International Journal of
Financial Studies

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Empirical Analysis of Economic Impact of Monetary Policy and Fiscal Policy in China Under Global Uncertainty

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Abstract

This study examines how monetary and fiscal policies affect economic growth in China under global economic uncertainty. We estimate a Markov Switching Regression (MSR) model using quarterly data from 1996: Q1 to 2024: Q4. We also apply Bayesian Model Averaging (BMA) to choose the relevant control variables. During expansions, higher policy rates, government revenue, moderate inflation, FDI inflows, and export growth support growth. Government expenditure can crowd out private investment. During recessions, higher policy rates reduce growth. Government expenditure has limited impact, but revenue collection remains growth-supportive. Global uncertainty steadily reduces growth. Government expenditure shows negative effects, which indicates possible crowding out. The findings support that monetary and fiscal policies coordination may sustain long-term growth in China and strengthen the resilience amid global uncertainty. The Impulse response functions (IRFs) from Bayesian Vector Autoregression (BVAR) confirm the persistence and dynamics of policy shocks under global uncertainty. This study adds to the empirical literature on the role of macroeconomic policies in shaping economic growth in the case of China.

Keywords: monetary policy; fiscal policy; economic growth; MSR; BMA; BVAR; China

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Received: 21 August 2025
Revised: 10 October 2025
Accepted: 15 October 2025
Published: 20 October 2025

Citation: Chinnakum, W., Ko, H., Xie, J., Wu, M., & Chaiboonsri, C. (2025). Empirical Analysis of Economic Impact of Monetary Policy and Fiscal Policy in China Under Global Uncertainty. *International Journal of Financial Studies*, *13*(4), 196. https://doi.org/10.3390/ijfs13040196

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1. Introduction

Monetary and fiscal policies (MP and FP) are central instruments used by governments and central banks to stabilize the economy and promote sustainable growth. While each policy can function independently, their coordination may enhance policy effectiveness, particularly in response to economic fluctuations and external shocks. Over the past three decades, China has undergone profound structural changes, transitioning from a centrally planned system to a market-oriented economy. Policy reforms since the late 1970s have transformed China into one of the world's largest economies, reshaping the role and implementation of MP and FP in managing growth and macroeconomic stability. China's policy environment is complex. State-owned enterprises dominate many sectors. Urban-rural dual-track development creates regional disparities. Financial markets are evolving rapidly. External shocks, such as the 2007–2008 financial crisis, the US–China trade war, and the COVID-19 pandemic add further uncertainty. Policymakers must manage these domestic and global factors simultaneously.

The relationship between monetary and fiscal policies (MP and FP) and economic growth under global uncertainty is grounded in several macroeconomic schools of thought. From the Keynesian perspective, output and employment fluctuate with changes in aggregate demand. Countercyclical MP and FP can stabilize the economy by offsetting demand

shocks. Fiscal expansion through higher spending or tax cuts stimulates consumption and investment during recessions, while contractionary measures prevent overheating in booms (Blinder & Solow, 1973). Monetary easing through lower interest rates or credit expansion encourages borrowing and supports fiscal impulses (Mankiw, 2019). The IS–LM framework highlights the interdependence between MP and FP in determining income and interest rates (Gerrard, 1995). The New Classical approach, based on rational expectations, argues that systematic policies are anticipated and thus neutralized by private agents (Lucas, 1976). Under the Policy Ineffectiveness Proposition, only unanticipated policy shocks affect real variables, while predictable actions change nominal ones (Sargent & Wallace, 1975). The New Keynesian view combines rational expectations with nominal rigidities, where sluggish wage and price adjustments allow well-designed monetary rules, such as Taylor-type policies, to stabilize inflation and output (Clarida et al., 1999). Fiscal policy remains relevant, especially when monetary policy is constrained by the zero lower bound or when uncertainty dampens private spending (Christiano et al., 2011; Auerbach & Gorodnichenko, 2012).

The policy-mix literature emphasizes coordination, as simultaneous fiscal expansion and monetary accommodation yield stronger and more predictable outcomes than isolated measures (Theil, 1956; Corneo & Blanchard, 2023). In emerging economies, coherent and credible policy frameworks help anchor expectations and reinforce confidence. Periods of heightened global uncertainty such as financial crises, pandemics, trade disruptions, or geopolitical tensions alter policy transmission. High uncertainty often suppresses investment and consumption, reducing the effectiveness of standard policy tools (Bloom, 2009). Institutional quality further shapes stabilization outcomes; transparent budgeting, rule-based monetary frameworks, and credible communication foster trust and reduce risk premia (North, 1990). In economies with significant state participation, sound governance and fiscal discipline ensure that public spending crowds in rather than crowds out private investment. Global uncertainty shapes China's macroeconomic policy effectiveness. Broad economic and political risks have risen during major events such as the 2008 financial crisis, Brexit, US–China trade tensions, and the COVID-19 pandemic. Pandemic-related uncertainty remained low before 2020 but increased sharply with the outbreak of COVID-19. Trade uncertainty was relatively stable until recent years, when disputes and global disruptions pushed it higher. These overlapping global shocks influence China's economic growth and policy outcomes. High uncertainty can weaken the effects of interest rate changes, government spending, or fiscal revenues. Trade disruptions and pandemics can amplify or dampen policy impacts. Understanding these relationships is essential for designing timely and effective interventions.

This study investigates how MP and FP affect China's economic growth under global uncertainty. We employ a Markov Switching Regression (MSR) model from 1996: Q1 to 2024: Q4. The model captures regime-dependent effects, distinguishing between Expansion Periods and Recession Periods. This approach is relevant in a rapidly changing economy where high- and low-growth phases alternate under external shocks. To improve robustness, we applied Bayesian Model Averaging (BMA) to select relevant control variables. This method accounts for model uncertainty and identifies factors that consistently influence growth. The BMA-selected variables are included in the MSR and subsequent Bayesian VAR (BVAR) analysis to study dynamic responses to policy shocks.

This study is significant because it highlights the importance of adaptable and well-coordinated policies. Understanding how MP and FP work across regimes can help mitigate downturns and sustain economic resilience. By combining regime-switching estimation with BMA-based variable selection, our approach captures both structural shifts and key macroeconomic interactions under uncertainty.

The remainder of this paper is organized as follows: Section 2 reviews recent empirical studies of this field and Section 3 describes the data utilized in this study and specify the econometric model employed for the analysis. Section 4 discusses the empirical findings. Finally, Section 5 concludes the study by summarizing key results and acknowledging the limitations of the study to guide future research.

2. Recent Empirical Studies

The relationship between monetary policy (MP), fiscal policy (FP) and economic growth has been studied in empirical literature for a quite long time. Yet, findings remain mixed largely due to differences in methodological approaches and regional contexts. For example, Azad et al. (2021) used regime-switching and structural VAR models to evaluate MP and FP impacts on Canada's economy from 1990 to 2020. They concluded that FP was more effective in boosting short-term growth, whereas MP faced limitations due to rising interest rates and inflation in the long term. These results illustrate the utility of advanced econometric methods in capturing dynamic policy impacts. In 2024, a study conducted by Batayneh et al. (2024) through an unrestricted VAR model to examine MP and FP effects on U.S. economic growth from 1964 to 2021, found that expansionary MP and FP positively influenced short-term growth while external shocks like financial crisis and COVID-19 pandemic negatively impacted the economy.

Mwale and Mulenga (2024) also analyzed tax revenue, public expenditure, and external debt in Zambia using VECM and ARDL models. Their findings revealed that while tax revenue positively impacted long-term GDP growth, public expenditure and external debt had negative effects, emphasizing the need for careful fiscal management in emerging economies. Similarly, Nguyen et al. (2024) found that FP, as measured by public expenditure, had a larger impact on economic growth than MP in Vietnam between 1996 and 2021. Similarly, Kim et al. (2021) analyzed FP impacts in China, revealing a shift from infrastructure-driven growth to R&D-focused strategies, with local government spending being more influential than central spending. Aisyah et al. (2024) investigated the FP-economic growth nexus in Indonesia and observed a positive long-term relationship between government spending and growth. Ali et al. (2024) drew similar conclusions in Somalia, where FP consistently contributed to economic growth from 1970 to 2019.

In the United States, Andini (2024) argued that the effectiveness of FP and MP in promoting growth depends on heterogeneity, sample size, research methods, and intermediate variables. Their study highlighted that FP impacts vary across countries, with taxation and public debt often yielding unclear results. For instance, in Vietnam, FP was more influential than MP, while in Somalia and Nigeria, FP exhibited a consistently positive long-term relationship with growth (Ali et al., 2024). Besides, Tan et al. (2020) examined the asymmetric effects of MP and FP on economic growth in Thailand between 1980 and 2017. They found a negative relationship between economic growth and the money market rate (a tool of MP) but a positive relationship with government spending (a tool of FP). The study concluded that FP was more effective than MP in Thailand compared to neighboring countries like Malaysia and Singapore. However, the results appeared biased due to the limited explanatory factors considered.

Relating to global perspectives, Chugunov et al. (2021) explored the impact of FP and MP on economic growth in 19 emerging countries from 1995 to 2018. Their findings highlighted that general government spending had a negative relationship with per capita GDP growth, moderated by institutional quality, expenditure composition, and fiscal architecture. They recommended using adaptive monetary variables to balance inflation targets and growth objectives. Recent studies have further examined the role of institutional quality in shaping policy effectiveness. Pastpipatkul and Ko (2025a) demonstrates that

strong institutions enhance the impact of monetary and fiscal policies on sustainable growth in Thailand. Moreover, Pastpipatkul and Ko (2025b) analyze the dynamic effects of these policies on economic growth, emphasizing the importance of policy coordination in different economic regimes. Similarly, Ito and Kawai (2024) analyzed regime-dependent impacts of MP and FP across 61 developing and emerging economies from 1971 to 2020. They found that MP was effective in increasing GDP growth under flexible exchange rate regimes but not under fixed exchange rate regimes, while FP showed varying effects depending on fiscal openness and exchange rate flexibility. Demirtas (2023) investigated MP and FP effectiveness in 110 countries (55 developed and 55 developing) from 2007 to 2016. Using an Arellano-Bond GMM model, they demonstrated that MP was more effective in developed countries, whereas FP supported aggregate demand in developing economies. This study underscores the importance of distinguishing between economic contexts when analyzing policy impacts.

The existing literature shows that the effects of monetary policy (MP) and fiscal policy (FP) are influenced by economic contexts, exchange rate regimes, and institutional qualities. However, several gaps remain, particularly in the context of China. First, much of the research focuses on the individual effects of MP and FP, neglecting their interactive effects. Given that economic conditions, such as recessions or growth periods, affect policy effectiveness, this gap limits a comprehensive understanding of policy dynamics. Second, while some studies use advanced models like VAR and VECM, few account for the dynamic, nonlinear nature of policy effects across economic cycles. Third, exogenous shocks, such as financial crises or the COVID-19 pandemic, have not been sufficiently explored. Thus, this study addresses these gaps by examining the economic impact of MP and FP in China, based on three empirical equations developed in Section 3.

3. Data Selection and Econometric Model

3.1. Data Selection

This study examines the effects of monetary and fiscal policy on China's economic growth under global uncertainty. GDP is the dependent variable. The monetary policy instrument is the central bank policy rate while the fiscal policy instrument is government expenditure. We initially included variables that are commonly considered determinants of economic growth. Domestic variables such as government revenue, consumer price inflation, lending and deposit interest rates, broad money supply, unemployment, exchange rates, exports and imports growth, and foreign direct investment inflows and outflows are all standard drivers of aggregate output Global uncertainty is captured using the Economic Policy Uncertainty index (Davis et al., 2025), the World Uncertainty Index, the World Trade Uncertainty Index, and the World Pandemic Uncertainty Index (Ahir et al., 2022). These variables account for shocks that may influence China's growth through trade, investment, or financial channels. In Table 1, the notations, units of measurements and data sources of variables used in this study are provided. The summary statistics of variables of the study are provided in Appendix A.

Many existing empirical studies highlighted the importance of potential multicollinearity and model uncertainty. We thus used Bayesian Model Averaging (BMA) with the BAS R package (Clyde et al., 2011) to address such issues. Besides, all index-based and high-volume variables were transformed using natural logarithms to reduce scale differences and improve robustness (see Table 2). The BMA results indicate that consumer price inflation and government revenue have the strongest support for inclusion in the growth model. Government expenditure, the central bank policy rate, and government debt show moderate support. Some global uncertainty measures, such as EPU, WPUI, and WTUI, have lower PIPs (<0.2), suggesting weaker direct effects. These results show that BMA

effectively identifies robust determinants while mitigating multicollinearity and model selection bias. It is a method to only focus on variables that consistently influence GDP.

Table 1. Notations, Units and Sources of Variables and Data.

Variable	Notation	Unit	Source
Current Gross Domestic Product (GDP)	GDP	RMB bn	CEIC
Central Bank Policy Rates	INTEREST	%	FRED and CEIC
Government Expenditure	GOVEXP	RMB mn	CEIC
General Government Debt % of GDP	GDEBT	%	IMF
Government Revenue	REV	RMB mn	CEIC
Consumer Price Inflation	INF	2015 = 100, Index	FRED
Exchange Rates Against US Dollar, end of period	EXR	RMB per USD	CEIC
Exports Growth	EXPORTG	%	FRED
Imports Growth	IMPORTG	%	FRED
Unemployment Rates	UNEMP	%	World Bank
Broady Money, Money Supply (M2) % of GDP	M2	%	World Bank
Foreign Direct Investment, net inflows % of GDP	inFDI	%	World Bank
Foreign Direct Investment, net outflows % of GDP	outFDI	%	World Bank
Lending Interest Rates, end of period	LENDR	%	CEIC
Deposit Interest Rates, end of period	DEPOR	%	CEIC
Economic Policy Uncertainty, Mainland Newspapers	EPU	Index	Davis et al. (2025)
World Uncertainty Index	WUI	Index	Ahir et al. (2022)
World Trade Uncertainty Index	WTUI	Index	Ahir et al. (2022)
World Pandemic Uncertainty Index	WPUI	Index	Ahir et al. (2022)

Notes: We used the open-source secondary data attained from Ahir et al. (2022) available at (https://worlduncertaintyindex.com, accessed on 12 October 2025); CEIC available at (https://www.ceicdata.com, accessed on 12 October 2025); Davis et al. (2025) available at (https://www.policyuncertainty.com, accessed on 12 October 2025); FRED available at (https://fred.stlouisfed.org, accessed on 12 October 2025); IMF available at (https://www.imf.org, accessed on 12 October 2025); and World Bank available at (https://data.worldbank.org, accessed on 12 October 2025). For the robustness, variables expressed as indices and high-volume series were transformed using natural logarithms.

Table 2. The Variable Selection Results Using Bayesian Model Averaging.

Variable	BMA Posterior Inclusion Probability	Inclusion
logINF	0.9978	YES
logREV	0.9723	YES
logGOVEXP	0.3621	YES
EXR	0.1801	YES
inFDI	0.1635	YES
LENDR	0.2094	YES
logM2	0.1241	NO
DEPOR	0.3163	YES
INTEREST	0.2276	YES
logGDEBT	0.6328	YES
outFDI	0.1276	NO
UNEMP	0.1659	YES
WPUI	0.1015	NO
logEPU	0.0882	NO
logWUI	0.1642	YES
WTUI	0.1173	NO
IMPORTG	0.1125	NO
EXPORTG	0.1762	YES

Notes: We used the *BAS* R package with shrinking and diffusing priors. BMA was calculated by weighting models with their posterior probabilities. Posterior probabilities came from marginal likelihoods and priors. We set the prior inclusion probability (PIP) at 0.5 for each variable. The estimation was repeated 100 times. Final results are based on average PIPs and posterior model weights.

3.2. Econometric Model Specification

This study used Markov Switching Regression (MSR) model to investigate the dynamic effects of monetary and fiscal policies on economic growth in China under global economic uncertainty. This model is particularly suitable for time-series data that exhibit structural changes as it allows the relationship between the dependent and explanatory variables to vary across unobserved states. Unlike the linear models, the MSR model accounts for potential shifts in economic behavior that occur due to varying macroeconomic conditions or external shocks. In this analysis, we consider a two-state linear Markov Switching model following the methodology proposed by Perlin (2012) and implemented in R by Sanchez-Espigares and Lopez-Moreno (2022).

The general form of the model is specified as

$$Y_t = \gamma_t x_{t-i} + \theta_i(\delta_i - \gamma_{t-i}) + \sigma_i \epsilon_t \text{ when } Regime_t = 1 \,\&\, 2 \tag{1}$$

where Y_t denotes independent variable; x_t denotes independent variables; θ_i denotes parameters to be estimated in each regime; δ_i denotes means of dependent variable; and $\sigma_i \& \epsilon_t$ denotes volatilities and error terms.

The transition between regimes follows a first-order Markov process where the probability of moving from one regime to another depends solely on the current regime.

$$\mathrm{P}\left(Regime_t = j \middle| Regime_{t-1} = i\right) = \pi_{ij} \text{ for } i, j \in \{1, 2\} \tag{2}$$

where π_{ij} is the probability of transitioning from regime i to state j within transition probabilities represented in the matrix form:

$$\Pi = \begin{pmatrix} \pi_{11} & \pi_{12} \\ \pi_{21} & \pi_{22} \end{pmatrix} \rightarrow \pi_{11} + \pi_{12} = 1 \text{ and } \pi_{21} + \pi_{22} = 1 \tag{3}$$

The likelihood function of this model is given by the joint probability of the observed data conditional on the latent states and the model parameters:

$$L(\theta, \Pi) = \prod_{t=1}^{T} \mathrm{P}(Y_t | Regime_t, \theta, \Pi) \tag{4}$$

Here, $\mathrm{P}(Y_t | Regime_t, \theta, \Pi)$ is the likelihood of observed data given the regime t, the parameters (θ) for each regime and the transition probabilities (Π).

We used *MSwM* R package in R 4.5.1 version to estimate this model. This specification enables the identification of differential policy effects during stable growth periods and recession growth periods. In this way, it studies potential asymmetries in macroeconomic responses under varying conditions. Furthermore, we employed Bayesian Vector Autoregression (BVAR) model for robustness checks following Kuschnig and Vashold (2021). Posterior distributions are generated for all parameters, and Impulse Response Functions (IRFs) are computed to trace the dynamic response of economic growth to one-time shocks in monetary policy and fiscal policy in China.

4. Empirical Analysis and Discussion

The Markov Switching Regression (MSR) model was estimated to investigate the impact of monetary and fiscal policy on China's economic growth under varying global uncertainty conditions from 1996: Q1 to 2024: Q4. The results reveal significant differences in policy effectiveness across regimes which we label as Stable Quarters or Expansion Periods and Recession Quarters or Recession Periods (see Table 3).

Table 3. Fiscal Policy and Monetary Policy on Growth in China (1996:Q1–2024:Q4).

	Regime 1. Expansion Periods			Regime 2. Recession Periods		
Variable	**Estimate**	**Std. Error**	**T-Value**	**Estimate**	**Std. Error**	**T-Value**
Intercept	−1.7918	0.3141	−5.7046 ***	−5.2215	0.2465	−21.1826
INTEREST	0.0395	0.0088	4.4886 ***	−0.0452	0.0128	−3.5312 ***
logGOVEXP	−0.7042	0.0395	−17.8278 ***	−0.1055	0.0836	−1.2620
logINF	1.1088	0.1907	5.8144 ***	3.3320	0.1904	17.50000 ***
logREV	1.1249	0.0325	34.6123 ***	0.5097	0.0895	5.6950 ***
EXR	−0.0189	0.0118	−1.6017	0.0254	0.0202	1.2574 ***
inFDI	0.0372	0.0080	4.6500 ***	0.0100	0.0111	0.9009
LENDR	−0.0625	0.0232	−2.6940 ***	−0.0006	0.0220	−0.0273
DEPOR	0.0192	0.0190	1.0105	0.0201	0.0244	0.8238
logGDEBT	0.7694	0.1013	7.5953 ***	−0.1338	0.1247	−1.0730
UNEMP	0.1186	0.0149	7.9597 ***	−0.0232	0.0217	−1.0891
logWUI	−0.1797	0.0299	−6.0100 ***	0.0358	0.0264	1.3561
EXPORTG	0.0030	0.0006	5.0000 ***	−0.0026	0.0009	−2.8889 **
R^2	0.9982			0.9955		
Residuals	0.0175			0.0286		

Note: Significance denotations are *** $p < 0.001$; ** $p < 0.01$.

In Expansion Periods, the central bank policy rate (INTEREST) had a positive and significant effect on GDP growth. Government expenditure (logGOVEXP) was negative and significant. Inflation (logINF) and government revenue (logREV) both had strong positive effects. Foreign direct investment inflows (inFDI), government debt (logGDEBT), unemployment (UNEMP), and export growth (EXPORTG) also showed positive and significant effects. Lending rates (LENDR) and the world uncertainty index (logWUI) had negative and significant effects. Exchange rates (EXR) and deposit rates (DEPOR) were not statistically significant. The model explained nearly all variation in GDP growth ($R^2 = 0.9982$), with a residual standard error of 0.0175. The positive effect of the policy rate suggests that modest tightening signals economic confidence and strengthens financial stability when growth is strong. The negative effect of government expenditure indicates possible crowding out of private investment, or inefficiencies in public projects when demand is already high. Inflation's positive effect shows that moderate price increases support demand and production. Government revenue strengthens growth by financing infrastructure and social spending while ensuring fiscal discipline. FDI inflows contribute to capital accumulation and technology transfer, boosting productivity in expansions. Higher government debt is growth-enhancing in the short run, likely through investment financing, although it may raise long-term sustainability risks. Rising unemployment appears positively related to growth, which may reflect China's labor market dynamics where rapid structural transformation generates temporary increases in unemployment while productivity rises. Export growth reinforces expansion by sustaining external demand. By contrast, higher lending rates constrain credit access, reducing private sector investment, while global uncertainty weakens business confidence and investment. The lack of significance for exchange rates and deposit rates indicates that these channels play a limited role in explaining growth during expansions.

In Recession Periods, the intercept was negative and significant, showing lower baseline growth. The central bank policy rate (INTEREST) had a negative and significant effect. Government expenditure (logGOVEXP) was negative but statistically insignificant. Inflation (logINF) and government revenue (logREV) both remained positive and highly significant. Export growth (EXPORTG) had a negative and significant effect. Other variables, including exchange rates (EXR), foreign direct investment (inFDI), lending rates

(LENDR), deposit rates (DEPOR), government debt (logGDEBT), unemployment (UNEMP), and the world uncertainty index (logWUI), were statistically insignificant. The explanatory power of the model remained very high (R^2 = 0.9955), with a residual standard error of 0.0286. The negative effect of the policy rate shows that higher borrowing costs reduce demand and investment in downturns, consistent with conventional macroeconomic theory. Government expenditure is not significant, which may reflect limited fiscal space, delayed spending effects, or structural inefficiencies in China's fiscal system during recessions. Inflation still supports growth, suggesting that price stability and moderate inflation sustain demand even in weak periods. Similarly, government revenue remains growth-enhancing, possibly by maintaining public investment and fiscal credibility. The negative impact of export growth highlights external vulnerabilities: weaker global demand or trade tensions can deepen recessions. The insignificance of FDI implies that foreign capital inflows are less effective in supporting growth during downturns, either due to capital flight or lower investor confidence. Debt levels no longer stimulate growth, reflecting that additional borrowing is less productive in recessions. The world uncertainty index is not significant, but its positive coefficient suggests that firms and households may adjust expectations differently when the economy is already contracting.

The expected duration of each economic state indicated that Stable Quarters persisted for approximately 1.69 quarters on average, whereas Recession Quarters lasted longer, around 2.81 quarters. Transition probabilities suggested moderate persistence within each state, with a 41% chance of remaining in a Stable Quarter and a 64% chance of staying in a Recession Quarter in the following quarter. The expected duration and transition probabilities provide additional insight into the dynamics of Chinese economic cycles. Stable periods are relatively short-lived whereas recessions continue longer. It showed the importance of timely targeted policy interventions. These are summarized in Table 4.

Table 4. Expected Duration of Regimes and Their Transition Probabilities.

Regime	Expected Duration	Regime Transition Probabilities	Regime Transition Probabilities
1 | Expansion Periods	1.69 Quarters	41.03%	58.97%
2 | Recession Periods	2.81 Quarters	35.57%	64.43%

Notes: The expected duration of each regime is computed as $ED_i = \frac{1}{1-\pi_{ii}}$. The regime transition probabilities are defined as $\pi_{ij} = P(S_t = j|S_{t-1} = i|) \rightarrow i,\ j \in \{1,2\}$ where π_{ij} is the probability of staying in regime i in the next quarter j.

During expansions, monetary policy signals and fiscal discipline appear critical for sustaining growth while avoiding overheating. Efficient use of FDI and export competitiveness further strengthens expansionary momentum. During recessions, flexible monetary easing and revenue-supported fiscal stability matter more than broad spending increases, which may lack effectiveness. Export diversification and domestic demand resilience are key to reducing vulnerability to global downturns.

To assess the robustness of the MSR estimation results, we next used Bayesian Vector Autoregression (BVAR) model to study the dynamic interactions among macroeconomic policies and economic growth. Specifically, we examined the dynamic responses of GDP to shocks in monetary and fiscal policies as well as other the BMA model's chosen control variables. This model estimates Impulse Response Functions (IRFs) which trace the effects of a one-standard-deviation shock in one variable on other variables during studied quarters. The IRFs provide an intuitive and dynamic perspective on how monetary and fiscal policy shocks propagate through the economy under global economic uncertainty. A shock to the policy rate raises GDP growth immediately, but the effect fades after one quarter. This suggests that initial monetary tightening signals market confidence, but its

contractionary impact dominates quickly (Figure 1). A government expenditure shock has a small, positive, and persistent effect for 15 quarters. This indicates that fiscal spending supports growth over time, yet inefficiencies or slow project absorption limit its magnitude (Figure 2). Inflation shocks appear neutral for GDP growth, showing that moderate price increases sustain demand without disrupting economic activity (Figure 3). Revenue shocks generate a small positive effect that persists, confirming that fiscal discipline and higher revenues stabilize growth through sustained public investment (Figure 4). Exchange rate shocks slightly raise growth, but the effect is small and persistent. This reflects China's managed exchange rate regime, where fluctuations have limited influence on domestic growth (Figure 5). FDI shocks contribute minor, positive effects, supporting capital accumulation and technology transfer, though structural or regulatory constraints moderate their impact (Figure 6). Lending rate shocks briefly increase growth for two quarters before returning to neutral. This pattern indicates short-term credit constraints influence investment, but other channels dominate in sustaining growth (Figure 7). Deposit rate shocks are small and transient, suggesting limited impact on aggregate activity (Figure 8). Government debt shocks initially reduce growth, then reverse, implying that borrowing may crowd out private investment at first but finance productive projects in the long run (Figure 9). Unexpectedly, unemployment shocks temporarily raise growth, likely reflecting labor reallocation and productivity gains during structural transformations (Figure 10). Global uncertainty shocks consistently lower GDP growth, highlighting China's vulnerability to external shocks and the need for coordinated policy responses (Figure 11). Export shocks boost growth strongly in the first three quarters before flattening, showing that external demand drives short-term growth while domestic factors moderate its effect over time (Figure 12). Overall, the IRFs confirm the MSR results across different models. They show that the main findings such as the regime-dependent effects of monetary and fiscal policy and the vulnerability of growth to global shocks are robust. The IRFs also reveal how shocks propagate over time, their delayed effects, and how long they persist. This adds more detail and clarity to the static MSR estimates.

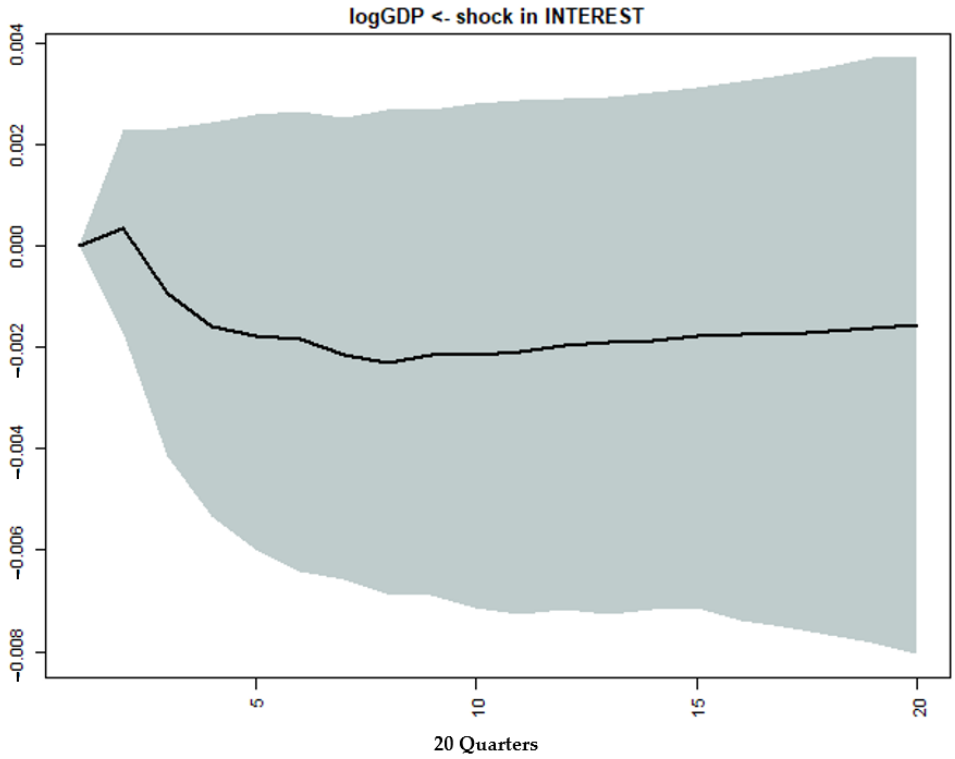


Figure 1. Shocks in Monetary Policy Affecting Economic Growth in China.

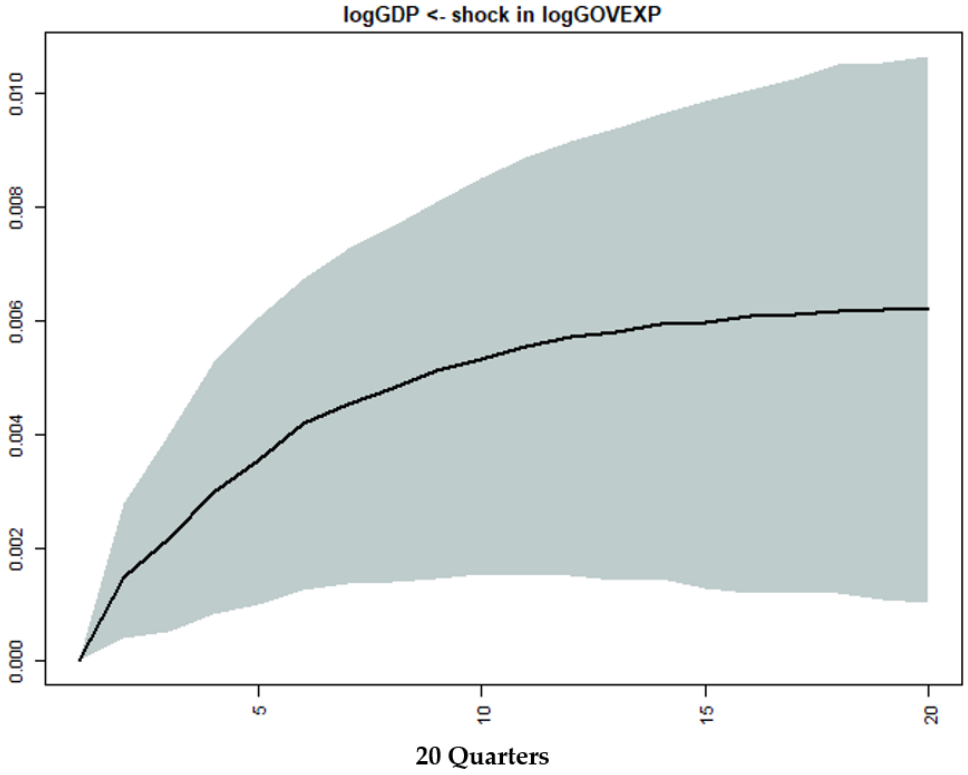


Figure 2. Shocks in Fiscal Policy Affecting Economic Growth in China.

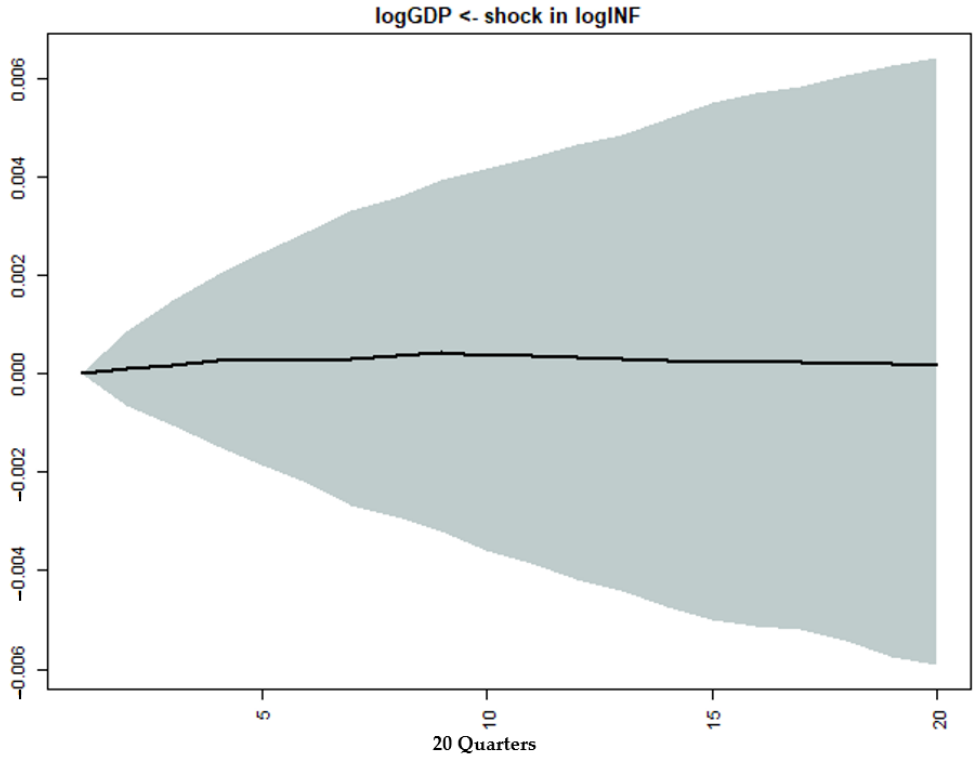


Figure 3. Shocks in Inflation Affecting Economic Growth in China.

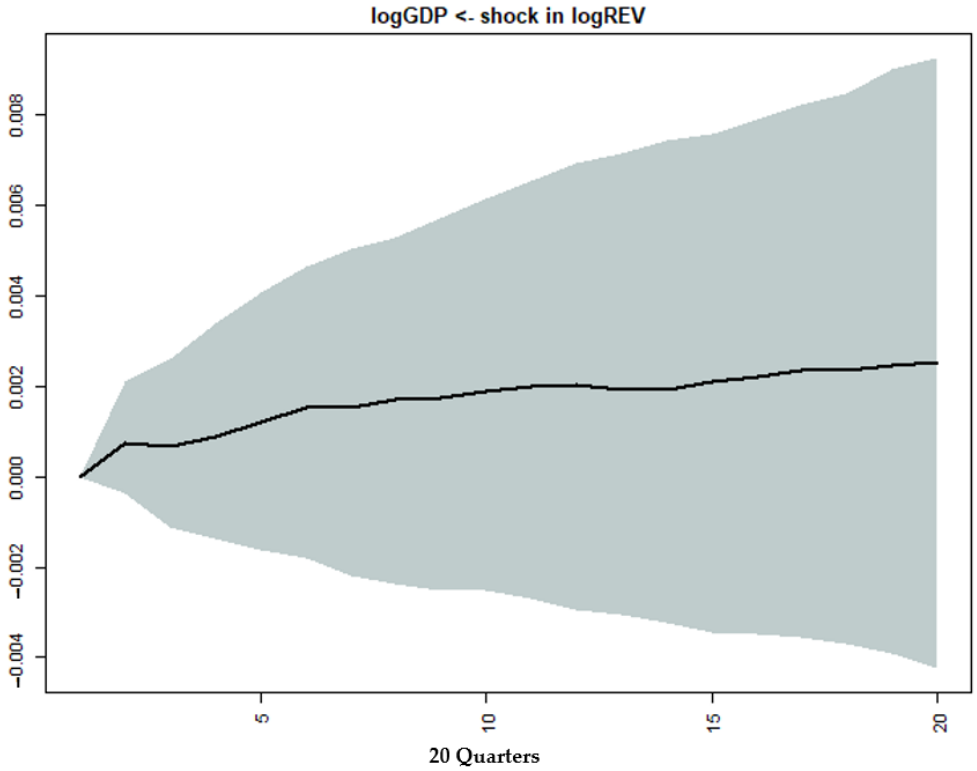


Figure 4. Shocks in Government Revenue Affecting Economic Growth in China.

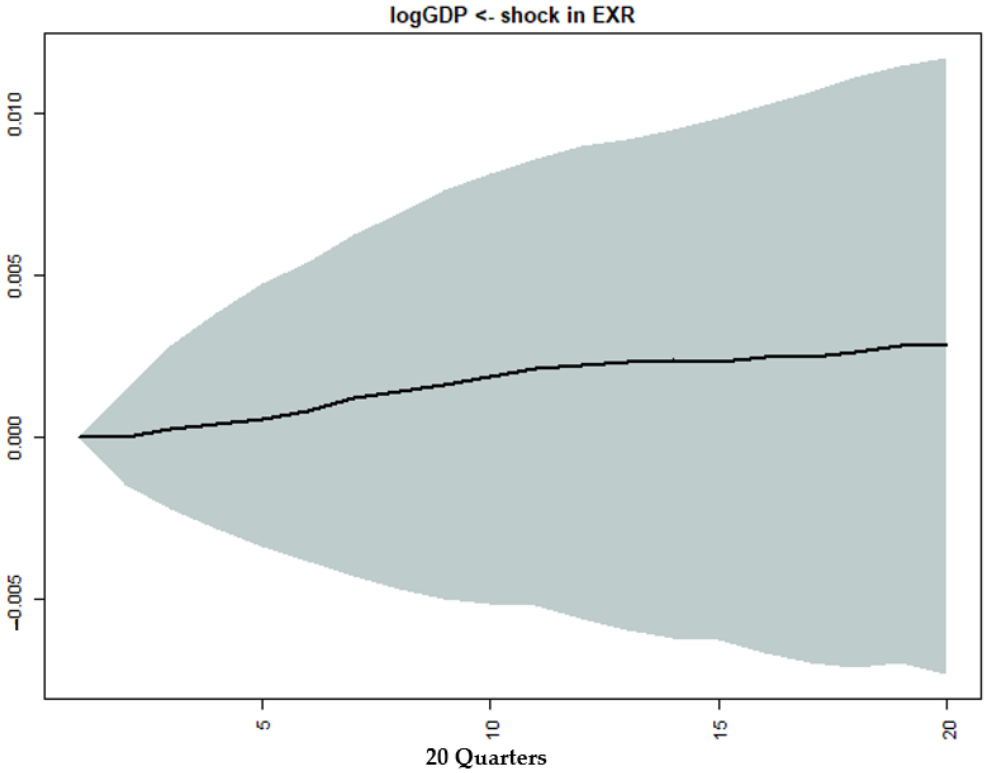


Figure 5. Shocks in Exchange Rates Affecting Economic Growth in China.

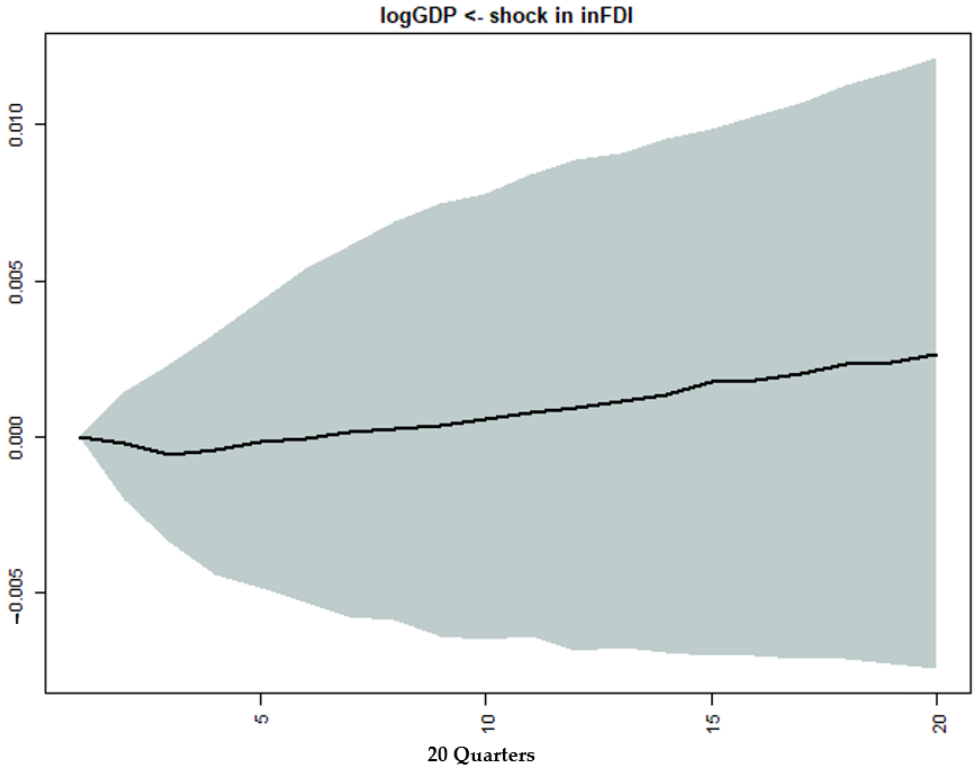


Figure 6. Shocks in FDI inflows Affecting Economic Growth in China.

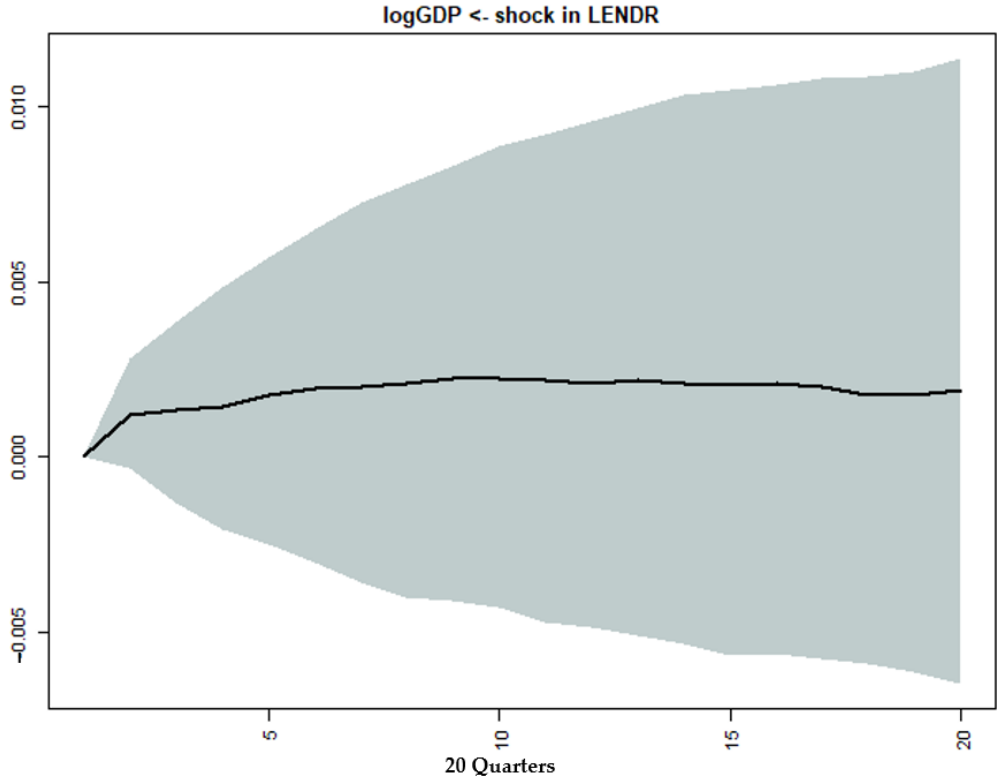


Figure 7. Shocks in Lending Interest Rates Affecting Economic Growth in China.

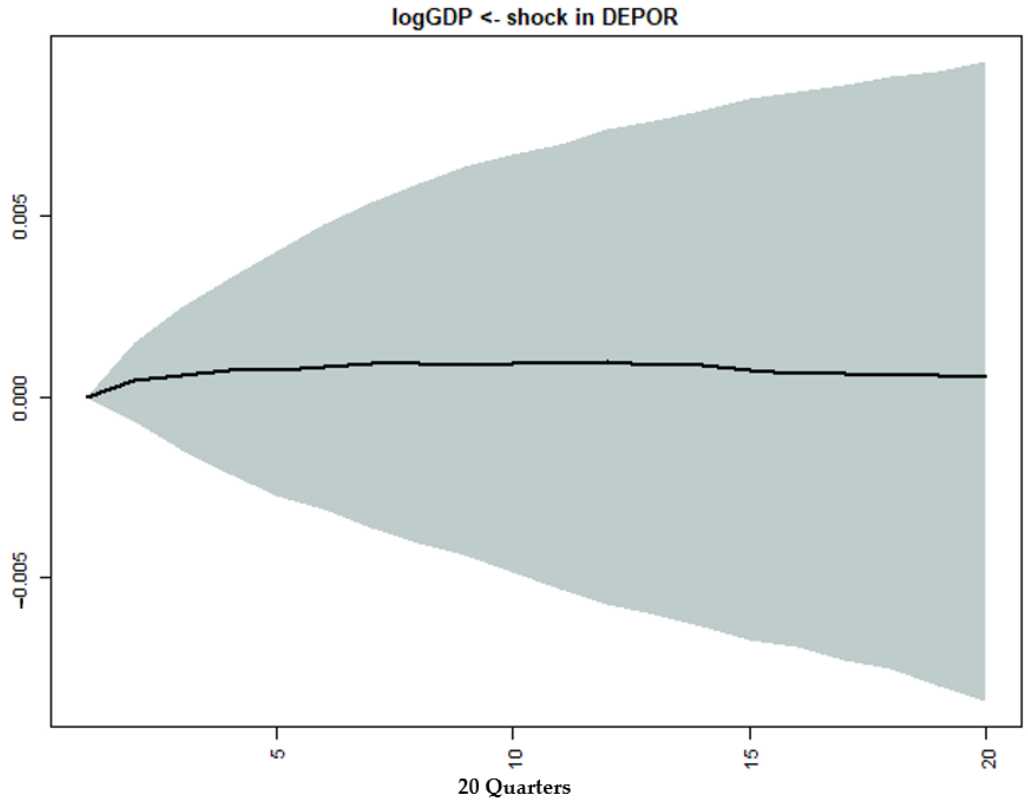


Figure 8. Shocks in Deposit Interest Rates Affecting Economic Growth in China.

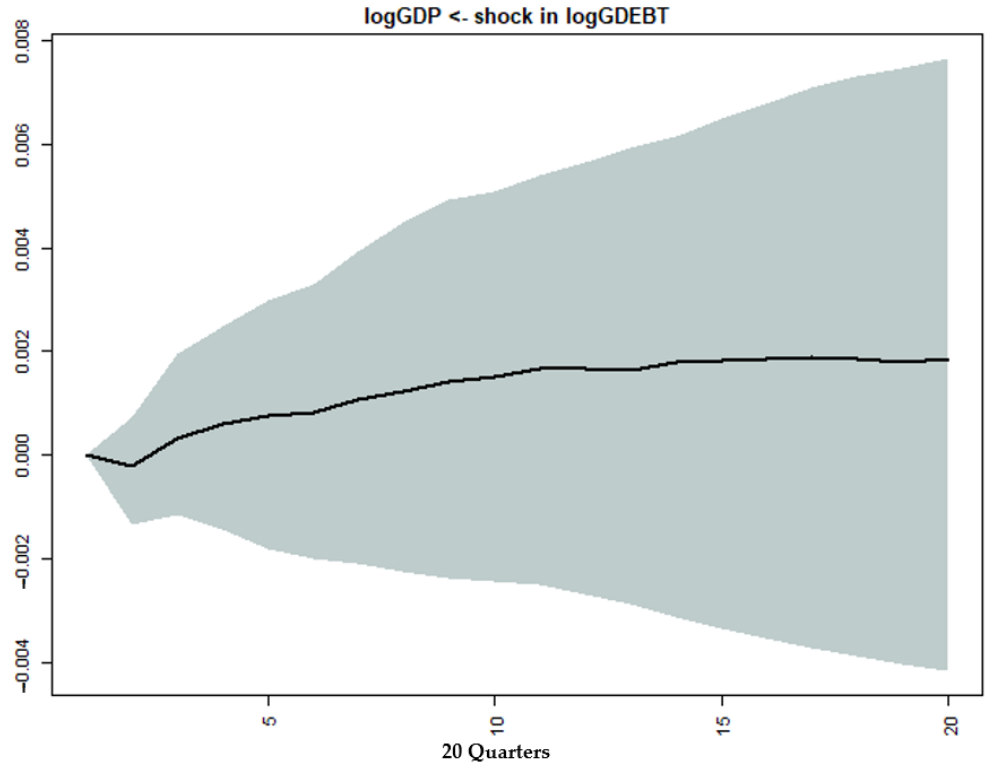


Figure 9. Shocks in General Government Debt Affecting Economic Growth in China.

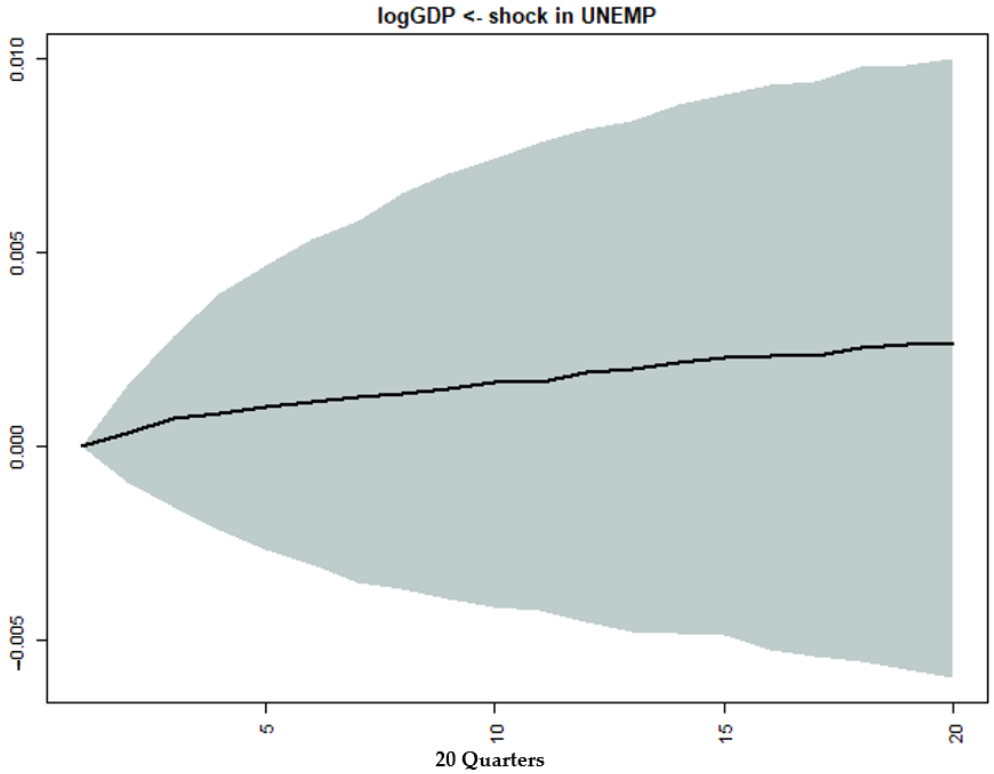


Figure 10. Shocks in Unemployment Rates Affecting Economic Growth in China.

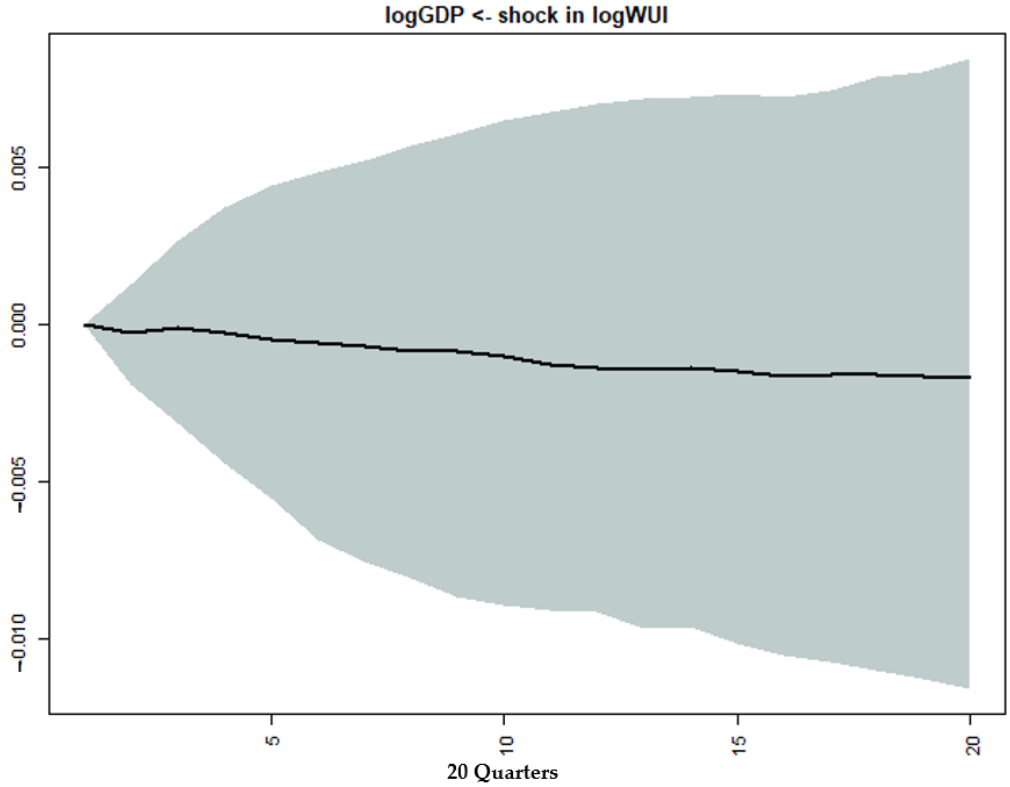


Figure 11. Shocks in World Uncertainty Index Affecting Economic Growth in China.

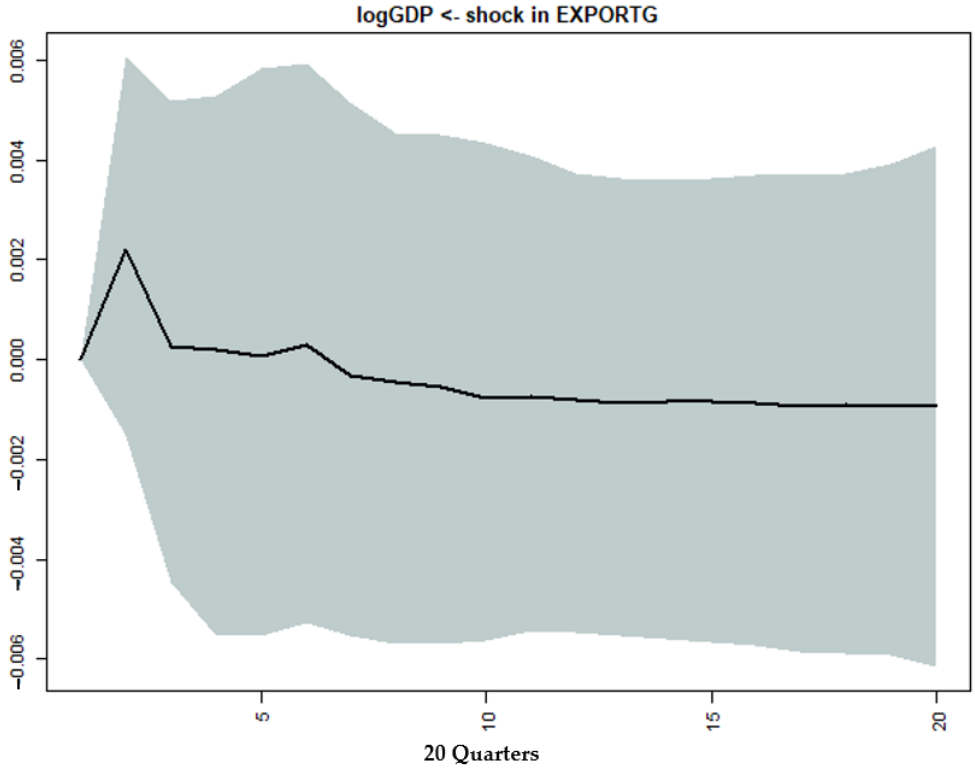


Figure 12. Shocks in Exports Growth Affecting Economic Growth in China.

5. Conclusions and Limitations

This study examines the effects of monetary policy (MP) and fiscal policy (FP) on the economic growth in China under global uncertainty from 1996: Q1 to 2024: Q4. Results show that policy effectiveness depends on the economic regime. During expansions, higher policy rates signal confidence and support growth. Government revenue, moderate inflation, FDI inflows, and export growth enhance growth. Government expenditure can crowd out private investment when demand is high. During recessions, higher policy rates reduce growth, while government expenditure shows limited impact. Revenue collection remains crucial for sustaining investment. Export growth is vulnerable to external shocks. Global uncertainty consistently reduces growth, confirming China's exposure to international risks. Coordination between MP and FP accelerates recovery and sustains growth more effectively than either policy alone. The IRFs confirm these findings as they show dynamic propagation, lagged effects, and persistence of shocks across quarters.

The findings provide clear guidance for policymakers. Policy effectiveness is regime-dependent. During expansions, moderate monetary tightening and fiscal discipline support sustainable growth. Efficient use of government revenue, export competitiveness, and FDI inflows strengthens expansionary momentum. During recessions, fiscal discipline and revenue-driven investment stabilize the economy. Aggressive expenditure increases are less effective. Policymakers should coordinate monetary and fiscal policies to accelerate recovery and enhance resilience. Persistent global uncertainty and trade-related risks highlight the need for external diversification and proactive risk management.

Despite its contributions, this study has several limitations. First, the analysis relies on aggregate national-level data which may obscure regional, provincial, or sectoral heterogeneity within China. It remains the gap on the differential effects across economic agents and income groups. Second, some variables, such as institutional quality and policy implementation lags, are approximated indirectly, which may reduce measurement precision and obscure their moderating role. Third, the study assumes only two economic regimes,

whereas additional regimes could better capture complex cyclical transitions and subtle shifts in economic activity. Fourth, extreme events, such as the COVID-19 pandemic, may involve structural breaks that the model cannot fully accommodate. Fifth, quarterly macroeconomic indicators may not reflect very short-term dynamics or high-frequency policy responses, including rapid changes in financial markets or banking sector activities, which are not explicitly modeled. Sixth, while the study focuses on aggregate growth effects of monetary and fiscal policy, it does not analyze distributional impacts across income groups, financial institutions, or economic agents, nor does it incorporate thorough financial market channels such as stock indices, credit spreads, or banking sector performance. Finally, exogenous shocks beyond global uncertainty such as geopolitical tensions, climate risks, and technological disruptions are not explicitly considered, and public debt dynamics or distinctions between current and investment expenditures were not analyzed.

Future research could address these limitations in several ways. Using more granular data at the regional, sectoral, or household level would allow for an assessment of heterogeneity in policy effects and distributional impacts across income groups and economic agents. Incorporating detailed institutional quality measures could clarify their moderating role. Expanding the analysis to include additional economic regimes may capture more nuanced cyclical dynamics, while high-frequency data could improve understanding of short-term policy and financial sector impacts. Integrating financial market indicators, credit conditions, and banking sector performance into regime-dependent macroeconomic models would provide a more complete picture of monetary policy channels. Combining Bayesian variable selection or machine learning techniques with macroeconomic modeling could enhance predictive power and robustness. Finally, systematically examining additional sources of uncertainty including geopolitical shocks, climate risks, and technological innovations would clarify their interactions with monetary and fiscal policies and their implications for sustainable growth.

Author Contributions: Conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing—original draft preparation, writing—review and editing, and visualization, W.C., J.X., H.K., M.W. and C.C.; supervision, project administration, and funding acquisition, W.C. and C.C. All authors have read and agreed to the published version of the manuscript.

Funding: This research was partially supported by Chiang Mai University.

Data Availability Statement: The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author.

Conflicts of Interest: There is no potential conflict of interest to declare regarding authorship, and publication of this work.

Appendix A

Table A1. Summary Statistics of Variables.

Variable	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Ex. Kurtosis
logGDP	3.9471	4.0185	3.1680	4.5730	0.42506	−0.22585	−1.3604
INTEREST	3.3667	3.2400	1.5000	10.440	1.7554	2.5163	5.8227
logGOVEXP	6.8365	6.9536	5.8997	7.4543	0.50844	−0.39177	−1.2714
logINF	1.9452	1.9373	1.8353	2.0631	0.079887	0.074089	−1.5400
logREV	6.7808	6.9196	5.8697	7.3418	0.49257	−0.47475	−1.2577
EXR	7.2903	7.0435	6.1020	8.3340	0.81095	0.12332	−1.5895
inFDI	2.8644	3.4330	0.099000	4.6953	1.3185	−0.43476	−0.88545

Table A1. *Cont.*

Variable	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Ex. Kurtosis
LENDR	5.7226	5.3300	4.3500	12.060	1.5536	1.8382	3.7396
DEPOR	2.6879	2.2500	1.5000	10.980	1.6976	2.5137	6.9294
logGDEBT	1.5588	1.5230	1.3095	1.9461	0.19668	0.53982	−1.0124
UNEMP	4.3159	4.5500	3.1200	5.0000	0.54455	−1.2437	0.16014
logWUI	4.2442	4.2616	3.7459	4.7457	0.19881	−0.13853	−0.10638
EXPORTG	2.9875	3.3640	−17.758	20.628	5.6268	−0.82187	2.4862

Notes: Table A1 presents the final selected variables after the data-driven model averaging. The variables show moderate stability in GDP, fiscal revenue, and inflation. Financial and trade variables, such as lending rates, deposit rates, and export growth, exhibit higher volatility and occasional extreme values. Skewness and kurtosis indicate the presence of asymmetric shocks. It highlights the need to modeling regime-dependent and dynamic effects.

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