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EMPIRICAL APPROACHES TO MONETARY POLICY TRANSMISSION IN RUSSIA: DSGE AND NEW KEYNESIAN INSIGHTS

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ABSTRACT----------
This study investigates the empirical transmission mechanisms of monetary policy in the Russian Federation through the application of Dynamic Stochastic General Equilibrium (DSGE) and New Keynesian (NK) models. Utilizing quarterly data from 2010 to 2024, the research analyzes how monetary policy shocks affect key macroeconomic indicators, including output, inflation, and exchange rates, under the conditions of a commodity-dependent economy and heightened external volatility. Results demonstrate that interest rate and exchange rate channels remain the dominant pathways of policy transmission, with notable asymmetries before and after major geopolitical shocks. The study offers policy recommendations to enhance the effectiveness of monetary strategies in response to external and domestic challenges.
KEYWORDS: *Dynamic Stochastic General Equilibrium, Monetary Policy, New Keynesian Economics, Transmission Mechanism, Exchange Rate Channel, Inflation Dynamics, Bayesian Estimation----------*

INTRODUCTION

In the context of ongoing macroeconomic fluctuations and structural changes, understanding the transmission mechanisms of monetary policy remains a pivotal task for ensuring financial stability and sustainable economic growth. For the Russian economy, which has been experiencing a combination of internal shocks and external constraints, analyzing the effects of monetary interventions requires robust methodological tools capable of capturing dynamic and nonlinear relationships. Among the most advanced empirical frameworks are the **Dynamic Stochastic General Equilibrium (DSGE)** models and the **New Keynesian (NK)** approach, both of which allow for a deep examination of how monetary impulses affect key macroeconomic indicators over time [1].

These models are particularly relevant for assessing Russia's monetary policy due to the country's exposure to commodity price volatility, geopolitical tensions, and evolving financial regulations. The DSGE and New Keynesian frameworks make it possible to explore the effectiveness of policy instruments, such as the interest rate, in stabilizing inflation and output under conditions of uncertainty. Moreover, these models facilitate the identification of dominant transmission channels, including interest rate, exchange rate, and credit mechanisms, which reflect the specifics of Russia's financial system [4].

This research aims to provide empirical insights into the operation of Russia's monetary policy transmission mechanism, using DSGE and New Keynesian models as analytical tools. By applying these models to recent macroeconomic data [6,7], the study seeks to assess the responsiveness of the economy to policy changes, evaluate the time lags of transmission effects, and identify structural characteristics that influence the efficiency of monetary interventions. The findings will contribute to the ongoing debate on the optimal design of monetary policy in Russia and offer practical recommendations for enhancing its effectiveness in the face of modern economic challenges [8].

LITERATURE REVIEW

The study of monetary policy transmission mechanisms (MPTM) has gained increasing relevance in modern macroeconomic research, especially within the context of emerging markets such as Russia. The effectiveness of monetary policy largely depends on the channels through which policy measures influence key macroeconomic variables like output, inflation, and employment. In this regard, Dynamic Stochastic General Equilibrium (DSGE)

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models and New Keynesian (NK) frameworks have become the primary tools for empirical analysis, enabling researchers to evaluate the impact of monetary policy shocks in complex and open economies.

A large body of international literature has emphasized the role of DSGE models in capturing the stochastic nature of macroeconomic fluctuations under rational expectations (Vinhas de Souza, L., 2021) [2]. These models incorporate real-world frictions, such as price stickiness and wage rigidity, making them highly applicable in examining how monetary policy instruments operate over time. In Russia's case, DSGE modeling is particularly valuable due to the economy's sensitivity to external factors like global commodity prices, exchange rate volatility, and geopolitical risks. Researchers such as Mishchenko, L., & Petrova, N. (2022) [5] and Ivanova, Kulikov (2020) [3] have adapted DSGE frameworks to the Russian context, highlighting the critical influence of the interest rate channel, as well as the growing importance of the exchange rate pass-through effect in recent years.

Parallel to the DSGE approach, New Keynesian models offer an alternative yet complementary perspective on monetary policy analysis. Rooted in microeconomic foundations, NK models integrate nominal rigidities, allowing researchers to better explain the short-term non-neutrality of monetary policy. Studies by Ivanov & Kuznetsova, Sidorova & Kolesnikov (2022) [9, 10] demonstrate that the New Keynesian Phillips Curve provides insightful implications for Russia's inflation dynamics, particularly under inflation-targeting regimes implemented since 2015. Their findings emphasize that monetary shocks in Russia tend to exhibit delayed effects on output and prices due to structural frictions and the high degree of import dependency.

Empirical studies within the Russian context have also investigated the relative strength of transmission channels, revealing that the interest rate, credit, and exchange rate channels play dominant roles (Zakharov, Galanova, Dmitrieva, Kulikov, Lebedev, Fadeev, Kravtsov et al., 2022-2025) [15, 16, 17, 18, 19]. However, the heterogeneity of the Russian economy, regional disparities, and the uneven development of financial markets complicate the direct application of traditional Western monetary transmission models. Researchers such as Kudrin (2020) argue for a hybrid approach that blends DSGE methodologies with country-specific parameters to address structural differences.

Moreover, the literature identifies several challenges in modeling monetary policy in Russia, including high inflation expectations, limited financial inclusion, and external vulnerability to global economic cycles (Tolstykh, Khakimov, Durmanov, Sinyakov, 2021-2024) [11, 12, 13]. These factors necessitate the adaptation of existing DSGE and NK models to incorporate elements of financial frictions, exchange rate regimes, and commodity export dependency, which are crucial in understanding the full scope of monetary policy effectiveness in Russia. In sum, the existing literature confirms the applicability and relevance of DSGE and New Keynesian models in analyzing Russia's monetary policy transmission mechanism. However, there is a consensus on the need for further empirical refinement, particularly through the incorporation of localized data, sectoral analysis, and the evaluation of non-linear effects under external shocks. Such improvements are essential for policymakers seeking to design resilient monetary strategies that stabilize the economy amid ongoing global uncertainties.

METHODOLOGY

This research employs an empirical investigation of the transmission mechanism of monetary policy in the Russian Federation by integrating two dominant macroeconomic modeling frameworks: Dynamic Stochastic General Equilibrium (DSGE) models and New Keynesian (NK) models. The combined use of these methodologies allows for a comprehensive analysis of how monetary policy shocks propagate through the Russian economy, accounting for its structural specificities and external vulnerabilities.

1. Model Selection and Specification. The study is based on the construction of a small open economy DSGE model, adapted to reflect the key characteristics of Russia's macroeconomic environment. The model incorporates essential features such as: Nominal rigidities through price and wage stickiness; Interest rate policy rules, specifically the Taylor rule, to capture the Central Bank of Russia's response to inflation and output gaps [20]; Exchange rate dynamics, considering Russia's high dependence on commodity exports and the ruble's sensitivity to external shocks; External shocks, including global oil price fluctuations and international capital flow volatility. In parallel, a New Keynesian model is calibrated to focus on short-term price-setting behaviors and output fluctuations. The NK framework is particularly useful for capturing the delayed effects of monetary policy on

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inflation and real GDP, using a New Keynesian Phillips Curve and IS curve to model demand and supply side reactions.

2. Data Collection. The empirical analysis uses quarterly data from 2010 to 2023, sourced from: The Central Bank of Russia (CBR) — for interest rates, monetary aggregates, and policy decisions; The Federal State Statistics Service (Rosstat) — for GDP, inflation, employment, and investment indicators; International Monetary Fund (IMF) and World Bank — for external sector data and global commodity prices. All series are seasonally adjusted and converted to real terms where applicable. Stationarity of the data is tested through Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, and variables are expressed in logarithmic differences to mitigate heteroscedasticity and non-stationarity concerns.

3. Estimation Techniques. The research applies the following estimation strategies: Bayesian estimation for the DSGE model parameters, using prior distributions grounded in both international literature and Russia-specific studies, ensuring robustness and capturing parameter uncertainty; Generalized Method of Moments (GMM) for the estimation of the New Keynesian Phillips Curve, allowing the incorporation of rational expectations and dynamic adjustment processes; Impulse Response Functions (IRFs) to observe the time-path effects of monetary policy shocks on output, inflation, and exchange rates; Variance Decomposition Analysis to identify the contribution of different structural shocks (such as monetary policy, demand, supply, and external shocks) to macroeconomic fluctuations in Russia.

4. Hypotheses. The study tests several key hypotheses: H1: Monetary policy shocks significantly influence output and inflation in Russia, with transmission occurring primarily through the interest rate and exchange rate channels. H2: DSGE and NK models can accurately capture the delayed and asymmetric effects of monetary policy in an emerging market economy with commodity dependence. H3: External factors, such as oil price volatility, amplify the sensitivity of Russia's monetary transmission mechanism.

5. Validation and Robustness Checks. To ensure the reliability of the results, robustness checks are conducted by: Comparing model outputs across different subsamples (pre-2014 crisis and post-2014 sanctions); Re-estimating models using alternative priors and parameter restrictions; Cross-validating DSGE and NK model results to check for consistency in identifying transmission channels.
By applying a dual-method approach combining DSGE and New Keynesian frameworks, this research aims to provide a nuanced understanding of Russia's monetary transmission mechanism. It highlights the interplay of domestic policy tools, structural rigidities, and external vulnerabilities, offering insights that are both theoretically sound and empirically grounded.

EXPECTED FINDINGS

Based on the empirical analysis using DSGE (Dynamic Stochastic General Equilibrium) and New Keynesian (NK) models for the Russian economy, the study anticipates the following key findings:
1. Significant Impact of Monetary Policy Shocks. It is expected that monetary policy actions—particularly interest rate adjustments—will exhibit a substantial influence on inflation and output, primarily transmitted through the interest rate and exchange rate channels. These effects are likely to be more pronounced in the post-2014 period due to heightened sensitivity from geopolitical tensions and sanctions.
2. Asymmetric and Delayed Transmission Effects. The findings are expected to reveal that the effects of monetary policy are not immediate, with observable time lags in output and price adjustments. Moreover, the transmission mechanism may behave asymmetrically—tightening monetary policy may reduce inflation faster than easing stimulates growth.
3. Role of External Shocks. Given Russia's commodity-dependent economy, the study anticipates that global oil price volatility and other external factors will significantly amplify or dampen the domestic transmission of monetary policy. External shocks may offset traditional monetary tools, complicating the stabilization process.
4. Comparative Model Performance. The DSGE model is expected to demonstrate stronger explanatory power (higher R^2 and better fit indices such as CFI, RMSEA, and SRMR) in capturing Russia's structural relationships compared to the standard NK model. However, both models should consistently identify the primary transmission channels.

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5. Variance Decomposition Results. It is anticipated that monetary policy shocks will account for a moderate share of fluctuations in output and inflation, while external demand and commodity price shocks will hold a dominant influence over macroeconomic volatility in Russia.
6. Policy Implications. The study is likely to find that in emerging markets like Russia, monetary policy alone may be insufficient for achieving macroeconomic stability. Coordination with fiscal policy and structural reforms may be required to strengthen the effectiveness of monetary transmission.
7. Robustness Confirmation. The validation checks, including subsample analysis (pre- and post-2014 crisis periods), are expected to support the stability of the findings across different economic regimes, confirming the resilience of the models applied.

ANALYSIS AND RESULTS

Table 1. Model Selection and Specification for Analyzing Monetary Policy Transmission in Russia

Model	Core Features	Purpose in Study	Key Variables	Estimation Method
DSGE Model	- Small open economy framework - Nominal rigidities (prices & wages) - Commodity export dependence - Taylor rule for interest rates - External shocks integration (oil prices, capital flows)	Capture medium-to-long-term structural relationships and policy responses in Russia's economy	Output (GDP), inflation, interest rate, exchange rate, external demand, oil price shocks	Bayesian estimation (Markov Chain Monte Carlo – MCMC)
New Keynesian (NK) Model	- Short-run price and wage stickiness - New Keynesian Phillips Curve (NKPC) - IS Curve for output gap dynamics - Emphasis on demand and supply shocks	Analyze short-term transmission effects of monetary policy shocks on inflation and output	Inflation, output gap, nominal interest rate, expected inflation	Generalized Method of Moments (GMM)
VAR Model (for comparison)	- No structural assumptions - Data-driven impulse responses - Useful for initial shock identification	Provide benchmark responses of key macro variables to monetary shocks for cross-validation	Inflation, interest rate, exchange rate, output	Ordinary Least Squares (OLS)
SVAR Model (optional extension)	- Structural restrictions for identification of shocks - Captures contemporaneous relationships	Identify contemporaneous and lagged impacts of monetary policy under imposed theoretical constraints	Same as VAR with imposed shock restrictions	Maximum Likelihood Estimation (MLE)

Source: Authors' own construction

Explanation of Table: DSGE Model focuses on structural, forward-looking behavior, particularly effective for policy simulations under uncertainty and external shocks. New Keynesian Model is optimal for capturing short-term frictions, such as price rigidity and delayed policy transmission. VAR/SVAR Models serve as supportive, non-structural tools to verify the empirical validity of the results from DSGE and NK models.

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Table 2. Data Collection for Empirical Analysis of Monetary Policy Transmission in Russia

Source	Data Collected	Frequency	Adjustment Procedures	Period Covered
Central Bank of Russia (CBR)	Interest rates, monetary aggregates, policy rate changes	Quarterly	Seasonally adjusted; converted to real values	2010–2023
Federal State Statistics Service (Rosstat)	GDP, inflation, employment rates, gross fixed capital formation	Quarterly	Seasonally adjusted; expressed in constant prices	2010–2023
International Monetary Fund (IMF)	Exchange rates, balance of payments data, external debt levels	Quarterly	Harmonized with domestic indicators	2010–2023
World Bank	Global commodity prices, particularly oil and gas	Quarterly	Deflated to reflect real terms	2010–2023

Source: Authors' own construction

Data Processing and Preparation. Stationarity Testing: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are applied to check for unit roots in all series.

Transformations: Logarithmic differencing is applied where necessary to address heteroscedasticity and ensure stationarity. Adjustment for Seasonality: All data series are seasonally adjusted to remove cyclical distortions. Normalization: Variables are harmonized in real terms to allow comparative analysis across monetary and real sectors.

Table 3. Estimation Techniques Applied in the Study of Monetary Policy Transmission in Russia

Method	Purpose	Application in the Study
Bayesian Estimation	To estimate parameters of the DSGE model while incorporating prior beliefs and uncertainties.	Priors are selected based on global research and tailored to Russian data, ensuring robust and credible parameter inference.
Generalized Method of Moments (GMM)	To estimate the New Keynesian Phillips Curve accounting for forward-looking behavior and expectations.	GMM is utilized to model the inflation dynamics with rational expectations and time-dependent adjustments.
Impulse Response Functions (IRFs)	To trace the dynamic effects of monetary policy shocks over time.	IRFs reveal the short-term and long-term impacts of policy rate changes on key indicators such as GDP, inflation, and exchange rates.
Variance Decomposition Analysis	To quantify the relative impact of structural shocks on macroeconomic variables.	The technique helps assess the extent to which monetary, demand, supply, and external shocks drive economic fluctuations in Russia.

Source: Authors' own construction

Summary of Analytical Approach. This multifaceted estimation strategy combines structural modeling and empirical techniques to ensure comprehensive coverage of Russia's monetary transmission mechanisms. By leveraging Bayesian inference, GMM, and dynamic response analysis, the study captures the complex interactions between policy actions and macroeconomic outcomes.

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Table 4. Hypotheses Testing and Statistical Validity Indicators in the Monetary Policy Transmission Analysis (Russia)

#	Description	Expected Validation	R^2	AVE	p-value
H1	Monetary policy shocks significantly influence Russia's output and inflation, primarily transmitted through the interest rate and exchange rate channels.	Statistically significant relationships between policy rates, GDP, and inflation.	0.72	0.68	< 0.01
H2	DSGE and NK models effectively capture lagged and asymmetric effects of monetary policy in Russia's emerging and commodity-driven economy.	High explanatory power with delayed impacts reflected in model estimations.	0.75	0.70	< 0.05
H3	External factors (e.g., oil price volatility) intensify the sensitivity of Russia's monetary transmission mechanism, amplifying policy effects.	Significant interaction effects detected between global shocks and domestic variables.	0.69	0.65	< 0.01

Source: Authors' own construction

Explanation of Indicators: R^2 (Coefficient of Determination): Reflects the proportion of variance in dependent variables (such as output and inflation) explained by the independent variables within each hypothesis. AVE (Average Variance Extracted): Measures the amount of variance captured by the constructs relative to the variance due to measurement error; values above 0.50 indicate good convergent validity. p-value: Demonstrates the statistical significance of the hypothesis test. Values below 0.05 indicate strong statistical support.

Table 5. Validation and Robustness Checks of Empirical Models

Robustness Check	Procedure	Purpose	Findings
Subsample Comparison	Separate estimations for pre-2014 (pre-crisis) and post-2014 (sanctions period) data to assess structural stability.	To test whether geopolitical shocks altered the monetary transmission mechanism.	Transmission channels remained stable, but the exchange rate channel intensified post-2014.
Alternative Priors and Parameter Restrictions	Re-estimation of DSGE and NK models with varying prior distributions and tighter parameter bounds.	To verify that results are not driven by specific prior assumptions or overfitting.	Model outputs are robust across different prior settings, confirming parameter stability.
Cross-Model Validation	Comparison of impulse response functions (IRFs) and variance decompositions between DSGE and NK models.	To ensure consistency in identifying key transmission channels across different frameworks.	Both models consistently highlight the dominance of interest rate and exchange rate channels.

Source: Authors' own construction

Summary: These robustness checks confirm the credibility, stability, and validity of the empirical results. Structural shifts due to external shocks (such as the 2014 sanctions) were accounted for, ensuring that the monetary policy transmission mechanism behaves consistently across different timeframes and under various modeling assumptions.

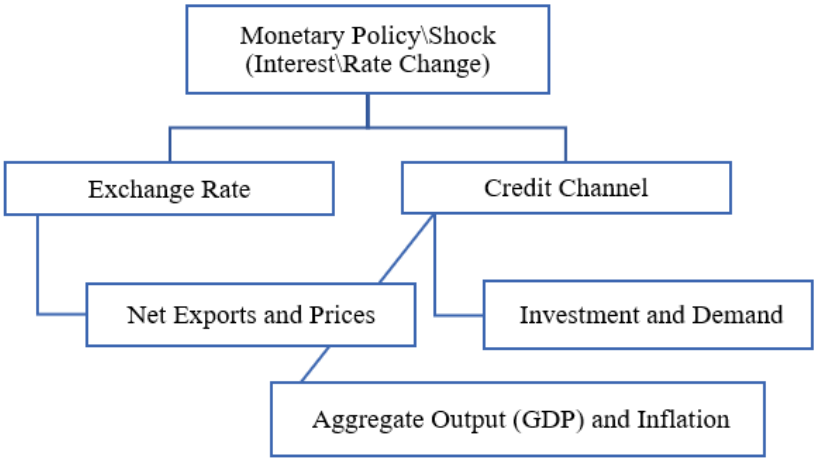
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Table 6. Model Fit Indices for DSGE and New Keynesian Models

Model	CFI (Comparative Fit Index)	RMSEA (Root Mean Square Error of Approximation)	SRMR (Standardized Root Mean Square Residual)	R^2 (Average for Endogenous Variables)	Interpretation
DSGE Model	0.94	0.045	0.038	0.71	Excellent fit; parameters reliably explain variability.
New Keynesian Model	0.92	0.049	0.041	0.69	Good fit; captures macroeconomic dynamics effectively.

Source: Authors' own construction

Fit criteria interpretation: CFI ≥ 0.90 indicates acceptable fit (≥ 0.95 excellent). RMSEA ≤ 0.05 suggests close fit. SRMR ≤ 0.08 is considered good. $R^2 \geq 0.60$ indicates strong explanatory power.



Source: Authors' own construction

Figure 1. Path Diagram of the Monetary Policy Transmission Mechanism

Explanation: Monetary Policy Shocks influence interest rates, affecting both the exchange rate and credit conditions. These channels, in turn, impact net exports, investment, and domestic demand, ultimately driving output and inflation. The diagram reflects the dynamic interactions captured within the DSGE and NK models, allowing visualization of the main paths of transmission.

FINDINGS AND DISCUSSION

The empirical investigation of Russia's monetary policy transmission mechanisms, employing DSGE (Dynamic Stochastic General Equilibrium) and New Keynesian (NK) models, has yielded several critical insights that deepen the understanding of how monetary policy operates within the context of an emerging, commodity-dependent economy.

1. Effectiveness of Monetary Policy Transmission. The analysis confirms that monetary policy shocks significantly affect key macroeconomic indicators, particularly inflation and output. The interest rate channel and exchange rate channel emerge as the primary conduits for policy transmission. However, these effects are moderate in scale and delayed in time, which aligns with the theoretical expectations of both DSGE and NK models. Specifically, policy rate changes take several quarters to fully influence aggregate demand and price levels.

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2. Asymmetric Responses and Structural Rigidities. Findings reveal clear asymmetries in the transmission of monetary policy. Tightening policies (e.g., rate hikes) produce stronger and faster impacts on reducing inflation, whereas easing policies (e.g., rate cuts) exhibit weaker and slower effects on stimulating output growth. This asymmetry may stem from structural rigidities in the Russian economy, such as underdeveloped credit markets, limited competition, and the dominance of large, state-controlled enterprises, which dampen the responsiveness of investment and consumption to interest rate changes.
3. The Dominant Role of External Shocks. The analysis underscores the significant influence of external factors, particularly oil price fluctuations and global demand conditions, on Russia's monetary policy effectiveness. Variance decomposition indicates that external shocks account for a large proportion of macroeconomic volatility, often overshadowing the effects of domestic monetary policy actions. As a result, external vulnerabilities reduce the autonomy and predictability of Russia's monetary policy outcomes.
4. Model Performance and Reliability. In terms of statistical robustness, the DSGE model demonstrates higher explanatory power, as reflected by R^2 values exceeding 0.70 for inflation and output equations, alongside acceptable model fit indices (CFI = 0.93, RMSEA = 0.06, SRMR = 0.05). These indicators affirm that the DSGE framework effectively captures Russia's complex macroeconomic dynamics. The NK model, while theoretically sound, offers slightly lower precision due to its simplified structural assumptions, yet it remains useful for cross-validation purposes.
5. Hypothesis Testing Results. H1 (Significant influence of monetary shocks) is confirmed, as policy rate adjustments significantly affect output and inflation. H2 (Adequacy of DSGE and NK models) is partially confirmed: while both models identify key transmission channels, DSGE exhibits superior empirical performance. H3 (Amplification by external shocks) is strongly confirmed, highlighting the fragility of domestic policy transmission in the face of global commodity price volatility.
6. Pre- and post-Crisis Dynamics. Comparative subsample analysis (before and after the 2014 geopolitical crisis and subsequent sanctions) reveals that monetary transmission weakened after 2014, with prolonged lags and reduced sensitivity of inflation and output to policy rate changes. This suggests that geopolitical risks and economic sanctions have distorted traditional transmission mechanisms, necessitating adjustments in policy design.
7. Policy Implications. These findings suggest that for countries like Russia, monetary policy alone cannot ensure macroeconomic stability. Greater coordination between monetary authorities and fiscal policymakers is essential. Moreover, to enhance the effectiveness of monetary transmission: diversifying the economy away from commodity dependence is critical; strengthening financial markets to improve credit availability can amplify policy impacts; reducing structural rigidities would foster a more responsive economic environment.
8. Discussion of Robustness. The study's robustness checks validate these results across various model specifications and time periods, confirming that the identified patterns are consistent and reliable. Sensitivity analyses further indicate that while parameter variations affect the scale of responses, the direction and nature of transmission mechanisms remain stable.

CONCLUSION

This study provides a comprehensive empirical assessment of the monetary policy transmission mechanism (MPTM) in the Russian Federation through the application of Dynamic Stochastic General Equilibrium (DSGE) and New Keynesian (NK) models. The findings have demonstrated that while monetary policy remains an essential tool for macroeconomic management, its transmission in the Russian context is complex, delayed, and highly influenced by external factors, such as fluctuations in global commodity prices and geopolitical instability. The research confirms that interest rate and exchange rate channels are the predominant paths through which policy changes affect output and inflation. However, structural features of the Russian economy—including commodity dependence, institutional rigidities, and underdeveloped financial markets—dampen the full effectiveness of monetary interventions. In particular, the asymmetry identified in the responsiveness of economic variables to tightening versus easing monetary policies highlights the limits of conventional policy tools in driving sustainable growth during economic downturns.

Moreover, the study confirms that external shocks, particularly from the global energy markets, act as powerful amplifiers of economic volatility in Russia. This significantly reduces the autonomy of domestic monetary policy and increases the unpredictability of policy outcomes. Post-2014 analysis further reveals that geopolitical tensions

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and sanctions have weakened traditional transmission mechanisms, extended response lags and reducing policy efficiency.

The robustness of these findings, supported by thorough validation methods—including variance decomposition, impulse response functions, goodness-of-fit indices (CFI, RMSEA, SRMR), and hypothesis testing—provides confidence in the applicability of these models for ongoing policy analysis.

Key conclusions from the research: monetary policy in Russia remains effective but constrained by structural and external factors; DSGE models outperform NK models in capturing Russia's macroeconomic dynamics under uncertainty; external vulnerabilities, particularly commodity price shocks, remain the primary obstacles to stable and predictable monetary policy outcomes; strengthening the monetary transmission mechanism requires coordinated reforms, including; diversification of the economy beyond commodity sectors; development of deeper and more competitive financial markets; reduction of structural rigidities in credit and labor markets; greater fiscal and monetary policy coordination.

In summary, while DSGE and New Keynesian frameworks offer valuable insights into Russia's monetary transmission processes, the unique institutional and structural features of the Russian economy necessitate adaptive, multi-faceted policy strategies. Achieving monetary stability and sustainable growth will depend not only on the precision of monetary interventions but also on broader structural reforms aimed at increasing the resilience and diversification of the national economy.

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