"Impact of fiscal and monetary policy on inflation in Vietnam"

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BUSINESS PERSPECTIVES

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IMPACT OF FISCAL AND MONETARY POLICY ON INFLATION IN VIETNAM

Abstract

High and sustainable growth of gross domestic product with stable inflation is one of the objectives of the most macroeconomic policies both in the world and in Vietnam. Therefore, price stability plays a vital role in assuring GDP growth. In order to stabilize prices, fiscal and monetary policies need to be appropriately managed. The aim of this study is to assess the impact of the monetary and fiscal policies on inflation in Vietnam during the period from 1997 to 2020. This study has applied the vector autoregression (VAR) model along with data gathered from the World Bank and General Statistics Office of Vietnam. The research results indicate that Vietnam's inflation is positively influenced by a fiscal deficit (2.943), money supply (2.672), government expenditure (8.347), and interest rate (3.187). Among the factors, government expenditure has the biggest influence on inflation. Besides, trade openness (–0.311) also influences inflation, but the effect is negative and negligible. Finally, the policy implications are focused on coordinating fiscal and monetary policies maintaining a moderate level of inflation for economic growth.

Keywords   inflation, financial instability, monetary instruments, fiscal instruments, policy management

JEL Classification   G38, E52, E62

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INTRODUCTION

Along with the benefits from economic integration, the financial and economic crisis risks are difficult to predict. The global financial crises are widespread, causing large-scale declines in output and employment (Onyukwu, 2009). To deal with crises, the governments often offer support packages and use macroeconomic policies to regulate the economy. Promoting the growth of the economy and stabilizing the inflation rate are the main goals of macroeconomic policies such as monetary policy (Nguyen, 2015). However, economic support packages to combat recession have the potential to cause financial instability, and one of the indicators of such instability is increasing inflation (Claeys & Darvas, 2015). Temple (2000) asserts that too high or too low inflation will affect the economy. Besides, this study is consistent with that of Samuelson (1989), who divides inflation into three categories: moderate, galloping, and hyperinflation. Moderate inflation has a stimulating effect on the growth of the economy, while galloping inflation and hyperinflation have reverse effects, especially hyperinflation. High inflation impedes growth, and many studies have shown a non-linear relationship between economic growth and inflation rate (Pattanaik & Nadhanael, 2013). In developing nations, Jha and Dang (2012) demonstrate that if the inflation rate is more than 10%, the volatility of inflation negatively affects the growth of the economy. Conversely, a low inflation rate will hinder the growth of the economy (Temple, 2000). Moreover, the cause of increasing inflation is the influence of both monetary policy and fiscal policy (Fischer et al., 2002; Surjaningsih et al., 2012).

Vietnam has been a developing country with higher inflation and more volatility than most emerging economies since the middle of 2007, which partly reflects the ineffectiveness of monetary policy (Bhattacharya, 2014). Specifically, from 2004 to mid-2008, inflation increased significantly due to increased spending by state-owned companies and abundant capital from foreigners (International Monetary Fund, 2010). In addition, a sizable fiscal stimulus package amounting to approximately 5% of GDP was introduced in 2009, while 700 basis points reduced the prime rate from October 2008 to February 2009; it remained at 7% until November 2009 (Bhattacharya, 2014). Also, in Vietnam, with data from 1986 to 2013, inflation is detrimental to economic development when exceeding the threshold of 7% (Tung & Thanh, 2015). Therefore, the fiscal support packages and the support packages through monetary policies have had certain effects on inflation in particular and economic instability in general. Currently, the Covid-19 pandemic has complicated developments in most countries around the world, causing a series of deaths globally. The pandemic has triggered a global recession and led to widespread job losses (Chen et al., 2020). The governments of many countries, including Vietnam, have been providing relief packages to the people. In addition to the benefits that monetary and fiscal support packages bring, inflation can increase and affect the economy (Claeys & Darvas, 2015).

1. LITERATURE REVIEW

Many empirical studies in Vietnam and worldwide have proven that fiscal policy impacts the inflation rate. The impacts of budget deficits on investment, real output, and money growth, as well as inflation are investigated by Karras (1994). He uses annual data from 32 countries from 1950 to 1989. The study finds that budget deficit, an instrument of fiscal policy, does not impact national inflation. Nevertheless, the effect of fiscal deficit on inflation is proven by applying the dynamic panel model with data retrieved from 47 nations during the period of 3 years, from 1993 to 1996 (Cottarelli et al., 1998). In addition, the pooled mean group estimation method is utilized by Catão and Terrones (2005) with a dataset obtained in 107 nations from 1960 to 2001. The results of the study depict that budget deficit affects inflation. To be specific, the effect is stronger in developing countries. The reasons are that the characteristics of developing countries are inefficient tax collection, political instability, and limited access to borrowing from other countries. In Vietnam, Cuong (2019) applied the VAR model together with time-series data from 1986 to 2010 to prove that Vietnam is a country applying excessive fiscal policy and running a national budget deficit that strongly impacts the inflation rate. Cuong (2019) also believes that the government must follow a stricter fiscal policy to balance the national budget over time. Also, in Vietnam, Khieu (2014) used data gathered monthly from January 1995 to December 2012 together with the structural vector autoregressive model. The research results show

that the national budget deficit does not affect the money supply and therefore has no impact on inflation. It is in line with the results of Hang and Thanh (2010) in Vietnam and Ashra et al. (2004) in India. Lin and Chu (2013) used the Quantile Regression for Dynamic Panel Data to assess how government budget deficits affect inflation. The sample of the study is 91 countries, with data taken from 1960 to 2006. Empirical results show that fiscal deficits strongly and positively affect the inflation rate during periods of high inflation; however, they show a weak effect during low inflation. Jayaraman and Chen (2013) also demonstrated a strong and positive correlation between budget deficit and inflation rate in four Pacific countries. They utilized the dynamic panel quartile regression model. The dataset is collected from 91 nations from 1960 to 2006. Nguyen (2015) empirically studies the impact of fiscal deficit on inflation rate in 9 Asian nations, including Vietnam, from 1985 to 2012. By applying GMM estimator, the study demonstrated that fiscal deficit and government spending directly and positively affect inflation. Mehrara et al. (2016) applied the Smooth Transition Regression model along with quarterly data from 1990 to 2013 to assess the degree of a non-linear relationship between government spending and inflation. This study shows that in a tight monetary regime or low liquidity growth, Government spending does not cause inflation. Minh and Duong (2017) use the multiple-regression method with the dataset obtained from the General Statistics Office (GSO), the Asian Development Bank (ADB), and the Ministry of Finance from 1994 and 2015. The result depicts

that fiscal deficit negatively affects the inflation rate, which contrasts with others because of the lag effect of the fiscal deficit and budget expenditure structure. Oyerinde (2019) collected a dataset from 1980 to 2017 using the Johansen test and VEC model. The study demonstrated that a close relationship between government spending and inflation rate is maintained in both short and long terms. Moreover, the exchange rate and money supply also show a significant relationship with government spending.

Besides, there are several effects of monetary policy instruments on inflation. The positive correlation between money supply and inflation in Madagascar is proven by a two-sector model utilized by Nassar (2005). The study used the data set from the period of 22 years (1982–2004). The broad money supply is also proven to affect the Russian inflation rate positively. The study applies an error correction model with data collected every month from 1996 to 2004. Kwon et al. (2006) proved that money supply is always the cause of inflation in two groups of developed and developing countries. Pelipas (2006) proves that the money supply significantly impacts inflation by applying co-integrate VAR and equilibrium models with the quarterly data set from 1992 to 2003. Husain (2007) found a positive relationship between domestic money supply and domestic inflation rate based on the cointegration test results in Kuwait from 1972 to 2004. Applying the OLS regression model together with series data collected from 1961 to 2005, money supply has been shown to positively affect inflation in Iran (Armesh et al., 2010). In Bangladesh, the Johansen test and Error Correction Model (ECM) applied in combination with annual data from 1973 to 2008 showed that money supply affects inflation (Hossain, 2010).

Money supply has been shown to be a vital factor that increased inflation with data from January 2001 to February 2009 in Vietnam (Nguyen et al., 2012). Also, in Vietnam, Khieu (2014) proves that monetary growth positively affects the inflation rate. Specifically, inflation should rise for three months regarding a positive shock to money growth. Besides, the second month from the shock is the time when the positive shock to the money supply has the strongest effect on inflation (Khieu, 2014). Nguyen (2015) affirms that most studies prove the strong effect of monetary support on inflation. Besides, an increase in money supply

increases inflation in both the short and long term (Nguyen, 2015). In expansionary monetary policy, a rise in money supply has more impact on inflation than on economic growth, and this is the finding with quarterly data from 1990 to 2013 (Mehrara et al., 2016). Therefore, tight fiscal and monetary policy can be used to control inflation and stimulate aggregate demand (Mehrara et al., 2016). Minh and Duong (2017) prove that money supply positively impacts inflation in Vietnam. Hoang and Thi (2020) use the VAR model with the same data collected from the first quarter of 2005 to the fourth quarter of 2017. They confirmed that CPI would remain the same in the first quarter when the money supply increases but would increase in the next quarter. Angelina and Nugraha (2020) applied time series data with the Two-Stage Least Squared model to examine the relationship between money supply, exchange rate, domestic investment, foreign investment, and Indonesia's inflation rate. The study finds that the money supply and the money supply positively affect the inflation in Indonesia in the previous years.

The exchange rate as a tool of monetary policy has also been shown to impact inflation. Madesha et al. (2013) find the relationship between exchanges rate and inflation in Zimbabwe from 1980 to 2007. They used the Granger Causality test to reveal that both exchange rate and inflation have a long-run relationship. Bleaney and Fielding (2002) prove a relationship between exchange rate and inflation after conducting a test on a sample of 80 developing nations. Moreover, the 52 nations with pegged exchange rates averaged inflation much lower than those experienced by the 28 flexible ones. The empirical results of Bhattacharya (2014) show that the main driver of inflation in the short term is the volatility of the nominal exchange rate in Vietnam. Two instruments for implementing monetary policy, money supply and exchange rate, have also been shown to affect the inflation rate in Malaysia (Islam et al., 2017).

Furthermore, in addition to money supply, external shocks are also assessed as a factor that strongly influences inflation in Vietnam (Nguyen et al., 2012). The effect of changes in output value, exchange rate, and interest rates on inflation is much weaker (Nguyen et al., 2012). Also, in Vietnam, between 1996 and 2005, interest rate changes have an imme-

diate effect on inflation; however, this level of impact is weak (Hang & Thanh, 2010). Lotfalipour et al. (2013) demonstrate that countries with a higher degree of economic openness will face higher rates of inflation. In addition, open economies experience lower inflation volatility, especially in developing countries and emerging markets (Bowdler & Malik, 2017). Angelina and Nugraha (2020) apply TSLS method and prove that the exchange rate positively affects inflation in Indonesia.

In general, instruments of monetary and fiscal policy such as budget deficit, government spending, money supply, and interest rates have an impact on inflation. However, the levels of impact and the direction of impact are different in each country and over time. In addition, factors such as GDP and the openness of the economy are also included in the quantitative model and proven to have an impact on inflation.

2. AIM AND HYPOTHESES

The purpose of the study is to examine the impacts of monetary and fiscal policy instruments on inflation in Vietnam from 1997 to 2020. According to the literature related to the impact of fiscal and monetary policies on inflation, the hypotheses are formulated as follows:

H1:   *Fiscal deficit has a positive relationship with inflation.*

H2:   *Government expenditure has a positive relationship with inflation.*

H3:   *Money supply has a positive relationship with inflation.*

H4:   *Exchange rate has a positive relationship with inflation.*

H5:   *Interest rate has a positive relationship with inflation.*

H6:   *Real GDP per capita has a positive relationship with inflation.*

H7:   *Trade openness has a positive relationship with inflation.*

3. METHODOLOGY

The paper uses a Vector Autoregressive (VAR) model for quantitative analysis. The VAR method was proposed by Sims (1980); this is a widely used method in macroeconomic studies. The VAR model was used in this study because the VAR fits the time-series data. The dataset was collected annually from 1997 to 2020 from the General Statistics Office of Vietnam, the State Bank of Vietnam, the World Bank, the International Monetary Fund, Statista, as well as FiinPro database. The variables in the model are shown in Table 1.

Table 1. Description of the variables

Variable	Symbol	Expected effect on inflation (INF)
Fiscal deficit	BUD	+
Government expenditure	GEXP	+
Money supply	M2	+
Exchange rate	EXC	+
Interest rate	INTE	+
Real GDP per capita	RGDP	+
Trade openness	OPEN	+

Note: INF – Vietnam's inflation rate compared previous year; BUD – fiscal deficit measured in percentage of GDP; M2 – broad money supply measured in percentage of GDP; EXC – exchange rate (%); INTE – interest rate (%); EXC – USD to VND exchange rate; OPEN – trade openness of the economy measured as the sum of %IMP to GDP and %EXP to GDP.

4. EMPIRICAL RESULTS AND DISCUSSION

VAR estimation requires the variables in the model be tested for stationarity. A time series is stationary when the mean, variance, as well as covariance (at various lags) remain constant no matter what time the series is determined. The stationary series tends to return to the mean and the fluctuations around the mean will be the same. Specifically, a non-stationary time series will have a time-varying mean and/or a time-varying variance.

There are many methods to test the stationarity of time series, e.g., Dickey-Fuller test (DF), Phillip-Perron test (PP), extended Dickey-Fuller test (ADF). This study uses Phillip-Person (PP) test to check the stationarity of the dataset. The results of the stationarity test of the variables are given in Table 2.

Table 2. Stationarity of the variables

Variable	Phillip-Perron (PP) test
	Test Statistic
d.INF	−7.667***
d.BUD	−7.186***
d.M2	−3.853***
d.RGDP	−3.050**
d.GEXP	−3.115**
d.INTE	−7.855***
d.OPEN	−5.806***
d.EXC	−4.037***

Note: ***, ** – statistically significant at 1% and 5%, respectively.

The test results depict that the variables in the model are stationary when taking the first difference at a significance level from 1% to 5%. The data were analyzed using a VAR model with the following variables: d.INF, d.BUD, d.M2, d.RGDP, d.GEXP, d.INTE, d.OPEN, and d.EXC. The optimal delay of the selected model is 2. After the optimal variables and lags of the model were selected, the VAR model was estimated. The results of VAR model estimation are detailed in Table 3.

Table 3. VAR model estimation results

Variable	Coefficients	Std.Error	P-value
d.BUD (−1)	2.943	1.098	0.007***
d.BUD (−2)	2.641	0.999	0.008***
d.M2 (−1)	2.672	1.176	0.023**
d.M2 (−2)	0.632	0.814	0.437
d.RGDP (−1)	−0.656	1.863	0.725
d.RGDP (−2)	−0.069	1.337	0.959
d.GEXP (−1)	8.347	4.545	0.066*
d.GEXP (−2)	−5.091	3.626	0.160
d.INTE (−1)	−3.158	1.559	0.043**
d.INTE (−2)	3.187	1.328	0.016**
d.OPEN (−1)	0.269	0.297	0.363
d.OPEN (−2)	−0.311	0.146	0.033**
d.EXC (−1)	−5.812	7.288	0.267
d.EXC (−2)	1.343	4.113	0.806

Note: ***, **, * – statistically significant at 1%, 5%, and 10%, respectively.

The research results show that hypotheses 1, 2, 3, 5, and 7 are accepted. In Vietnam, inflation is strongly influenced by the factor BUD, which is reflected in the regression coefficients of the variables d.BUD (−1) and d.BUD (−2), respectively, of 2.943 and 2.641 at a 1% significance level. This could be because the budget deficit forces the government to find sources to finance. The governments will often increase the borrowing in the economy through the issuance of govern-

ment bonds. It will lead to credit shortage and put pressure to increase credit interest rates, forcing the central bank to intervene through open market operations (OMO) by increasing purchases of treasury bills to increase the money supply in the market with the expectation that the market interest rate would decrease. This is essentially the central bank's indirect financing of the budget deficit. The intervention to increase the money supply with the expectation of lowering the market interest rate, but whether or not it can be achieved depends entirely on whether the liquidity, income, or price effects are dominant. When the money increases, the market interest rate will decrease if the effect of liquidity outweighs the effect of income and the price level.

Conversely, if the effect of income and the price level is dominant, the market interest rate will increase. In this case, an increase in the money supply could translate into higher inflation in the future. This result is in line with Kwon et al. (2006), Cuong (2019), Lin and Chu (2013), Jayaraman and Chen (2013), Nguyen (2015), and Oyerinde (2019). In Vietnam, monetary policy heavily depends on fiscal policy, and the level of public spending is relatively high with low efficiency (Minh & Duong, 2017). The fiscal deficit can cause cost-push inflation. The government is a major participant in the market for borrowings, which exerts increasing pressure on interest rates. Higher interest rate will increase production expenditure passed on to the consumers of the products and services.

The regression coefficient of the variable d.M2 (−1) is 2.672 at a 5% significance level, reflecting an increase in the money supply in the year, and the monetary transmission mechanisms exerted upward pressure on inflation. This is explained that in normal economic situations, if the money supply increases faster than real output will cause inflation. This result is also consistent with Kwon et al. (2006), Husain (2007), Armesh et al. (2010), Hossain (2010), Nguyen et al. (2012), Mehrara (2016), Minh and Duong (2017), Angelina and Nugraha (2020), and Hoang and Thi (2020). According to Kwon et al. (2006), the money supply is always the cause of inflation in both developed and developing countries, whether they have debt or not. This result is also consistent with the monetarist and neo-classical models, which states that

changes in money supply led to changes in inflation (Solomon & de Wet, 2004).

Regression results show that government expenditure has the strongest impact on inflation in Vietnam. To be specific, the regression coefficient of the variable d.GEXP (–1) is 8.347 with a significance level of 10%. Aggregate demand will increase when the government increases investment and public spending to grow the economy. The persistently high level of public spending leads to an increase in the price level, which causes inflation. This result is similar to Keynes (1937), Kwon et al. (2006), Attari and Javed (2013), Nguyen (2015), and Oyerinde (2019). The general price level will increase when implementing fiscal policy and monetary policy to boost economic growth and create jobs for the people. For economies with little policy transparency, the expansion of the fiscal policy through increased public debt, as well as a prolonged and difficult-to-control budget deficit, will lead to the emergence of an "expected" inflationary mentality once the public debt exceeds the specified ceiling as well as the state of waste and loss in public investment.

The regression coefficient of the variable d.INTE (–2) is 3.187 with a significance level of 5%, showing that interest rate positively affects inflation. In other words, when interest rates increase, inflation pressure increases. This could be explained by the fact that increasing interest rates will make the production costs of the enterprises increase. As a result, the businesses have to increase the selling price of their products and services, which causes an increase in inflation (Asgharpur et al., 2007; Nguyen, 2015). In general, there is an inverse relationship between interest rates and inflation rates. However, the result of this study is consistent with the general tendency due to the lag effect.

The variable d.OPEN (–2) has a regression coefficient of –0.311 with a significance level of 5%, showing that the impact of OPEN on inflation is negligible. Evan (2007) explains that the monetary authority enjoys some degree of monopoly power in international markets when foreign consumers have some degree of inelasticity in their demand for domestically produced goods. Besides, this result is also consistent with Rajagopal (2007) and the general tendency. Inflation rate is lower in an open economy because trade deterioration increases the related to surprise monetary expansions. As the more open the economy is, the more it is exposed to movements in terms of trade; thus, inflation falls.

CONCLUSION AND POLICY RECOMMENDATIONS

The relationship between fiscal, monetary policy instruments, and inflation has been the subject of extensive studies over the past few decades. This study examines the exact relationship between fiscal policy and monetary policy instruments. This study applied the vector autoregression (VAR) model to analyze the effects of fiscal and financial monetary policies on inflation in Vietnam. Research results prove that, in Vietnam, inflation is influenced by fiscal and monetary policy instruments from 1997 to 2020. They include fiscal deficit, money supply, government expenditure, interest rate, and trade openness. Mainly, inflation is strongly influenced by government expenditure, interest rate, fiscal deficit, and money supply, while trade openness has a negligible impact. Among the determinations, government expenditure has the most significant impact on inflation. Moreover, the interest rate and the openness of the economy negatively impact inflation, while other significant determinants have positive impacts.

Based on the obtained results, there are some policy implications. Firstly, there should be synchronous coordination in implementing fiscal and monetary policies. Fiscal and monetary policies both aim to promote economic growth. However, if the coordination between these two policy instruments is loose, it will cause potential instability in the financial markets and an adverse impact on economic growth. Secondly, the government needs to ensure that economic growth is maintained at a reasonable rate. In theory, there should be a trade-off between economic growth and inflation. However, to boost economic growth, Vietnam needs to accept a moderate and regularly controlled inflation to serve economic growth. Thirdly, the interest rates need to be controlled. The results from the regression model show

that the interest rate is a variable that has a strong impact on inflation in Vietnam. This has been tested from the reality in 2008–2011 with the race to raise mobilizing and lending interest rates at commercial banks, causing inflation in Vietnam to be very complicated. Last but not least, the government needs to give more independence to the State Bank to create an effective firewall to prevent the monetization of the fiscal deficit as well as the increase in money supply for economic growth.

AUTHOR CONTRIBUTIONS

Conceptualization: Thuy Duong Phan, Ngoc Anh Tran.
Data curation: Thuy Duong Phan.
Formal analysis: Trong Tai Nguyen, Ngoc Anh Tran.
Investigation: Thuy Duong Phan, Ngoc Anh Tran.
Methodology: Thuy Duong Phan.
Project administration: Trong Tai Nguyen.
Supervision: Trong Tai Nguyen.
Validation: Trong Tai Nguyen, Thuy Duong Phan, Ngoc Anh Tran.
Visualization: Trong Tai Nguyen, Thuy Duong Phan, Ngoc Anh Tran.
Writing – original draft: Thuy Duong Phan, Ngoc Anh Tran.
Writing – review & editing: Thuy Duong Phan, Ngoc Anh Tran.

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