

**BRATISLAVA INTERNATIONAL SCHOOL OF LIBERAL ARTS**

**The Impact of Eurozone Dynamics on Monetary Policy Goals:  
Comparative Analysis of CNB and NBS**

**BACHELOR THESIS**

**Bratislava, 2024**

**Lukáš Dzíbela**

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**Lukáš Dzíbela**

## **Declaration of Originality**

I hereby declare that this bachelor's thesis is my own work and has not been published in part, or in whole elsewhere. All used literature and other sources are attributed and cited in references.

**In Bratislava, February 20, 2024**

**Lukáš Dzíbela**

Dzíbela: The Impact of Eurozone Dynamics on Monetary Policy Goals

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Author: Lukáš Dzíbela

University: Bratislava International School of Liberal Arts

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Chair of the Defense Committee: prof. PhDr. František Novosád, CSc.

Committee Members: Prof. PhDr. František Novosád, CSc., doc. Samuel Abrahám PhD., Mgr. Dagmar Kusá, PhD., prof. Silvia Miháliková

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## **Abstract**

This research explores the distinction between eurozone membership and independent currency status, focusing on how these factors shape the monetary policy decision-making on objectives, and on the performance of the National Bank of Slovakia (NBS) and the Czech National Bank (CNB). Investigating the impact of the European Central Bank (ECB) regulations on the NBS, compared to the CNB's more independent decision-making, the study reveals the effectiveness of chosen objectives on economic indicators such as growth of GDP, inflation rate, interest rate and effective exchange rate. Utilizing comparative frameworks, this study sheds light on both distinct and similar approaches adopted by these banks. Furthermore, this study provides a historical evolution of these respective banks with their regulatory relationship to the ECB, and evaluates, whether strict ECB regulation is the most effective approach. The homogeneity of a single monetary policy was challenged, as flexibility might suggest more efficiency for better economic outcomes. However, findings have shown that eurozone membership, cooperative approach, and consensus driven decision-making of monetary policy in the case of Slovakia do bring certain benefits to outweigh the independent status of the Czech Republic.

Dzíbela: The Impact of Eurozone Dynamics on Monetary Policy Goals

Názov: Dopad Členstva v Eurozóne na Ciele Monetárnej Politiky: Porovnávacia

Analýza ČNB a NBS

Autor: Lukáš Dzíbela

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Komisia pre obhajobu bakalárskej práce: Prof. PhDr. František Novosád, CSc., doc.

Samuel Abrahám PhD., Mgr. Dagmar Kusá, PhD., prof. Silvia Miháliková

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## **Abstrakt**

V tejto práci sa skúma rozdiel medzi členstvom v eurozóne a stavom nezávislej meny, so zameraním na efektivitu rozhodovacieho procesu pri určovaní cieľov monetárnej politiky Národnej Banky Slovenska (NBS) a Českej Národnej Banky (ČNB). Porovnaním vplyvu regulácii Európskej Centrálnej Banky (ECB) na NBS s viac nezávislým rozhodovacím procesom ČNB, štúdiá odhalí efektívnosť určených cieľov na ekonomické ukazovatele ako sú rast HDP, inflácia, úrok a efektívny menový kurz. Využitie komparatívnych postupov v tejto štúdií objasňuje aj odlišné, aj podobné prístupy, ktoré tieto banky využívajú. Okrem toho táto štúdiá poskytuje historickú evolúciu týchto bánk s regulatívnym vzťahom ku ECB a porovnáva, či prísna regulácia ECB je najefektívnejším prístupom. Homogenita jednotnej menovej politiky bude preskúmaná, keďže flexibilita rozhodovacieho procesu monetárnej politiky sa javí užitočnejšie pre efektívne odzrkadlenie ekonomických ukazovateľov. Avšak, výsledky tejto práce naznačujú, že členstvo v eurozóne prináša Slovensku niekoľko výhod, ktoré potenciálne prevyšujú nezávislý status Českej Republiky.

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## **Abbreviations**

ECB - European Central Bank  
NBS - National Bank of Slovakia  
CNB - Czech National Bank  
NCB - National Central Bank  
CB – Central Bank  
CBI - Central Bank Independence  
GDP - Gross Domestic Product  
FED - Federal Reserve System  
GFC - Global Financial Crisis  
CZK – Czech crown currency  
SKK - Slovak crown currency  
EU - European Union  
EMU - European Monetary Union  
EMI - European Monetary Institute  
NEER - Nominal Effective Exchange Rate  
REER - Real Effective Exchange Rate  
ESCB - European System of Central Banks  
ESFS - European System of Financial Supervision  
ESRB - European Systemic Risk Board

## Introduction

Neighbors, two historically common, almost inseparable countries - the Czech Republic and Slovakia. After the dissolution of Czechoslovakia in December 1992, the central banks of each country at first applied a policy of the previous Czechoslovakian bank, but after several years they chose different paths to follow (CNB, 2024 & NBS, 2024). Several years after the dissolution, the National Bank of Slovakia (NBS) chose to adopt the Euro as its currency, becoming a member of the eurozone by surrendering monetary sovereignty to a supranational entity, the European Central Bank (ECB). The case of the Czech Republic remains different, as to this day, the Czech National Bank (CNB) remains independent, causing the Czech Republic to hold an independent currency status. Decision-making procedures within these two central banks differ, as eurozone members and independent currency countries have different regulations and policy-making processes. This thesis explores the monetary policies of these countries, by examining the strategies of their central banks.

The decision of Slovakia to join the eurozone shows commitment to a cooperation and shared vision of financial integration, compared to the Czech Republic's approach, where a monetary policy currently remains a sign of national independence (CNB, 2024). This thesis aims to analyze the implications of such a decision, examining how eurozone membership shapes the monetary policy perspective of member states, especially in terms of central banking objectives such as the desired level of economic indicators and financial stability. This comparative study of NBS and CNB provides insight through which the impacts of eurozone membership can be evaluated, contributing towards the broader debate over centralization against independent monetary policy control.

As expressed, the eurozone's unified monetary policy, governed by the ECB, has significant implications for its member states. These implications extend beyond interest rate setting, inflation control, and broader economic stability. Slovakia's participation in this monetary union subjects it to the ECB's regulations and policies (NBS, 2024). This setting is contrasted with the Czech Republic's scenario, where the CNB exercises a higher degree of autonomy in its monetary policymaking. This thesis examines these differing approaches, investigating the consequences and effectiveness of each strategy in achieving economic stability and growth.

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The structure of this thesis provides a coherent and comprehensive explanation of the topic. Following this introduction, a section about objectives and methodology should provide more in-depth information about the selected approach. The literature review will take the role of a theoretical framework and background for the following parts. The research will be divided into two parts. The first part focuses on a deeper assessment of the evolution, history, and strategy of both central banks. The influence of ECB regulation on NBS and the independence of CNB will be discussed. The objectives of both central banks will be compared, and external factors will be considered. The second part will focus on data analysis, describing all selected economic indicators and their relevance to this study. Afterward, the collection of data will have its interpretation to conduct conclusions under certain limitations. After both parts, the discussion section will focus on a more normative approach to determine the advantages and disadvantages of eurozone membership.

## **Thesis and Objectives**

This thesis examines a central question: How does Slovakia's eurozone membership, as opposed to the Czech Republic's independent currency status, influence the monetary policy objectives and outcomes of the CNB and NBS?

This research question seeks to understand different central banks' monetary policy strategies and their implications on national economic outcomes. The study will compare their approaches and determine how their alignment or deviation from the ECB's regulations influences their effectiveness in achieving financial stability and economic growth.

Objectives of this study are interconnected; the primary objective is to provide a comprehensive analysis of the monetary policies of the NBS and CNB, placing emphasis on their evolution, goals, processes, and outcomes on economic indicators. The conclusion of the primary objective should determine which approach of monetary policy strategy performs better. The secondary objective is to contribute to the broader discourse on the advantages and disadvantages of eurozone membership, especially in terms of autonomy and economic performance.

The thesis is significant for several reasons, it contributes to the existing body of knowledge on monetary policy strategies and theories with an empirical approach provided by data analysis of two neighboring, but from the perspective of central bank regulatory independence, distinct countries. Furthermore, it offers valuable insights for policymakers and financial analysts about the dynamics of central banking in the context of a unified monetary union against independent monetary control. The findings of this research are expected to provide empirical evidence of the effectiveness of the ECB's regulatory framework compared to the independent one. This approach is particularly relevant in the context of recent debates surrounding the future of the eurozone. The study provides an analysis of trade-offs between different approaches; insights are crucial for understanding the optimal balance between national economic autonomy and the advantage of being a part of a larger economic entity such as the eurozone.

**Hypothesis:**

**H1:** Given the membership of Slovakia in the eurozone, subjecting the National Bank of Slovakia (NBS) to the regulatory oversight and policies of the European Central Bank (ECB), it is hypothesized that the NBS will have different monetary policy objectives from the Czech National Bank (CNB). This hypothesis suggests that the differing affiliations with the eurozone and the ECB influence the prioritization of approaches between the NBS and CNB.

**H2:** From a normative assumption I hypothesize that consensus driven, cooperative monetary policy decision-making provides more long-term price stability and trust, compared to independent decision-making with local currency.

**Thesis:**

Given the membership of Slovakia in the eurozone, subjecting the National Bank of Slovakia (NBS) to the regulatory oversight and policies of the European Central Bank (ECB), it is hypothesized that even though there is less independency of monetary policy by NBS, decision-making procedures enforced by ECB are results of consensus between national representatives of member countries. Such consensus might appear as less independent, compared to CNB's monetary policy, however, cooperative agreement between eurozone countries brings other benefits in the form of shared economic price stability, better cooperation, interdependence, and trust needed for economic activity.

## Literature Review

Writing a research paper about the central bank decision-making procedures in monetary policy requires an understanding of the previous discourses within the theme of monetary policy. It is necessary to describe what monetary policy is, what are responsibilities connected with it and what are the effects of the chosen monetary policy approach on central banks. All chosen sources provide a general theoretical framework that must be understood before diving into the effectiveness of the monetary policy approaches. The literature review contains both a general understanding of the theme, but also important notions such as the global financial crisis that have to be considered.

### Monetary policy and its responsibility

To provide a general definition of monetary policy, Benjamin Friedman (2000) states in his paper that “monetary policy is one of the two principal means (the other being fiscal policy) by which government authorities in a market economy regularly influence the pace and direction of overall economic activity, importantly including not only the level of aggregate output and employment, but also the general rate at which prices rise or fall” (Friedman, 2000, p.1). He further explains that in most financial systems, such as banks, there is a necessity to possess assets that are provided by claims from the central bank to generate deposits and provide lending options. This process comes with an authority that ensures the central bank’s control over these respective assets, and being an authority provides a level of influence over the overall money and credit within the economy. Furthermore, Friedman (2000) states that experience has brought evidence, showing that managing this authority, known as monetary policy, significantly impacts a country’s economic well-being, for better or worse (Friedman, 2000).

Another definition of monetary policy comes directly from the official website of the National Bank of Slovakia, stating that “monetary policy refers to the central bank’s decision that affects the price and availability of money in the economy, these decisions are adjusted to the economic outlook and the pursuit of an inflation target over the medium term” (NBS, 2024, *Monetary Policy Framework*).

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After the monetary policy has been set, Friedman (2000) argues that the major objectives of monetary policy in contemporary times have been mainly emphasized in terms of stability over the country's general price levels. This means that the objective is to prevent two major concerns, inflation, or deflation. Additionally, as the author mentions, maximization of employment promotion and increased output levels are targeted. Friedman (2000) mentions other commonly accepted goals, "Other often accepted goals of monetary policy include maintaining balance in a country's international trade, preserving stability in its financial markets, and fostering increased capital investment so as to enhance its economic growth over time" (Friedman, 2000, p.3).

In terms of monetary policy effectiveness, the author Friedman (2000), argues that outcomes require some process called a "transmission mechanism", by which the purely financial actions, proposed by the central bank, influence the non-financial decisions of households and firms. For Friedman (2000) monetary policy is not only problematic because of the central bank's goal setting conflicting with itself, but also because the various mechanisms, proposed by central bank actions, affect the nonfinancial economy only over a longer time frame, overtime, giving space to "lags". Examples of monetary policy goal's conflicts are also stated, desire to avoid inflation can come into conflict with the desire to boost output and employment (Friedman, 2000).

### **Single variable for monetary policy**

Leeper, Sims, Zha, Hall, and Bernanke (1996) aimed to criticize the need for a single assessment tool that would determine how choices of policymakers influence the economy. The paper concluded a difficulty to find out desired tool, as the decision-making procedures are affected by ongoing events. Ongoing events, such as the needs of the economy or trends can influence the choices of policymakers. Furthermore, understanding of these factors might increase the accuracy of the assessment. The authors argue that choices are not always the same, as they are based on what is currently happening and what the economy needs. For this reason, they propose an approach that would carefully consider the dynamics of such decision-making (Leeper & et. all, 1996).

### **Monetary Policy of the European Central Bank**

Issing, Gaspar, Angeloni and Tristani (2001) published a book covering multiple topics relevant to this study. The book explores the ECB monetary policy strategy and decision-making procedures under a stability-focused approach. Furthermore, additional topics including accountability and transparency are highlighted, as the book concludes that the ECB's decisions are integration and economic stability in Europe. The authors cover theories, evolution and provide empirical thoughts, as they emphasize the responsibility that the ECB bears. Further conclusions have shown that the ECB's role is critical, as the decisions must be made to balance diverse European economic environments to create a unified monetary policy (Issing & et. all, 2001).

Surico (2007) proposes relevant information to support this study, as he states that the ECB goal of price stability is expressed as symmetric annual inflation close to 2%. Additionally, he mentions that while inflation goal is symmetric, reaction in case of interest rates is asymmetric. Furthermore, Surico (2007) provides another conclusion arguing that the increase in growth of (M3) monetary aggregate could be seen as a leading indicator of inflation. It seems that the author highlights the dual role of the ECB, as he states that it both focuses on price stability, but also on employment and economic growth (Surico, 2007).

### **Independence of Slovakian Central Bank**

Dvorsky (2000) measures the degree of both formal and practical central bank independence (CBI) within five transitioning economies of Central and Eastern European: the Czech Republic, Slovakia, Poland, Hungary, and Slovenia. This study finds that the overall degree of legal CBI is high in all analyzed countries, however frequency of change in governing structure does not fully mirror the degree of actual CBI. The author highlights the importance of considering the impact of CBI on disinflation and the combination of both fiscal and monetary policies, as it is crucial for completing all requirements for joining the EU and adopting the Euro. The requirements, as the author states, include central bank independence status and anti-inflationary policies to align with EU inflation criteria (Dvorsky, 2000).

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Bukowski & et. all (2023) argue positively about Slovakia's choice to adopt the Euro currency through joining the eurozone, as it has had a significant positive impact on economic growth in Slovakia. They further highlight that the Euro made a statistically significant effect on GDP fluctuations in Slovakia. The authors conclude that in the case of small, highly open economies with uncompetitive currency, membership in a monetary union is strongly advised (Bukowski & et. all, 2023).

Hlavatý & Zelinka (2003) note that "the currency division of the former Czechoslovakia and the creation of National Bank of Slovakia occurred unexpectedly smoothly and without greater upheavals" (Hlavatý & Zelinka, 2003, p.30).

Kocsmáros & et. all (2019) argue that the introduction of a single currency had three advantages in Slovakia. The most significant advantage was the stability of the financial environment, preventing devaluation of the currency and creating a positive impact on the economy. Another benefit was the solution to the liquidity issues the countries faced following the economic crisis. The last advantage was an increase in competitiveness, attracting thousands of foreign investors to Slovakia (Kocsmáros & et. all, 2019).

### **Effects of Monetary Policy in the Czech Republic and Slovakia**

Fišera & Kotlebová (2020) examine the impacts of the global financial crisis (GFC) on the monetary policies in major central banks, focusing on the ECB and the CNB. The authors state that the ECB adopted measures such as Quantitative Easing (EQ) to address challenges, while CNB adopted a one-sided exchange rate, defended by sterilized foreign exchange interventions. Their study focuses on understanding of the effects these policies have on the banking sectors of countries Slovakia and the Czech Republic, which has both joined the European Union in 2004. Fišera & Kotlebová's (2020) findings suggest that both central banks' policies increased bank lending with more significant results in Slovakia (Fišera & Kotlebová, 2020).

Szomolányi, Lukáčik, & Lukáčiková (2009) analyzed the monetary policy of the National Bank of Slovakia (NBS). They have stated the target interest rate of the NBS standing on average at 5% and claiming that the NBS has a strict tendency to act if interest rates are below the target. The highlight of the paper is that the NBS monetary policy was time consistent. The authors further note that the entrance of the Slovak

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economy to the EMU, will remove its monetary policy and replace it with the European one. Also, they argue that such an act will have positives and negatives. From a negative perspective, they mention stability, if time inconsistent, flexibility, and time consistency problems - free-rider problems (Szomolányi & et. all., 2009).

Černohorská & et. all (2019), note that the main activity of the CNB is to ensure price stability. Furthermore, they state that the CNB was forced to pursue unconventional monetary policy due to the GFC and that the CNB chose to adopt inflation targeting, which goal was not achieved. The authors claim that the “CNB is perceived as one of the most independent central banks, the constitutional dimension of its independence is being confirmed by the case law of the Czech Constitutional Court” (Černohorská & et. all, 2019).

### **Global financial crisis**

Čajka & et. all (2014) argue that in the case of the global financial crisis (GFC), each country performed better than the other one in certain aspects, but there was not a direct winner or loser. The authors state that the situation before the crisis was worse in the case of Slovakia, as the unemployment rate was high, standing at 16.7. Čajka's & et. all (2014) conclusion is that a single European currency did not help Slovakia to overcome the economic crisis in a smoother way than in the case of the Czech Republic. However, the author claims that the Euro might be a useful tool as it has the ability to attract foreign investment. Additionally, the text mentions that anti-crisis measures were different in these respective countries. In the case of the Czech Republic, policy became more business-oriented, while in Slovakia there was more pressure on employment (Čajka & et. all, 2014, p.1).

Zeman (2012) provides another supportive argument that in the case of common currency, there is indeed a possibility for increased trade opportunities and economic growth. Additionally, he claims that common currency reduces transaction costs (Zeman, 2012).

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Čečrdlová (2021) also argues that under comparison of central banks' approaches to the crisis, the Czech National Bank performed better, both in terms of interest rate cuts and in terms of resulting inflation regarding non-standard monetary policy instrument choice. Later in time, the ECB also adopted a non-standard instrument called quantitative easing in 2015. Such a step was undertaken to support the euro area economy by purchasing financial assets (Čečrdlová, 2021).

Bukowski & et. all (2023) claim that Slovakia joined the full economic monetary union at an unfortunate time of financial and fiscal crisis, together with the pandemic crisis, which had some adverse effects on the cost-benefit relation of the euro area membership. As the authors note, Slovakia has managed to gain some measurable positive effects since joining the euro area and the benefits can be seen as outweighing the costs (Bukowski & et. all, 2023).

Kadas (n.m.) states that the expected long-term benefits of joining the eurozone in the case of Slovakia were questioned during GFC, causing the Czech Republic to question the eurozone membership. The author states that while in Slovakia, there is higher GDP growth, in the Czech Republic there is less public debt. Kadas (n.m.) notes that euro currency benefits for Slovakia are blurry, especially due to the short time since the adoption and GFC. He concludes that expected benefits are damaged by the fact that the eurozone is still a work in progress project (Kadas, n.m.).

## **Inflation Targeting**

Mishkin's book *Monetary Policy Strategy* (2007) presents an analysis of the evolution and effectiveness of monetary policy. The book covers basics of monetary policy, highlighting price stability as a key goal of monetary policy, and discusses inflation targeting. The author draws arguments from Monetarist and Keynesian approaches. He provides evolution from the Keynesian approach, emphasizing state intervention and employment, to a focused approach on inflation control and CBI. He further notes that long-term price stability achieved by inflation control is more important than short-term employment gains. Additionally, he seems to dislike political pressure, as it often influences policymaking, causing time inconsistency problems. Mishkin's (2007) book is relevant as it highlights the critical role of central banks, stating that strategy should be shifted into stability, inflation control, and challenges management rather than growth or employment (Mishkin, 2007).

Ješić, Mladenović & Jakšić (2021), present a definition on what is inflation targeting, stating that “inflation targeting represents a monetary policy regime that has been implemented in many countries of different development stages in the last three decades. Its fundamental feature is defining and publicly announcing a numerical goal for the inflation rate” (2021, p.184).

With inflation targeting, another concept of inflation expectations is required to be defined. Vesna (2020) sees inflation expectations as very important tools when it comes to monetary policy and its decisions. He states that in countries that are using inflation targeting, inflation expectations are reflecting predictions of economic agents of movement of inflation rate in both mid and long terms. He further explains that anchored inflation expectations and their movements within the tolerance band are pointing to the effectiveness of the inflation targeting strategy. This notion is especially necessary, as empirical analysis will use inflation expectations to compare the performance of central banks (Vesna, 2020).

### **Monetary Policy Approaches**

Brunnermeier, James and Landau (2016) in the book *The Euro and the Battle of Ideas*, present an analysis of different aspects of Eurozone challenges. This provides historical context and economic theories that have shaped Eurozone policy responses. In this book, rule based, and discretion-based approaches are compared. Book contains several debates covering fiscal and monetary policy, crisis management, and vision for European integration. Furthermore, the authors state how divergent can responses toward economic crises be if historical and cultural contexts are considered. It provides insights into the complexities of European economic policies and the challenges of balancing diverse national interests within a unified monetary system. It explores different economic theories like Keynesian and Monetarist perspectives, with the notion of policy principles focused on price stability and economic growth (Brunnermeier & et. all., 2016).

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*Central Banking in Theory and Practice* by Blinder (1999) offers a comprehensive function of central banking. The book provides theory with practical implications, highlighting the complexity of policymaking, and advocating for a balance between rules and discretion. The author emphasizes appropriate policy instruments selection and the significance of central bank independence, linking it to lower inflation rates and economic stability. He notes that there is a need for central banks to balance objectives and navigate uncertainties in economic models (Blinder, 1999).

Additionally, Blinder (1999) leans toward interest rate targeting rather than monetary aggregate, due to instabilities in money demand functions. The book also discusses the world impacts of these theoretical choices. CBI suggests that it leads to lower inflation without slowing long-term growth. It discusses the challenges and benefits of independent central banks, their reputation, and operational freedom. (Blinder, 1999)

Keith Bain and Peter Howells (2003) wrote a book *Monetary Economics: Policy and its Theoretical Basis* with a focus on various aspects of monetary economics, including the nature and definition of money, the money supply process, the theory and practice of monetary policy, and the role of monetary policy in different economic context such as UK, EU, and USA. The authors provide theoretical perspectives and practical implications highlighting monetary policy and its role in shaping economic outcomes. The book also touches on topics of objectives like price stability and controlling inflation with a touch of Keynesian and Monetarist perspectives which are crucial to understanding monetary policy formulation (Bain & Howells, 2003).

## **Methodology**

The approach used in this study will consist of quantitative data to conduct a comparative analysis of economic indicators performance in the case of the National Bank of Slovakia (NBS), and the Czech National Bank (CNB), over the period of years. Data will be expressed in the form of graphic figures, but for accurate interpretation additional dataset sheet will be used. Economic indicators for the analysis are growth of Gross Domestic Product (GDP), real effective exchange rates, inflation rate, interest rate and inflation expectations 5Y5Y. Data will be supported from reputable sources such as the official European Data website, Eurostat and other economic reports published by either central banks or economic forums. Collected data will be organized, analyzed, and further interpreted to provide conclusions and findings about the performance of these two central banks. Microsoft Excel functions of standard deviation, average and median will be used to provide an outlook of certain trends.

Such data analysis might provide a helpful reflection on outcomes of monetary policy employed by these selected central banks. Findings will highlight impacts of their approaches, trends and patterns that have emerged. This approach is not only beneficial in highlighting the differences and similarities between the two banks' policies but also in understanding the broader economic implications of these policies.

The primary objective of this study is to determine which approach performs better on economic indicators outcomes. Alternatively, this provides a contribution to the secondary objective, broader context of eurozone membership. The monetary policy of NBS is expected to be regulated and constructed by the European Central Bank (ECB) as a single-monetary policy based on consensus of member countries. This study will show the effectiveness of shared monetary policy compared to independent one, through comparison of the impacts ECB regulations creates. Lastly, the research will challenge the notion of whether a uniform policy under the ECB is as effective as a more flexible, country-specific policy. It is important to state the limitations of such a method, as conclusions will be conducted *ceteris paribus*, acknowledging that monetary policy outcomes are not the only factor influencing economic indicators. By keeping other variables constant, the study will focus on isolating the effects of monetary policy decisions made by the NBS and the CNB. Despite this limitation, this approach is still promising, because it creates a link between monetary policy approaches and outcomes of these neighboring countries.

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Additionally, Robert E. Lucas, Jr. (2006) mentions in his econometric policy evaluation critique, that such a model, based only on historical macroeconomic data may not be reliable, because the structural parameters of econometric models (which are assumed to be constant) can change when policies change. Author critique suggests that models need to incorporate such expectations. He proposes focus also on micro foundations which are necessary as they are based on realistic behavior of individuals and business (Robert E. Lucas, Jr., 2006).

Based on Lucas's (2006) critique, he would argue that this methodological approach used in this research might not account for how eurozone membership and the actions of central bank might change the behavior of economic agents in both eurozone and non-eurozone countries. GDP, exchange rate and interest rates can be influence by people's expectations and reactions to policy changes, therefore simply comparing these indicators without considering how expectations and behaviors might shift t in response to policy could lead to inaccurate conclusions about effectiveness of monetary policy within and outside of eurozone. However, for the purpose of interdisciplinary bachelor thesis research such limitation is acceptable, as this research just provides certain groundwork in terms of general overview of mandates, objectives, and evolution of respective central banks with some economic indicators that might be a leading influence for future analysis.

## **I. PART - Comparative Analysis of CNB and NBS**

Before comparing the performance of each central bank, it is essential to provide a general groundwork of how these respective central banks have evolved over time. In this part, the overview of the Eurosystem and central bank formation will be highlighted, with a focus on both eurozone membership, in the case of the National Bank of Slovakia, and the independent status of the Czech National Bank. Current relations between these respective banks will provide a general outlook of their roles and regulation status. Understanding these relations is crucial as there is a difference that must be considered before a comparative analysis of economic indicator performance. This part will additionally describe primary objectives and key instruments of monetary policy, to understand decision-making processes in these central banks.

### **1.1 History and Evolution of ECB**

For the purpose of historical accuracy, the official website of the European Central Bank (2024), provides general evolution that has brought the ECB to its current role. According to the website, the evolution began in June 1988, when the European Council confirmed the creation of the Economic and Monetary Union (EMU). This step provided an economic framework and monetary integration within the European Union (EU), with its goal to create a unitary currency and monetary policy for EU members. Later in 1992, the Maastricht Treaty promoted a common idea of currency in Europe, which set a criterion for joining the EMU and its groundwork. In January 1994, the European Monetary Institute was established as a short-term transitional institution that provided necessary preparations for the creation of Euro currency, central bank cooperation, and monetary policy coordination. The role of this respective institute was transitioned in June 1998 by the establishment of the European Central Bank (ECB) in Frankfurt, Germany, which now conducts a single monetary policy for the euro area. Furthermore, the ECB forms the Eurosystem, which is the monetary authority of the eurozone, consisting of the ECB and national central banks (ECB, 2024).

## **1.2 History and Evolution of NBS**

According to the website National Bank of Slovakia (2024), Slovakia joined the Eurosystem after fulfilling its convergence criteria on the first of January 2009, forming the system of central banking in the euro area within the European System of Central Banks (ESCB). Before that, NBS was the sole monetary policy maker for the Slovak Republic. Its history can be split into two stages, the first being a stage of independent monetary policy in times between 1993-1999, which happened after Czechoslovakia's peaceful split. During this stage, NBS adopted the monetary policy of the previous State Bank of Czechoslovakia. In the period of harmonization with the ECB between 2000-2008, also known as the second stage, NBS endorsed euro adoption in 2003. Following this endorsement, in 2004 Slovakia joined the EU with a commitment towards EMU membership. In the year 2008, Slovakia met the criteria for euro adoption and in the following year 2009, Slovakia has adopted the Euro as its currency. The sole establishment of the National Bank of Slovakia was done by the act proposed by the National Council of Slovak Republic known as the Act. No. 566/1992 Coll. By this act, NBS was established on the first of January 1993 (NBS, 2024).

## **1.3 History and Evolution of CNB**

In the case of the Czech Republic, the official source of the Czech National Bank (2024) website was used to provide its evolution. Like Slovakia, CNB was established after the dissolution of Czechoslovakia, adopting the same monetary policy of the previous state bank of Czechoslovakia. CNB functions as a central bank and financial regulator of the Czech Republic, with a main office in Prague, but with many regional branches. It operates under the Czech constitution and specific laws such as the Act. No. 6/1993 Coll., and it is a legal entity under public law. Over time, the Czech Republic has not adopted the Euro as its currency, but the country is involved in European integration efforts, discussing euro adoption, and providing technical assistance to other central banks. CNB has not evolved into the Eurosystem, but it is integral to both the European System of Central Banks (ESCB) and European System of Financial Supervision (ESFS), working towards the ESCB goals and cooperating with European bodies like the European Systemic Risk Board (CNB, 2024).

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As expressed, both countries at first adopted the same monetary policy of the previous state bank of Czechoslovakia, but as the evolution continued, Slovakia adopted Euro currency with a complete Eurosystem integration, while the Czech Republic remained independent, using national currency Czech koruna, and addressing their own monetary policy autonomously from ECB with only integration into ESCB, ESFS and ESRB.

### **1.4 Influence of ECB Regulations on NBS**

According to the official European Central Bank website (2024), it is stated that since 2014, the ECB has been monitoring the persistence of NCBs, correcting their possible issues. This provides a certain level of trust and stability as the ECB can through this process predict turbulent times and react to shocks without major disruptions. The Eurosystem is a central bank system of the eurozone and a leading authority in both monetary and financial affairs. It relies on shared identity, commitment, involvement, and cooperation of all members to construct efficient methods and structures. Their decision-making process consists of analysis and arguments where a variety of views from member countries are represented (ECB, 2024).

The European Central Bank website (2024) further describes the structure of the European Central Bank. Structure consists of a Governing Council, who take responsibility for ECB and Eurosystem by splitting supervisory responsibilities from monetary policy, adopts guidelines and decisions for both ECB and Eurosystem performance, and sets key interest rates, objectives, reserve supplies, and monetary policy for the eurozone. This council adopts draft decisions by the Supervisory Board that has national representatives of national supervisors. The Executive Board on the other hand, prepares Governing Council meetings, implements monetary policy for the eurozone in accordance with Governing Council guidelines, and manages daily tasks of the ECB with some regulatory powers. President and vice-president of ECB together with all NCBs, governors of EU member states, and all representatives of both euro area and non-euro area countries in the EU contribute to the transitional task of EMI to introduce a single currency in all EU member states (ECB, 2024).

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In this Governing Council, as the National Bank of Slovakia's official website (2024) claims, Slovakia is represented by the governor of NBS, who co-decides on monetary policy in a rotation voting system that divides countries into groups according to the size of economies and financial sectors, together evaluating economic and financial development and making monetary policy decisions (NBS, 2024). From this it is visible that NBS is integrated within the framework of the Eurosystem, adhering to guidelines set by the ECB, to which it is subordinate, aligning its monetary policy with consensus reached among member countries.

### **1.5 Independent status of CNB**

In contrast to NBS, CNB appears to be independent as the country of the Czech Republic possesses its own Czech koruna currency. Absent Eurosystem membership gives CNB the opportunity to conduct and formulate monetary policy autonomously. This autonomy allows CNB to craft policies tailored specifically to the Czech Republic's conditions, unconstrained by regulations that govern the eurozone. Besides autonomous independent status that omits consensus driven approach, which NBS is part of, CNB can hypothetically respond quicker in urgency. As mentioned previously, besides its independent status, CNB is integrated within EU structures like ESCB and ESFS, so to a degree, CNB internationally cooperates and provides technical assistance.

The Czech National Bank (2024) provides structure stating that the Bankboard of CNB consists of the supreme governing body, which has a governor, two deputy governors, and four other members appointed by the president of the Czech Republic. This board meets regularly to make decisions on monetary policy (CNB, 2024).

The authors Černohorská & et. all (2019) claim that the “CNB is perceived as one of the most independent central banks, the constitutional dimension of its independence is being confirmed by the case law of the Czech Constitutional Court” (Černohorská & et. all, 2019).

## 1.6 Objectives, targets, and outcomes

Based on official CNB website (2024), the CNB's primary mandate is to maintain price stability, low and stable inflation, and sustainable economic growth without compromising its independence essential for effective monetary policy. Monetary policy at the CNB targets inflation close to 2%, using interest rate adjustments decided in eight annual Bank Board meetings based on economic forecasts. There is +/-1% acceptance of the inflation rate both ways. This policy supports business activity and living standards by ensuring predictable inflation. In supervisory roles, the CNB oversees various financial sectors like banking, capital markets, insurance, pension funds, and more, enforcing regulations to ensure financial stability and compliance. Another role is to issue banknotes and coins, while managing currency circulation. All these objectives are achieved through interest rates, monetary policy, and macroprudential policy to support CZK. Independence is a key condition for the successful implementation of monetary policy. This high degree of independence relates to a high degree of accountability (CNB, 2024).

ECB website (2024) state that the main objective of the ECB is to be responsible for supervision over national central banks, the cooperative constitution of the Eurosystem, to maintain price stability, safeguarding the value of the Euro, and contributing towards the safety and stability of the banking and financial system within the EU and each member state. ECB uses a range of monetary policy tools to keep prices stable, this supports the economy, people's incomes, and job creation. ECB creates euro banknotes and coins, with updated security features against counterfeiting. Via Eurosystem, they establish a solid global financial stability framework. Additionally, the ECB uses open market operations to steer interest rates, manages the amount of liquidity in the financial system, and signals monetary policy stances. The inflation target is 2% and the ECB uses policy rates to ensure it such as interest rates, deposit facility rates, and marginal lending rates. Other tools such as loans and negative interest rates can influence the economy in a desired way. In July 2021 the Government Council of the ECB approved a new monetary policy strategy that focuses on a symmetric inflation target of 2% over the medium term, it considers both negative and positive deviations of inflation to be equally unfavorable. ECB key interest rates remain the primary monetary policy instrument, others are forward guidance, asset purchases, and longer-term refinancing operations (ECB, 2024).

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Additionally, NBS website (2024) note that in the case of NBS, the primary objective is to maintain price stability in the euro area, ensuring stable prices is the most important way in which monetary policy can contribute to creating a favorable economic environment and full employment. During the first stage of evolution, NBS evolved from credit limits to open market operation, widening the fluctuation band. From 2000-2004 NBS shifted toward qualitative management of monetary policy focusing on interest rate adjustment over quantitative targets. In 2001 in the NBS Act. It was amended to prioritize price stability. In 2003 euro adoption strategy was endorsed and in 2005 NBS adopted inflation targeting. NBS is also responsible for issuing euro banknotes and coins, making smooth operations of payment, and clearing systems, regulating, and coordinating and ensuring currency circulation, and economic efficiency. NBS maintains and disposes of foreign reserved assets and implements foreign exchange operations according to separate regulations applicable to Eurosystem operations. Since NBS is included in the Eurosystem, through an operational framework comprising instruments and procedures monetary policy is implemented to ensure the primary goal of price stability. Changes are possible during scheduled or unscheduled meetings with the Governing Council. The most important decisions are key interest rates at which commercial banks borrow from their central bank, via transmission mechanism, these rates are affecting the level of interest rates in the economy. Eurosystem key MP rates are these: rate of marginal lending facility 4.75%, interest rate on the main refinancing operations 4.5%, rate on the deposit facility 4%. Key interest rates are applied to standard instruments like open market operations and standing facilities. OMO is mainly used to manage short-term market interest rates and liquidity while LTROs are longer term operations for refinancing the euro area financial sector. Since the GFC in 2007, ECB Governing Council has introduced nonstandard instruments and techniques to respond to developments and requirements including the pandemic crisis (NBS, 2024).

## 1.7 External factors

Political independence is crucial for ensuring objectives such as price stability and economic growth. That is why the ECB is independent, and legally established in the Treaty and Statute and neither ECB, NCBs nor decision makers can take instructions from EU institutions, government, or any other body (ECB, 2024). Furthermore, ECB has its own budget and capital from NCBs, and it is prohibited to grant a loan to EU or national public entities. Disputes are settled by the court of justice of the EU (ECB, 2024).

Dvorsky's (2000) paper concluded that the overall degree of legal CBI is high in all examined countries also covering the Czech Republic and Slovakia. This argument seems to be unchanged.

The European Central Bank website (2022) states that the ECB began using forward guidance in July 2013 when the Governing Council stated that it expected interest rates to remain low for a longer term. Forward guidance provides information about CB's future monetary policy intentions that are based on the assessment of the price stability outlook (ECB, 2022, *What is forward guidance?*). This approach further boosts credibility, trust, and stability, as not only businesses and commercial banks, but also investors can expect future movements in the economy.

## 1.8 Synthesis

The official websites of central banks provided sufficient information to construct this summary of the evolution, history, importance, regulation, and objectives of respective central banks. This information will be further used in the second part where performance on economic indicators will be measured and interpreted. This part will serve as an important backbone of interpretation in further parts of this research.

From what was mentioned, NBS operates under the framework of the Eurosystem which consists of member countries that have the Euro as their currency. Representatives of these countries, together with governors of the ECB, meet regularly to vote and construct monetary policy adjustments and decisions. Such cooperation and contribution are viewed as beneficial as it provides trust and stability within the eurozone.

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In contrast, the Czech Republic is actively participating in European systems, but is absenting Euro currency now. This decision provides CNB with the ability to conduct monetary policy on their own, outside of Eurosystem regulation, giving the Czech Republic independent currency status.

In both countries there is a visible focus on preserving stability, in such case Friedman (2000), Issing & et. all (2001), Mishkin (2007) and Vesna's (2020) advocacy for inflation targeting and price stability focus was present. The ECB has indeed annual symmetrical inflation target of 2% as Issing, Gaspar, Angeloni and Tristani (2001) claimed, while Surico's argument of inflation target close to 2% more resembles case of the Czech Republic's mandate.

In the case of Slovakia and eurozone membership, Hlavatý & Zelinka (2003) note that the creation of National Bank of Slovakia turned out smoothly, while Bukowski & et. all (2023) argue that there were positive impacts on economic growth, and GDP fluctuations after joining the eurozone. This aligns with the view of Kocsmáros & et. all (2019) that also supports the idea of positive effects on Slovak's introduction of a single currency, solving liquidity problems, preventing devaluation, and increasing competitiveness from investors' perspective. Zeman (2012) would further support the idea of increased trade opportunities and economic growth after the adoption of a common currency, reducing transaction costs. Bukowski & et. all (2023) also claim that Slovakia had joined under harsh conditions of financial, fiscal, and pandemic crises which had impacts on the cost-benefit relation of eurozone membership, but Slovakia had gained positive effects since joining the eurozone, stating that benefits outweigh the costs.

## **II. PART - Data Analysis**

In this part of the research, specific economic indicators will be chosen and defined, according to their relevance. This section of the thesis provides data analysis of collected graphs, statistical numbers of rates, and additional contributions in the form of an expert interview with a specialist in the monetary policy field from NBS. Data is provided by the official data website of the ECB, which sources from Eurostat or directly from central banks. Additionally, external graphs and data will be provided by monetary specialist Juraj Falath and the website The World Bank. After data collection, the interpretation section, based on the provided graph figures, will describe possible connections to the research question. Anomalies and limitations will be considered.

### **2.1 Economic Indicators**

For the purpose of this research, chosen economic indicators should provide a general outlook of monetary policy performance. For the selected countries, Slovakia, and the Czech Republic it was advised by a monetary specialist to choose growth of Gross Domestic Product (GDP) as the general and starting indicator. Together with an effective exchange rate and inflation control, research will provide a general outlook of these two economies.

Kramer (2023) defines GDP as a measure of the national economy's total output in each period, usually calculated quarterly or annually. Under output, the author means the monetary value of final goods and services - those that are bought by the final user and produced within the country's borders. Calculations are usually done by a national statistical agency. He states that GDP is widely used as a reference for the health of national and global economies, which is generally relevant for the purpose of this research. Kramer (2023) further mentions that the growth of GDP, besides unhealthy inflation, is usually connected to the contribution of the betterment of the economy. The real GDP is expressed as the nominal value of GDP adjusted with the inflation rate, while nominal GDP is based on the value of goods and services as collected, so it reflects inflation (Kramer, 2023).

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Furthermore, for the purpose of analysis, nominal exchange rate (NEER) and real exchange rate (REER) indicators will provide a comparison of exchange rate stability over time, showing us results of monetary trust and stability. OECD (n.m.) defines exchange rates as “the price of one country’s currency in relation to another country’s currency” (OECD, n.m., *Exchange rates*). The website states that this indicator is measured in terms of national currency per US dollar (OECD, n.m.).

In the case of NEER and REER, the International Monetary Fund (n.m.) provides definitions of both. In the case of NEER “it is a measure of the value of a currency against a weighted average of several foreign currencies” (IMF, n.m., *NEER*). The website states that “an increase in NEER indicates an appreciation of the local currency against the weighted basket of currencies of its trading partners (IMF, n.m., *NEER*). Similarly, REER is also an indicator of the exchange rate, but in this case, it is a real effective exchange rate, meaning that it is also a measure of the value of a currency against the weighted average of foreign currencies, but this measure is further divided by price deflator or index of costs, providing more accurate results (IMF, n.m.). The increase in REER means that exports became much more expensive, while imports became cheaper, therefore an increase means a loss in the competitiveness of trade (IMF, n.m.).

Afterward, the combination of interest rate, inflation rate, and inflation predictions 5y5y will provide a general outlook of economic behavior for the next 5 years. This analysis will provide a more in-depth comparison of trust and stability from investors’ perspective.

Oner (n.m.) defines inflation as a measure of “how much more expensive a set of goods and services has become over a certain period of time, usually a year” (Oner, n.m., *Inflation*). She further explains that the inflation rate is a broad measure of the increase in prices. Furthermore, she states that most economists believe that stable, low, and predictable inflation is good for the economy, giving an easy opportunity to capture it in price adjustments and interest rates. Knowing the future moves of prices gives consumers an incentive to make purchases sooner, which boosts economic activity. The author claims that many central banks have made their primary policy objective to maintain low and stable inflation - inflation targeting. High inflation is in contrast connected with lesser growth in the economy, income, and activity (Oner, n.m.).

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In contrast, Oner (n.m.) explains that too much growth of money supply can cause diminishing currency value, and purchasing power, while prices are rising - quantity theory. Disinflationary policies are known for reducing inflation (Oner, n.m.).

Banton (2023) explains this monetary tool accordingly: "Interest rate is the amount a lender charges a borrower and is a percentage of the principal amount loaned" (Banton, 2023, *Interest Rates*). The interest rate on a loan is noted on an annual basis and is usually applied to most lending or borrowing transactions. Furthermore, it can be explained as the cost of debt for the borrower and the rate of return for the lender. The rate charged by banks is determined by central banks. Too high a rate causes the cost of debt and thus discourages people from borrowing, slowing consumer demand. The author argues that interest rates tend to rise with inflation, while low interest rates cause people to spend more and to purchase riskier investments. Such behavior fuels the economy and leads to economic expansion. On the contrary, the author suggests that while a low interest rate is preferred, it leads to market disequilibrium, where demand exceeds supply and that causes inflation - Walras law (Banton, 2023).

## 2.2 Data Analysis

In this analysis section, data will be collected and compared. Multiple graphs show the development of indicators over the time period and include valuable datasets for this research. With this data, average rates, standard deviation, and median of chosen indicators, affecting the economies of Slovakia and the Czech Republic, will be calculated. Comparison will highlight differences in the development of certain economic indicators over the period in respective countries, additional information on euro area economic indicators will show how much Slovakia deviates from the eurozone average. This section will provide the groundwork for later analysis and interpretation. Data was collected from official data publications of central banks, mainly sourced from the ECB Data website, also shared publicly on Eurostat.

## 2.2a Inflation rate

ECB Data Portal, 31 January 2024, 14:36 CET



Source: EUROSTAT

EUROPEAN CENTRAL BANK | EUROSISTEM

<https://data.ecb.europa.eu>

Figure 1: HICP, Euro Area - Monthly, data.ecb.europa.eu, 2024

This graph shows percentage changes in harmonized indices of consumer prices for the eurozone. Between 1997-2008 inflation was around 2%, which is considered optimal for the euro area. Years of the global financial crisis (GFC) show that there was an increase in consumer prices going from 1.7% in August 2007 to 4.1% change in July 2008, after this peak, prices fell to -0.6% in July 2009. It took a while to get back to the desired 2% rate. Inflation started to go over the desired rate, so central banks have implemented several HICP Regulations to anchor it down slowly. After January 2013, prices went down again for several years until 2017. Since that year, prices have plummeted with a downward tendency with the lowest point by the end of 2020 standing at -0.3%. Extreme increase happened between the years 2021-2022 with the highest peak of inflation standing at 10.6% in October 2022. Since then, policymaking has been trying to stabilize the desired inflation rate currently standing at 2.9% in December 2023. From the whole dataset, the average inflation rate was indeed 2.04% which is desired, however by looking at extreme fluctuations in changes, this is not considered a long-term desirable. In the long run, the objective has been met, but what is important is that such a rate should be stabilized on average around 2% even in shorter terms. Standard deviation was calculated and found that the prices deviated by 1.78%, median inflation rate, in this case, was standing at 1.9%.

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ECB Data Portal, 31 January 2024,15:13 CET

HICP - Overall index, Slovakia, Monthly



Source: EUROSTAT

EUROPEAN CENTRAL BANK | EUROSISTEM

<https://data.ecb.europa.eu>

Figure 2: HICP, Slovakia - Monthly, data.ecb.europa.eu, 2024

ECB Data Portal, 31 January 2024,15:21 CET

HICP - Overall index, Czech Republic, Monthly



Source: EUROSTAT

EUROPEAN CENTRAL BANK | EUROSISTEM

<https://data.ecb.europa.eu>

Figure 3: HICP, Czech Republic - Monthly, data.ecb.europa.eu, 2024

From the provided datasets of both countries, the average inflation rate over this period in the Czech Republic was lower than in the case of Slovakia. The Czech Republic's inflation rate between 1997-2023 was on average 3.74%, while in Slovakia in the period between 1996-2023, it was higher standing at 4.48%. On the other hand, in Slovakia highest peak was lower, standing at 16.8% in 2000, in the case of the Czech Republic, peak was even higher standing at 19.1%, but at the beginning of 2023. During 2000, Slovakia had a rough inflation period that was not the case for the Czech Republic, however during peak times after the pandemic, Slovakia performed

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slightly better in case of inflation rates. After Euro adoption Slovakia had more stable inflation rates than before, this changed with approach of pandemic crisis. In the case of GFC, Slovakia had lower inflation rates compared to the Czech Republic. On the contrary, over a long period of time, the Czech Republic graph shows overall higher stability of prices.

Total inflation rate average in the Czech Republic stands at 3.74% compared to 4.48% in the case of Slovakia. Before Euro adoption in January 2009, Slovakia had averaged on 6.21%, and after Euro adoption it went to 2.98%, compared to the Czech Republic's before 2009 average standing at 4.16% and after 3.38%.

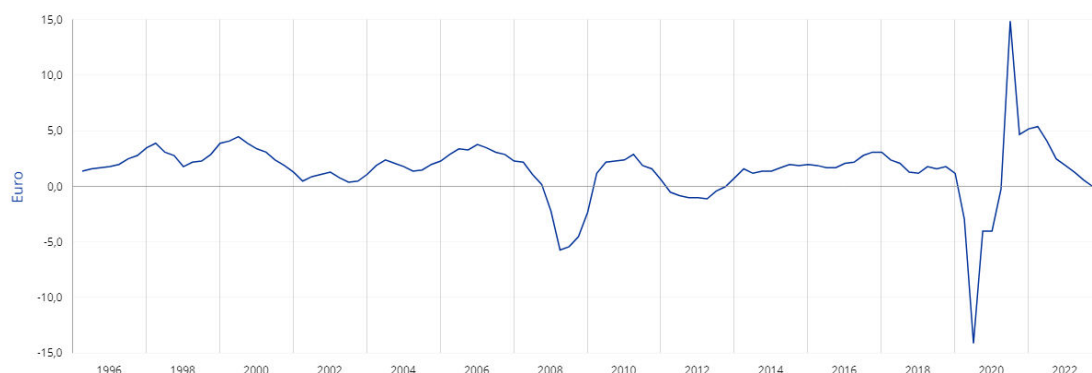
Total deviation in the Czech Republic was 3.89%, while in Slovakia 3.94%. Before Euro adoption Slovakia had a deviation at 3.3%, which increased to 3.83% after the adoption. Before 2009, the Czech Republic deviation was 3.25%, but afterwards it has increased to 4.34%.

Total median in the Czech Republic is 2.5%, while in Slovakia 3.6%. Before the Euro adoption median in Slovakia was 6.1%, but after 1.95%, which is closer to the desired 2% than in the case of the Czech Republic that has before 2009 median standing at 3.25%, but after 2009, the median at 2.1%.

## 2.2b Gross Domestic Product

ECB Data Portal, 31 January 2024, 14:42 CET

■ Gross domestic product at market prices, Euro area 20, Quarterly



Source: European Central Bank (ECB)

EUROPEAN CENTRAL BANK | EUROSISTEM

<https://data.ecb.europa.eu>

Figure 4: GDP growth, Euro Area - Q, data.ecb.europa.eu, 2024

When looking at gross domestic product at market prices real growth in the Euro area 20 it is visible that in some specific years, negative growth of GDP occurred. The growth rate between the years 1996-2008 fluctuated between 0.4-4.5%. After the third quarter of 2008 negative growth rate occurred due to GFC, with the lowest growth rate of -5.7% in the first quarter of 2009. After the crisis, the situation in euro countries improved, but soon in 2012 another negative GDP growth occurred, but not as severe as in 2020 when the growth rate went from previous year 1.8% to -14.1% in the second quarter of the year 2020. This situation alerted officials, creating the highest GDP growth rate standing at 14.9% in the second quarter of 2021, since then the growth rate has decreased and currently stands at 0.1% as for the fourth quarter of 2023. The average long-term growth rate stands at 1.49%.

## Dzібeła: The Impact of Eurozone Dynamics on Monetary Policy Goals

ECB Data Portal, 16 February 2024, 13:1 CET

Gross domestic product at market prices, Slovakia, Quarterly



Source: European Central Bank (ECB)

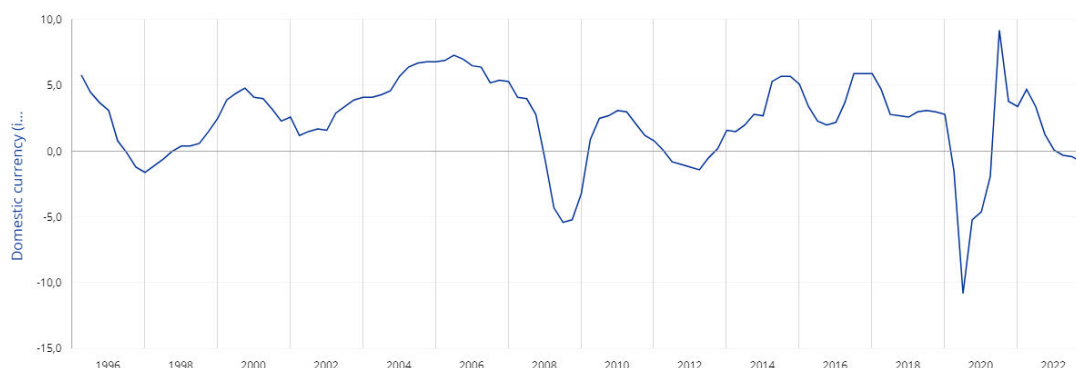
EUROPEAN CENTRAL BANK | EUROSYSTEM

<https://data.ecb.europa.eu>

Figure 5: GDP growth, Slovakia - Q, data.ecb.europa.eu, 2024

ECB Data Portal, 16 February 2024, 13:1 CET

Gross domestic product at market prices, Czech Republic, Quarterly



Source: European Central Bank (ECB)

EUROPEAN CENTRAL BANK | EUROSYSTEM

<https://data.ecb.europa.eu>

Figure 6: GDP growth, Czech Republic - Q, data.ecb.europa.eu, 2024

Overall, Slovakia had a higher average growth rate, standing at 3.48% than the Czech Republic (2.29%). Before Euro adoption in January 2009, both countries had higher growth rates, Slovakia (5.23%) and Czech Republic (3.35%). After 2009 Slovakia had (1.96%) and the Czech Republic (1.34%) showing that the economic challenges such as GFC cause growth rates to fall. On overall, Slovakia outperformed the Czech Republic in all time periods, in general and before 2009, Slovakia had a higher average growth rate than the Czech Republic. Additionally, Slovakia had a better recovery after GFC.

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In terms of standard deviation which shows the volatility of the GDP growth rate it is visible from calculations that on overall, Slovakia had a higher deviation (3.7%) compared to the Czech Republic (3.18%). Before 2009 both countries had lower deviations when Slovakia (3.28%) had higher compared to the Czech Republic (2.47%). After 2009, the deviation increased in the Czech Republic's GDP growth rate to 3.43% surpassing Slovakia (3.37%). This suggests that the economic environment has become more unpredictable in the Czech Republic.

Overall median growth rate of GDP was slightly higher in the case of Slovakia (3.25%) than the Czech Republic (2.75%), supporting stronger GDP performance in the case of Slovakia. Before 2009, Slovakia had a higher median (5.85%) compared to Czech Republic (3.9%). After 2009, both countries had the same median growth rate standing at 2.1%, indicating certain similarities in their economic performances.

Although the average growth rate was higher post-2009 in the case of Slovakia, the median has shown that both countries performed similarly. The higher average growth rate in Slovakia indicates that in some periods, economic growth was higher, but the identical median suggests that for most quarters, growth was very similar. Looking at both indicators provides a fuller picture of the economic performance of GDP growth.

### 2.2c Real Effective Exchange Rate

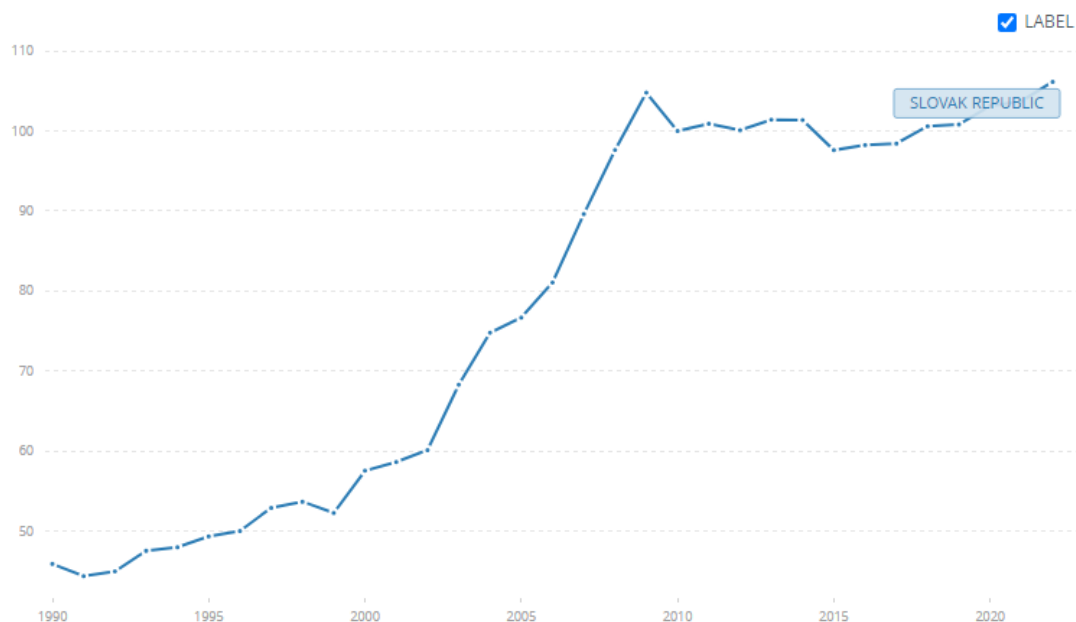


Figure 7: REER Slovakia (2010=100), data.worldbank.org, 2024

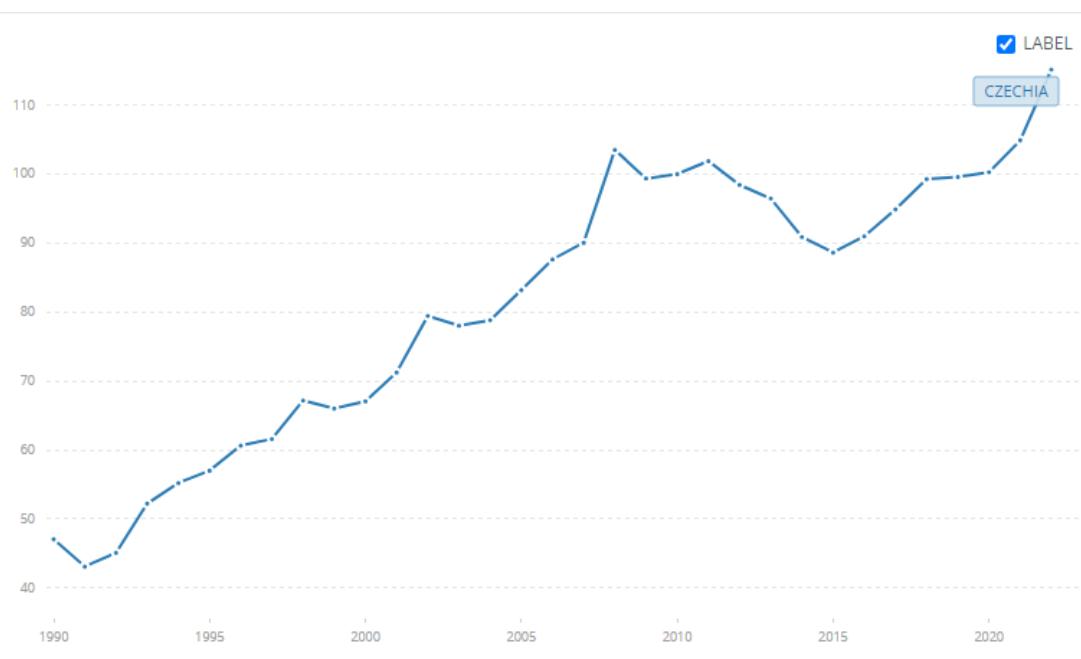


Figure 8: REER Czech Republic (2010=100), data.worldbank.org, 2024

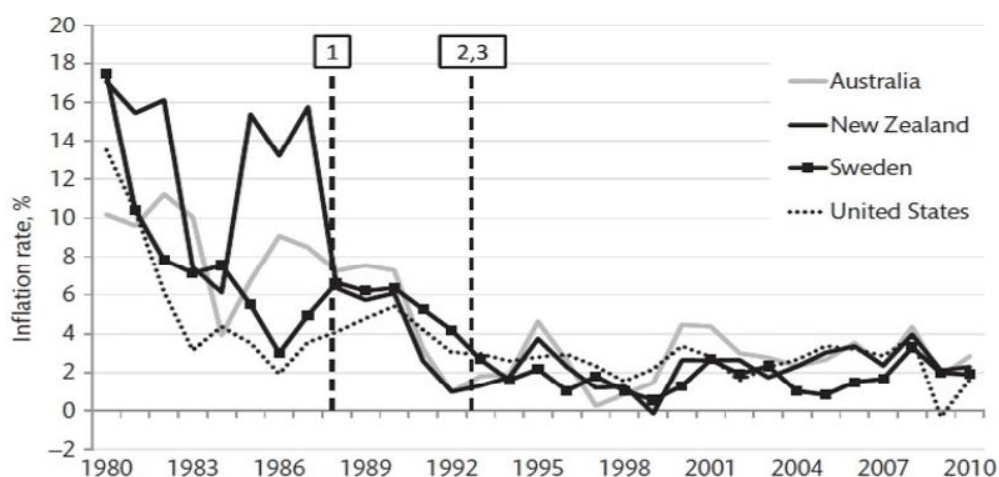
These two figures indicate real effective exchange rate changes over the period. It is possible to compare and draw certain conclusions in the case of Slovak and Czech Republic. Firstly, in the case of the Slovak Republic, after the adoption of the Euro in 2009 stability of the REER has increased till now, while in the case of the Czech Republic, till this day there are higher deviations of REER.

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Stable and predictable real effective exchange rate is considered beneficial as it attracts economic activity, unstable exchange rates are considered as risky and might withdraw economic activity. However, it is important to state that a higher exchange rate indicates more strength of local currency for the Czech Republic, which in their case of last year is considered as beneficial.

To compare these two countries, the provided dataset with a reference to 2010=100, has shown that before 2009 adoption of the euro standard deviation in REER in the case of Slovakia was 18.46%, for the Czech Republic it was lower, standing at 16.56%. After the adoption of the Euro post-2009, Slovakia improved its standard deviation to 2.48% compared to the Czech's 6.6%. This shows an improvement, and a more stable, less deviated REER could highlight more competitiveness in international trade as exports are stable. High deviation could mean more expensive exports, thus less export and competitiveness in international trade, but for the purpose of this study, it is important to see that in the case of Slovakia, REER had become significantly more stabilized after the adoption of the Euro, causing Slovakia to be in more competitive and lucrative position for international trade. This concludes that Euro adoption provided stability, trust, and possibility for international economic activity.

## 2.2e Inflation Expectations and Inflation targeting



### Dates inflation targeting was first adopted:

1. Reserve Bank of New Zealand—April 1988
2. Sveriges Riksbank (the Swedish central bank)—January 1993
3. Reserve Bank of Australia—March 1993

Note: The US had no formal inflation target over this period, but did adopt a target of 2% in January 2012.

Figure 3.2 Inflation rates—before and after the adoption of inflation targeting: 1980–2010.

Source: IMF World Economic Outlook, September 2011.

*Figure 9: Inflation Targeting, IMF World Economic Outlook, 2011*

As expressed in previous chapters, inflation targeting is shown to be an efficient approach towards monetary policy goals. This figure shows inflation rates before and after the approach of inflation targeting adopted by the central banks of Australia, New Zealand, Sweden, and the United States in the years 1980–2010. From this figure, a possible conclusion might indicate that after inflation targeting was adopted by respective central banks, the inflation rate got under control providing better economic stability.

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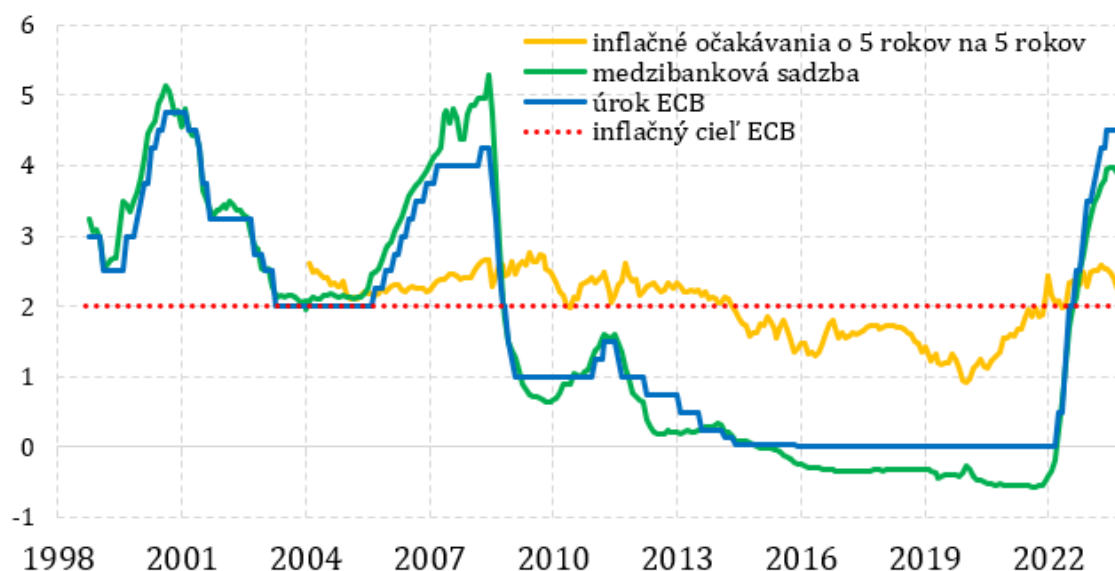


Figure 10: Inflation Expectations 5y5y, National Bank of Slovakia, 2024

In this provided graph, it shows three different value movements between the years 1998-2023. The yellow line represents inflation expectations after 5 years on 5 years known as 5Y5Y inflation expectations. The green line represents the interbank rate, while the blue line represents the ECB interest rate. Both interest and interbank rates can be used with inflation expectations to provide a general outlook of economic stability, which is as expressed one of the main priorities of central banking.

The inflation target for the ECB was 2% for the whole time, but what is important is to mention that the interest rate of the ECB fluctuated during the years 1999-2008 on average at 3,1%. With the highest interest rate during the years 2000 and 2001 reaching 4.75%. During the years 2009-2013 interest rate was around 1% and from 2016-2022 interest rate was standing at 0%. Since then, it has gone upwards to 4.5% in recent years.

Since 2004 inflation expectations 5y5y expected on average inflation 2.03% which is close to the goal with a standard deviation of 0.44% which is not a big volatility, but in the years 2014-2022 they have expected inflation below 2% target, which is why interest rate was stabilized on 0% and the interbank rate fell down as ECB adopted quantitative non-standard instruments to stabilize ECB interest rates using different steps to increase inflation – quantitative easing.

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Between 2014 and 2015 inflation expectations were lower, which caused the ECB to adopt quantitative non-standard instruments to stabilize the ECB interest rate. A stable interest rate can be seen as a long time between 2014-2022 during which the ECB took different steps to increase inflation.

### 2.3 Data Interpretation

Altogether, the provided data from graphs and various datasets indicates several possible outcomes that are relevant for the research question of this paper. While looking at inflation rate, Euro adoption in the case of Slovakia has shown to lower average inflation levels by more than a half, also lowering the median inflation rate severely. There was a little increase in standard deviation, but in case of the Czech Republic, the increase was even higher. Slovakia outperformed the Czech Republic in standard deviation, average inflation rate and median inflation rate post currency adoption. In case of GDP growth, Slovakia again outperformed the Czech Republic in all mentioned variables but was on par with median. During the GFC and pandemic crisis, Slovakia did not reach as high inflation rates as the Czech Republic, potentially highlighting that the Eurosystem membership might bring a more stable economy in terms of inflation rates.

Additionally, while comparing the real effective exchange rates of these respective countries, the research has found out that in the case of Slovakia, after euro adoption, exchange rates became much more stable than in previous years, even more stable than in the case of the Czech Republic, possibly highlighting that Euro adoption and eurozone membership brings more stable exchange rate. Such stability indicates an increase in economic activity as it creates more trust and possible predictions for investors. Important takeaway from this data analysis is that even though the Czech Republic outperformed Slovakia in some indicators before Euro adoption, Slovakia caught the lead after 2009. As for REER, the research has shown that Slovakia managed to stabilize real effective exchange rate from standard deviation of 18.46% to 2.48%, compared to the Czech Republic's 16.56% to 6.6%.

This analysis suggests that eurozone membership in case of Slovakia provided more stable exchange rate, stability in price levels, and better economic recoveries from crisis like GFC. The Euro adoption caused betterment of the economy of Slovakia. This creates an answer for proposed research question.

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Furthermore, in the debate on inflation targeting and inflation expectations, it was found that after the inflation targeting strategy was adopted by central banks, the inflation rate became more stable, making it an effective approach to monetary policy.

Inflation expectations regarding the interest rate of the ECB have shown the ECB chose to adopt quantitative easing, a non-standard instrument, when 5Y5Y inflation expectations indicated too low inflation rate. This was done to stabilize the ECB interest rate, explaining that even under stable interest rates, the ECB was able to raise inflation closer to the goal.

### **2.4 Interview with NBS Senior Analyst of Monetary Policy**

To further support the credibility of this research, an interview with NBS Senior Analyst of Monetary Policy, Juraj Falath, provides an interesting insight of the practical aspects from the National Bank of Slovakia. Several related themes were discussed, and insights were collected for the purpose of contribution towards the research question and objectives. To enrich this study, relevant data sources were advised, and important economic indicators were highlighted. Juraj Falath advised using Real Effective Exchange Rate (REER) to analyze the stability of monetary value via the exchange rate. Furthermore, GDP growth, inflation rate, and inflation expectations were suggested to show that with increased stability and successful predictions, trust from investors is heightened, leading to economic activity and growth.

The interview began with a basic question of the monetary theory approach, where Juraj Falath argued that the most known central banks are using the Keynesian theory approach. With a brief explanation, the Keynesian framework is a more regulative approach known for the use of discretionary policy with long-term objectives of inflation targeting. On the other hand, the Monetarist approach, which also targets inflation, chooses to place its main concern on the amount of currency in the economy, often stating that every inflation increase is caused by the amount of currency in the economy. Juraj Falath's arguments are more aligned with the Keynesian approach, as he states that the inflation rise could be easily explained by various other reasons different from the inflow of currency volume.

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Regarding Central Bank Independence, Juraj Falath acknowledges its importance and claims that it is strictly obeyed, since it promotes stability and trust of central banks. However, there might be a gap, through which the government can intervene with central banks as they have power over fiscal policy, which influences monetary policy decisions to a certain degree, but in terms of official independence, central banks hold CBI status. It is crucial since government intervention inside monetary policy decisions could lead to abuse in lending programs, or fulfillment towards short-term oriented objectives rather than long-term stability.

As for the comparison of big central banks' objectives, he states that in the case of ECB, and thus NBS, the goal is to achieve a symmetrical value of inflation standing at 2%. Similarly, CNB chose as their objective to maintain levels of inflation around 2% with 1% tolerance both ways. Both ECB and CNB have similarities in other primary goals, economic growth, and stability. As an interesting remark, the difference might be in the case of FED, an American central bank, where the primary goal is to both control inflation and maximization of employment, which can be paradoxical for some - Phillips curve.

Lastly, in the case of Eurozone membership, together with Falath we concluded that both CNB and NBS monetary policy goals are similar, with the only difference being the Eurozone status. Some might argue that due to CNB's independent monetary policy, governors are able to react faster and adjust monetary policy to the needs of their country, however as Falath stated, ECB has shown during the COVID crisis that such supranational entities can react respectively fast to. What is different is that NBS shares a consensual monetary policy with other member countries of the Eurozone, contributing towards cooperation with the benefits of prediction models and interdependence. Such cooperation might raise economic growth and stability in the Eurozone, making it pleasant ground for investors.

## **2.5 Anomalies, Limitations, Contradictions**

As for the limitations, it is important to state that even though there are indicators such as growth of the GDP, inflation rate, interest rate, NEER, REER, or inflation predictions, there is not a unified monetary policy performance indicator. Leeper, Sims, Zha, Hall, and Bernanke's (1996) search for a single variable for monetary policy could be extended towards this issue, as there is still a need for such a variable.

Conclusions from data are normative, as they can be interpreted only under *ceteris paribus*. These mentioned economic indicators can be influenced by various causes, not only by the choices of monetary policymakers. There is a need for a unified single monetary policy variable to provide accurate conclusions.

For recommendation of future study, some additional indicators that are relevant for this comparison are unemployment rate, debt to GDP ratio, and money supply growth. For the scope of this study, these indicators were omitted, as the focus was mainly towards general understanding of monetary policy performance.

Comparing the inflation rate, GDP growth rate, and real effective exchange rate reflects a sufficient general outlook on outcomes of monetary policy decisions and the country's external competitiveness. These indicators were chosen to compare the main goal of central banks – price stability, with a secondary focus on economic growth in terms of international economic activity. Unemployment rate, debt to GDP ratio, and money supply offer different perspectives, more aligned with fiscal policy outcomes, labor market, and broader monetary conditions, which is beneficial for future study.

## Discussion

Theories have been compared, objectives have been highlighted and data was interpreted, however, how does all this refer to the research question of eurozone membership? From this research, it was found out that both CNB and NBS function similarly regarding decision-making, policymaking, and objectives. A comparison of performance within these two banks was undertaken under ceteris paribus and a more accurate comparison would require either a single monetary policy variable or further research. However, the question of eurozone membership has been discussed and it is quite visible that there are many benefits to choosing a Eurosystem membership, as it focuses on economic stability and growth for not only a single country, but rather for multiple countries within the European Union that chose to cooperate. Such cooperation is beneficial as it brings the ability to predict and evaluate monetary policy on a larger scale.

In the first part, research has revealed the history and evolution of these central banks and that primary and secondary objectives are very similar. Governors of respective central banks seem to be elected under the same process. However, the difference can be found in decision-making. While the NBS is under the influence of consensus established monetary policy by the ECB, the CNB can enjoy independence in its decision-making. From a strategic point of view, inflation targeting has been shown to be the main approach of central banks, as the most important goal is to ensure price stability.

Inflation targeting effectiveness was highlighted in the second part, data interpretation indicates that Euro adoption and thus eurozone membership bring certain positives of price stability, exchange rate stability, and predictable inflation expectations. These positives are crucial as they promote trust and economic activity from investors. The argument of Euro currency promoting economic activity by authors from the literature review was thus confirmed. It is also important to state that Slovakia had joined the Eurosystem during harsh economic times like the GFC and the pandemic crisis. This notion could explain why some authors claim that the independent status of CNB caused the Czech Republic to perform slightly better in certain aspects, while Slovakia did not achieve all promised expectations. It is important to highlight that Slovakia survived both crises in terms of inflation better than the Czech Republic, but on the other hand with harsher issues with unemployment.

## Conclusion

Exploring the research question of eurozone membership effectiveness on monetary policy goals, as opposed to the independent currency status, this research has found out answers to the proposed hypotheses. The first hypothesis that suggested difference between monetary policy objectives choices, has been partially fulfilled, as the objectives of CNB and NBS were compared with following results. With a high degree of similarity, there was indeed a difference in the accepted tolerance fluctuation band. While the ECB regulates NBS to contain a symmetrical inflation rate of 2%, where fluctuations both ways are considered as undesirable, the CNB has a tolerance band of 1% both ways. From this perspective, it is easier to fulfill the monetary policy goal in the case of CNB, but with lesser tolerance. Higher stress causes the ECB to contain the inflation rate for higher price stability.

The second hypothesis was also fulfilled, as data analysis and interpretation provided general evidence to support arguments in discussion, noting that from a normative assumption, the ECB consensus driven, cooperative monetary policy decision-making provides more long-term price stability and trust, which is essential for higher economic activity and international investors.

Altogether, it is clear that given the membership of Slovakia in the eurozone, subjecting the National Bank of Slovakia (NBS) to the regulatory oversight and policies of the European Central Bank (ECB), it is now clear that decision-making procedures enforced by ECB are results of consensus between national representatives of member countries and such consensus provides benefits in terms of shared economic price stability, interdependence, and trust needed for economic activity and international investors.

Additionally, the Czech Republic operates within the European Union and governors from CNB participate in ESCB, ESRB, and ESFS. From this perspective, when the goals of central banks appear similar, having Eurozone membership can only bring future benefits. Some might argue that independent policymaking in an independent national central bank can provide more accurate, relevant, and faster induced monetary policy, however, it is important to state that the Eurosystem works regularly with national representatives to solve issues within the euro area, and they have applied monetary policy changes in crisis with fast reaction time.

## Resumé

Táto práca skúma vzťah členstva Eurozóny s efektivitou rozhodnutí monetárnej politiky Národnej Banky Slovenska (NBS), oproti rozhodnutiam nezávislej Českej Národnej Banky (CNB). Toto porovnanie prispieva k otvorenému diskurzu, či členstvo v Eurozóne je pre členské štáty Európskej Únií výhodnejšou voľbou pred autonómnosťou centrálného bankovníctva. Porovnávacie metódy použité v práci skúmajú zhodnosť, alebo nezhodnosť mandátov centrálnych bánk. V druhej časti sa jednotlivé postupy centrálnych bánk porovnávajú s vyústením do interpretácie, ktorá centrálna banka napĺňa ciele monetárnej politiky efektívnejšie, vzhľadom na vybrané ekonomické ukazovatele.

Dôležitosťou v tejto práci je podotknúť existujúcu limitáciu. Keďže vybrané ukazovatele nemusia jasne a presne reflektovať efektivitu monetárnej politiky, práca získava rolu všeobecnej analýzy porovnania evolúcie mandátov a ich vplyv na makroekonomické ukazovatele. Zvolené ukazovatele, sú interpretované pod ceteris paribus metódou, pretože ako Lucas (2006) spomína, podrobná a presná ekonomická analýza vyžaduje využitie pokročilých metód zahŕňajúce aj ukazovatele pre prípadné správanie ekonomických agentov. Táto interdisciplinárna bakalárska práca neobsahuje takto podrobnú analýzu, a tak slúži ako všeobecný základ pre budúci výskum.

Ako metóda bola zvolená porovnávací analyza dát, ktoré boli poskytnuté oficiálnymi webovými stránkami centrálnych bánk alebo ekonomický fór zameriavacích sa na analyzu skúmaných ukazovateľov, ako sú, rast HDP, efektívny menový kurz, inflácia a úroková sadzba.

Z výskumu vyplýva hypotéza, že Národná Banka Slovenska, pod vedením Európskej Centrálnej Banky má podobný, avšak mierne odlišný mandát od Českej Národnej Banky. Obe centrálné banky majú za cieľ udržiavať stabilitu cien a prípadne prispieť ku ekonomickému rastu, využívajú podobné inflačné postupy, avšak s rozdielom v tolerancii. Pokým jednotným symetrickým inflačným cieľom pre NBS je dostať sa na úroveň 2% inflácii, s nežiadúcim tolerančným rozsahom na oba smery, CNB má tento tolerančný rozsah obojsmerne nastavený na 1%.

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Ďalším rozdielom týchto centrálnych bánk je ich rozhodujúci proces. Pokým NBS priama rozhodnutia monetárnej politiky cez proces konsenzu viacerých členských krajín používajúcim Euro, rozhodnutia v prípade CNB vyplývajú mimo tohto konsenzu.

Sekundárna hypotéza sa tiež potvrdzuje, keďže členstvo v Eurosysteme naozaj prináša v prípade NBS stabilizáciu spoločnej meny. V rozbere literatúry je niekoľko krát spomenutý argument, že práve jednotná spoločná mena, ako je Euro prináša vyššiu možnosť ekonomickej aktivity. Stabilný systém, predpoveď inflácie a jednotná mena sa teda javí za efektívnejšiu.

Dátová analýza tejto práce poukázala na výhody prijatia spoločnej Európskej meny. Stabilita, výmenný kurz, inflácia a dôvera boli navýšené. Týmto navýšením bolo Slovensku umožnené zapojiť sa do kompetitívnejšieho prostredia.

Napriek všeobecným zisteniam, nevyhnutnou úlohou je sa pozrieť podrobnejšie na efektívnosť členstva v prípade viacerých krajín s metódou zahŕňajúcou pokročilé indikátory a výskum.

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