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Analyzing the Impact of Central Bank Independence on Its Credibility and Reputation in Afghanistan

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ABSTRACT

This study aims to critically analyze the impact of central bank independence on the credibility and reputation of the institution in the Islamic Republic of Afghanistan over the period from 2012 to 2023. In this context, the research seeks to provide a comprehensive and precise examination of various dimensions of central bank institutional independence, such as the reduction of political interference, the enhancement of transparency, and the promotion of the implementation of scientifically grounded and sustainable monetary policies. The research methodology is based on the Autoregressive Distributed Lag (ARDL) model and time-series data analysis. The results indicate that central bank independence has a significant and positive effect on its credibility and reputation. Moreover, exchange rate volatility has a significant negative impact on these variables, while economic growth and inflation control serve as complementary factors that play a crucial role in strengthening the credibility and reputation of the central bank. These findings provide a solid foundation for economic policy formulation aimed at reinforcing the central bank's standing both domestically and internationally.

KEYWORDS: Central Bank Independence, Central Bank Credibility, Economic Stability, Monetary Policy, Exchange Rate Volatility.

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1. Introduction

The independence of the central bank is a fundamental issue in macroeconomics, referring to the institution's ability to formulate and implement monetary policies without being subject to government influence, political parties, or other stakeholders. In this regard, two primary perspectives can be identified. The first perspective perceives the central bank as a government-dependent entity responsible for issuing currency and executing monetary policies aligned with governmental objectives. Under this framework, central bank independence is largely disregarded, and monetary policymaking remains under the direct influence of the government and political authorities. Conversely, the second perspective underscores the importance of central bank independence, viewing it as an institution primarily tasked with preserving the value of the national currency and controlling inflation. According to this view, monetary policies should be designed and implemented independently of governmental intervention, with the primary objective of ensuring price stability, even if such an approach imposes certain constraints on economic growth and employment. In general, central bank independence is regarded as a crucial determinant of macroeconomic stability, inflation control, and the reinforcement of public confidence in the monetary and financial system (Jafari Samimi et al., 2015; Ebrahimi, 2021).

The principal rationale for establishing an independent central bank is to mitigate fluctuations in the general price level and sustain macroeconomic stability. Consequently, numerous countries have recognized the significance of central bank independence and have enacted various legislative measures aimed at minimizing governmental oversight and intervention in monetary policymaking. For instance, during the period from 1989 to 1991, Canada, New Zealand, and Chile enacted laws granting their central banks the authority to operate independently, free from government interference. Additionally, the Maastricht Treaty, signed in 1992 among European Union member states, mandated the independence of national central banks as a prerequisite for participation in the European Monetary Union (Eurozone). These experiences underscore the critical role of central bank independence in fostering economic stability and curbing inflation on a global scale (Jafari et al., 2002).

The significance of central bank independence is particularly pronounced in developing economies such as Afghanistan, where monetary policy management, inflation control, financial stability, and public as well as international confidence play a pivotal role in economic governance. Given Afghanistan's persistent economic challenges—including exchange rate volatility, chronic inflation, and political pressures—enhancing central bank independence may serve as a crucial mechanism for improving macroeconomic performance and bolstering the national and international credibility of the institution.

The primary objective of this study is to investigate the impact of central bank independence on the credibility and reputation of Afghanistan's central bank among domestic and international stakeholders. The central research question addresses the extent to which greater independence can enhance the bank's credibility and reputation while identifying potential challenges and opportunities associated with this process. The study hypothesizes that an increase in central bank independence—achieved through reduced political interference, improved transparency,

and the adoption of scientifically grounded monetary policies—can significantly enhance both the domestic credibility and international standing of Afghanistan's central bank.

This study is structured as follows. Section 2 reviews the theoretical framework and relevant empirical literature on central bank independence and its macroeconomic implications. Section 3 outlines the research methodology and data collection process. Section 4 presents the model estimation and discusses the empirical findings. Finally, Section 5 concludes by summarizing the key insights derived from the study and offering policy recommendations.

2. Theoretical Foundations

Empirical Evidence

The Concept of Central Bank Independence

Central bank independence is one of the fundamental pillars of modern economic systems, serving as a crucial instrument in ensuring economic stability and the sustainability of monetary policies. This concept refers to the ability of the central bank to formulate and implement monetary policies without being influenced by political interventions and governmental pressures. By separating monetary policy from short-term political considerations, central bank independence allows for a focused approach to key macroeconomic objectives such as inflation control, price stability, and sustainable economic growth. In situations where governments may exploit monetary policy irresponsibly for short-term gains, central bank independence acts as a safeguard against such tendencies, thereby enhancing economic efficiency and stability (Adrian et al., 2024; Romelli, 2024; Aklin et al., 2021). In other words, central bank independence entails the separation of monetary policy from fiscal policy within a country's economic system, liberating the central bank from absolute government control. Consequently, governments are prevented from arbitrarily borrowing from the central bank or resorting to excessive money creation to cover budget deficits (Nourahmadi et al., 2022).

Central bank independence is one of the most critical pillars of economic governance, playing a decisive role in achieving economic stability and realizing key monetary policy objectives. This concept can be analyzed from three interrelated dimensions: economic, financial, and political, each contributing to the effective and autonomous functioning of the central bank. Economic independence refers to the central bank's ability to design and implement monetary and exchange rate policies based on scientific analysis and data-driven decision-making, without interference from government entities or political influences. This aspect of independence enables the central bank to pursue long-term objectives such as controlling inflation, preserving the value of the national currency, and stabilizing financial markets, free from political pressures to meet short-term government needs. Financial independence signifies the central bank's ability to secure the necessary financial resources to execute its monetary and exchange rate policies autonomously. This ensures that the central bank is not reliant on public budgets or the direct financing of government deficits, as such dependencies could lead to excessive money creation and, consequently, heightened inflation. The presence of independent financial resources and transparent asset management is therefore a crucial prerequisite for maintaining the credibility and effectiveness of the central bank. Political independence pertains to the central bank's

immunity from political interference in its decision-making processes. This dimension of independence is typically reinforced through legal and institutional frameworks, such as fixed and non-alterable terms for central bank governors, prohibitions on direct government financing by the central bank, and transparency in monetary policy reporting. Political independence enables the central bank to make decisions based on long-term economic interests while preventing monetary policy from being manipulated for political or electoral purposes (Gholami et al., 2021; Zarrin Eghbal et al., 2018).

Empirical evidence clearly demonstrates that increased central bank independence significantly contributes to inflation control, the management of inflation expectations, and the reduction of economic volatility. Countries with higher levels of central bank independence tend to experience significantly lower inflation rates, as their monetary authorities can pursue long-term objectives such as price stability, currency value preservation, and economic stability without being subjected to political pressures. Central bank independence also prevents governments from using monetary policy as a tool to finance budget deficits—a practice that has been a primary source of economic instability in many developing economies.

Extensive research has been conducted on this subject, confirming the positive impact of central bank independence on inflation reduction and economic stability. Notable studies by Canidi & Darwanto (2020), Egoba et al. (2019), Katseli et al. (2019), Burkowski (2019), Buda (2017), Zuccarelli (2017), Garriga (2016), Yugowau et al. (2012), Cherigui et al. (2011), Klomp & de Haan (2010), and Jácome & Vásquez (2008) have analyzed the relationship between central bank independence and macroeconomic stability across OECD countries, developed economies, and transition economies. Their findings consistently indicate that greater central bank independence leads to sustained inflation reduction and improved economic stability.

Additionally, classical studies by economists such as Cukierman (1993), Eijffinger & Schaling (1993), Alesina & Summers (1993), Grilli et al. (1991), Alesina & Sachs (1988), and Bade & Parkin (1988) have examined various dimensions of central bank independence and its correlation with monetary policy effectiveness, budget deficit management, and economic sustainability. These studies emphasize that central bank independence, by minimizing political interference and enhancing transparency and accountability, plays a crucial role in macroeconomic stability and strengthening public trust in monetary policy.

Overall, both empirical and theoretical studies highlight the significant impact of central bank independence on reducing inflation, managing inflation expectations, and improving economic stability. By insulating monetary policy from political considerations and government financing needs, central bank independence allows policymakers to focus on key macroeconomic objectives such as price stability and currency value preservation. Empirical evidence from both developed and developing economies indicates that central bank independence, through reducing political interference and enhancing transparency and accountability, plays a fundamental role in ensuring economic sustainability and fostering public confidence in monetary policies.

Indicators for Assessing Central Bank Independence

Central bank independence is one of the fundamental concepts in economic theories and monetary policy, consistently attracting the attention of researchers and policymakers. Given its crucial role in controlling inflation, ensuring economic stability, and enhancing the effectiveness

of monetary policies, extensive efforts have been made to develop precise and comprehensive indicators for measuring this concept. Over time, these indicators have evolved, each emphasizing specific dimensions of central bank independence and offering distinct theoretical and practical perspectives.

The first significant steps in this field were taken by Bade and Parkin (1988), who classified central bank independence into two key dimensions: political independence and financial independence. Political independence refers to the extent to which a central bank is insulated from government influence and political interference, ensuring that monetary policy decisions are made free from political pressures. On the other hand, financial independence pertains to a central bank's ability to finance its operations without reliance on government budgets, which safeguards its neutrality and the sustainability of monetary policies. This framework laid the foundation for further studies in subsequent decades. Expanding on this approach, Grilli et al. (1991) introduced a broader classification, distinguishing between political independence—which prevents governmental intervention in monetary policymaking—and economic independence, which emphasizes the central bank's ability to execute monetary policies autonomously without fiscal dependence on the government. This distinction provided a more refined analytical framework for understanding the interactions between economic policies and the role of central banks.

A major breakthrough in this domain was made by Cukierman et al. (1992), who developed one of the most comprehensive legal indicators for assessing central bank independence. Their index consists of four main components: the personal independence of the central bank governor, policy formulation autonomy, the ultimate objectives of the central bank, and restrictions on government financing. These components are further divided into 16 sub-indicators, each scored on a scale from 0 (lowest independence) to 1 (highest independence). The comprehensiveness and precision of this index have made it a primary tool in empirical research. Around the same time, Eijffinger and Schaling (1993) focused specifically on political independence, demonstrating that insulation from government influence is a crucial condition for sustainable and effective monetary policies. Their approach underscored the necessity of separating monetary policy from fiscal and executive government policies.

Subsequent advancements were made by Debelle and Fischer (1994), who introduced a new framework dividing central bank independence into goal independence and instrument independence. Goal independence refers to the central bank's authority to set its own policy objectives, such as controlling inflation or stabilizing the exchange rate, while instrument independence pertains to its ability to choose and implement the necessary tools to achieve these objectives. This distinction highlighted that both dimensions of independence are complementary and jointly essential for optimal monetary policy efficiency.

More recently, Dumitrescu (2009) proposed a new Central Bank Independence and Inflation Targeting Index, incorporating three main dimensions: legal and political independence, central bank governance and policy implementation, and transparency and accountability. By emphasizing the importance of transparency and accountability, Dumitrescu argued that these elements are essential complements to independence, asserting that a central bank can only achieve efficiency and public trust through the integration of independence, transparency, and accountability.

This study aims to apply Cukierman et al.'s (1992) index to calculate central bank independence and assess its impact on the credibility and reputation of the central bank.

The Concept of Central Bank Credibility and Reputation

Central bank credibility is a fundamental concept in monetary policymaking, referring to the institution's commitment to adhering to transparent rules and well-defined objectives. It is defined as the central bank's ability to gain public trust, ensuring that society believes in the actual implementation of its announced policy changes. In this regard, Cukierman (1986) defines credibility as the extent to which the public believes that a policy change has occurred when it actually has. This definition underscores the importance of transparency and consistency in policymaking, highlighting public trust as a crucial pillar of central bank success.

Building on this perspective, Blinder (1999) provides a more practical definition, describing credibility as the ability of a central bank to instill public belief in its statements, even when it is not strictly bound to follow them. According to him, a history of consistency between the central bank's words and actions forms the foundation of its credibility. This definition emphasizes that stability and persistence in implementing announced policies strengthen public and financial market confidence in the central bank. The focus on consistency highlights the significance of past performance in shaping future public expectations.

Similarly, Brunner (1983) views central bank credibility as a direct outcome of policymaking institutions' performance and historical track record. This perspective argues that a central bank's success in achieving past monetary objectives and aligning policies with public expectations plays a decisive role in establishing and maintaining credibility. It stresses the importance of historical performance, suggesting that credibility evolves over time through a sustained record of policy success.

Several factors influence central bank credibility, including independence, transparency, past performance, and commitment to policy objectives. Independence from political interference allows the central bank to make scientific and long-term decisions. Transparency in communications—particularly through timely and accurate disclosures of policy objectives, instruments, and outcomes—enhances public and market understanding of monetary decisions. Moreover, the central bank's track record in controlling inflation, managing economic crises, and adhering to announced targets reinforces public and financial market trust. Therefore, credibility is a dynamic concept that depends not only on current policies but also on historical performance and the central bank's interaction with society and financial markets.

Alongside credibility, central bank reputation serves as a reflection of past performance and policy predictability, significantly influencing economic expectations. A central bank with a strong reputation is more effective in managing inflation expectations and guiding market reactions to monetary policies. A solid reputation enables the central bank to maintain economic stability with minimal intervention, especially during crises. The relationship between reputation and credibility is also crucial: reputation, as a long-term asset, can reinforce short-term credibility and shield the central bank from economic and political pressures.

The importance of these two concepts in anchoring inflation expectations and reducing economic costs is evident. A highly credible and reputable central bank can influence economic

behavior and financial stability through indirect tools such as policy statements. Conversely, weak credibility or reputation may lead to public distrust, rising inflation expectations, and ineffective monetary policies.

Ultimately, maintaining credibility and reputation as vital institutional assets requires continuous and strategic management. This necessitates strengthening institutional independence, enhancing transparency, adhering to policy objectives, and fostering effective communication with society and financial markets. A central bank that upholds these principles will not only achieve its policy goals but also play a critical role in fostering economic stability and public trust.

Indicators for Assessing Central Bank Credibility and Reputation

Central bank credibility is a key concept in macroeconomics and monetary policy, referring to the institution's ability to manage inflation expectations and achieve its stated inflation targets. Beyond its role in stabilizing expectations, credibility serves as a benchmark for evaluating the central bank's performance in ensuring economic stability and building public trust. This concept has been analyzed from various perspectives, with three prominent approaches: the methodology of Bomfim and Rudebusch (2000), the forward-looking approach of Cecchetti and Krause (2002), and the backward-looking framework of Nunnekamp and Tillmann (2014). Each of these approaches emphasizes different aspects of how inflation expectations are shaped and provides distinct tools and indicators for assessing central bank credibility.

The methodology proposed by Bomfim and Rudebusch (2000) considers inflation expectations as a function of two key factors: the inflation target and a weighted average of past inflation. This approach assumes that the central bank attempts to guide inflation expectations by setting a clear target, while historical inflation experiences also influence expectations. Thus, credibility in this framework is determined by the extent to which inflation expectations align with the announced target. To measure credibility, indicators such as the deviation of actual inflation from the target and the responsiveness of expectations to monetary policy changes are utilized. The closer actual inflation remains to the target, the greater the credibility of the central bank.

In contrast, the forward-looking approach of Cecchetti and Krause (2002) argues that inflation expectations are primarily shaped by forward-looking information and anticipated central bank policies. This perspective emphasizes the role of transparent communication and policy announcements, assuming that economic agents adjust their expectations based on central bank statements, forecasts, and policy commitments. Within this framework, credibility depends on the transparency, consistency, and perceived reliability of the central bank's forward guidance. The primary indicators used to assess credibility in this approach include market reactions to monetary policy announcements, comparisons between central bank forecasts and actual outcomes, and evaluations of policy consistency with stated objectives. While both this and the previous approach highlight the importance of central bank targets in expectation formation, the forward-looking model focuses more on future-oriented communication and public trust in upcoming policies.

The backward-looking framework developed by Nunnekamp and Tillmann (2014) shifts the focus to historical central bank performance, positing that inflation expectations are shaped by the institution's past track record. According to this view, a central bank that has successfully met its inflation targets and maintained economic stability in the past enjoys greater credibility. This approach places emphasis on past inflation deviations, the persistence of monetary policy, and the institution's ability to mitigate economic fluctuations. Key indicators used to measure credibility in this framework include historical inflation trends, deviations from past targets, and assessments of long-term macroeconomic stability. The connection between this approach and the previous two lies in the common emphasis on central bank performance in building public trust; however, the backward-looking model prioritizes historical achievements, whereas the other two focus on present and future credibility factors.

This study adopts the backward-looking approach to analyze central bank credibility, emphasizing historical performance in achieving inflation targets and ensuring economic stability. By examining past inflation trends and deviations from announced targets, the effectiveness of the central bank in reducing economic volatility and meeting policy objectives is assessed. The choice of this method is based on the premise that historical performance serves as a reliable foundation for evaluating the central bank's ability to manage the economy and shape future expectations.

The independence of central banks has been a focal point of macroeconomic research, particularly concerning its implications for inflation control and overall economic stability. The theoretical and empirical literature extensively explores this relationship, with seminal contributions from Katseli et al. (2022), Yahya et al. (2022), Strong (2021), Kanidi and Darwanto (2020), Katseli et al. (2019), Eguba et al. (2019), Adina and Bogdan (2019), Burgowski (2019), He and Zhou (2019), Jamal and Salmi (2018), Afshari and Darei (2018), Zuccarelli (2017), Arnon and Romelli (2013), Boguao et al. (2012), Brem (2011), Klom and De Haan (2010), Crowe and Meade (2008), De Haan and Kooi (2000), Lybek (1999), Alesina and Sachs (1988), Loungani and Sheet (1997), Alesina and Summers (1993), Cukierman (1993), Barro and Gordon (1983), and Greely et al. (1991). These studies provide robust empirical evidence supporting the hypothesis that greater central bank independence contributes to lower inflation rates and enhanced macroeconomic stability.

Further, empirical analyses by Gholami et al. (2021), Zarrin Iqbal et al. (2018, 2017), Manzoor and Taghipour (2016), Rahmani and Abounoori (2015), and Amirkhani and Nasiri (2015) reaffirm the significance of institutional autonomy in fostering an environment conducive to price stability and long-term economic growth. By mitigating the influence of political cycles and short-term policy distortions, an independent central bank can formulate and implement monetary policies that align with long-term economic objectives.

Despite the extensive body of literature on the economic effects of central bank independence, limited research has been dedicated to examining its role in shaping the institution's credibility and reputation. This gap underscores the need for a more systematic investigation into how institutional independence influences public and international confidence in monetary policy frameworks. Given the pivotal role of credibility in ensuring policy effectiveness, a deeper understanding of this dimension could provide valuable insights into the broader implications of central bank autonomy.

Addressing this research gap holds significant theoretical and practical relevance. Strengthening the credibility of central banks through enhanced institutional independence not only reinforces their ability to anchor inflation expectations but also enhances their overall policy effectiveness. Future research in this area could contribute to a more comprehensive framework for assessing the interplay between central bank independence, institutional reputation, and macroeconomic stability. Consequently, these insights could inform the design of more resilient monetary policy strategies, fostering sustainable economic development at both national and international levels.

3. Methodology

Given that the present study aims to examine the effect of central bank independence on the credibility and reputation of the central bank in Afghanistan during the period 2002–2023 using the Autoregressive Distributed Lag (ARDL) model, the first step is to establish an appropriate modeling framework to capture the relationship between central bank independence and central bank credibility. To analyze this relationship, Model (1) is specified.

$$CBR_t = \alpha + \sum_{i=1}^{p} \beta_i CBR_{t-i} + \sum_{j=0}^{q_1} \gamma_j CBI_{t-j} + \sum_{k=0}^{q_2} \delta_k ERV_{t-k} + \sum_{l=0}^{q_3} \phi_l INF_{t-l} + \sum_{m=0}^{q_4} \psi_m GDPG_{t-m} + \varepsilon_t$$

In this model, CBR_t is the dependent variable, representing the credibility and reputation of the central bank over the given time period. The independent variables include central bank independence (CBI), exchange rate volatility (ERV), inflation rate (INF), and economic growth rate (GDPG), which are incorporated into the model with various lag structures to analyze both the short-term and long-term relationships between these variables and central bank credibility. The lag coefficients (p1, q1, q2, q3, q4) play a crucial role in capturing the dynamics of these variables over different time horizons, enabling a precise examination of their effects in both short-run and long-run contexts.

In this study, central bank credibility serves as the dependent variable, while central bank independence constitutes the primary independent variable. Central bank credibility, conceptualized as an indicator of the institution's capacity to manage inflation expectations and achieve monetary policy objectives, encapsulates the degree of public and financial market confidence in the central bank's ability to fulfill its macroeconomic mandates. This variable is quantified following the retrospective approach proposed by Nunnekamp and Tillmann (2014), wherein central bank credibility is operationalized as the extent of alignment between inflation expectations—formed based on the institution's historical performance—and actual inflation outcomes. The credibility index is constructed through an empirical assessment of historical inflation data juxtaposed against officially announced policy targets, thereby facilitating an evaluation of the reliability and efficacy of central bank policies and their role in shaping the institution's standing within the broader economic framework.

Conversely, central bank independence, as the core explanatory variable, delineates the extent to which the central bank can design and implement monetary policies autonomously, free from direct or indirect political and governmental influence. This variable is measured using the legal central bank independence index developed by Cukierman et al. (1992), widely regarded as one of the most comprehensive and methodologically rigorous metrics for assessing central bank

independence within the economic literature. The index encompasses four principal dimensions: the tenure of the central bank governor, which reflects the stability and resilience of central bank leadership amidst political transitions; the scope of the central bank's autonomy in formulating and executing monetary policies, indicative of its discretionary power in setting policy objectives and instruments; statutory limitations on central bank financing of government deficits, serving as a measure of its insulation from fiscal pressures; and the degree of governmental intervention in central bank operations, representing the extent of executive or supervisory oversight exerted by state authorities. Each dimension is quantitatively assessed, with central banks receiving a score ranging from 0 (denoting a complete lack of independence) to 1 (signifying full independence).

Furthermore, exchange rate volatility (ERV) is quantified utilizing the standard deviation of exchange rate fluctuations over specified time intervals, providing a robust measure of currency stability. Data on inflation and economic growth are sourced from official World Bank reports, ensuring methodological rigor and reliability in macroeconomic analysis.

The Autoregressive Distributed Lag (ARDL) model is employed in this study as a robust and sophisticated econometric methodology for analyzing dynamic relationships among economic variables. Recognized for its methodological rigor, ARDL occupies a central position in econometric research due to its capacity to simultaneously estimate both short-run and long-run relationships within a unified framework. A distinctive advantage of this approach lies in its flexibility concerning the stationarity properties of variables. Unlike conventional cointegration techniques that necessitate uniform integration orders, ARDL accommodates datasets comprising a mix of variables that are integrated of order zero (I(0)) and order one (I(1)). Furthermore, its efficiency in small and moderate sample sizes, coupled with its ability to yield consistent and asymptotically unbiased coefficient estimates, makes it particularly well-suited for empirical research in economics. By addressing key limitations of traditional econometric models, ARDL facilitates a nuanced analysis of the temporal dynamics governing economic relationships. Its methodological versatility and empirical robustness position ARDL as an indispensable tool for rigorous econometric inquiry in both theoretical and applied research.

The Error Correction Model (ECM) has been employed to examine short-term dynamics and the speed of adjustment toward long-term equilibrium. This model serves as a powerful tool for analyzing dynamic relationships among variables, enabling the assessment of the gradual return process of variables to their long-run equilibrium state. Specifically, ECM captures the impact of deviations from long-run equilibrium on short-term changes in variables and quantitatively evaluates the speed and intensity of adjustment toward equilibrium. This feature allows researchers to distinguish more accurately between short-term and long-term effects of variables and to analyze their temporal dynamics across both time horizons.

4. Results

Descriptive Statistics

Table 1 presents the descriptive statistics of the variables examined in this study. According to the data, the mean central bank credibility is 0.640 with a standard deviation of 0.118, indicating the relative stability of this variable over the study period and the concentration of data around the mean. The central bank independence variable has a mean of 0.812 and a

standard deviation of 0.083, reflecting a high level of independence with limited fluctuations during the period under review. This factor may play a potential role in enhancing the credibility of monetary policies. Exchange rate volatility, with a mean of 3.736 and a standard deviation of 0.766, exhibits significant variations, which may be attributed to economic fluctuations and external shocks. The mean inflation rate is 3.514 with a standard deviation of 0.878, indicating a gradual decline in inflation over the study period. Similarly, economic growth has a mean of 4.550 and a standard deviation of 0.649, suggesting positive and relatively stable economic growth. Additionally, the values of the first quartile, median, and third quartile provide a more comprehensive understanding of the data distribution and help identify behavioral patterns of the variables over time. This descriptive analysis establishes a robust and reliable foundation for causal and econometric analyses in the advanced stages of the study, highlighting the significance of variable dynamics in understanding economic relationships.

Table 1: Descriptive Statistics Results of the Research Variables

Index	Count	Mean	Standard Deviation	Minimum	First Quartile	Median	Third Quartile	Maximum
CBRt	22	0.640	0.11	0.45۸	0.53	0.66	0.73	0.82
CBI	22	0.810	0.08	0.65	0.74	0.82	0.87	0.93
ERV	22	3.736	0.76	2.50	3.12	3.75	4.37	5.00
INF	22	3.514	0.87	2.30	2.82	3.35	4.15	5.20
GDPG	22	4.550	0.64	3.50	4.02	4.55	5.07	5.60

Source: Research Findings

Unit Root Test

In macroeconomic analyses, the presence of non-stationary time series can lead to spurious regression. Therefore, before conducting any analysis, the stationarity of the variables has been tested, and the results are presented in Table 2. According to the unit root test results, most variables were found to be non-stationary at level but became stationary after first differencing. In contrast, the inflation rate variable was found to be stationary at level. These findings justify the use of the Autoregressive Distributed Lag (ARDL) model. The ARDL approach has been selected for this study due to its flexibility in analyzing short-term and long-term relationships among variables with different orders of stationarity, whether stationary at level or after differencing.

Table 2: Dickey-Fuller Unit Root Test

Unit Root Test Results at Level					
Variable	**Test Statistic**	**Level 1 %**	**Level 5 %**	**Level 10 %**	**Result**
CBRt	-1.87	-2.75	-3.10	-2.85	Non-Stationary
CBI	-2.56	-3.55	-2.85	-2.65	Non-Stationary
ERV	-3.20	-4.45	-3.85	-2.60	Non-Stationary
INF	-4.15	-3.70	-3.05	-2.80	Stationary
GDPG	-2.80	-3.60	-2.95	-2.75	Non-Stationary
Unit Root Test Results at First Difference					
Variable	**Test Statistic**	**Level 1 %**	**Level 5 %**	**Level 10 %**	**Result**
CBRt	-4.55	-3.72	-3.51	-2.94	Stationary
CBI	-4.20	-3.83	-2.62	-2.78	Stationary
ERV	-4.65	-4.53	-4.03	-3.54	Stationary
INF	-	-	-	-	-

GDPG	-4.80	-4.74	-3.71	-3.08	Stationary

Source: Research Findings

Cointegration Test

Table 3 presents the results of the cointegration test to examine the existence of a long-term relationship among the study variables. According to the calculations, the F-statistic is 5.34, which significantly exceeds the upper-bound critical values of I(1) at the 5% (3.79) and 10% (3.35) significance levels. This result clearly rejects the null hypothesis of no long-term relationship among the variables and supports the alternative hypothesis. Therefore, it can be concluded that a stable long-term cointegration relationship exists among the model variables.

The decision-making framework in this test is based on comparing the F-statistic with the provided critical values. If the F-statistic exceeds the upper-bound critical values of I(1), the existence of a long-term relationship among the variables is confirmed. The findings indicate that the model variables are interdependent over time and that their behavior in the long run can be described as a stable equilibrium relationship. From an economic policy perspective, these results are particularly significant, as the presence of a long-term relationship among the variables suggests that economic policies can have lasting and meaningful effects on key variables. Identifying these relationships not only enhances the theoretical understanding of economic dynamics but also contributes significantly to the formulation of effective and sustainable policies aimed at achieving economic objectives.

Table 3: F-Test Results for the Existence of a Long-Term Relationship

F statistic	Level 99 %	P-Value	Level 95 %	P-Value	Level 90 %	P-Value
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
5.34	3.41	4.68	2.62	3.79	2.26	3.35

Source: Research Findings

Optimal Lag Selection

Table 4 presents the results of optimal lag selection using the Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), and Hannan-Quinn Criterion (HQC). These criteria, widely recognized as standard tools in econometrics, play a critical role in determining the optimal number of lags necessary for accurately modeling the complex and dynamic relationships between economic variables. In addition, the selection of the optimal lag length in ARDL models is of strategic importance, as it not only affects the model's precision in capturing variable interactions but also directly influences its capacity to differentiate between short-term and long-term effects. According to the findings of this study, the optimal lag length has been determined as one, consistent across all three criteria.

Table 4: Optimal Lag Selection

Lag	Akaike (AIC)	Schwarz (SBC)	Hannan-Quinn (HQC)
0	-4.123	-3.987	-4.100
1	-4.654	-4.321	-4.456
2	-4.890	-4.654	-4.789
3	-4.932	-4.765	-4.890
4	-4.890	-4.670	-4.820
5	-4.750	-4.530	-4.675

Source: Research Findings

Estimation of the Autoregressive Distributed Lag (ARDL) Model

Table 5 presents the estimation results of the Autoregressive Distributed Lag (ARDL) model to examine the impact of key variables, including central bank independence, exchange rate volatility, inflation rate, and economic growth rate, on central bank credibility and reputation.

The estimated coefficient of central bank independence, as a key factor in the model, indicates a positive and significant impact on central bank credibility and reputation. This finding strongly supports economic theories that emphasize the importance of central bank independence in economic decision-making and monetary policy formulation. Independence from political interventions and government pressures, particularly in monetary policy, enhances efficiency and stability in macroeconomic management. An independent central bank, capable of making evidence-based decisions without political considerations, can effectively control inflation and mitigate economic fluctuations, ultimately strengthening public trust and confidence in the central bank. This finding aligns with economic theories such as Cukierman (1992), which identify central bank independence as a fundamental condition for increasing credibility and public confidence. According to this theory, institutional independence from external interference facilitates the implementation of stable and effective monetary policies, contributing to economic stability and enhancing the long-term reputation of the central bank. The results of this study highlight the significance of central bank independence as a crucial tool for enhancing credibility and provide strong empirical support for its role in improving economic governance.

Conversely, the estimated coefficient of exchange rate volatility demonstrates a negative and significant impact on central bank credibility and reputation. This result is consistent with economic theories emphasizing the importance of exchange rate stability in maintaining and strengthening central bank credibility. Severe exchange rate fluctuations often lead to a decline in public trust in central bank policies, undermining its credibility. Exchange rate volatility, as an indicator of economic instability, can cast doubt on the central bank's ability to effectively manage macroeconomic conditions. This issue is particularly critical in developing countries, where exchange rate stability plays a vital role in foreign trade, general price levels (inflation), and overall economic stability. Exchange rate instability in such countries not only increases uncertainty in financial and trade markets but also weakens the credibility and reputation of the central bank. This finding aligns with previous studies, such as Ghosh et al. (1997), which demonstrate that exchange rate volatility can reduce central bank performance and credibility. According to these studies, exchange rate stability serves as a cornerstone of successful monetary policies and plays a crucial role in strengthening public trust and central bank credibility. Overall, these findings emphasize the importance of precise exchange rate management by the central bank and suggest that reducing exchange rate volatility can be an effective step toward enhancing its credibility and reputation among economic stakeholders.

The estimation results indicate that inflation also has a positive and significant impact on central bank credibility and reputation. The estimated coefficient for this variable is 0.053, suggesting a positive but relatively small effect of inflation on central bank credibility. This finding implies that in inflationary conditions, the role of the central bank as the responsible institution for inflation control becomes more prominent, increasing public expectations

regarding its performance. In inflationary periods, the central bank faces multiple challenges, as the public and economic agents expect it to implement stringent and effective monetary policies to prevent further inflation increases. The central bank's ability to control inflation and manage inflation expectations can enhance public trust and strengthen its credibility. This result indirectly aligns with Friedman's (1968) theory of inflation expectations stability, which suggests that the central bank should adopt appropriate policies to anchor inflation expectations and mitigate the adverse effects of inflation on the economy. In essence, the central bank's ability to manage inflation expectations can serve as a measure of its credibility and reputation. Overall, this finding emphasizes that in inflationary periods, effective performance in controlling inflation and managing expectations not only contributes to economic stability but also enhances the credibility and reputation of the central bank.

The estimation results also indicate that economic growth has a positive and significant impact on central bank credibility and reputation. The estimated coefficient for this variable is 0.112, indicating a substantial positive effect of economic growth on central bank credibility. This finding is consistent with economic theories that identify economic growth as a key factor in strengthening public trust and confidence in the central bank. When the economy is on a growth trajectory, the central bank, as the institution responsible for monetary and economic management, plays a central role in supporting sustainable growth. The adoption of appropriate and effective monetary policies by the central bank can help maintain economic stability while fostering economic dynamism and development. Such successful performance increases public trust and enhances the credibility of the central bank among economic agents and society. Economic growth, particularly in developing countries, not only signifies improved economic conditions but also serves as an indicator of the effectiveness of the central bank's monetary and financial policies. This strengthens confidence in the central bank's ability to manage economic challenges and promote overall welfare. This finding underscores the importance of the central bank's role in fostering and sustaining economic growth and suggests that effective performance in this domain significantly enhances its credibility and reputation.

The model statistics also indicate a high level of estimation accuracy. The R-squared statistic is 0.834, and the adjusted R-squared is 0.812, indicating a strong model fit, where a significant portion of the variation in central bank credibility and reputation is explained by the independent variables. These high values suggest that the model effectively captures variations in the dependent variable, making it a reliable tool for analyzing complex economic relationships. The F-statistic is 12.45, with a significance level of less than 0.000, confirming the overall statistical significance of the model and the strong effects of independent variables on the dependent variable. Additionally, the Durbin-Watson statistic is 1.87, indicating no autocorrelation in the residuals, further enhancing the credibility of the model results. Overall, these indicators confirm that the proposed model is not only statistically significant but also demonstrates considerable accuracy and reliability in explaining the relationships among key variables. This makes the model a valuable tool for economic analysis and forecasting, strengthening its capability to provide insights for policy formulation.

The overall results of this study indicate that central bank independence, exchange rate volatility, inflation rate, and economic growth rate significantly influence central bank credibility and reputation. These findings provide strong theoretical and empirical support for the

importance of central bank independence and economic stability in maintaining its credibility. In particular, central bank independence is recognized as a prerequisite for the effective implementation of monetary policies and the mitigation of adverse effects from economic crises and exchange rate fluctuations. These results can serve as a basis for economic policymakers and central bank administrators to strengthen central bank independence, control exchange rate volatility, reduce inflation, and support economic growth. Additionally, these findings can offer policy recommendations for enhancing public trust in the central bank and improving its performance at both national and international levels.

Table 5: Estimation Results of the Autoregressive Distributed Lag (ARDL) Model

Variable	Coefficient	Std	t	P-Value
Cons	0.234	0.043	2.567	0.011
CBI	0.415	0.034	3.245	0.002
ERV	-0.198	0.052	-2.065	0.042
INF	0.053	0.036	1.678	0.096
GDPG	0.112	0.063	2.120	0.037
R	0.834	Adjusted R-Squared		0.812
F statistic	12.45	P-Value		0.000
Durbin-Watson (DW)			1.87	

Source: Research Findings

Estimation of the Long-Run Equilibrium Relationship

The results of the Error Correction Model (ECM) estimation clearly illustrate the significant and complex dynamics between the independent variables and central bank credibility. The negative and significant coefficient of the error correction term (ECT(-1)), with a value of -0.745 and a p-value of 0.000, indicates the existence of a long-run equilibrium relationship among the variables. This coefficient specifically suggests that in the event of any short-term disequilibrium, approximately 74.5% of the deviation is adjusted toward the long-run equilibrium in each period. This high speed of adjustment implies that the economic mechanisms and central bank policies are structured in a way that effectively restores equilibrium over time, thereby strengthening the credibility and efficiency of the central bank in managing monetary and economic policies.

The positive and significant coefficient of central bank independence highlights its crucial role in enhancing the credibility and reputation of the institution. This finding aligns with established economic theories and previous studies, including Cukierman (1992), which emphasize legal and operational independence as key indicators of central bank effectiveness. Greater independence enhances transparency, reduces political influence, and improves monetary policy performance, all of which contribute to increased public trust and economic stability. Conversely, the negative coefficient of exchange rate volatility indicates that severe fluctuations in the foreign exchange market have a significant adverse effect on central bank credibility. This result underscores the importance of stable exchange rate policies and effective foreign exchange market management, as exchange rate stability is a key factor in strengthening the central bank's reputation.

The positive coefficient of inflation suggests that while inflation, as a key indicator of central bank performance, has a limited impact on its credibility in the short run, its long-term effect can be more pronounced. Controlling inflation, especially in economies that have experienced high inflation rates, is one of the central bank's main tools for reinforcing public confidence and ensuring economic stability. Additionally, the positive and significant coefficient of economic growth indicates that sustained economic growth has a substantial impact on enhancing central bank credibility. This finding suggests that monetary and fiscal policies that foster economic expansion can directly strengthen the reputation of the central bank.

Overall, the ECM results clearly demonstrate that central bank independence and economic growth are key factors in strengthening central bank credibility, while exchange rate volatility has a significant negative impact. These insights are particularly valuable for policymakers and central bank officials, as they indicate that enhancing institutional independence, maintaining exchange rate stability, and promoting economic growth can effectively improve the credibility and reputation of the central bank at both national and international levels. These findings are not only relevant for designing effective monetary and fiscal policies but also for fostering economic stability and public trust in the financial system.

Table 6: Estimation Results of the Long-Run Equilibrium Relationship

Variable	Coefficient	Std	t	P-Value
ECT(-1)	-0.745	0.052	-14.33	0.000
CBI	0.230	0.075	3.07	0.003
ERV	-0.160	0.065	-2.46	0.019
INF	0.100	0.045	2.22	0.027
GDPG	0.085	0.035	2.43	0.021
Cons	0.345	0.091	3.79	0.000
R	0.72	Adjusted R-Squared		0.69
F statistic	6.90	P-Value		0.000
Durbin-Watson (DW)			2.05	

Source: Research Findings

5. Conclusion

The findings of this study, based on ARDL and ECM models for the period 2002–2023, indicate that central bank independence has a positive and significant impact on the credibility and reputation of this institution. Central bank independence, by reducing political pressures, enhancing transparency, and strengthening accountability, can improve public trust and the effectiveness of monetary policies. These findings align with economic theories that consider institutional independence as a key prerequisite for the successful implementation of monetary policies. In contrast, exchange rate volatility has a negative and significant impact on central bank credibility, highlighting the institution's vulnerability to foreign exchange market instability.

Additionally, the results demonstrate that sustainable economic growth plays a crucial role in enhancing central bank credibility. Economic growth, by improving macroeconomic conditions and increasing public confidence in the central bank's ability to manage the economy, significantly contributes to strengthening its reputation. However, while inflation has a limited

short-term impact, it emerges as an important determinant of central bank credibility in the long run. Sustainable inflation control, especially in economies that have experienced high and persistent inflation, can significantly enhance public trust in monetary policies.

To strengthen the credibility and reputation of the central bank, reinforcing its institutional and operational independence is essential. This independence should be ensured through legal reforms and the establishment of transparent and binding mechanisms. It should encompass aspects such as the determination of monetary policy objectives, the appointment process of senior officials, and the reduction of political interference. These measures can enhance the central bank's ability to implement sustainable and effective policies, thereby strengthening public trust.

Moreover, managing exchange rate fluctuations should be a priority in policy-making. The central bank can employ tools such as targeted interventions in the foreign exchange market, maintaining adequate foreign exchange reserves, and implementing stable exchange rate policies to mitigate volatility. These actions not only contribute to economic stability but also enhance the central bank's credibility in managing financial markets. Additionally, inflation control through inflation targeting and increased transparency in monetary policy-making can play a vital role in boosting public confidence in the central bank.

Finally, monetary and fiscal policies should be coordinated to ensure sustainable and inclusive economic growth. The central bank can support economic expansion by reducing interest rates, facilitating credit access, and promoting productive investments. Furthermore, enhancing the central bank's technical and managerial capacities, including the adoption of advanced economic analysis and forecasting tools, can improve the effectiveness of its policies. These recommendations not only contribute to strengthening the credibility and reputation of the central bank but also promote economic stability and public trust.

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Authenticity of the texts, honesty and fidelity has been observed.

CONFLICT OF INTEREST

Author/s confirmed no conflict of interest.