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# **The Transmission of U. S. Monetary Policy Shocks to Developing Economies: Evidence from Vietnam**

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## Abstract

**Purpose:** This study aims to analyze how U.S. monetary policy shocks affect the economy of Vietnam through key transmission channels, including trade, investment flows, and financial markets.

**Design/methodology/approach:** This study employs a Structural Vector Autoregression (SVAR) approach by using quarterly data from 2010 to 2023 and incorporates seven key variables, categorized into external (oil prices, foreign interest rates) and domestic (GDP, CPI, exchange rate, discount rate, and money supply) sectors.

**Findings:** The results indicate that a positive shock to U.S. policy rates is followed by a short-run decline in output growth of Vietnam, accompanied by an adjustment in the depreciation rate, consistent with tighter external financial conditions transmitting to real activity and the exchange rate. Oil-price shocks generate measurable movements in output growth and the exchange rate, with the output response exhibiting short-run volatility and subsequent adjustment over the horizon considered, while inflation dynamics respond within a narrow range.

**Originality/value:** The paper develops a small-open-economy SVAR for Vietnam that jointly identifies U.S. policy-rate and global oil-price shocks over the 2010–2023 period and benchmarks the results against a conventional VAR model. Thereby providing an integrated, state-of-the-art picture of how external monetary and commodity shocks transmit to Vietnam’s macroeconomic variables.

**Implications:** These findings carry direct policy and risk-management implications. The dominance of the exchange-rate and interest-rate channels indicates that these variables are the key instruments for cushioning Vietnam against external monetary and oil-price shocks. Greater exchange-rate flexibility and timely monetary adjustments are therefore required to preserve macroeconomic stability. The SVAR framework maps alternative paths of U.S. interest rates and global oil prices into quantitative scenarios for output, inflation, and the exchange rate. Such scenario-based evaluation lies within the domain of decision sciences and enables systematic comparison of policy and risk-management options under uncertainty.

**Keywords:** monetary policy, structural vector autoregressive (SVAR) model, foreign shocks, macroeconomic variables, Vietnam.

**JEL-Classifications:** C32, E52, F42, E31, E44

## 1 Introduction

Changes in monetary policy in large economies, particularly the U.S., are crucial in driving global economic developments through transmission channels such as international trade and financial markets (Miranda-Agrippino & Rey, 2020; Rey, 2016). Consequently, the latest cycle of U.S. monetary tightening, which began in 2022, is considered a significant risk to the global economic recovery (Andriantomanga et al., 2023). However, the size and direction of these spillover effects depend primarily on domestic economic conditions and a country's policy response. According to Miranda-Agrippino and Rey (2020), U.S. monetary policy affects other countries primarily through financial and trade channels.

Among these channels, three stand out as particularly significant. The first transmission channel relates to the financial strength of firms. When the U.S. raises interest rates, it becomes more expensive for companies in other countries to borrow money. As a result, their financial health deteriorates, and they may reduce investment. The second transmission channel is the financial channel related to the exchange rate, in which currency depreciation increases the burden of foreign-currency-denominated debt. The third transmission channel involves international trade, and its effects are less clear than those of the previous two financial channels. While the balance sheet and interest rate channels suggest clear negative impacts from tighter U.S. monetary policy, the trade channel can have mixed effects on other countries. On the one hand, a contractionary U.S. monetary policy reduces U.S. import demand, negatively affecting its trading partners. On the other hand, it can enhance foreign export competitiveness by depreciating their currencies, potentially stimulating external demand.

Regarding the corporate financial health channel, Vo and Nguyen (2016) demonstrate that the Federal Reserve's monetary tightening has adverse effects on Vietnam's stock market, with firms characterized by high financial leverage and small size being more strongly affected. For the exchange rate and foreign currency debt channel, studies on exchange rate pass-through indicate that fluctuations in the VND/USD exchange rate entail a relatively strong transmission, particularly to consumer prices, thereby increasing the burden of foreign-currency-denominated debt and the risk of imported inflation (AMRO, 2024). Given Vietnam's continued dependence on imported inputs, Federal Reserve shocks tend to amplify macroeconomic instability through both the exchange rate and balance sheet channels. Ngo and Doan (2023) further reveal that the quantitative easing (QE) programs of the Federal Reserve previously boosted Vietnam's GDP and inflation through risk-taking and portfolio rebalancing effects, while bilateral trade analyses between Vietnam and the United States indicate that interest rate and exchange rate fluctuations can alter both U.S. import demand and the price competitiveness of Vietnamese exports.

Although a growing body of research has examined the effects of U.S. monetary policy on various aspects of the economy of Vietnam, most of the existing evidence remains fragmented and insufficient to form a comprehensive picture. Current studies typically concentrate on isolated aspects, such as stock market reactions or the degree of exchange rate pass-through. Furthermore, recent international contributions emphasize the importance of distinguishing between different types of Federal Reserve policy shocks, such as those related to shifts in policy stance versus those arising from information about the economic

outlook, as their effects on emerging economies may differ considerably (Georgiadis & Jarocinski, 2023). To the best of our knowledge, this approach has not yet been applied in Vietnam, especially amid the tightening cycle that began in 2022, which has generated substantial pressure on the exchange rate, capital flows, and trade.

In the context of deepening globalization, economic shocks propagate rapidly across borders, directly impacting economies that rely heavily on international trade and investment. As a small, open economy with a strong export orientation, Vietnam remains highly exposed to external shocks. Fluctuations in global commodity prices, interest rates, U.S. inflation, and industrial production growth significantly impact Vietnam's macroeconomic performance. This paper addresses this gap by providing a comprehensive assessment of how external monetary and commodity shocks transmit to Vietnam's key macroeconomic variables. To the best of our knowledge, this study is among the first studies to develop a small-open-economy SVAR for Vietnam that jointly identifies U.S. policy-rate and international oil-price shocks and explicitly compares the structural model with a conventional VAR benchmark. First, we estimate an SVAR that treats U.S. monetary policy and world oil prices as exogenous drivers while allowing for rich interactions among domestic variables (GDP, CPI, ER, DR, M2). Second, we use quarterly data 2010 - 2023, covering the post-global financial crisis period, the COVID-19 episode, and the recent tightening cycle that began in 2022. Third, in the small-open-economy SVAR literature, we contrast the results with those from a conventional VAR to show that structural identification yields clearer, more policy-relevant impulse responses for Vietnam. The paper contributes to decision sciences by transforming macroeconomic relationships into a tractable decision-support system. Given assumed paths for external shocks, the SVAR delivers conditional forecasts for output, inflation, and the exchange rate that can be used to assess trade-offs between different monetary and fiscal policy options.

## 2 Theoretical review

Monetary transmission refers to the set of mechanisms through which changes in monetary conditions affect output, prices, and other macroeconomic variables. There are two main perspectives on monetary transmission: the traditional view and the credit view. The traditional view emphasizes the role of interest rates, asset prices, and exchange rates in shaping aggregate demand. In contrast, the credit view focuses on financial frictions, bank lending, and borrower balance-sheet conditions (Mishkin, 2007). Choi et al. (2024) show that monetary policy has stronger output effects in industries with more limited collateral and smaller firms, while industries producing durable goods respond more strongly, consistent with the interest-rate channel. In a closed-economy setting, the output is determined by goods-market equilibrium and money-market equilibrium as follows by the IS–LM framework:

$$Y = C(Y - T) + I(r) + G,$$

$$\frac{M}{P} = L(Y, r),$$

where  $Y$  is output,  $r$  is the real interest rate,  $M/P$  is real money balances, and  $L$  is money demand. A monetary expansion that increases real balances lowers the interest rate, stimulates investment and

consumption, and raises aggregate demand and output. Monetary tightening works in the opposite direction.

In an open economy, the transmission mechanism is extended through the Mundell–Fleming framework, where external conditions and exchange-rate movements play a central role, presented as follows:

$$Y = C(Y - T) + I(r) + G + NX(E, Y, Y^*),$$

where  $NX$  denotes net exports,  $E$  is the nominal exchange rate, and  $Y^*$  is foreign income.

The credit view adds an important dimension to the traditional framework by emphasizing imperfections in financial markets and the role of banking intermediation. Bernanke and Gertler (1995) argue that monetary policy affects the economy not only through the market interest rate, but also through changes in the availability and cost of external finance. Kashyap and Stein (1995) show that tighter monetary conditions can reduce loan supply and disproportionately affect credit-dependent borrowers. While Mishkin (2007) notes that the bank-lending channel is especially important for smaller firms, which are generally more dependent on bank credit than large firms with broader access to capital markets.

### **3 Literature review**

#### ***3.1 Small open economy studies***

Empirical research on small open economies shows that the effects of monetary policy depend critically on the identification strategies employed. Studies based on VAR and SVAR models consistently document significant responses of output, prices, and exchange rates to policy shocks. Dedola and Lippi (2005), analyzing several European economies, report heterogeneous effects across industries, indicating that sectoral structures condition monetary transmission. Chen et al. (2017) provide evidence for China that monetary policy shocks affect output as well as exports and imports. Kim and Roubini (2000) and Zaidi and Fisher (2010), applying a non-recursive SVAR, confirm significant impacts on output, prices, and exchange rates in advanced economies. Subsequent work relies on sign-restriction approaches to reduce dependence on rigid contemporaneous assumptions. Canova and De Nicolo (2002) find that monetary policy shocks significantly affect output and inflation across major economies. Rafiq and Mallick (2008) show that contractionary interest rate shocks reduce output in Germany and France, with additional effects on prices, money supply, and exchange rates. Zaidi et al. (2016) confirm in Malaysia that interest rate shocks significantly influence output, inflation, and the exchange rate, while also highlighting the role of foreign variables. More recent contributions employ high-frequency identification to capture the unexpected component of policy decisions around central bank meetings (Bauer & Swanson, 2023; Nakamura & Steinsson, 2018). This line of research highlights the distinction between policy stance shocks and information shocks, with different consequences for small open economies (Camara, 2025; Georgiadis & Jarocinski, 2023).

#### ***3.2 Empirical studies in Vietnam***

Small open economies like Vietnam are susceptible to global economic shocks due to their reliance on international trade and investment. The COVID-19 pandemic, ongoing geopolitical tensions, and significant shifts in global monetary policies have significantly heightened these vulnerabilities in recent years. ESCAP (2021) reported that supply chain disruptions caused by the pandemic severely affected export-reliant economies, including those in emerging countries. Additionally, De Leo et al. (2022) emphasized that uncertainties in global trade, driven by events such as the U.S.-China trade war, have further amplified economic volatility. Vietnam's integration into multiple free trade agreements (FTAs) has provided opportunities to expand its export markets. However, it has also exposed the country to the economic fluctuations of its trading partners. As a result, the need for enhanced resilience in trade and production systems has become increasingly evident. Monetary policy is crucial for dealing with external shocks and stabilizing the economy. Vietnam's approach to monetary policy has evolved over the past two decades, reflecting the changing global economic environment. Anwar and Nguyen (2018) highlight the increasing sophistication of Vietnam's monetary tools, including greater flexibility in exchange rate management. Unlike earlier periods characterized by a rigid exchange rate regime, the State Bank of Vietnam has gradually adopted a more dynamic approach to address external shocks, such as fluctuations in global commodity prices and U.S. inflation. Chatterjee (2024) showed that during the post-pandemic period, Vietnam's monetary policies balanced the dual goals of supporting economic recovery and controlling inflation. This shift demonstrates Vietnam's ability to adapt to modern challenges, such as managing liquidity in the banking sector while responding to external pressures.

Trade resilience has become increasingly important in helping Vietnam cope with external economic shocks. As a major participant in global supply chains, Vietnam's manufacturing and agricultural exports are highly sensitive to disruptions in international trade. Baldwin and Freeman (2022) observed that supply chain bottlenecks during the pandemic exposed vulnerabilities in economies like Vietnam, where industries rely heavily on global production networks. Nevertheless, Vietnam has successfully enhanced its economic resilience through diversification of trade partners and active participation in regional trade agreements, such as the ASEAN and RCEP. UNCTAD (2023) highlighted Vietnam's efforts to reduce dependence on any single market, particularly China, through initiatives to expand its presence in Europe and North America. Vietnam continues to face inflation challenges amid current global price fluctuations. In recent years, higher domestic prices in Vietnam have mainly resulted from rising global energy prices and supply chain disruptions.

Vietnam's industrial production has been both a driver of growth and a source of vulnerability. Recent trends indicate that Vietnam is increasingly attracting foreign direct investment (FDI) from multinational corporations seeking to diversify their operations through the "China+1" strategy. Vo et al. (2024) highlighted that digital transformation initiatives have improved efficiency and resilience in industrial production, enabling businesses to navigate global disruptions more effectively. However, Vietnam still faces significant obstacles to long-term industrial resilience, particularly related to adopting advanced technologies and improving digital infrastructure. Vietnam's policy responses to global shocks have significantly contributed to maintaining economic stability. However, Nguyen and Dinh (2024) also argued that Vietnam must now focus on addressing structural vulnerabilities revealed by the pandemic,

such as dependence on external markets and weaknesses in its domestic supply chain. Increasing digital trade and effectively leveraging agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, are important strategies to enhance Vietnam's ability to withstand economic shocks. Additionally, Vietnam's efforts to strengthen its domestic industries and reduce reliance on imports align with global best practices for building economic stability.

Overall, the existing literature indicates that Vietnam is significantly exposed to global economic shocks; however, its policy responses have effectively mitigated these negative impacts. The findings underscore the importance of adopting adaptive monetary policies, diversifying trade relationships, and leveraging technological innovation to enhance resilience. By addressing these challenges, Vietnam can reduce its exposure to external risks and position itself as a competitive player in the global economy. These insights provide a solid foundation for further analysis of Vietnam's macroeconomic responses to global economic shocks.

## **4 Methodology**

### ***4.1 Methodology framework***

Empirical macroeconomic studies commonly employ multivariate time series models to describe the joint behavior of output, prices, interest rates, and exchange rates. VAR is widely used as a flexible reduced-form framework that allows straightforward computation of impulse responses and forecast-error variance decompositions (Lütkepohl, 2005). In a standard VAR, the shocks are simply the residual innovations from each equation, which makes the approach convenient for summarising the data's correlations. However, it is less suitable for policy analysis that requires identifying specific economic disturbances, such as monetary policy or commodity price shocks. To obtain shocks with a clear structural interpretation, a large literature instead employs SVAR models that impose identifying restrictions based on macroeconomic theory and the economy's institutional features. For small open economies, Cushman and Zha (1997) construct an SVAR for Canada, treating foreign variables as exogenous and using contemporaneous restrictions to identify domestic monetary policy shocks. Majenge et al. (2025) compare a standard VAR with SVAR specifications with theory-based run and long run restrictions to study how oil price shocks and the exchange rate affect consumer prices in South Africa, and find that the SVAR models provide a richer and more plausible characterisation of the transmission of external shocks than the unrestricted VAR. Using the SVAR approach, this study examines the impact of global economic shocks on key macroeconomic indicators in Vietnam. The SVAR approach is chosen for its ability to capture dynamic interactions between multiple variables while allowing for causal inferences. It is well-suited for studying the effects of global economic shocks on Vietnam's small and open economy. The model builds on theoretical foundations from macroeconomic literature on open economies and empirical evidence from similar studies in emerging markets, providing a robust framework for understanding Vietnam's economic responses.

The SVAR model is well-suited for analyzing interactions among macroeconomic variables, especially in small, open economies like Vietnam. Unlike traditional vector autoregression (VAR) models, the SVAR framework imposes structural restrictions to identify causal relationships among variables. This is important for distinguishing between exogenous global shocks and endogenous domestic responses. The approach aligns with established methodologies in macroeconomic research, as exemplified by De Leo et al. (2022), and emphasizes the importance of employing dynamic models to analyze the impact of external shocks on economies. Therefore, the SVAR method, which captures these dynamic interactions, is appropriate for Vietnam, given its economic openness and significant dependence on international markets. The model accounts for Vietnam's position in global value chains and its sensitivity to external factors, including commodity price fluctuations, U.S. monetary policy, and shifts in global demand. By incorporating both global and domestic variables, the SVAR approach offers a comprehensive understanding of how international economic dynamics impact Vietnam's macroeconomic performance.

Macroeconomic relationships are often analysed using multivariate time-series models that relate each variable to its own past and to the past of other variables, with vector autoregressions becoming a standard workhorse for such applications (Kilian & Lütkepohl, 2017; Lütkepohl, 2005). In this paper, we adopt a structural VAR (SVAR) framework in which a system of macroeconomic variables is driven by a set of economically interpretable structural shocks, allowing us to trace the transmission of external and domestic monetary disturbances over time. The empirical strategy is designed to quantify the transmission of shocks to growth and short-run changes. Accordingly, the baseline system is specified using stationary-consistent transformations that deliver interpretable responses in terms of growth rates and changes. Let  $y_t$  denote the vector of quarterly variables entering the model:

$$y_t = (\Delta \ln OIL_t, \Delta PR_t, \Delta \ln GDP_t, \Delta INF_t, \Delta DR_t, \Delta \ln ER_t, M2G_t), \quad (1)$$

where  $OIL_t$  is the international oil price,  $PR_t$  is the U.S. policy rate,  $GDP_t$  is real GDP,  $DR_t$  is the domestic discount rate, and  $ER_t$  is the nominal exchange rate,  $\Delta$  is the first-difference operator, and  $\Delta \ln$  denotes the log-difference.  $INF_t$  is the inflation rate, and  $M2G_t$  is broad money growth. Unit-root tests are reported in the empirical results section to verify the time-series properties of the transformed variables.

The model is expressed as follows:

$$y_t = c + \sum_{i=1}^p B_i y_{t-i} + u_t, \quad \mathbb{E}(u_t u_t') = \Sigma_u, \quad (2)$$

where  $c$  is a vector of intercepts,  $B_i$  are coefficient matrices, and  $u_t$  is the vector of reduced-form innovations. The lag length  $p$  is selected using standard information criteria (AIC, SIC, HQ), and model adequacy is evaluated through residual diagnostics and stability conditions.

To obtain economically meaningful shocks, the reduced-form innovations are mapped into orthogonal structural shocks. The model is expressed as follows:

$$A_0 y_t = \alpha + \sum_{i=1}^p A_i y_{t-i} + \varepsilon_t, \mathbb{E}(\varepsilon_t \varepsilon_t') = I, \quad (3)$$

where  $A_0$  captures contemporaneous relationships,  $A_i$  are lagged structural coefficient matrices, and  $\varepsilon_t$  is the vector of structural shocks. The model is expressed as follows:

$$u_t = A_0^{-1} \varepsilon_t, \Sigma_u = A_0^{-1} (A_0^{-1})'. \quad (4)$$

Identification requires restrictions on  $A_0$ . Consistent with the small-open-economy SVAR literature, this study employs a recursive (triangular) contemporaneous structure in which global variables are ordered first and treated as the most exogenous within the quarter, while domestic variables can respond contemporaneously to external shocks but adjust sequentially within the domestic block (Cushman & Zha, 1997; Kim & Roubini, 2000). The baseline ordering is  $\Delta \ln OIL$ ,  $\Delta PR$ ,  $\Delta \ln GDP$ ,  $\Delta INF$ ,  $\Delta DR$ ,  $\Delta \ln ER$ ,  $M2G$ . This ordering allows shocks to global oil prices and the U.S. policy rate to affect domestic growth, inflation, interest-rate changes, exchange-rate depreciation, and money growth within the same quarter. In contrast, contemporaneous feedback from domestic conditions to the external drivers is restricted.

The study also reports Granger causality tests among the transformed variables to summarize predictive relationships in the data. These tests are used as descriptive evidence on lead-lag dynamics; identification of structural shocks in the SVAR is ultimately governed by the contemporaneous restrictions implied by the recursive ordering.

## 4.2 Variables

The SVAR system consists of seven variables, divided into two foreign-block variables and five domestic-block variables. Separating these variables into the foreign block (OIL, PR) and the domestic block (GDP, CPI, DR, ER, M2) provides a more precise depiction of how U.S. monetary policy transmits through trade, financial, and exchange rate channels. This classification allows the study to offer policy recommendations that enhance Vietnam's resilience against external shocks.

The two exogenous variables in the model include international oil prices (OIL) and the U.S. federal funds rate. The international oil price (OIL) is included to capture the impact of global commodity price fluctuations on Vietnam's economy, with data from the IFS, IMF, and Indexmundi from 2010:Q1 – 2023:Q4. Given Vietnam's heavy reliance on oil imports, oil price volatility directly affects domestic production costs, placing upward pressure on inflation (CPI) and influencing exchange rate movements (ER). When oil prices rise, domestic production and transportation costs increase accordingly, intensifying inflationary pressure. Conversely, declining oil prices also impact Vietnam's economy, given its role as an oil-exporting nation. Blanchard and Gali (2007) and Bernanke et al. (1997) highlight that oil price shocks can significantly affect monetary policy in developing economies, altering financial conditions for businesses and households.

The U.S. federal funds rate represents U.S. monetary policy shocks. Data for this variable come from the Board of Governors of the Federal Reserve System and span the period from 2010:Q1 to 2023:Q4. U.S. monetary policy has a substantial influence on capital flows, exchange rates, and global financial conditions in open economies such as Vietnam (Table 2). When the Federal Reserve (FED) raises interest rates, capital outflows from emerging markets increase, shifting back to the U.S. This places depreciation pressure on the Vietnamese Dong (VND) and increases international borrowing costs for Vietnamese firms (Rey, 2016). Conversely, when the FED lowers interest rates, foreign investment inflows into Vietnam tend to rise, stabilizing the exchange rate and fostering credit growth. Although the U.S. federal funds rate has not been widely examined in studies on Vietnam, it plays a crucial role in SVAR-based research on monetary policy transmission, as evidenced by studies from Raghavan et al. (2012). In addition, studies such as Goujon (2006) emphasize that Vietnam's currency policy closely tracks U.S. monetary policy due to its peg to the USD. As a result, any changes in U.S. interest rates can strongly affect Vietnam's economic variables.

**Table 1. Variable description**

Variable	Description	Period	Source
dLOIL	Oil price growth, $\Delta \ln(\text{WTI oil price})$	2010:Q1 – 2023:Q4	International Financial Statistics (IFS); from Indexmundi, <a href="http://www.indexmundi.com">www.indexmundi.com</a>
dPR	Change in U.S. policy rate, $\Delta \text{Effective Federal Funds Rate}$	2010:Q1 – 2023:Q4	Data Stream <a href="http://www.economy.com/freelunch">http://www.economy.com/freelunch</a>
dLGDP	Real GDP growth, $\Delta \ln(\text{real GDP})$	2010:Q1 – 2023:Q4	International Monetary Fund, General Statistics Office of Vietnam
dINF	Change in inflation rate, $\Delta \text{CPI inflation}$	2010:Q1 – 2023:Q4	International Monetary Fund
dDR	Change in domestic policy rate, $\Delta \text{discount/refinancing rate}$	2010:Q1 – 2023:Q4	General Statistics Office of Vietnam, World Economic Outlook database, and International Monetary Fund
dLER	Depreciation rate, $\Delta \ln(\text{USD/VND})$	2010:Q1 – 2023:Q4	International Monetary Fund, State Bank of Vietnam
M2G	Broad money growth, quarterly growth rate of broad money	2010:Q1 – 2023:Q4	International Financial Statistics

*Note: The sample covers quarterly observations from 2010Q1 to 2023Q4. Source: Author's Calculation*

The five endogenous variables in the model include GDP, CPI, DR, ER, and M2, representing key macroeconomic indicators of Vietnam. GDP represents Vietnam's domestic economic growth. Data for GDP come from the International Monetary Fund (IMF) and the General Statistics Office of Vietnam (GSO), covering the period from 2010:Q1 to 2023:Q4. Fry and Pagan (2011) and Christiano et al. (2001) suggest that U.S. monetary policy shocks can influence GDP in open economies through two main channels: trade (changes in U.S. demand for imported goods from Vietnam) and finance (foreign investment flows). The annual percentage change in Vietnam's Consumer Price Index (CPI) represents domestic inflation. Data are collected from the International Monetary Fund's International Financial Statistics (IFS) database for the period of 2010:Q1 – 2023:Q4. When the Federal Reserve (FED) raises interest rates, the Vietnamese Dong (VND) may face depreciation pressure, which could increase import

prices and push up domestic inflation. According to Taylor (2007), changes in U.S. monetary policy can influence inflation in other countries through exchange rate channels.

The discount rate (DR), set by the State Bank of Vietnam (SBV), represents Vietnam’s domestic monetary policy stance. Data for this variable are obtained from the SBV and cover the period from 2010:Q1 to 2023:Q4. As the FED raises interest rates, the SBV may adjust the discount rate to regulate capital flows and stabilize the domestic financial market. The nominal exchange rate (ER) between USD/VND represents foreign exchange rate fluctuations and Vietnam's trade competitiveness, based on data from the SBV and IMF for 2010:Q1 – 2023:Q4. When the FED tightens monetary policy, capital outflows from Vietnam may increase, putting downward pressure on the exchange rate and depreciating the VND, affecting imports and inflation. Finally, broad money supply (M2) is included to reflect domestic liquidity and the central bank's monetary policy stance, with data from IFS and IMF for 2010:Q1 – 2023:Q4. When the FED tightens monetary policy, the SBV may adjust money supply levels to manage capital outflows and stabilize the exchange rate.

### 4.3 Data source

This study uses quarterly macroeconomic data from 2010Q1 to 2023Q4, compiled from reliable sources including the State Bank of Vietnam (SBV), the International Monetary Fund (IMF/IFS), the General Statistics Office of Vietnam (GSO), and the U.S. Federal Reserve.

**Table 2. Data description**

Variable	Mean	Median	Maximum	Minimum	Standard Deviation	Observations (N)
dLOIL	0.0016	-0.0093	0.3726	-0.6139	0.1777	54
dPR	0.0000	-0.0001	0.0047	-0.0050	0.0018	54
dLGDP	0.0112	0.0033	0.2148	-0.1319	0.0899	54
dINF	-0.0002	0.0003	0.0184	-0.0271	0.0066	54
dDR	-0.0000	-0.0000	0.0018	-0.0011	0.0006	54
dLER	0.0027	0.0085	0.0533	-0.0726	0.0312	54
M2G	0.0049	0.0050	0.0095	0.0024	0.0016	54

Note: The table reports descriptive statistics for the variables used in the empirical model. dLOIL = oil price growth; dPR = change in the U.S. policy rate; dLGDP = output growth; dINF = change in inflation; dDR = change in the domestic policy rate; dLER = exchange-rate depreciation; M2G = money growth. N denotes the number of observations. Source: Author’s calculation

Descriptive statistics are presented in Table 2, while detailed variable definitions and data sources are provided in Table 1. The sample period is chosen for three main reasons. First, it spans several distinct phases of U.S. monetary policy, which is essential for assessing external policy spillovers to Vietnam. The post–global financial crisis period (2010–2015) was characterized by highly accommodative policy; this was followed by a tightening phase (2015–2019) with gradual rate increases. The COVID-19 shock (2020–2022) led to a rapid return to near-zero rates, and the subsequent period (2022–2023) reflects the high-rate environment associated with inflation stabilization efforts. Second, from 2010 onward, Vietnam’s macroeconomic statistics became more consistently available and comparable across time, supporting a coherent quarterly dataset for empirical analysis. Third, the period contains substantial

variation in global and domestic conditions, including oil-price movements, pandemic disruptions, and policy normalization, providing a rich setting to study transmission mechanisms. The empirical analysis considers international oil prices, the U.S. policy interest rate, Vietnam’s real GDP, inflation, the domestic policy rate, the VND–USD exchange rate, and broad money conditions.

## 5 Results and discussion

The study examines how Vietnam’s economy responds to shocks from U.S. monetary policy, as captured by changes in the Effective Federal Funds Rate, and global oil price fluctuations, using a Structural Vector Autoregression (SVAR) model. The research investigates how changes in U.S. monetary policy transmit to Vietnam’s macroeconomic conditions through the financial and exchange-rate channels, as reflected in movements in the exchange rate and real economic activity. Moreover, the study also examines the impact of global oil price shocks on inflation dynamics, domestic policy-rate adjustments, the exchange rate, and output growth, providing insights into how Vietnam absorbs external commodity market shocks. The empirical findings offer crucial evidence regarding the magnitude of external factors' influence on Vietnam’s economy, thereby supporting the formulation of appropriate policy measures to enhance the country's resilience against international volatility.

To address the spurious-like relationships in the time-series system (Cheng et al., 2021, 2022; Wong & Yue, 2024), the study first examines the stationarity properties of all variables entering the baseline SVAR. The Augmented Dickey-Fuller (ADF) and Phillips–Perron (PP) tests are employed to test the unit-root null, while the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test is used to test the stationarity null. As reported in Table 3, the ADF and PP statistics reject the unit-root null for all variables included in the baseline SVAR, and the KPSS statistics do not reject the stationarity null. These findings confirm that dLOIL, dPR, dLGDP, dINF, dDR, dLER, and M2G are stationary. Therefore, the baseline SVAR is estimated using stationary variables, reducing the risk that the estimated dynamic relationships and impulse responses are affected by spurious-like time-series behaviour.

**Table 3. The results of unit root test**

Variable	ADF statistic	ADF p-value	PP statistic	PP p-value	KPSS statistic	Result
dLOIL	-6.9907***	0.0000	-7.2145***	0.0000	0.0814	Stationary
dPR	-4.6424***	0.0001	-4.3186***	0.0007	0.1048	Stationary
dLGDP	-7.1740***	0.0000	-7.6021***	0.0000	0.0736	Stationary
dINF	-7.9076***	0.0000	-8.2149***	0.0000	0.0662	Stationary
dDR	-5.4869***	0.0000	-5.2374***	0.0000	0.0925	Stationary
dLER	-7.8496***	0.0000	-8.0638***	0.0000	0.0789	Stationary
M2G	-3.3296**	0.0136	-3.1842**	0.0215	0.1327	Stationary

Note: ADF = Augmented Dickey–Fuller test; PP = Phillips–Perron test; KPSS = Kwiatkowski–Phillips–Schmidt–Shin stationarity test. The null hypothesis of the ADF and PP tests is that the series has a unit root, while the null hypothesis of the KPSS test is that the series is stationary. \*\*\*, \*\*, and \* denote rejection of the unit-root null at the 1%, 5%, and 10% levels, respectively. For the KPSS test, the reported statistics do not reject the stationarity null at conventional significance levels. Source: Author’s calculation

After confirming the stationarity properties of the series, the study selects the VAR lag length using standard information criteria, including the Final Prediction Error (FPE), Akaike Information Criterion

(AIC), Schwarz Criterion (SC), and Hannan–Quinn Criterion (HQ). As reported in Table 4, the FPE, AIC, and HQ criteria suggest an optimal lag length of five quarters. However, given the relatively limited sample size and the resulting loss of degrees of freedom in a multivariate VAR with seven variables, the baseline specification adopts VAR(4) to ensure stable estimation and well-behaved residual diagnostics.

**Table 4. Lag-order selection criteria for the VAR**

Lag	AIC	BIC	HQIC	FPE
1	-68.6123	-66.4502 *	-67.7920	1.6256
2	-68.2476	-64.1937	-66.7096	2.6429
3	-68.0077	-62.0620	-65.7519	4.7211
4	-69.9797	-62.1421	-67.0061	1.4036
5	-72.1109 *	-62.3815	-68.4195*	0.8394*

Note: AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; HQIC = Hannan–Quinn Information Criterion; FPE = Final Prediction Error. Asterisks indicate the lag length selected by each information criterion. Source: Author’s calculation

After selecting the lag length, the stability of the estimated SVAR is examined through the inverse roots of the AR characteristic polynomial. To further address the spurious-like concern highlighted by Cheng et al. (2021) and Wong and Yue (2024), Table 5 shows that the SVAR model with four lags satisfies the stability condition, indicating that the impulse response functions generated from the model are valid and stable.

**Table 5. Stability of the SVAR model: inverse roots of the AR characteristic polynomial**

Modulus	0.970	0.970	0.965	0.889	0.889	0.882	0.882
	0.838	0.838	0.824	0.824	0.817	0.817	0.808
	0.808	0.790	0.790	0.787	0.787	0.758	0.758
	0.695	0.695	0.652	0.652	0.343	0.187	0.091

Note: No inverse root lies outside the unit circle; therefore, the estimated SVAR satisfies the stability condition. Source: Author’s calculation

To validate the selected lag specification, residual serial correlation is examined using the Lagrange multiplier (LM) test. Table 6 reports the LM statistics and p-values for the estimated VAR. The results indicate that the null hypothesis of no residual autocorrelation is supported, suggesting that the model adequately captures the dynamic structure of the data. The subsequent analysis proceeds with the VAR(4) model, and the residual diagnostics confirm that this lag length is appropriate for empirical inference.

**Table 6. VAR Residual Serial Correlation LM Test**

Lag	LM-Stat	Prob.
1	43.9095	0.6791
2	39.2738	0.8383
3	43.5565	0.6927

4	32.8393	0.9631
5	51.3394	0.3822
6	52.6487	0.3348
7	31.4754	0.9756
8	47.6296	0.5288
9	33.6050	0.9542
10	36.0534	0.9156
11	40.7669	0.7925
12	37.4717	0.8853

Note: The table reports the Lagrange multiplier (LM) tests for residual serial correlation in the estimated VAR model. Source: Author's calculation

To evaluate the adequacy of the linear specification, the study conducts nonlinearity diagnostics for each equation in the system. Ramsey RESET tests are employed to detect possible functional-form misspecification, and BDS tests are used to examine whether nonlinear dependence remains in the residuals after estimation (Broock et al., 1996; Hui et al., 2017). Table 7 shows that the RESET statistics are insignificant for all equations, indicating no evidence of omitted nonlinear functional forms. The BDS statistics are likewise insignificant across all equations, suggesting that the residuals do not contain systematic nonlinear dependence.

**Table 7. Nonlinearity diagnostic tests**

	RESET		BDS	
	F-stat	p-value	stat	p-value
dLOIL	0.9652	0.3988	2.6657	0.3077
dPR	0.7139	0.5024	0.0968	0.9229
dLGDP	1.7537	0.2000	-0.6719	0.5016
dINF	0.9560	0.2007	2.3724	0.1177
dDR	0.2858	0.7546	-0.7870	0.4313
dLER	1.4647	0.2561	-0.2796	0.7798
M2G	0.2648	0.7701	-1.0923	0.2747

Note: RESET denotes the Ramsey RESET test for functional-form misspecification, and BDS denotes the Brock–Dechert–Scheinkman test for remaining nonlinear dependence in the residuals. dLOIL = oil price growth; dPR = change in the U.S. policy rate; dLGDP = output growth; dINF = change in inflation; dDR = change in the domestic policy rate; dLER = exchange-rate depreciation; M2G = money growth. Higher p-values indicate less support for departures from linearity. Source: Author's calculation

Based on the selected lag length of the VAR model, the study conducts Granger causality tests for each pair of variables under the null hypothesis  $H_0$ : the “Excluded” variable does not Granger-cause the Equation variable. The Wald chi-squared test results for the VAR(4) specification are reported in Table 8 and are evaluated at the 10%, 5%, and 1% significance levels. The results indicate that several variables Granger-cause money growth (M2G) at the four-quarter lag structure. In particular, changes in inflation (dINF) Granger-cause M2G at the 1% significance level (p-value = 0.005). In addition, global oil price growth (dLOIL) and changes in the domestic policy rate (dDR) Granger-cause M2G at the 10% level (p-values of 0.052 and 0.055, respectively). The joint All test for the M2G equation is also significant at the 10% level (p-value = 0.068), suggesting that the remaining variables have predictive content for money

growth. For the exchange-rate depreciation rate (dLER), the tests show that dDR Granger-causes dLER at the 10% level (p-value = 0.068), implying that domestic interest-rate adjustments may contain information relevant for subsequent exchange-rate movements. For real GDP growth (dLGDP), changes in the U.S. policy rate (dPR) Granger-cause dLGDP at the 10% level (p-value = 0.079), indicating that U.S. monetary policy changes may have short-run predictive content for Vietnam's output growth.

**Table 8. VAR Granger causality**

Equation	Excluded	Chi-sq	df	Prob.	Equation	Excluded	Chi-sq	df	Prob.
dLOIL	dPR	2.2639	4	0.6874	dDR	dLOIL	1.5023	4	0.8262
dLOIL	dLGDP	0.4734	4	0.9760	dDR	dPR	2.4471	4	0.6541
dLOIL	dINF	5.3093	4	0.2570	dDR	dLGDP	1.6109	4	0.8068
dLOIL	dDR	2.5646	4	0.6331	dDR	dINF	2.1312	4	0.7116
dLOIL	dLER	5.6874	4	0.2237	dDR	dLER	1.2570	4	0.8686
dLOIL	M2G	2.8284	4	0.5869	dDR	M2G	4.4108	4	0.3533
dLOIL	All	24.4247	24	0.4375	dDR	All	16.2826	24	0.8776
dPR	dLOIL	1.7132	4	0.7883	dLER	dLOIL	2.2733	4	0.6856
dPR	dLGDP	1.2900	4	0.8631	dLER	dPR	0.4153	4	0.9812
dPR	dINF	3.4796	4	0.4810	dLER	dLGDP	4.5146	4	0.3408
dPR	dDR	2.7307	4	0.6038	dLER	dINF	2.9496	4	0.5663
dPR	dLER	2.4808	4	0.6481	dLER	dDR	8.7312	4	0.0682
dPR	M2G	3.7722	4	0.4377	dLER	M2G	6.4784	4	0.1662
dPR	All	20.5160	24	0.6671	dLER	All	19.7504	24	0.7109
dLGDP	dLOIL	4.5136	4	0.3409	M2G	dLOIL	9.3967	4	0.0519
dLGDP	dPR	8.3611	4	0.0792	M2G	dPR	5.0861	4	0.2786
dLGDP	dINF	2.4802	4	0.6482	M2G	dLGDP	1.4801	4	0.8302
dLGDP	dDR	6.9994	4	0.1359	M2G	dINF	14.9952	4	0.0047
dLGDP	dLER	1.2745	4	0.8657	M2G	dDR	9.2590	4	0.0549
dLGDP	M2G	1.0752	4	0.8982	M2G	dLER	4.0625	4	0.3976
dLGDP	All	22.1133	24	0.5725	M2G	All	35.0252	24	0.0680
dINF	dLOIL	4.2439	4	0.3740	dINF	dDR	1.5897	4	0.8106
dINF	dPR	1.0140	4	0.9077	dINF	dLER	1.3879	4	0.8463
dINF	dLGDP	3.0876	4	0.5433	dINF	M2G	3.5716	4	0.4671
					dINF	All	13.4378	24	0.9583

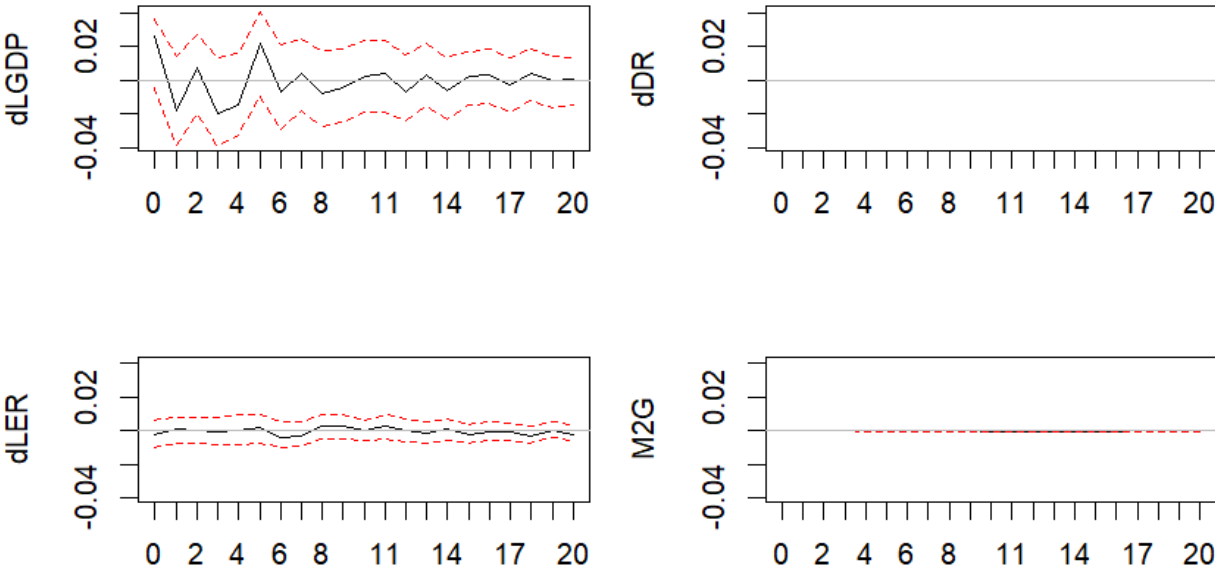
Note: Chi-sq denotes the Wald chi-square statistic; df denotes degrees of freedom; Prob. denotes the p-value. dLOIL = oil price growth; dPR = change in the U.S. policy rate; dLGDP = output growth; dINF = change in inflation; dDR = change in the domestic policy rate; dLER = exchange-rate depreciation; M2G = money growth. Source: Author's calculation

Figure 1 reports the impulse responses of Vietnam's domestic variables to a positive shock in U.S. policy-rate changes, measured by dPR. Output growth, dLGDP, falls quickly and stays below its baseline path for several quarters. This result is consistent with the international evidence that a more hawkish U.S. policy stance can generate a broad tightening in emerging-market financial conditions and a slowdown in real activity, particularly when external funding becomes more expensive and risk premia rise (Ahmed et al., 2024). In Vietnam, the transmission to growth can be reinforced by the way monetary policy is operationalized: the State Bank of Vietnam uses multiple tools and does not rely solely on discrete quarter-to-quarter movements in a single policy rate. The IMF's Vietnam Selected Issues note describes a toolkit

that includes policy rates, open market operations through repo transactions, and SBV bills to steer interbank liquidity, and foreign-exchange operations alongside other measures (Díez et al., 2024). This framework can smooth immediate domestic rate adjustments without fully insulating output growth from tighter external conditions, so the real-economy response remains visible in dLGDP.

The responses of domestic monetary indicators in Figure 1 are comparatively muted. The change in the domestic policy rate, dDR, stays close to zero, and money growth, M2G, remains broadly stable over the horizon. This finding can be explained by Vietnam’s hybrid operating framework, in which short-run stabilization often relies on liquidity management and exchange-rate operations rather than large, frequent adjustments to headline policy rates. Díez et al. (2024) note that open market operations and SBV bills are used to manage system liquidity and influence interbank rates, while FX intervention and exchange-rate management tools can lean against short-term pressure in the foreign-exchange market. Complementary evidence from a Vietnam-focused monetary-policy model indicates that the authorities employ a combination of interest-rate instruments, indicative credit growth guidance, and exchange-rate interventions as part of their policy toolkit (Epstein et al., 2022). Under this mechanism, domestic rates and money growth may adjust more smoothly in the short run. At the same time, the external shock continues to transmit to the real economy through tighter overall financial conditions and exchange-rate pressure.

**Figure 1. Responses of domestic variables to Federal Funds rate shocks**

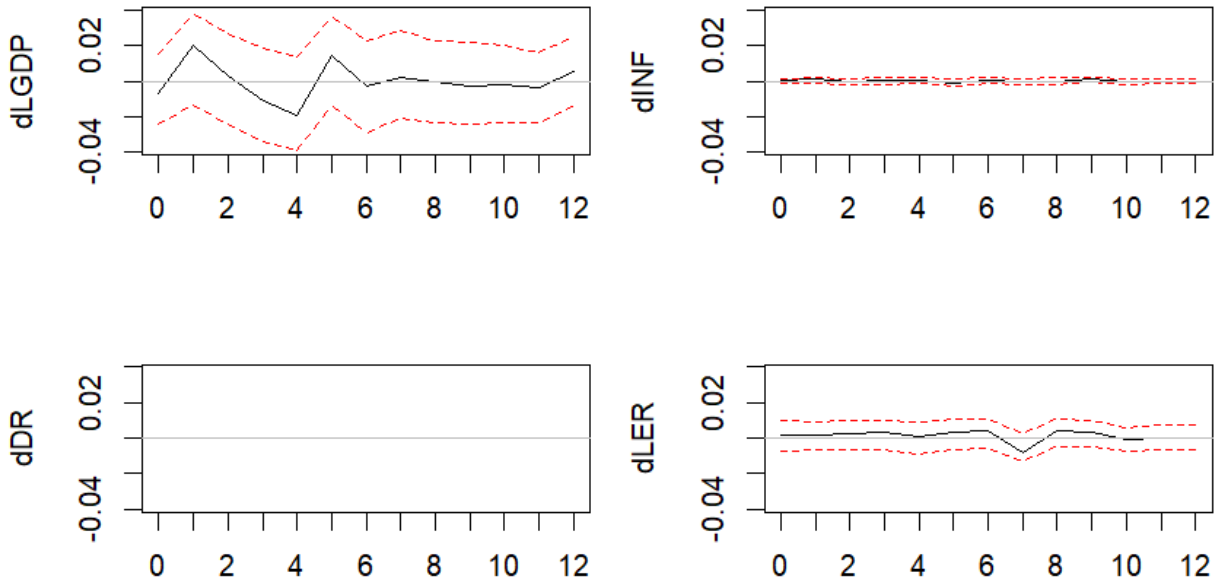


Note: The figure shows orthogonal impulse responses from the baseline SVAR to a positive shock in dPR. The solid line represents the estimated impulse response, while the dashed lines denote 95% bootstrap confidence bands. dLGDP = real GDP growth; dDR = change in the domestic policy rate; dLER = exchange-rate depreciation; M2G = money growth; dINF = change in inflation; dPR = change in the U.S. policy rate; dLOIL = oil price growth. Source: Author’s calculation

Figure 2 reports the impulse responses of Vietnam’s domestic variables to a positive oil price shock, measured by dLOIL. Output growth, dLGDP, fluctuates rather than moving in a single direction: it falls in the immediate quarters following the shock, then rebounds and turns positive later in the horizon. This dynamic is consistent with two-stage transmission. In the short run, higher oil prices raise energy and transportation costs and compress real purchasing power, which can weigh on activity and reduce output growth. After several quarters, the response reverses as firms and households gradually adjust, cost pressures are partly absorbed or passed through, and macroeconomic conditions normalize, allowing growth to recover. Inflation dynamics, dINF, remain close to zero over the horizon, indicating that the oil shock in this specification does not translate into a sharp quarter-to-quarter acceleration in inflation, even though oil prices are a key input cost in production and distribution.

The policy-rate response is more delayed. The change in the domestic policy rate, dDR, does not react strongly on impact but declines after a few quarters. This lagged adjustment is consistent with the SBV’s practice of smoothing short-run shocks and calibrating policy actions after assessing the persistence of external cost pressures and domestic activity conditions, rather than responding mechanically in the same quarter. The depreciation rate, dLER, also shows a small but persistent movement, suggesting that oil shocks can affect external balance conditions and exchange rate dynamics over time. The figure indicates that oil price shocks first generate short-run stress on growth, followed by a recovery. At the same time, domestic policy adjustments tend to lag as the SBV responds to evolving macroeconomic conditions.

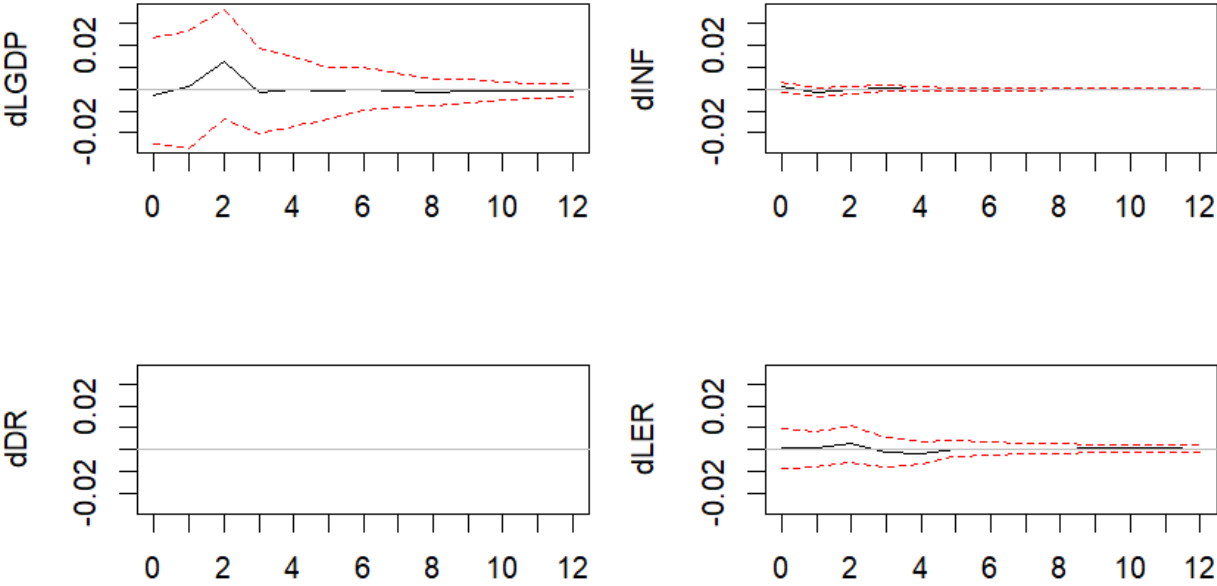
**Figure 2. Responses of domestic variables to the international oil price shock**



Note: The figure shows orthogonal impulse responses from the baseline SVAR to a positive shock in dLOIL. The solid line represents the estimated impulse response, while the dashed lines denote 95% bootstrap confidence bands. dLGDP = real GDP growth; dDR = change in the domestic policy rate; dLER = exchange-rate depreciation; M2G = money growth; dINF = change in inflation; dPR = change in the U.S. policy rate; dLOIL = oil price growth. Source: Author’s calculation

To benchmark the baseline SVAR results and assess robustness, the study also estimates a conventional VAR(2) using the same quarterly variables employed in the empirical system. The lag length of two quarters is selected to balance model fit and parsimony, given the limited sample size. Orthogonal impulse responses are computed using a standard Cholesky decomposition with an ordering consistent with the small-open-economy assumption, placing global variables first and domestic variables afterward.

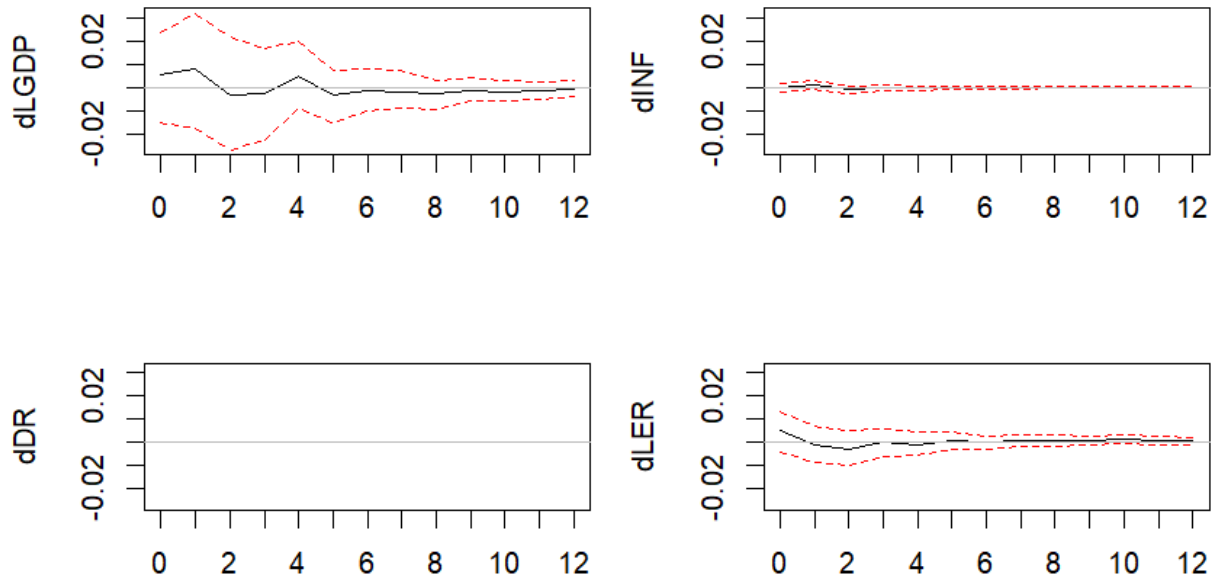
**Figure 3. VAR responses of domestic variables to U.S. monetary policy shocks**



Note: The figure shows orthogonal impulse responses from the benchmark VAR(2) to a positive shock in dPR. The solid line represents the estimated impulse response, while the dashed lines denote 95% bootstrap confidence bands. dLGDP = real GDP growth; dDR = change in the domestic policy rate; dLER = exchange-rate depreciation; M2G = money growth; dINF = change in inflation; dPR = change in the U.S. policy rate; dLOIL = oil price growth. Source: Author’s calculation

Figure 3 reports the responses of Vietnam’s domestic variables to a positive shock in U.S. policy-rate changes, dPR, under the VAR(2) benchmark. The results show that output growth (dLGDP) declines in the short run following the shock, while the depreciation rate (dLER) adjusts slightly and then stabilizes. By contrast, the responses of the change in inflation, dINF, and the change in the domestic policy rate, dDR, remain close to zero over the horizon.

**Figure 4. VAR responses of domestic variables to the international oil price shock**



Note: The figure shows orthogonal impulse responses from the benchmark VAR(2) to a positive shock in dLOIL. The solid line represents the estimated impulse response, while the dashed lines denote 95% bootstrap confidence bands. dLGD = real GDP growth; dDR = change in the domestic policy rate; dLER = exchange-rate depreciation; M2G = money growth; dINF = change in inflation; dPR = change in the U.S. policy rate; dLOIL = oil price growth. Source: Author's calculation

Figure 4 reports the impulse responses to a positive oil-price shock, dLOIL, from the benchmark VAR(2). Output growth (dLGD) shows only a modest short-run response and then quickly returns to its baseline, suggesting that the real-activity effect of an oil shock is limited in this parsimonious specification. Inflation dynamics, dINF, remain close to zero throughout the horizon, indicating no clear short-run acceleration in inflation. The exchange-rate depreciation rate, dLER, shows a small adjustment that fades over time, while the change in the domestic policy rate, dDR, shows virtually no response. Overall, the VAR(2) results suggest that oil-price shocks generate relatively contained short-run macroeconomic responses over the 12-quarter horizon considered.

## 6 Conclusion and implications

This study employs the SVAR model to examine how external shocks - U.S. monetary policy (PR) and global oil prices (OIL)- transmit to Vietnam's macroeconomic outcomes (GDP, CPI, ER), while domestic policy indicators (DR, M2) capture the SBV's policy stance and endogenous response. The analysis examines the impact of changes in the money supply (M2) and policy interest rates on output (GDP), inflation (CPI), and exchange rates (ER). Additionally, we examine how global oil-price shocks (OIL) affect Vietnam's macroeconomic variables, alongside U.S. monetary policy shocks (PR). The impulse-response evidence indicates that a positive shock to U.S. policy-rate changes, dPR, is followed by a short-run decline in Vietnam's output growth, dLGD, with the response gradually easing. This result points to

an external transmission mechanism in which tighter U.S. monetary conditions worsen global financial conditions and temporarily weigh on Vietnam's domestic demand and financing environment. The same dPR shock also generates a response in the depreciation rate, dLER, implying upward pressure on VND depreciation as higher U.S. rates shift international portfolio incentives and external funding conditions. By contrast, inflation dynamics, captured by dINF, move only slightly and revert quickly, indicating that the immediate pass-through from U.S. tightening to short-run inflation changes is limited within the horizon considered. The change in the domestic policy rate, dDR, shows only a small and delayed adjustment, suggesting that domestic policy does not mechanically mirror U.S. rate movements quarter by quarter, even though external shocks transmit to real activity and exchange-rate dynamics. In addition, oil-price shocks, measured by dLOIL, affect Vietnam through a different channel: they are associated with short-run fluctuations in output growth and an adjustment in the depreciation rate, consistent with external cost and balance-of-payments pressures that influence activity and the exchange rate over time.

The results demonstrate how an empirically grounded SVAR can be integrated into the policy process as a scenario analysis and risk management tool for Vietnam, enabling central banks, fiscal authorities, and financial institutions to design more timely and consistent responses to external monetary and commodity shocks. The findings indicate that the most pronounced transmission from external monetary shocks operates through real economic activity, with Vietnam's output growth responding most clearly to changes in U.S. monetary policy. The research, therefore, underscores the importance of maintaining policy flexibility and a credible macroeconomic framework to cushion the domestic economy against shifts in global financial conditions while preserving overall stability. First, the exchange rate policy must strike a balance between trade competitiveness and macroeconomic stability. While active intervention in the foreign exchange market can help mitigate excessive volatility, strengthening foreign exchange buffers would provide additional room to respond to external shocks. Second, inflation management requires a coordinated mix of monetary and fiscal policies to contain cost pressures and prevent second-round effects, especially during periods of heightened external price volatility. Third, domestic monetary conditions should be calibrated to support growth while safeguarding financial stability, since liquidity and credit conditions remain central to the transmission of monetary impulses to the real economy.

Vietnam's economic trajectory remains promising but faces persistent external challenges. The government aims for 7.0% - 7.5% GDP growth, supported by public investment, export diversification, and industrial transformation. However, global economic uncertainties, geopolitical tensions, and commodity price volatility continue to pose risks to inflation and financial stability. In the short term, anticipated Federal Reserve rate cuts may ease capital outflow pressures, supporting credit expansion and investment growth. However, long-term resilience requires structural improvements in energy security, trade integration, and financial sector stability. To strengthen economic resilience, Vietnam must further enhance its monetary policy framework by maintaining exchange rate flexibility, expanding foreign exchange reserves, and adopting proactive policy interventions. Trade diversification and technological innovation will also be crucial in sustaining long-term growth amid increasing global uncertainties.

This paper makes some contributions to the literature. Firstly, it is among the first studies to develop a small-open-economy SVAR for Vietnam that jointly identifies U.S. policy-rate shocks and international oil-price shocks within a single framework. Secondly, it uses quarterly data from 2010 to 2023, covering the post-global financial crisis period, the COVID-19 episode, and the recent tightening cycle that began in 2022. Thirdly, it compares SVAR results with those from a conventional VAR benchmark and shows that structural identification yields clearer, more policy-relevant impulse responses for Vietnam. In addition, the paper contributes to decision sciences by translating macroeconomic relationships into a tractable decision-support framework that can generate conditional scenarios for output, inflation, and the exchange rate under alternative external shocks.

This study has some limitations. First, the analysis utilizes aggregate quarterly data from 2010 to 2023. The sample period is still relatively short, and quarterly data may not fully capture the rapid movements in trade, capital flows, and financial markets. Second, the empirical framework is a linear, time-invariant SVAR estimated with classical methods and a specific block-exogeneity scheme. This structure is transparent, but it does not accommodate changing relationships over time, non-linear effects, or a formal treatment of parameter uncertainty in small samples.

Future studies can extend the time span, use monthly macro-financial data where available, and construct sectoral or industry-level datasets to capture heterogeneous responses across the economy. On the methodological side, future work can apply more advanced approaches, such as Bayesian SVAR, local projections, and GVAR, to handle small-sample problems and quantify parameter and impulse-response uncertainty more rigorously. Time-varying-parameter SVARs with stochastic volatility or local-projection methods can also be employed to accommodate changes in the transmission mechanism over time and across different states of the economy. These frameworks would relax the linear and time-invariant assumptions of the current model, providing a richer basis for policy evaluation.

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