6.55E-07	***
age	0.05	0.01	4.20	4.69E-05	***
urban	0.93	0.26	3.52	0.0006	***
healthcare_ac	0.11	0.08	1.43	0.1557	
public_sec	-0.57	0.28	-2.02	0.0453	**
finlit	-0.05	0.05	-1.01	0.3162	
gender	-0.12	0.24	-0.52	0.6068	
EURO_threat	-0.50	0.06	-9.05	8.12E-16	***
study	0.84	0.54	1.56	0.1213	

Source: Author

Note: Excluding the constant, p-value was highest for variable 5 (gender), confidence level of 90% was used, p-values below 0.1 are marked with an asterisk (*).

The table below (see table 4) shows how different income levels affect the perception of euro. The levels of income were chosen based on the average monthly salary in Estonia, which was 1756 in the last quarter of 2021 (Statistikaamet, December 2021). A total of four income brackets were used low (below 1000), mid (1000-1756), high-mid (1756-2500) and high (over 2500). The table below (see table 4) shows that all 4 levels of income used proved to statistically insignificant.

Table 4: Income level regression, observations from 1 to 157, dependent variable: EUR_op

variable	coefficient	std. error	p-value	coefficient	Std. error	p-value

const	4.71	0.95	1.74E-06	***	4.69	0.96	2.99E-06	***
trustgov	0.33	0.06	6.55E-07	***	0.34	0.06	4.47E-07	***
age	0.05	0.01	4.69E-05	***	0.05	0.01	3.47E-05	***
urban	0.93	0.26	0.0006	***	0.95	0.26	0.0005	***
heathcare_ac	0.11	0.08	0.1557		0.12	0.08	0.142	
public_sec	-0.57	0.28	0.0453	**	-0.62	0.29	0.0369	**
finlit	-0.05	0.05	0.3162		-0.02	0.05	0.7413	
gender	-0.12	0.24	0.6068		-0.07	0.25	0.7784	
EURO_threat	-0.50	0.06	8.12E-16	***	-0.51	0.06	8.25E-16	***
study	0.84	0.54	0.1213		0.60	0.60	0.3191	
inc_mid					-0.09	0.41	0.8329	
inc_highmid					-0.42	0.41	0.3045	
inc_high					-0.56	0.43	0.1986	

Source: author

Notes: p-values below 0.1 are marked with an asterisk (*), confidence level of 90% was used, the lowest income level was omitted (n-1)

Table 5 (see table 5 below) shows how different education levels affect the perception of euro. Education was divided into a total of three brackets. The lowest bracket consisted of primary education, secondary education and vocational education. The secondary bracket included Bachelor's degree and nothing else. The final bracket consisted of a Master's and doctoral degrees. All education levels proved to be consistently statistically insignificant when looking at the perception of the euro.

Table 5: education regression, observations from 1 to 157, dependent variable: EUR_op

variable	**coefficient**	**std. error**	**p-value**		**coefficient**	**std. error**	**p-value**	
const	4.71	0.95	1.74E-06	***	4.68	0.95	2.16E-06	***
trustgov	0.33	0.06	6.55E-07	***	0.33	0.06	1.33E-06	***
age	0.05	0.01	4.69E-05	***	0.05	0.01	0.0001	***
urban	0.93	0.26	0.0006	***	0.94	0.27	0.0005	***
healthcare access	0.11	0.08	0.1557		0.11	0.08	0.1824	
public_sec	-0.57	0.28	0.0453	**	-0.57	0.29	0.0559	*
finlit	-0.05	0.05	0.3162		-0.05	0.05	0.2972	
gender	-0.12	0.24	0.6068		-0.10	0.25	0.6737	
EURO threat	-0.50	0.06	8.12E-16	***	-0.50	0.06	3.89E-15	***
study	0.84	0.54	0.1213		0.93	0.55	9.27E-02	*
ed_BA					0.33	0.31	0.2947	
ed_MA_Doc					0.08	0.36	0.8303	

Source: Author

Notes: p-values below 0.1 are marked with an asterisk (*), confidence level of 90% was used, the lowest level of education was omitted (n-1)

3.2 Discussion of the results and the null hypothesis

The data shows that 5 out of 9 independent variables used were statistically significant at a 90% confidence level. Some of the socioeconomic and demographic variables correspond with previous research, but not all. Education and level of income were the two factors that have been shown to matter in the past when looking at perception of the euro and the EU (Čábelková et, 2015). However, this was not the case for this model. None of the education or income levels produced a statistically significant results in the regression model. The statistical insignificance persisted even after merging the lower and upper quartiles. Furthermore, age is shown as having a positive coefficient, which indicates that the perception of the euro improves as people get older. This finding is in stark contrast to previous research which suggests that age has a negative effect on the perception of the euro (Allen, 2017). There were two other socioeconomic variables that produced a statistically significant result. These were urban living and public sector employment. Urban living had the greatest statistical significance of all socioeconomic variables and a p-value below 0.01. This means that urban living is statistically important even at a 99% confidence level. This finding could be to some extent be explained by the fact that In Estonia there is a positive relationship between Eurosceptic party voters and rural areas (Veebel, 2017). Surprisingly, employment in the public sector had a negative relationship with perception of the euro. The coefficient for public sector employment was -0.57, which means public sector employees perceive the euro -0.57 points lower on average. This may be explained to a certain degree by the fact that the euro adoption was heavily influenced by the struggling private sector (Meriküll & Rõõm 2015). This may be the reason private sector employees and employers may look at the euro in a favourable light, but further research is needed to definitively answer what causes this relationship.

Trust in government was one of two independent variables, which were not socioeconomic or demographic, but produced a statistically significant result. Both of these independent variables had a p-value lower of 0.01. This means that we can say with 99% confidence level that trust in the government matters when it comes to perception of the euro. This find is also backed by previous research that shows people who mistrust the government also tend to be more Eurosceptic (Trumm, 2018). Trust in government was also statistically significant in regression models for perception of the EU with a negative coefficient. The perceived threat of the euro also produced a statistically significant result with a coefficient of -0.5. This means people who view the euro as a threat to national sovereignty have a negative outlook on the currency. This result is also backed by previous research that shows animosity towards the euro may stem from fears over euro-related loss of sovereignty (Veebel, 2017).

Finally, four independent variables included in the model did not produce a statistically significant result. These were gender, studying, healthcare access and financial literature. All of these produced a statistically insignificant results but were included in the final model because of the null hypothesis and the fact that they have been shown to matter in the past. People who actively take part in academic studies have shown to be more favourable towards the EU and European integration, but this factor proved to be statistically insignificant in this model. Healthcare access and gender also produced a low level of significance, despite past research indicating otherwise (Čábelková et, 2015). The most important of these is financial literature, which was the basis of

the main null hypothesis. The p-value shown in the regression analysis for financial literature was 0.3162 which means it did not reach the threshold of 0.1 needed for a 90% confidence level. Therefore, original hypothesis of this paper remains. Knowledge of economic concepts is not statistically significant when it comes to the perception of the euro. The lowest confidence level financial literature would be statistically significant is 68%.

CONCLUSION

Although Estonia has had the euro as their national currency for 11 years now, there are still individuals who view it in a bad light. Estonia is also an interesting case when it comes to public perception of the EU and its role in European integration. Past research has shown that Euroscepticism and perception of the euro are not always the same in Estonia. Most Estonians view the monetary union in a favourable light and see it as a benefit (Eurobarometer, 2021), despite this there is still some animosity towards the euro. The aim of this thesis was to find out what influences individual perception of the euro in Estonia 11 years after its adoption. The main hypothesis was that individual perception of the euro does not stem from financial and economic knowledge.

There were a total of 9 independent variables taken into account when conducting the Multiple linear regression analysis for this paper. Some independent variables showed a similar result to previously conducted Euroscepticism research, but not all. Urban living produced positive relationship when looking at the perception of the euro. This has been the case for similar studies about Euroscepticism. However, this was not the case for the level of education and level of income, which proved to not be statistically significant when it comes to the perception of euro. Furthermore, public sector employment proved to important when it comes to the perception of the euro, but this finding needs further research to determine what causes it.

General trust in the government showed one of the highest results for statistical significance. It is important to note that this independent variable was not specific to the EU or the national government. This means that people who already view the government in a bad light tend to do the same for the euro. Additionally, individual's knowledge of economics related to banking and the euro did not produce a statistically significant result. Therefore, we can say that the perception of the euro is not influenced by the individual's knowledge of economics. Furthermore, since some of the independent variables that have been shown to matter when looking at Euroscepticism, such as education and income, were not statistically significant here, we can confidently say that Euroscepticism and the perception of euro are not one and the same in Estonia. This statement is also backed by the fact that gender and studying did not produce a statistically significant results, but these factors have been shown to matter in past studies about Euroscepticism.

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APPENDICES

Appendix 1 (Questions in the questionnaire and their corresponding variable)

Question	Code
What is your opinion of the euro as the national currency of Estonia? *	**EUR_op**
Do you agree with the statement that the euro is a threat to Estonian national sovereignty?	EURO_threat
Do you agree with the statement that the European Union is a threat to Estonian national sovereignty?	EU_threat
How old are you?	age
Gender	gender
Do you live in an urban or a rural area?	urban
Is Estonian your first language?	language
Education	ed_school
Education	ed_BA
Education	ed_MA_Doc
Employment	unemployed
Employment	public_sec
How good is your access to healthcare?	healthcare
Are you employed or studying?	study
Do you pay rent for your place of residence?	pay_rent
Income	inc_low
Income	inc_mid
Income	inc_highmid
Income	inc_high
How well do you understand how the European Central Bank operates?	fin.lit_CB
How well do you understand the concept of macroeconomics and money supply?	fin.lit_Macro
How well do you understand the concept of central bank interest rates?	fin.lit_Rates
	fin.lit
Do you agree with the statement that the government has its citizens' best interest in mind?	govt.inten
Do you agree with the statement that the government is transparent to its citizens? *	govt.transp
Do you agree with the statement that the government allocates tax money fairly?	govt.fair.tax
	trustgov

Appendix 2 (correlation matrix of independent variables)

age	gender	urban	healthcare access	public sector	study	trustgov	finlit	euro threat	
1.00	-0.13	-0.36	-0.13	0.47	-0.32	-0.04	-0.11	-0.05	**age**
	1.00	0.16	0.08	-0.29	0.04	-0.10	0.23	0.14	**gender**
		1.00	0.09	-0.32	0.10	0.06	0.19	0.03	**urban**
			1.00	-0.16	0.02	0.33	0.13	-0.21	**healthcare**
				1.00	-0.19	-0.10	-0.30	0.11	**public sec**
					1.00	0.04	-0.03	0.08	**study**
						1.00	0.12	-0.56	**trustgov**
							1.00	-0.09	**finlit**
								1.00	**ET**

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