

Stockholm School of Economics
Department of Economics
BE551 Degree Project in Economics
Spring 2025

Independence in an Era of Interference:
A Quantitative Exploration of the Relationship between Central Bank
Independence and Inflation

Herman Nilsson (25785) and Emil Tallberg (25750)

Abstract

By the end of the 20th century, central bank independence (CBI) had become an entrenched principle of monetary policymaking across many market economies worldwide. This rested on the belief that CBI provided a credible solution to the time-inconsistency problem in controlling inflation. However, CBI has become increasingly contested since the global financial crisis. Rising political interference and concerns over the role of central banks in macroprudential oversight and democratic accountability have challenged the assumed legitimacy of CBI. These developments create a rationale for reevaluating the empirical foundations for CBI. Much of the influential research on the relationship between CBI and inflation relies on limited empirical methods and data predating key macroeconomic shifts, and the overall findings are inconclusive. This paper reexamines the relationship between CBI and inflation with updated data and an improved methodological approach. Using panel data for 155 countries from 1963 to 2023, the relationship between CBI and inflation is estimated through an OLS model with extensive robustness measures, complemented by an instrumental variable specification that instruments CBI with accession to the Maastricht Treaty. Across specifications, the findings are consistent with the logic that independence reduces inflation. The findings strengthen the case for central bank independence as a means of maintaining low inflation and suggest that international frameworks, such as the Maastricht Treaty, can play a crucial role in facilitating its adoption.

Keywords: Central Bank Independence, Inflation, Monetary Policy, Maastricht Treaty

JEL: E31, E52, E58, F33

Supervisor:	Álvaro Jañez Garcia
Date submitted:	11th May, 2025
Date Examined:	22nd May, 2025
Discussants:	Sibile Urbelyte & Erik Magnusson Åström
Examiner:	Johanna Wallenius

Acknowledgement

We want to thank our supervisor Álvaro Jañez Garcia for his support and continued enthusiasm throughout our work on this paper.

Glossary

Acronym	Meaning
CBI	Central Bank Independence
CIS	Commonwealth of Independent States. An alliance of former Soviet republics formed after the dissolution of the USSR.
GDP	Gross Domestic Product
GFC	Global Financial Crisis. Refers to the 2008 financial crisis that catalysed the Great Recession.
IV	Instrumental Variable
OLS	Ordinary Least Squares
2SLS	Two-Stage Least Squares

Table of Contents

1. Introduction.....	5
1.1 Background.....	6
1.2 Research Question and Hypothesis.....	7
2. Theory and Literature Review.....	9
2.1 Theoretical Framework.....	9
2.1.1 Monetary Policy in the Long Run: The Quantity Theory of Money.....	9
2.1.2 Monetary Policy in the Short Run: The AD-AS Framework.....	10
2.1.3 Commitment and Credibility: Rules vs. Discretion in Monetary Policy.....	11
2.2 The Empirical Case for CBI.....	12
2.3 Critiques and Conditional Relationships.....	12
3. Methodology.....	14
3.1 Data.....	14
3.1.1 Central Bank Independence Index.....	14
3.1.2 Inflation Rate Data.....	14
3.1.3 Control Variables.....	14
3.1.4 Maastricht Instrument.....	15
3.1.5 Post-Soviet Dummy.....	15
3.2 Methodological Approach.....	16
3.2.1 Fixed Effects and Clustered Standard Errors.....	16
3.2.2 Baseline Model.....	17
3.2.3 Extended Model.....	17
3.2.4 Instrumental Variable Model.....	18
4. Results.....	21
4.1 Descriptive Statistics.....	21
4.2 Baseline Model Results.....	25
4.3 Extended Model Results.....	26
4.4 Instrumental Variable Model Results.....	28
4.4.1 Placebo Test.....	30
5. Discussion.....	32
5.1 Interpretation of Results.....	32
5.2 Implications.....	33
5.3 Limitations.....	34
5.4 Further Research.....	35
6. Concluding Remarks.....	35
References.....	36
Appendix.....	40
AI Disclaimer.....	42

1. Introduction

If the President is competent enough to have his finger on the nuclear button, he is competent enough to control the money supply.

–Economist Lester Thurow, March 1982

[T]here can be a SLOWING of the economy unless Mr. Too Late [Jerome Powell, the Chair of the Federal Reserve], a major loser, lowers interest rates, NOW.

–President Donald Trump, April 2025

While central bank independence rose to become a cornerstone of monetary policy in many countries during the end of the 20th century, these claims reflect a persistent tension in contemporary monetary policy that has increased since the global financial crisis. Policymakers are exerting growing pressure on central banks to align monetary policy with political agendas. Christine Lagarde (2025), president of the European Central Bank, stated, “...there is no doubt that the de facto independence of central banks is being called into question in several parts of the world.”

U.S. President Donald Trump has repeatedly challenged the legitimacy of the Federal Reserve, escalating to the point of threatening to dismiss its chair, Jerome Powell. Referring to Powell, the President stated in April 2025, “I don't think he's doing the job... If I want him out, he'll be out real fast...” (Samuels, 2025). However, this is only the latest instance reflecting political interference with central banks in recent years. In 2021, Turkish President Recep Tayyip Erdoğan replaced the governor of the Turkish central bank with a party loyalist days after the bank increased interest rates (Partington, 2021). Similarly, Hungarian Prime Minister Viktor Orbán appointed his political ally and former finance minister as the governor of the Hungarian central bank earlier this year following repeated pressure on the outgoing governor to cut interest rates (Inman, 2025; Szakacs and Than, 2024).

This development suggests that monetary policy is in an era of interference. “In this environment, credible policy regimes become even more important for maintaining trust in central banks,” argues Lagarde. She references Alberto Alesina and Lawrence Summers’ (1993) seminal paper “Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence,” which finds a negative relationship between CBI and inflation. Yet,

the methods of inference that Alesina and Summers' paper relies on and the events that have played out since it was written prompts a need for revision. Against the backdrop of interference, our study revisits the relationship between CBI and inflation to provide a more robust assessment of its legitimacy from a price-stability perspective.

Alesina and Summers examine 16 industrialised countries during 1955–1988. By contrast, our study is based on panel data covering 155 countries over 1963–2023. Thus, our time frame includes important macroeconomic events that occurred after Alesina and Summers' paper was written. Rather than relying on the correlational inference used by Alesina and Summers, we provide a regression model that includes multiple robustness measures. Expanding upon this model, we instrument CBI with accession to the Maastricht Treaty while controlling for macroeconomic factors to improve validity. With these models, we aim to provide a more rigorous analysis of the CBI-inflation relationship.

We find that, although the validity of central bank independence (CBI) is often challenged by politicians and academics alike, a robust analysis of 155 countries over eight decades indicates that there is a negative and significant relationship between CBI and inflation. This strengthens the case for an independent central bank as outlined in economic theory, implying that the depoliticisation of monetary policy is more important than ever in today's era of interference.

1.1 Background

“Central bank independence (CBI) became a globally accepted truth of economics about 30 years ago,” write Paul Wachtel and Mario Blejer (2020, p. 1). Yet the idea had already gained broad academic support before it became the prevailing model for monetary policy in many countries. Describing their theory of time-inconsistency in economic policymaking, Finn Kydland and Edward Prescott (1977) state that:

If in each period the policy decision selected is the one which maximises the sum of the value of current outcomes and the discounted valuation of the end-of-period state, the policy selected will be consistent but not optimal... [T]he implication of our analysis is that policymakers should follow rules rather than have discretion (pp. 486-487).

This notion of time-inconsistent policy makers has prompted research into the institutional features that enable central bankers to credibly commit to low-inflation policies, as noted by Michael Kiley and Frederic Mishkin. The most prolific such institutional feature is central

bank independence (2024, p. 9). Wachtel and Blejer write that, by delegating monetary policy to an independent body, monetary policy is shielded from political business cycles, where politicians seek to exploit policy surprises to garner voter support, as well as inflationary financing, whereby governments fund their expenditures by printing more money (pp. 6-7).

However, since the Global Financial Crisis (GFC) of 2008, central bank independence and the technocratic delegation model it relies on have increasingly come under scrutiny. Blejer and Wachtel write that an idealised notion of central banking had emerged by the end of the 20th century. In summary, this notion was based on an independent body that conducted monetary policy to ensure price stability. Yet, Blejer and Wachtel write, “a narrow view of CBI emphasised monetary policy to the virtual exclusion of other roles” (p. 11). By focusing narrowly on price stability, central banks were unprepared for broader financial stability dangers and had to engage in politically sensitive crisis responses with distributional implications, challenging the notion of full independence. Blejer and Wachtel state, “[W]hile independence continues to be protected, its golden age ended with the crisis a decade ago... removing partially the implicit taboo involved in asking the unmentionable: *perhaps central banks should not be, nor should they aim at being, so independent after all?* [emphasis added]” (p. 2).

The justification for raising this question lies in the extraordinary responsibilities entrusted to the Federal Reserve and many other central banks. As Andrew Levin and Christina Parajon Skinner (2025) observe, “in exercising its monetary duties, the Fed wields tremendous power” (p. 1773). Yet, questions arise when such power is in the hands of an unelected body. Levin and Skinner write that the quantitative easing program implemented between 2020 and 2022, prompted by the COVID-19 recession, is projected to cost U.S. taxpayers more than \$1 trillion, despite the absence of any thorough external review of its effectiveness (p. 1769). In the wake of post-GFC critiques of central bank independence, it becomes relevant to re-examine the foundational rationale for CBI in economic theory: namely, the notion that more independent central banks are better able to fulfill the mandate of price stability.

1.2 Research Question and Hypothesis

Early studies linking CBI and inflation have important limitations. Alesina and Summers’ study, considered a seminal work, analyse only 16 industrialised countries over 1955–1988, excluding developing economies and later major macroeconomic and institutional changes.

Finally, their methodology does not account for confounding factors or outliers, and they base their conclusions on correlational inference. We aim to reevaluate the relationship with more robust methods and an expanded data-set.

Specifically, we define the research question:

Does the negative correlation between central bank independence and inflation documented by Alesina and Summers (1993) hold when tested with a broader dataset, improved methodology, and controls for key confounding factors?

Based on our research question, we develop the following hypothesis:

There is a statistically significant negative relationship between central bank independence and inflation. That is, higher levels of CBI are associated with lower inflation.

2. Theory and Literature Review

The literature review introduces the theoretical framework describing the link between monetary policy and inflation. The theory section is followed by a discussion on prior empirical work exploring the relationship between CBI and inflation.

2.1 Theoretical Framework

2.1.1 Monetary Policy in the Long Run: The Quantity Theory of Money

Central banks are crucial to discussions on inflation because of their influence over the money supply. “Inflation is always and everywhere a monetary phenomenon,” asserted Milton Friedman (1963, p. 16). Although this claim may not fully capture the complexity of short-run inflation dynamics, any discussion of the long-run determinants of inflation is incomplete without the foundational framework that links the price level to the money supply: the quantity theory of money. At the core of the theory is the equation of exchange:

$$M_t V_t = P_t Y_t$$

All variables are defined at time t : M is the money supply, V the velocity of money, P the price level, and Y the real GDP. As Charles Jones (2020) explains, “the velocity of money should be thought of as the average number of times per year that each piece of paper currency is used in a transaction” (p. 218). The equation of exchange states that nominal GDP, $P_t Y_t$, is equal to the effective amount of money used in transactions, $M_t V_t$.

$$Y_t = \bar{Y}_t$$

$$V_t = \bar{V}$$

$$M_t = \bar{M}_t$$

Given this, rearranging the equation of exchange leads to the following identity, the quantity theory for the price level:

$$P_t^* = \frac{\bar{M}_t \bar{V}}{\bar{Y}_t}$$

This expression implies that the effective money supply determines the long-run price level relative to long-run output. Since real GDP and the velocity of money are treated as exogenous in the long run, changes in the money supply, implemented by the central bank, translate directly into changes in the price level. In other words, the central bank's control over the money supply makes it a primary driver of long-run movements in the price level and, by extension, inflation (pp. 218-220).

2.1.2 Monetary Policy in the Short Run: The AD-AS Framework

While the quantity theory of money provides an essential long-run perspective on the link between money supply and inflation, it disregards important frictions, like sticky inflation, that arise in the short run. These short-run distortions and their implications for monetary policy can be understood through the Aggregate Demand and Supply (AD-AS) framework.

The framework builds on three key models. First, the monetary policy (MP) curve, which describes a positive short-run relationship between the nominal and real interest rates under the assumption of sticky inflation in the short-run. Second, the investment-saving (IS) curve shows how increases in the real interest rate reduce short-run output (real GDP). Third, the Phillips curve links current inflation to expected inflation and changes in short-run output. In this model, expectations are adaptive, meaning firms and households form inflation expectations on the previous period's actual inflation. This specification of the Phillips curve follows Friedman (1968), who highlighted that it reflects a temporary tradeoff between inflation and short-run output.

Replacing the MP curve with a monetary policy rule and combining it with the IS curve gives us the aggregate demand (AD) curve, which shows how interest rates set by the central bank affect output. Specifically, when inflation exceeds the target, the central bank raises the nominal interest rate, which lowers output below its potential and triggers a recessionary response aimed at bringing inflation back down to the target. Relabelling the Phillips curve as the AS curve, we get a supply-and-demand framework where monetary policy shifts demand by adjusting interest rates based on inflation, determining short-run output and inflation. However, if firms and households have adaptive expectations, believing that next period's inflation will match the current rate and setting prices accordingly, this creates an incentive for policymakers to use discretionary policy to lower the nominal interest rate to raise aggregate demand and boost short-run output (Jones, 2020, pp. 356-380).

2.1.3 Commitment and Credibility: Rules vs. Discretion in Monetary Policy

Going from an assumption of agents with adaptive, backwards-looking expectations to one of rational and forward-looking agents has crucial implications for the conduct of monetary policy. In their seminal paper “Rules Rather than Discretion: The Inconsistency of Optimal Plans,” Kydland and Prescott (1977) state that, “discretionary policy, namely, the selection of that decision which is best, given the current situation and a correct evaluation of the end-of-period position, does not result in the social objective function being maximised” (p. 473). This suggests that discretionary policy is appropriate for organising policy when current outcomes depend only on past and current policy decisions. Yet, as they explain, “this is unlikely to be the case for dynamic economic systems,” where economic agents can reasonably predict the way policy will be determined in the future (p. 474). In such cases, a policymaker using discretion may appear to act optimally in the moment, but they ultimately fail to account for the fact that firms and households adjust their behavior based on expectations of future policy.

Kydland and Prescott illustrate this inconsistency of seemingly optimal plans using a two-period model. In this model, policymakers strive to maximise a social objective function S , which depends on policy choices (π) and the decisions of private agents (x), such as firms and households. For two periods ($T = 2$), policy in period two (π_2) is selected to maximise

$$S(x_1, x_2, \pi_1, \pi_2),$$

subject to

$$x_1 = X_1(\pi_1, \pi_2)$$

and

$$x_2 = X_2(x_1, \pi_1, \pi_2)$$

where the functions X_1 and X_2 represent how private agents choose their actions based on current *and* expected future policy. If agents in period one expect the policymaker to re-optimize π_2 in period two, they anticipate that the actual policy will be different from what was initially announced. Consequently, they adjust their behavior in period one (x_1) based on that expectation. This leads to a socially suboptimal outcome where S is not maximised,

because the awareness that policymakers might have incentives to renege on the initial plan for period two undermines the credibility and effectiveness of the policy (pp. 475-476).

Kydland and Prescott extend this logic to the realm of monetary policy, stating that, “The conventional approach is to assume that expectations depend in some mechanical ad hoc way upon past prices.” Yet, as they explain, this assumption of adaptive expectations is overly simplistic: a shift in a policymaker's priorities, like placing more weight on employment relative to inflation, can immediately influence the expectations of firms and households (p. 478). This introduces an inflationary bias, where credibility problems lead to higher inflation without corresponding gains in output. If the credibility of policymakers is essential for anchoring inflation expectations, there is a clear need for an institutional framework in monetary policy that ensures both credibility and insulation from short-term political pressure.

2.2 The Empirical Case for CBI

In the paper “Political and Monetary Institutions and Public Financial Policies in the Industrial Countries”, Vittorio Grilli, Donato Masciandaro, and Guido Tabellini (1991) construct a measure of CBI based on economic and political dimensions of monetary policy. They regress inflation on their index using data from 18 industrialised countries between 1950 and 1989. They find a significant negative relationship between CBI and inflation (pp. 367-373). A more comprehensive measure of CBI is developed by Alex Cukierman, Steven Webb, and Bilin Neyapti (1992), who construct an index based on 16 *de jure* factors associated with CBI. Using data for 72 countries over 1950–1989, they also find a significant negative relationship between CBI and inflation. These findings are supported by Alberto Alesina and Lawrence Summers’ (1993) landmark paper “Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence.” Alesina and Summers point to a “near perfect negative correlation between inflation and central bank independence,” using data for 16 industrialised countries over 1955–1988 (pp. 151-154).

2.3 Critiques and Conditional Relationships

However, this empirical support for CBI has been subject to critique. Thomas Cargill (1995) questions the findings of Cukierman, Alesina, and Summers, arguing that:

[T]he lack of statistical robustness suggests that the claimed statistical association between low inflation and formal central bank independence should not be given the

importance it has been afforded in discussions of how to structure a price stabilising bank (p. 169).

Subsequent studies elaborate on Cargill's skepticism about the relationship between CBI and inflation. Adam Posen (1995) argues that the relationship between CBI and inflation depends on the political environment. He states that, "The preferences for price stability embodied by CBI require political support" (p. 254). Daron Acemoglu, Simon Johnson, Pablo Querubin, and James Robinson (2008) build on the political economy argument of Posen. They suggest that policy reforms towards increased independence are most effective in societies with intermediate political constraints. However, when constraints are either strong or weak, the impact of reform diminishes. In societies with strong political constraints, reforms are only marginally effective; in societies with weak political constraints, reform toward independence is undermined by a lack of checks on political authority (pp. 1-5).

3. Methodology

The methodology section introduces the data sources and variables, followed by a description of the methodological approach.

3.1 Data

To test our hypothesis, we use a panel data set. The following section describes the sources of our data and the variables included. The coverage of the variables differs and while the CBI index spans back to 1923, data for controls are available from 1963 and onwards. Consequently, the main regressions are based on panel data covering 155 countries between 1963 and 2023.

3.1.1 Central Bank Independence Index

The central bank independence index used is the widely recognized ‘Cukierman Index,’ created by Alex Cukierman, Steven Webb, and Bilin Neyapti (1992). They analyse and evaluate CBI using 16 de jure variables across four broad categories: appointment, dismissal and term of office of the central bank governor; formulation of monetary policy; objectives; and limitations in lending to the government. Each category is evaluated independently and weighed into an overall index ranging from zero to one, with one representing maximal independence. The original Cukierman index covers 72 countries between the 1950s and the 1990s (Cukierman et al., 1992). Davide Romelli (2022, 2024) updates and extends the Cukierman Index to cover the period 1923–2023, incorporating data on 155 countries across different stages of economic development. In our study, we use Romelli’s updated version of the Cukierman index.

3.1.2 Inflation Rate Data

The inflation data is collected from the Global Macro Database (GMD), developed by Karsten Müller et al. (2025). The inflation variable is calculated as a yearly percentage rate based on consumer price index (CPI) data.

3.1.3 Control Variables

We collect data for subsequent control variables from GMD. These include: real GDP growth rate; government deficit (% of GDP); government debt (% of GDP); and real effective exchange rate (REER). According to the AD-AS framework, economic booms increase

aggregate demand and thus inflationary pressure, motivating the inclusion of real GDP growth rate as a control. To capture the possibility that the relationship between CBI and inflation is conditional on the business cycle, we include an interaction term between CBI and GDP growth. Inclusion of the fiscal variables is motivated by the nature of the government budget constraint: when tax revenues are insufficient and borrowing is limited, the government might resort to printing more money to finance its expenditures, thereby fueling inflation (Jones, 2020, pp. 228-229).

We choose not to control for political conditions. Prior research (Posen, 1995; Acemoglu et al., 2008) suggests that political conditions are fundamental to the existence and functioning of CBI. Recent developments in countries such as Turkey and Hungary further illustrate that CBI is heavily shaped by the political environment. Controlling for political conditions would effectively estimate the link between CBI and inflation in a political vacuum and misrepresent the real-world relationship that this study seeks to capture.

3.1.4 Maastricht Instrument

To address endogeneity concerns, we include a specification where CBI is instrumented with accession to the Maastricht Treaty. Thus, we create a binary variable, *MaastrichtAccession*. *MaastrichtAccession* takes the value of one for the year a country signed the Maastricht Treaty, as well as subsequent years until the end of the data set. For countries that signed the agreement and later exited, such as the United Kingdom following Brexit, we continue to code the variable as one to reflect the assumption that the structural shift towards increased CBI resulting from accession persists even after formal EU membership ends.

3.1.5 Post-Soviet Dummy

After removing outliers, we still observe instances of extreme inflation, particularly in post-Soviet states during the 1990s. As Kaser (1999) explains, the Commonwealth of Independent States (CIS) retained the Russian Ruble after the dissolution of the Soviet Union and experienced extreme levels of inflation when Russia decontrolled prices during its market transition (p. 24). These inflation spikes are unlikely to reflect changes in central bank independence. To address this, we introduce a dummy variable, *PostSoviet*. *PostSoviet* takes a value of one for Soviet states from 1989 to 1998, spanning the fall of the Berlin Wall to the stabilisation of the inflation in the CIS countries (p. 24). To avoid excluding the entire region

and introducing selection bias, we use this approach rather than relying on stricter outlier removal.

Some might suggest a similar adjustment for Latin American countries that also experienced extreme inflation in the 1990s; however, Luis Ignacio Jácome and Samuel Pienknagura (2022) argue that the subsequent reduction in inflation across the region was largely driven by institutional reforms and increases in CBI (pp. 23-31). As this variation relates to our independent variable, we do not introduce a dummy for this period, treating these observations as part of the effect we are trying to estimate.

3.2 Methodological Approach

To test the hypothesis that there is a significant negative relationship between CBI and inflation, we begin with a baseline model designed to reflect the simplified specifications commonly used in earlier studies, like Alesina and Summers (1993). Next, we extend the model by treating outliers, controlling for confounding factors, and including a time-lag in CBI to reflect delays in monetary policy. To address potential endogeneity, we specify a model using accession to Maastricht as an instrumental variable and conduct a placebo test to evaluate the exclusion restriction of our instrument.

3.2.1 Fixed Effects and Clustered Standard Errors

Throughout specifications, we include country and year fixed effects to control for unobserved heterogeneity. Country fixed effects control for time-invariant differences across nations, like cultural, historical, and institutional characteristics that may influence both CBI and inflation. Year fixed effects control for shocks that affect all countries in a given year, such as financial crises or oil price shocks, preventing this variation from being mistakenly attributed to CBI. By controlling for these sources of unobserved heterogeneity, fixed effects reduce omitted variable bias, allowing us to focus on the within-country, over-time relationship between CBI and inflation.

In addition to fixed effects, we cluster standard errors at the country level, consistent with the level at which CBI varies. This mitigates biases introduced by serial correlation within countries over time, which is likely given that inflation is often considered sticky in the short run. Furthermore, clustering addresses concerns about potential heteroskedasticity, improving the reliability of our significance tests.

3.2.2 Baseline Model

To estimate the untreated relationship between CBI and inflation described by Alesina and Summers (1993), we start by regressing inflation on CBI using a simple OLS without controls or data transformations. This establishes a baseline for comparison with later specifications, helping to understand the contribution of cumulative controls. Mathematically, the specification is described by

$$\pi_{it} = \alpha_i + \beta_1 CBI_{it} + \varepsilon_{it}$$

where π_{it} is the annual inflation rate for country i in period t , CBI_{it} is the central bank independence for country i (as measured by the Cukierman index) in period t , and ε_{it} is the idiosyncratic error term.

To extend the comparability of the baseline model, we add fixed effects, resulting in the following specifications: OLS with country fixed effects, OLS with year fixed effects and OLS with two-way fixed effects (country and year) as illustrated by the following specification:

$$\pi_{it} = \mu_i + \lambda_t + \beta_1 CBI_{it} + \varepsilon_{it}$$

Here, μ_i is the fixed effect for country i , and λ_t is the fixed effect for year t .

3.2.3 Extended Model

With a reference point established, we extend the model by treating outliers, adding macroeconomic controls, and incorporating lag in the independent variable.

We exclude observations with a Z-score above three, removing 0.19% of the data, minimising bias from outliers. This removes observations unlikely to represent typical variation without significantly reducing the sample size.

According to the AD-AS framework, the classical dichotomy does not hold in the short run because prices, and consequently inflation, are considered sticky. As a result, changes in monetary policy, shaped by institutional factors like central bank independence, may affect inflation only with a delay. To account for this delayed effect, we transform the CBI index into a five-year backward-looking moving average.

We incorporate the macroeconomic controls referenced in section 3.2.2 and include a specification with the post-Soviet dummy. Mathematically, the complete model is

$$\pi_{it} = \mu_i + \lambda_t + \beta_1 \text{CBI_ma5}_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

where CBI_ma5_{it} is the 5-year moving average of CBI and β_1 is its coefficient, X_{it} a vector for the controls: real GDP growth; government deficit (% of GDP); government debt (% of GDP); real effective exchange rate (REER); interaction term between GDP growth and CBI; and the post-Soviet dummy, and β_2 is the vector of the controls coefficients.

The extended model addresses key limitations in the baseline specification, but concerns about potential endogeneity between CBI and inflation remain. This motivates the use of our instrumental variable.

3.2.4 Instrumental Variable Model

Potential Confounders

Inflation could be affected by many unobservable factors that might also influence the independence of a country's central bank. Bias might also be introduced by measurement error in the CBI index, as it is retrospectively constructed and based only on de jure factors.

Maastricht as an Instrument

To address these issues, we regress a two-stage least squares (2SLS) model with accession to the Maastricht Treaty as a binary dummy to instrument CBI. The Maastricht treaty was originally signed by twelve European countries in 1992, with additional countries joining in subsequent years. It established the European Union, as well as the European Economic and Monetary Union (Baliño and Cottarelli, 1994, p. 290). The treaty required, and still requires, prospective parties to meet certain economic and legislative criteria, including a guarantee of CBI in national law (European Central Bank, 2024). The external pressure to reform the structure and governance of central banks across countries that opted to be part of the treaty creates a potentially exogenous source of variation in CBI.

The first stage regression predicts the effect of accession to Maastricht on CBI. The specification is

$$\text{CBI}_{it} = \mu_i + \lambda_t + \gamma_1 \text{MaastrichtAccession}_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

where $MaastrichtAccession_{it}$ is a binary variable equal to one if a country has adopted the Maastricht reforms by year t , and zero otherwise, and γ_1 is the coefficient of $MaastrichtAccession_{it}$. The second stage regression, estimating the effect on inflation, is specified as

$$\pi_{it} = \mu_i + \lambda_t + \gamma_1 + \beta_1 \widehat{CBI}_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

where $\widehat{CBI}_{it}$ is the predicted CBI value from the first stage regression, for country i in period t . For consistency, the IV is estimated using the same set of controls and fixed effects as in the extended model, except that the interaction term between CBI and real GDP growth is omitted, since CBI is the dependent variable in the first-stage regression. To assess robustness, we estimate the model both with and without the post-Soviet dummy.

Relevance

Since countries that signed the Maastricht Treaty were required to undertake legal and institutional reforms to strengthen central bank independence, we expect a strong relationship between treaty accession and CBI. To explore this, we initially plot the time series of CBI for two subgroups: Maastricht countries and non-Maastricht countries. More formally, we test the relevance of the instrument in the first stage of the 2SLS regression.

Exclusion Restriction

Using Maastricht as an instrument relies on the assumption that it affects inflation through no other channel than CBI. That is, the exclusion restriction holds. However, some potential concerns about the validity of this assumption should be acknowledged.

First, there is an issue of selection bias due to the non-random selection of signatories to the Maastricht Treaty. Accession may be correlated with country characteristics, given that all signatories are European countries exhibiting similarities like advanced institutions and higher economic development. However, this selection bias should not be overstated; for instance, some less developed countries, such as Greece, signed the treaty, while some highly developed countries, such as Norway and Switzerland, never did.

Furthermore, there is a risk of unobserved heterogeneity, as factors affecting both accession and inflation may bias the relationship. Beyond the compatibility of national legislation with Maastricht, which included central bank independence, signatories had to

meet four convergence criteria related to the following areas: price stability; sound public finances (government deficit and debt); exchange-rate stability; and long-term interest rates (European Central Bank, 2024, pp. 5-31). The latter three criteria are either directly or indirectly controlled for in the specification. However, the price stability criterion raises the possibility that countries undertook inflation-reducing measures independently of CBI, potentially violating the exclusion restriction. Nevertheless, the macroeconomic controls and fixed effects absorb a lot of potential anti-inflation policy. Furthermore, we conduct a placebo test to evaluate the exclusion restriction by empirically examining whether there were preexisting differences in inflation between Maastricht and non-Maastricht countries.

Placebo Test

We conduct the placebo test by creating a ‘placebo Maastricht accession’ variable, assigning all signatories a fabricated accession year of 1960. The sample is restricted to the pre-Maastricht period, spanning 1923 to 1991, thereby creating a dataset that includes approximately 30 years before and after the placebo accession, mirroring the structure of the actual IV-model (1963–2023). We re-estimate the 2SLS model using the placebo treatment, maintaining the same set of controls for consistency. Since the placebo sample ends in 1991 and the post-Soviet dummy only becomes relevant from 1989 onward, we exclude it.

If the placebo instrument significantly predicts inflation, the exclusion restriction would be challenged, as it indicates that the Maastricht countries share pre-existing trends that correlate with inflation; however, if the placebo variable does not significantly predict inflation in the pre-Maastricht period, it supports the credibility of the instrument by suggesting that the accession to Maastricht primarily affects inflation through CBI. A non-significant placebo result would thus support the validity of the instrument and the findings of the IV model.

4. Results

This section presents the model results. It begins with descriptive statistics and an evaluation of data trends. The results are then structured according to the methodology: starting with the baseline model, followed by the extended model, and instrumental variable approach. The section concludes with the findings of the placebo test.

4.1 Descriptive Statistics

Table 1

Summary Statistics for Key Variables

	Count	Mean	SD	Min	Q1	Median	Q3	Max
Inflation (%)	8386	19.596	106.464	-72.729	2.142	5.061	10.919	2355.150
CBI (0-1)	7190	0.536	0.233	0.050	0.379	0.503	0.712	0.979
GDP Growth (%)	7740	3.808	6.692	-64.047	1.443	3.885	6.300	149.973
Deficit-to-GDP (%)	7153	-2.370	13.100	-557.499	-4.645	-2.194	0.213	61.515
REER	7771	122.629	101.886	0.577	92.095	101.765	125.319	3394.033
Debt-to-GDP (%)	7358	49.950	41.112	0.000	22.420	41.110	65.180	600.120

Note: The table reports summary statistics for the outlier-adjusted sample used in all regressions except the baseline specification. Real effective exchange rate (REER) is normalised to 100 in the base year; values above 100 indicate real appreciation, and values below indicate depreciation.

Inflation displays a notably wide distribution, with a mean of 19.60% and a standard deviation of 106.46%, while the median is 5.06%. The first and third quartiles (2.14% and 10.92%, respectively) indicate that most observations are concentrated at moderate levels, with a small number of extreme values driving the mean upward. To explore potential trends, time series plots for key variables are presented in Figure 1–6.

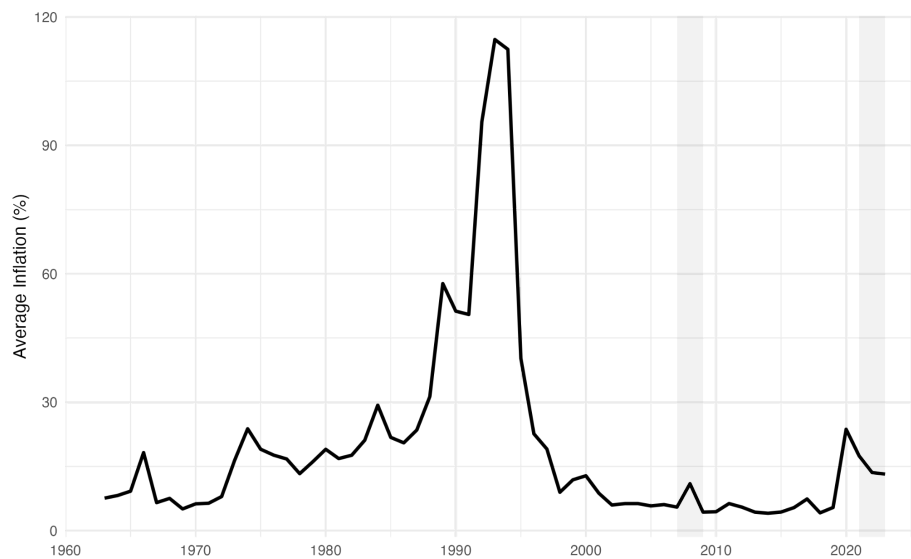
Figure 1*Average Inflation (1963–2023)*

Figure 1 displays the average inflation rate across all countries in the sample from 1963 to 2023. The grey area highlights the GFC (2007–2009) and the post-pandemic inflation surge (2021–2023). Source: Global Macro Database (Müller et al., 2025).

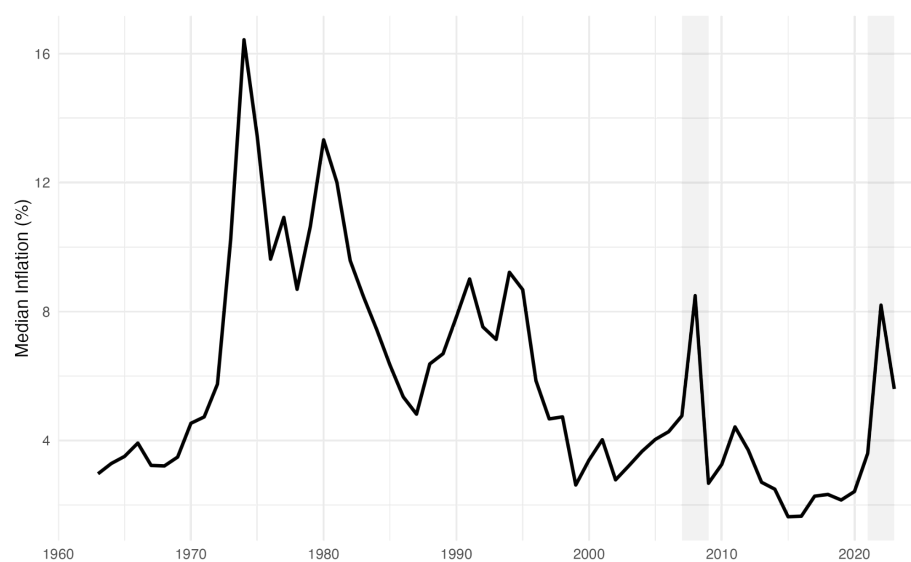
Figure 2*Median Inflation (1963–2023)*

Figure 2 displays the median inflation rate across all countries in the sample from 1963 to 2023. The grey area highlights the GFC (2007–2009) and the post-pandemic inflation surge (2021–2023). Source: Global Macro Database (Müller et al., 2025).

A general downward trend in global inflation is evident, with higher average inflation rates before the 2000s and a gradual decline in median inflation over time. A notable exception is the sharp rise in mean inflation during the early 1990s (Figure 1), largely driven by extreme inflation in CIS countries following the Soviet Union's collapse. Both Figure 1 and 2 suggest that inflation has been lower and more stable since the early 2000s, except spikes in 2007–2009 and 2021–2023, which coincide with the global financial crisis and the post-pandemic inflation surge, respectively. As for average CBI (Figure 3), a clear upward trend is visible from the 1990s and onwards, with a moderation in the 2010s.

Figure 3

Average CBI (1963–2023)

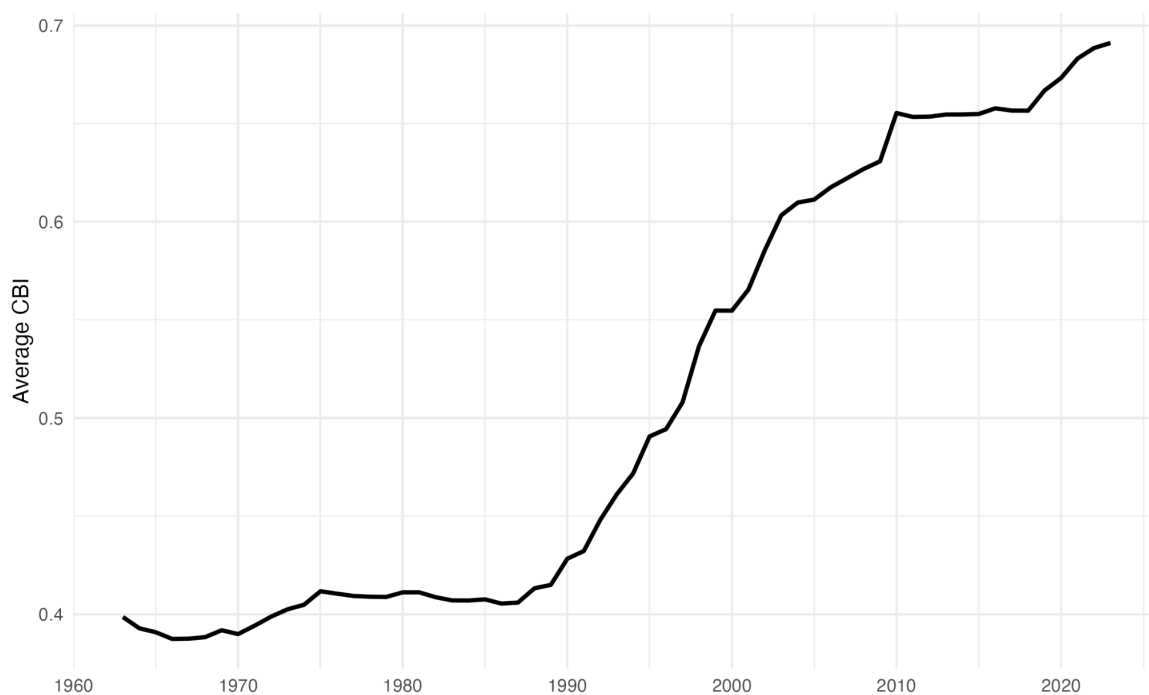


Figure 3 displays the average CBI across all countries in the sample from 1963 to 2023. Source: CBI Data (Romelli, 2022; 2024).

As accession to the Maastricht Treaty is used as an instrument, Figures 4–6 compare CBI and inflation between signatories and non-signatories. Each variable is plotted using both the original 12 signatories and the full set of countries that have signed the treaty. Figure 4 shows similar CBI levels across groups before the Treaty in 1992, followed by higher CBI among

signatories after 1992. Figure 5 and 6 indicate that inflation was consistently lower and more stable among Maastricht countries, particularly after 1992. Figure 5 shows that Maastricht countries had consistently lower and more stable inflation, both before and after the treaty, despite some post-treaty convergence. To account for the influence of extreme inflation values, Figure 6 presents median inflation. Unlike the average (Figure 5), the median reveals a clearer and more persistent post-treaty gap between Maastricht signatories and others. The similarity in inflation levels before 1992 and the divergence afterward, visible in both CBI and median inflation, supports the use of Maastricht accession as a credible instrument for identifying the effect of CBI on inflation.

Figure 4

Average CBI: Maastricht Signatories vs. Non-signatories (1963–2023)

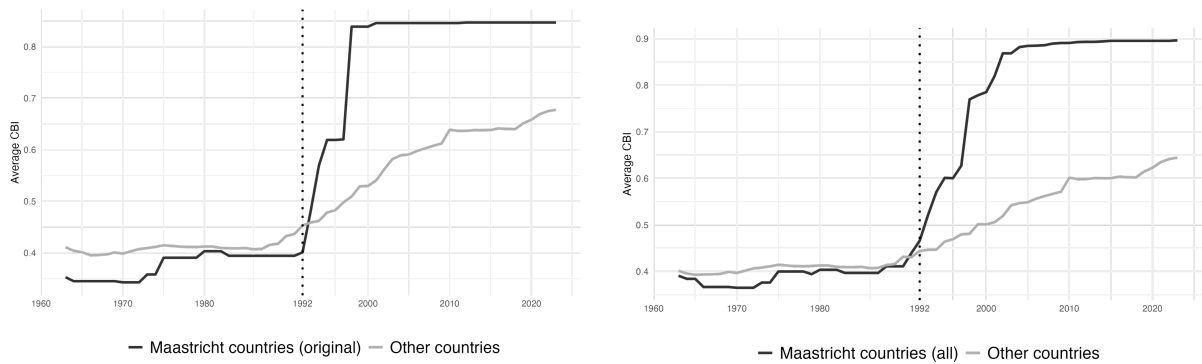


Figure 4 compares average CBI for Maastricht signatories and non-signatories. The left panel includes only the original 12 countries that signed the treaty in 1992 among the Maastricht countries, while the right panel includes all countries that have signed the treaty up to the present. Source: CBI Data (Romelli, 2022; 2024).

Figure 5

Average Inflation: Maastricht Signatories vs Non-signatories (1963–2023)

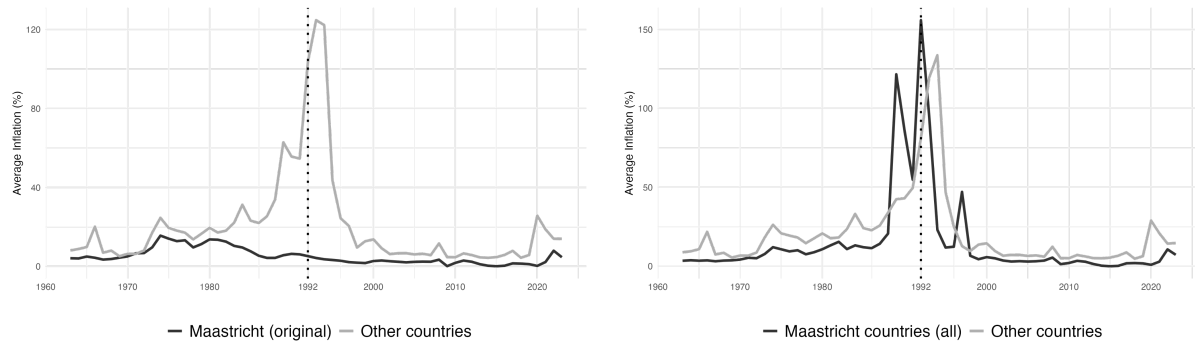


Figure 5 compares average inflation for Maastricht signatories and non-signatories. The left panel includes only the original 12 countries that signed the treaty in 1992 among the Maastricht countries, while the right panel includes all countries that have signed the treaty up to the present. Source: Global Macro Database (Müller et al., 2025).

Figure 6

Median Inflation: Maastricht Signatories vs Non-signatories (1963–2023)

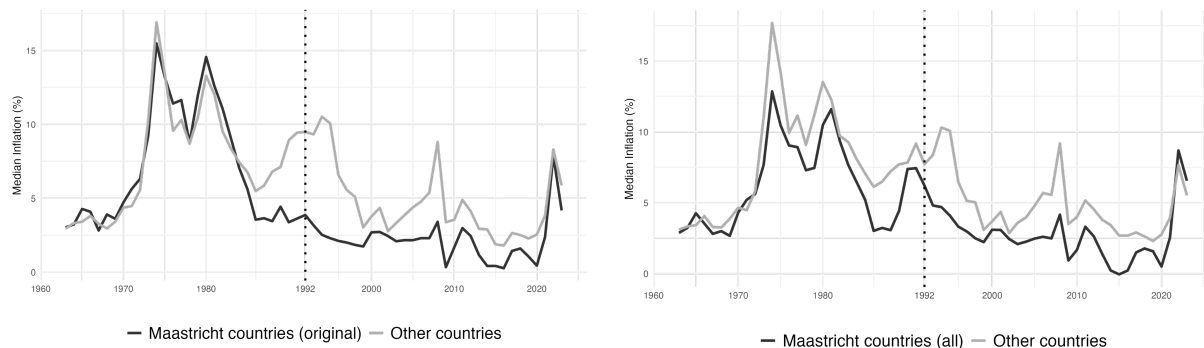


Figure 6 compares median inflation for Maastricht signatories and non-signatories. The left panel includes only the original 12 countries that signed the treaty in 1992 among the Maastricht countries, while the right panel includes all countries that have signed the treaty up to the present. Source: Global Macro Database (Müller et al., 2025).

4.2 Baseline Model Results

Table 2 presents estimates from the baseline specification assessing the relationship between central bank independence (CBI) and inflation. Column (1) shows the results from a simple OLS regression without fixed effects. The coefficient on the CBI index is positive (52.47) and statistically insignificant. Columns (2) and (3) introduce country and year fixed effects separately. While the coefficient remains positive, it continues to lack statistical significance.

In Column (4), which includes both country and year fixed effects, the coefficient becomes negative (−18.14) but still remains insignificant. While none of the coefficients are significant, the shift from a large positive to a negative estimate when both types of fixed effects are included suggests that unobserved heterogeneity across countries and over time may confound the untreated relationship between CBI and inflation. This reaffirms the need to control for such factors in subsequent models.

Table 2

Baseline model

	(1)	(2)	(3)	(4)
	Baseline	Country FE	Year FE	Full Fixed Effects
(Intercept)	7.590 (31.260)			
CBI index	52.473 (78.827)	1.280 (128.414)	66.141 (64.967)	−18.136 (84.439)
Num.Obs.	7705	7705	7705	7705
<i>R</i> ²	0.000	0.026	0.008	0.034
<i>R</i> ² Adj.	0.000	0.007	−0.002	0.005
RMSE	847.85	836.68	844.74	833.44

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3 Extended Model Results

Table 3 presents the results of the extended model, which introduces controls sequentially. Compared to the baseline model, the specification in Column (1) excludes outliers and replaces the CBI variable with a 5-year moving average (*CBI_ma5*). This results in a smaller, still statistically insignificant coefficient (−8.54). The decrease in the coefficient suggests that the baseline estimate may have been influenced by extreme values.

As control variables are added across Columns (2) to (5), the coefficient on *CBI_ma5* becomes increasingly negative. In Column (6), which includes all controls except the post-Soviet dummy, the coefficient is −33.63 and statistically significant at the 1% level. When the post-Soviet dummy is included in Column (7), the coefficient decreases to −23.81 and remains significant at the 5% level. The reduction in magnitude indicates that part of the

variation previously attributed to CBI is absorbed by the post-Soviet indicator. Throughout specifications, the model fit also improves: adjusted R^2 increases from 0.09 to 0.14, and RMSE declines from 76.67 to 59.52 between Columns (1) and (7). In Columns (6) and (7), the interaction term between CBI and GDP growth is positive and weakly significant ($p < 0.1$).

Table 3

Extended Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CBI_ma5	-8.673 (16.038)	-14.385 (15.488)	-21.786+ (12.043)	-22.921+ (12.522)	-20.081 (12.265)	-33.625** (11.583)	-23.808* (11.748)
GDP growth		-0.980** (0.354)	-1.138* (0.460)	-1.207* (0.517)	-1.130* (0.521)	-3.309+ (1.737)	-2.867* (1.309)
Deficit-to-GDP			0.097 (0.089)	0.097 (0.094)	0.160 (0.097)	0.162+ (0.096)	0.144 (0.091)
REER				0.038 (0.026)	0.029 (0.024)	0.032 (0.023)	0.018 (0.020)
Debt-to-GDP					0.109* (0.053)	0.114* (0.054)	0.078+ (0.040)
CBI_ma5 × GDP growth						4.223+ (2.499)	3.600+ (1.824)
Post-Soviet							133.722 (105.473)
Num. Obs.					6184	6184	6055
R^2					0.152	0.155	0.171
R^2 Adj.					0.122	0.126	0.142
RMSE					60.60	60.48	59.52

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.4 Instrumental Variable Model Results

Table 4 presents the results from the two-stage least squares (2SLS) model, where accession to the Maastricht Treaty is used to instrument CBI.

Columns (1) and (2) report the regressions without controlling for post-Soviet status. In the first stage regression (column 2), the coefficient on the Maastricht dummy (0.34) is positive and highly significant, suggesting that accession to the Maastricht Treaty is a strong predictor of CBI. The second-stage regression in column (1) shows a negative relationship between the predicted value of CBI and inflation, with a coefficient of -46.107 , also significant at the 0.1% level.

When the post-Soviet dummy is included in the specification, the first-stage regression remains highly significant at the 0.1% level (column 4), and the second-stage regression becomes significant at the 1% level (column 3). The magnitude of the coefficient on CBI in the second stage decreases to -34.64 , which is to be expected as the dummy absorbs some variation in inflation previously attributed to CBI.

Table 4*Instrumental Variable Model*

	(1)	(2)	(3)	(4)
	Second stage	First stage	Second stage (PostSoviet)	First stage (PostSoviet)
GDP growth	-0.996*** (0.152)	-0.001** (0.000)	-0.914*** (0.151)	-0.001** (0.000)
Deficit-to-GDP	0.100 (0.068)	0.001*** (0.000)	0.091 (0.067)	0.001*** (0.000)
REER	0.028* (0.013)	-0.000*** (0.000)	0.031* (0.013)	-0.000*** (0.000)
Debt-to-GDP	0.087** (0.027)	0.000 (0.000)	0.079** (0.027)	0.000 (0.000)
Post-Soviet			132.550*** (11.075)	-0.131*** (0.025)
CBI ma5(fit)	-46.107*** (10.782)		-34.641** (10.815)	
Maastricht		0.341*** (0.008)		0.337*** (0.008)
Num.Obs.	6055	6055	6055	6055
<i>R</i> ²	0.127	0.650	0.148	0.652
<i>R</i> ² Adj.	0.106	0.642	0.128	0.643
RMSE	61.07	0.14	60.32	0.14

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

4.4.1 Placebo Test

Table 5 reports the results of the placebo test. Column (2) presents the first-stage regression, which shows a weak association between the placebo instrument and central bank independence (CBI), with a coefficient of -0.02 , significant at the 10% level. This estimate is both smaller in magnitude and opposite in sign compared to the coefficient for the actual instrument (0.34), suggesting the placebo instrument lacks explanatory power for CBI. In the second stage, shown in column (1), there is no statistically significant relationship between the fitted CBI values and inflation. Although the estimate is large in absolute terms (-633.43), the corresponding standard error (988.37), indicates that the estimate is not distinguishable from zero.

Table 5*Placebo Model*

	(1)	(2)
	Second stage	First stage
GDP growth	-1.672** (0.569)	-0.000 (0.000)
Deficit-to-GDP	0.477 (0.410)	0.000* (0.000)
REER	-0.010 (0.063)	-0.000*** (0.000)
Debt-to-GDP	0.618 (0.378)	0.000*** (0.000)
CBI index(fit)	-633.430 (988.347)	
Placebo values		-0.022+ (0.012)
Num. Obs.	1842	1842
<i>R</i> ²	0.039	0.929
<i>R</i> ² Adj.	-0.017	0.925
RMSE	81.61	0.05

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: the post-Soviet dummy is not included in the placebo model, as the period it captures falls almost entirely outside the years covered by the placebo specification.

5. Discussion

5.1 Interpretation of Results

Both the extended and IV models support the hypothesis of a significant negative relationship between central bank independence and inflation. The findings suggest that the conclusions from Alesina and Summers (1993) hold when tested with a broader dataset, improved methodology, and controls for key confounding factors.

The CBI coefficient of the baseline model is -18.14 and insignificant (Table 2, Column 4). However, when developed into the extended model, the coefficient shifts to -33.63 and becomes significant at the 1% level (Table 3, Column 6). The change in magnitude and significance underscores the importance of accounting for outliers and including relevant control variables. This is further validated by the progressive improvement in model fit, as indicated by higher adjusted R^2 and lower RMSE values.

According to the extended model (Table 3, Column 6), a full increase in CBI from 0 to 1 corresponds to a 33.63 percentage point reduction in inflation when GDP growth is zero. A more realistic 0.2 increase in CBI is associated with a 6.73 percentage point decline. The interaction term suggests that this effect diminishes at higher growth rates; for instance, with 2% GDP growth, the same increase in CBI yields a 5.04 point reduction in inflation. However, the interaction term is only weakly significant, so this moderating effect should be interpreted cautiously.

After adding the post-Soviet control in the extended model (Table 3, Column 7), the magnitude of the CBI coefficient decreases from -33.63 to -23.81 , now significant at the 5% level. This decrease suggests that some of the variation previously attributed to CBI was capturing the effect of extreme inflation in the post-Soviet republics following the dissolution of the USSR. Controlling for this historical shock likely improves the precision of the estimate. According to this specification, a full increase in CBI from 0 to 1 is associated with a 23.81 percentage point reduction in inflation when GDP growth is zero, and a 0.2 increase in CBI implies a 4.76 percentage point decline in inflation.

As in earlier specifications, the coefficient on the interaction term with GDP growth is positive (3.60), indicating that the effect of CBI diminishes as growth rises. This pattern is intuitive, as the political and fiscal incentives to expand the money supply are likely stronger during economic downturns. However, the interaction term is still weakly significant.

The IV model reinforces the findings from the extended OLS specification and provides additional support for our hypothesis. The first-stage results (Table 4, Column 2) show that Maastricht accession is a strong and relevant instrument for central bank independence, with a highly significant coefficient of 0.34. This implies that, on average, accession increased the CBI substantially among signatories. In the second stage (Table 4, Column 1), the coefficient on the instrumented CBI variable is -46.11 and highly significant, indicating that a 0.2 increase in CBI corresponds to a 9.22 percentage point reduction in inflation. When including the post-Soviet dummy, the coefficient decreases to -34.64 , implying a 6.93 point decline for a 0.2 increase in CBI. The larger magnitude of the IV coefficients relative to the OLS estimates suggests that the latter may be subject to attenuation bias caused by measurement error or omitted variables. Thus, the IV approach may provide a more accurate estimate of the causal effect of CBI on inflation. However, as the identified variation of the IV is limited to a subsample of the Maastricht countries, the external validity of the IV findings may be limited. Therefore, one should be cautious to generalise the IV results beyond the Maastricht subsample.

The placebo test result supports the exclusion restriction and the internal validity of the IV model, as the second-stage result is insignificant. The first stage regression shows weak significance but does not invalidate the instrument, as this can likely be attributed to region-specific differences in independence levels that do not carry over to an effect on inflation. The contrast in significance and magnitude of coefficients between the IV and the placebo results reinforces the interpretation that Maastricht's impact on inflation operates through changes in central bank independence and not other confounding channels.

Overall, by addressing endogeneity concerns and incorporating a broader dataset with improved controls, our study complements the findings of Alesina and Summers (1993) by providing more robust evidence for a possible causal interpretation of the relationship between inflation and CBI.

5.2 Implications

The robust relationship between CBI and inflation identified in our findings aligns with the theoretical case for shielding monetary policy from politics, even though the legitimacy of CBI has become increasingly contested since the GFC. Recent critiques raise valid concerns about the role of independent central banks in macroprudential oversight and democratic accountability, but these issues do not contradict the fundamental theoretical argument for

CBI: by credibly committing to rules rather than discretion, independent central banks help resolve the time-inconsistency problem in monetary policymaking.

Although not the primary focus of this study, if the relationship observed were to reflect a causal effect, countries faced with persistently high inflation could potentially regard greater central bank independence as part of a policy response; however, we acknowledge that there are typically significant legal and political hurdles to enacting such reforms. While we acknowledge that political constraints play an important role, the instrumental variable used in our analysis points to the role that international frameworks can play in overcoming such hurdles.

5.3 Limitations

While the Cukierman Index is one of the most recognised measures of CBI, it is important to note that it only captures *de jure* factors and is a proxy for true independence. Because a central bank's legal framework does not necessarily translate precisely into *de facto* autonomy, there is a possibility of measurement error.

Furthermore, although our dataset is extensive, covering many countries over a long time horizon, we acknowledge the potential for sample selection bias. Data availability varies across countries and is likely correlated with country characteristics such as institutional quality and economic development.

Additionally, inflation is influenced by a wide range of economic and political factors, many of which are difficult to observe or measure fully. While we control for major confounders, some relevant variables might be omitted. Simultaneously, including too many controls can oversaturate the model. We, therefore, aim to capture meaningful variation while avoiding overfitting.

Finally, we emphasise the difficulties with validating the exclusion restriction of the instrumental variable approach. Although Maastricht provides a possibly exogenous source of variation in CBI, there are characteristics correlated both with accession to Maastricht and inflation that could violate the exclusion restriction. Yet, we have tried to control for these influences by including variables that capture the economic Maastricht convergence criteria. Furthermore, the placebo test supports the exclusion restriction, indicating that there were no substantial preexisting differences in inflation trends between Maastricht and non-Maastricht countries. However, it does not fully eliminate the possibility that Maastricht affects inflation through channels other than CBI.

5.4 Further Research

Examining the relationship between CBI and inflation variability would complement our findings by clarifying whether CBI is associated with both lower average inflation and lower inflation volatility. A negative relationship with inflation volatility would further strengthen the case for CBI.

Furthermore, our paper assumes that the relationship between CBI and inflation is linear. Exploration of a non-linear relationship would be a meaningful contribution to the literature. It is reasonable to suspect that the relationship between CBI and inflation may exhibit diminishing returns under certain circumstances, as suggested by Acemoglu et al. (2008). Gains in terms of credibility and inflation expectations are likely more substantial when CBI increases for heavily politicised central banks, compared to central banks that already enjoy high independence.

Moreover, based on the critique of how independent central banks failed in terms of macroprudential oversight before the GFC, investigating the relationship between independence and financial stability could be a valuable opportunity for further research. Exploring whether independence affects a central bank's ability to act efficiently in economic turmoil could provide important insights into the role of central banks in the post-GFC era.

6. Concluding Remarks

Although the legitimacy of central bank independence is increasingly contested, our analysis finds a strong, negative relationship between CBI and inflation, consistent with its theoretical foundations. Using a larger sample than previous studies and addressing endogeneity concerns, our study confirms and reinforces the findings of Alesina and Summers (1993). If interpreted as causal, the results strengthen the case for insulating monetary policy from politics, especially in today's era of interference.

References

- Acemoglu, D., Johnson, S., Querubín, P., & Robinson, J. A. (2008). When Does Policy Reform Work? The Case of Central Bank Independence. *Brookings Papers on Economic Activity*, 2008(1), 351–417. <https://doi.org/10.1353/eca.0.0002>
- Alesina, A., & Summers, L. H. (1993). Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence. *Journal of Money, Credit and Banking*, 25(2), 151–162. <https://doi.org/10.2307/2077833>
- Baliño, T. J. T., & Cotarelli, C. (1994). Frameworks for Monetary Stability: Policy Issues and Country Experiences. *IMF*.
- Blejer, M. I., & Wachtel, P. (2020). A Fresh Look at Central Bank Independence. *The Cato Journal*, 40(1), 105–132. <https://doi.org/10.36009/Cj.40.1.7>
- Cargill, T. F. (1995). The Statistical Association between Central Bank Independence and Inflation. *BNL Quarely Review*, 193, 159-172. <https://doi.org/10.13133/2037-3643/10560>
- Cukierman, A., Webb, S. B., & Neyapti, B. (1992). Measuring the Independence of Central Banks and Its Effect on Policy Outcomes. *The World Bank Economic Review*, 6(3), 353–398. <https://doi.org/10.1093/wber/6.3.353>
- European Central Bank. (2024, June). *Convergence Report*.
- Friedman, M. (1963). Inflation: Causes and consequences [Lecture transcript]. *Collected Works of Milton Friedman Project records*. Council for Economic Education. <https://miltonfriedman.hoover.org/objects/57545/inflation-causes-and-consequences>
- Friedman, M. (1968). The Role of Monetary Policy. *The American Economic Review*, 58(1), 1–17.

- Grilli, V., Masciandaro, D., & Tabellini, G. (1991). Political and Monetary Institutions and Public Financial Policies in the Industrial Countries. *Economic Policy*, 6(13), 342–392. <https://doi.org/10.2307/1344630>
- Inman, P. (2025, January 27). Political Interference in Central Banks Risks Economic Harm, ECB President Warns. *The Guardian*.
<https://www.theguardian.com/business/2025/jan/27/political-interference-in-central-banks-risks-economic-harm-ecb-president-warns>
- Jácome, L., I. & Pienknagura, S. (2022). Central Bank Independence and Inflation in Latin America—Through the Lens of History (Working paper). *International Monetary Fund*. <https://doi.org/10.5089/9798400219030.001>
- Jones, C. I. (2020). *Macroeconomics* (5th ed.). W. W. Norton & Company.
- Kaser, M. (1999). Escape routes from post-Soviet inflation and recession. *Finance & Development*, 36(2), 24-27.
- Kiley, M., & Mishkin, F. S. (2024). Central Banking Post Crises (Working paper). *National Bureau of Economic Research*. <https://doi.org/10.3386/w32237>
- Kydland, F. E., & Prescott, E. C. (1977). Rules rather than discretion: the inconsistency of optimal plans. *The Journal of Political Economy*, 85(3), 473–491.
<https://www.jstor.org/stable/1830193>
- Lagarde, C. (2025). *Central Bank Independence in an Era of Volatility*. European Central Bank.
<https://www.ecb.europa.eu/press/key/date/2025/html/ecb.sp250127~16c35af0c0.en.html>

- Levin, A. T. & Skinner, C. P. (2023). Central Bank Oversight: Assessing the Fed's Accountability to Congress. *The Wharton School Research Paper*.
<http://dx.doi.org/10.2139/ssrn.4653211>
- Müller, K., Xu, C., Lehib, M., & Chen, Z. (2025). *The Global Macro Database: A New International Macroeconomic Dataset*. <https://doi.org/10.3386/w33714>
- Partington, R. (2021, March 22). Turkish Economy in Turmoil Following Sacking of Central Bank Head. *The Guardian*.
<https://www.theguardian.com/world/2021/mar/22/turkish-economy-in-turmoil-following-sacking-of-central-bank-head>
- Posen, A. S. (1995). Declarations Are Not Enough: Financial Sector Sources of Central Bank Independence. *NBER Macroeconomics Annual*, 10, 253–274.
<https://doi.org/10.1086/654279>
- Rogoff, K. (1985). The Optimal Degree of Commitment to an Intermediate Monetary Target. *The Quarterly Journal of Economics*, 100(4), 1169–1189.
<https://doi.org/10.2307/1885679>
- Romelli, D. (2022). The Political Economy of Reforms in Central Bank Design: Evidence from a New Dataset. *Economic Policy*, 37(112), 641–688.
<https://doi.org/10.1093/epolic/eiac011>
- Romelli, D. (2024). Trends In Central Bank Independence: A De-jure Perspective. (Working paper). The University of Dublin, Trinity College
https://www.tcd.ie/triss/assets/PDFs/wps/Trends_in_CBI.pdf
- Samuels, B. (2025, April 17). Trump: If I ask Powell to Leave, He'll Be Out of There. *The Hill*.
<https://thehill.com/homenews/administration/5254177-trump-if-i-ask-powell-to-leave-hell-be-out-of-there/>

Sherman, N. (2025, April 25). Why Trump Keeps Attacking the US Central Bank. *BBC news*.
<https://www.bbc.com/news/articles/cx20lyg4385o>

Szakacs, G., & Than, K. (2024, September 8). Hungary's Orban to Overhaul Cabinet with New Central Bank Governor Appointment. *Reuters*.
<https://www.reuters.com/world/europe/hungarys-orban-overhaul-cabinet-with-new-central-bank-governor-appointment-2024-09-08/>

Appendix

Figure 7

Median CBI (1963–2023)

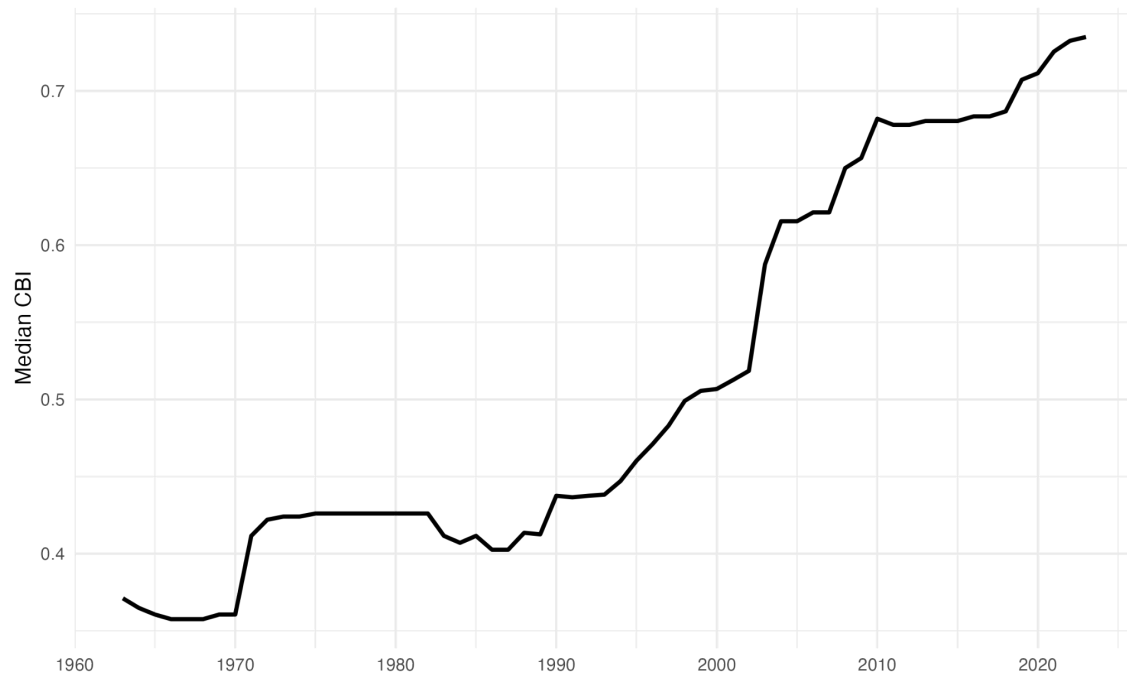


Figure 7 displays the median CBI across all countries in the sample from 1963 to 2023. Source: CBI Data (Romelli, 2022; 2024).

Figure 8

Median CBI: Maastricht Signatories vs Non-signatories (1963–2023)

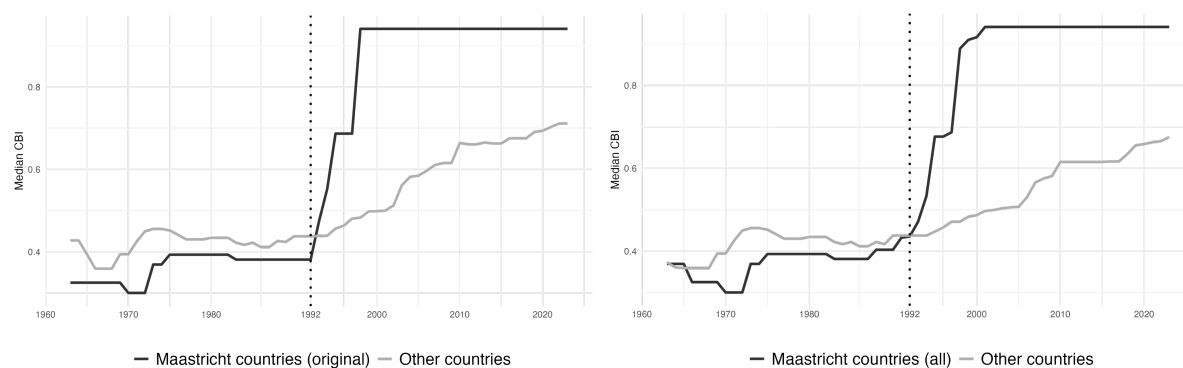
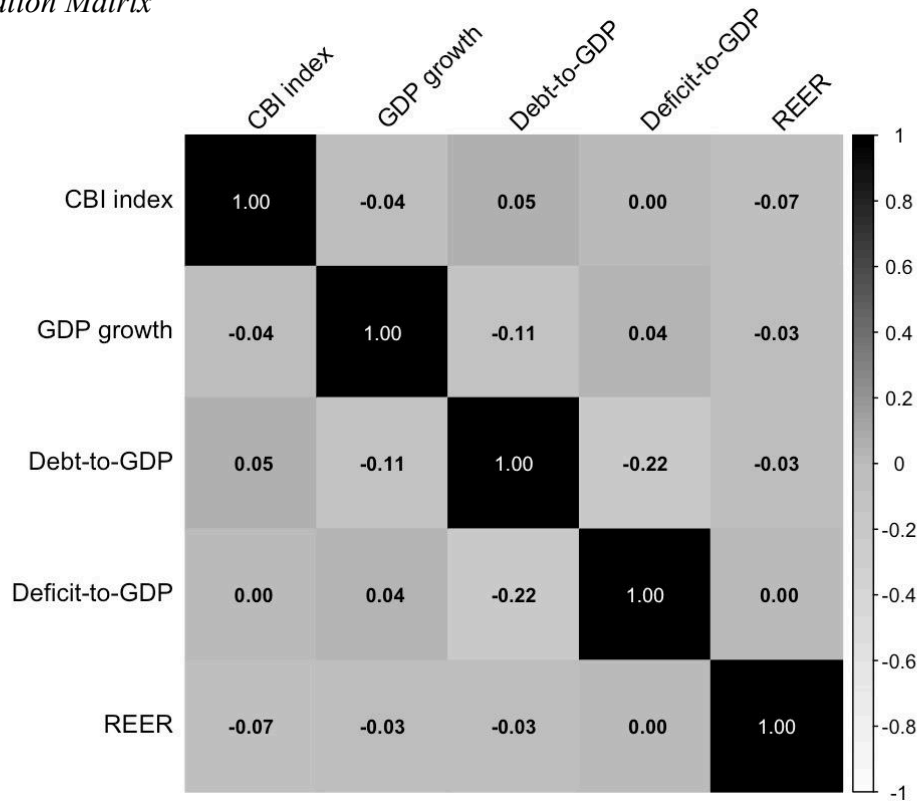


Figure 8 compares median CBI for Maastricht signatories and non-signatories. The left panel includes only the original 12 countries that signed the treaty in 1992 among the Maastricht countries, while the right panel includes all countries that have signed the treaty up to the present. Source: CBI Data (Romelli, 2022; 2024).

Figure 9*Correlation Matrix*

Graph 9 presents the pairwise correlations between the explanatory variables. The results indicate no concern regarding multicollinearity, as the highest correlation observed correlation is only -0.22 . However, it should be noted that the correlations are based on aggregated data across the entire sample. Source: Global Macro Database (Müller et al., 2025) & CBI Data (Romelli, 2022; 2024).

AI Disclaimer

ChatGPT has occasionally been used to assist us with coding, mainly with troubleshooting errors and formatting graphs. While we acknowledge the risks of using AI when coding, these risks have been mitigated by ensuring that we understand every step of the process. Additionally, ChatGPT has been used for grammar and spell-checking.