

Relationship between inflation and economic growth in Vietnam

Nguyen Hoang Tien (*)

Saigon International University, Vietnam

(*) Corresponding author: nguyenhoangtien@siu.edu.vn

Abstract: Vietnam government considers inflation adjustment as a primary goal of policies planning and implementing to achieve economic stability and GDP growth. Therefore, defining the threshold in inflation-GDP growth relationship is an important task to propose target inflation rate precisely. This paper investigates the threshold between inflation and GDP growth in Vietnam. Inflation is assumed to have a nonlinear relationship with GDP growth. The results confirm the existence of the threshold at 6 per cent inflation point, and the negative impacts on GDP growth of hyperinflation above the threshold and too low inflation beyond the threshold. Taking into account the total impact of inflation on GDP growth, the effects are negative. This finding suggests that Vietnam authorities should target lower inflation of 6 per cent to improve GDP growth.

Key words: impact of inflation, economic growth, inflation rate

1. Introduction

Theoretically, there are different schools of thought among economists with regards to whether inflation will have neutral, negative, or positive effects on GDP growth at certain levels.

The Keynesian school argues that a positive relationship between inflation and GDP growth is present. They claim that prior saving is not necessary for GDP growth. Dornbusch (1996) stated that in short run, the aggregate demand curve is upward sloping rather than vertical, therefore changes of demand will affect both price and output. Increasing money supply, under full employment conditions, will drive up aggregate demand and output saving (Tien and Wackowski, 2019). Conversely, under underemployment conditions, increasing the money supply will raise inflation and reduce real interest rates, which encourage capital intensity, hence stimulating output and saving (Taylor 1979; Thirlwall 1977). In addition, this theory also indicates that a low real interest is conducive for facilitating growth.

The Classical school, however, contributes to growth theory by the argument of self-reinforcement. Hossain and Chowdhury (1996) argue that investment comes from savings and hence income distribution should determine the GDP growth rate of a nation. Relative prices, employment, and output may affect nominal inflation but not the GDP growth path in steady state. The Classical school maintains neutrality in this relationship.

In contrast to the Classical and Keynesian schools, the Neo-classical school has different views among researchers. For example, Stockman (1981) argues that output and people's welfare are reduced when inflation rises. In response to the increasing in inflation hence reduction in the purchasing power of money, people shift away from their purchases of both cash goods and capital. As a result, the steady state level of output falls due to the rise in inflation. Opposite to that point of view, Mundell (1963) investigated inflation-output GDP growth and found that initially

inflation reduces people's wealth. However, this reduction in turn encourages saving, which leads to lower interest rates. Capital accumulation through savings eventually encourages output GDP growth (Tobin effect). Sollow (1956) and Swan (1956) developed this theory and argued that higher inflation rate causes increase in the GDP output. In other words, inflation and GDP growth have the positive relationship.

While the theoretical debates have come to no clear conclusion, researchers explain inflation-GDP growth relationship in empirical studies. Ghosh and Phillips (1998) took 145 countries as sample and tested whether GDP Per Capita effects on Consumer Price Inflation in the non-linearity relationship. The finding in general is that the high inflation rate (above 2.5 per cent) negatively effects GDP growth (Ghosh and Phillips 1998). In other words, the rise in hyperinflation leads to a decline in GDP growth. At the lower rate of 2 to 3 per cent, however, the inflation-GDP growth relationship is positive. Ghosh and Phillips (1998) also found the threshold at 2.5 per cent. Sarel (1995) approached this relationship differently by using a structural break model. His study confirms the negative effect of inflation on GDP growth. He found the strongly negative, significant, and robust effect of inflation on GDP growth at above 8 per cent level, and no or slightly positive effects on GDP growth at below 8 per cent (Sarel 1995). Barro (1995), however, found that an increase in inflation by 10 percent points led to a decrease in the GDP growth rate by 0.2 to 0.3 per cent points per year. Fischer (1993) argued for the negative relationship when investigating the channels in which inflation effect on GDP growth for 93 countries.

The consensus that inflation is harmful for GDP growth correlates with the research done by Khan and Senhadji (2001). Their empirical study on the inflation-GDP growth relationship using Sarel's method found the existence of the U-shaped relationship between inflation and GDP growth. The model does not seek which channels inflation affects GDP growth but establishes the threshold inflation level of 1-3 per cent for developed countries and 11-12 per cent for developing countries. If it is above the threshold level, there is a negative effect and if below the threshold level, the positive effect is present. This research has implications for developing countries since it analyzes industrialized and developing countries separately. The study is also supported by the theory of non-linearity in inflation-GDP growth effects. Therefore, the finding provides a guideline for analyzing the inflation-GDP growth relationship in Vietnam.

Historically, after a long period of economic crisis and unstable hyperinflation with its peak rate at 774.7 per cent in 1986, Vietnam experienced reduced inflation and higher GDP growth rates in the early 1990s. However, this did not help the policymakers to stop maintaining a stable inflation rate. This was due to liberalization of the economy, causing an increase the demand for money, which the government mostly borrowed from foreigners to fill the budget deficit gaps. As a result, the interest payments of the country increased substantially in a short time. Furthermore, the influence from overseas markets surged when Vietnam increased import demand while export mostly bases on the primary goods such as rice, rubber and coffee (Tien, 2012; Tien, 2013).

At the beginning of 2010, the down turn in economic growth indicated by slow GDP growth rates and deflation cause the state holders to raise concerns of future inflation rates. In the effort of preventing deflation and encouraging GDP growth, government pushed up the demand in consumption by expanding monetary policies. However, this policy is likely to fail because of the low economic growth. Hence there is urgency for Vietnamese government to develop a solution to stabilize inflation and the GDP growth rate.

However, due to the complexity in identifying the relationship between inflation and GDP growth, little research has been conducted in Vietnam (Le Thanh Tung and Pham Tien Thanh, 2015). Few researches aim at determining the causes of inflation, and its role on monetary policy, rather than identify the effect of inflation on GDP growth (Goujon 2006; Nguyen Huu Minh et al. 2012). Tran and Ngo (1995) found the inflation-GDP growth relationship was represented but it did not identify the inflexion point at which the effect of inflation on GDP growth changes the sign. Nguyen (1999) worked with GDP growth and inflation for socialist countries in panel data. His study did not provide much implication for Vietnamese policy makers because the results have been averaged when running the panel data with other socialist countries. The latest paper in this field by Nguyen and Nguyen (2005) mentions the threshold but did not provide a very statistical approach.

This paper will investigate whether the threshold exists in Vietnam. The findings will provide insight into the inflation-GDP growth relationship which helps Vietnam authorities to target inflation rate more precisely to achieve stable output GDP growth. The hypothesis is that under the threshold, inflation is conducive to GDP growth, otherwise it will retard GDP growth.

2. Econometric model

This paper uses balance time series data of Inflation and GDP of Vietnam for 40-year period after country's unification in 1975. Inflation is taken from the Consumer Price Index, which is the most watched price index. The annual dataset is mainly provided by Vietnam General Statistic Office and World Bank. Even though quarterly inflation rate can be used in the model, both annual inflation rate and annual GDP data are used in this model to avoid the seasonal properties of GDP.

Because GDP growth has non-linearity relationship with inflation (Sarel 1998; Fischer 1993; Barro 1995; Stanners 1993; Khan and Senhadji 2000) so that the log transformation will be approached to capture this property (Sarel 1998). The variable here is the growth rate of GDP. The growth rate of GDP is defined as $dlogGDP_t = \log(GDP)_t - \log(GDP)_{t-1}$. Subscript t is the time series index to be studied.

To develop the model, it is necessary to explore the data to see whether it suffers from unit roots or non-stationary. The Augmented Dickey-Fuller Test (Said and Dickey 1984) is used for testing unit roots. If the time series data are stationary, OLS can be used directly to identify the relationship. If there are unit roots and nonintegrated, the Error Correction Model may have to be used to transform the model.

Unit roots tests therefore deal with log GDP and log inflation. Due to the negative values of some data, before log-transformation, it is necessary to scale up the dataset by taking the first year of the period as the based year 100 per cent. By doing this the intercept will be shifted up, but this does not affect the relationship among the data, hence data still allows us to test the threshold correctly.

3. Discussion

The findings of negative effects of too high and too low inflation on growth are consistent with macroeconomic theory. Theoretically, the Phillips curve type phenomenon, applied to GDP growth rate rather than the level of employment, illustrates the threshold effects of inflation on GDP output (see Figure 1).

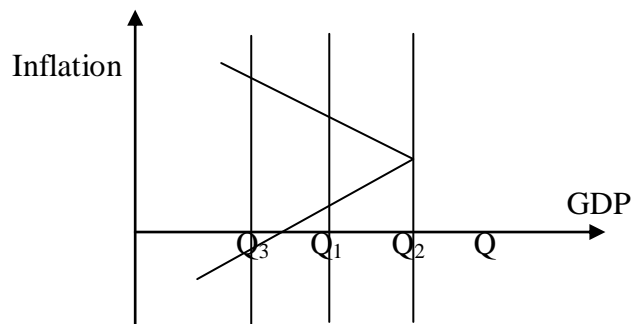


Figure 1. Philips Curves in the long run

From Figure 1, in the long run, when inflation increases and reaches the threshold, the economic output will shift from initial output Q_1 to Q_2 . This accounts for the mild inflation accelerating economic growth. However, if inflation rises beyond the threshold level, the output of the economy will fall backward to Q_3 . One of the macroeconomic policies that government of a country often tries to achieve is mild inflation targeting in order to accelerate economic growth.

In Vietnam in the first period 1976-1986, hyperinflation had large negative impacts on GDP growth. The reasons lay in the population boom, excess demand and monetary policy. The sharp increase in population after the Vietnam War caused high demand for food and commodities. To raise the GDP output, the Vietnamese government allowed farmers to sell part of their products to the planned market at negotiated prices (Kompas 2002). This led to a slight recovery in production. However, then, monetary policy accommodating to the adjustment of official prices rose to an open inflation (Nguyen 1999). The general price index rose up to nearly 200 per cent due to increase in official prices (Le 2002). As a result, hyperinflation reduced slightly but GDP output sharply decreased in 1984.

Interestingly, after the first transition in Vietnam to the market oriented system in 1986, inflation peaked at 774.7 per cent (Jansen 1995). This was because the process of the adjustment and the administrative barriers on price settings were removed. Price liberalization entailed a spurred upward movement of prices (Nguyen 1999). Ultimately, the future expectation of hyperinflation induced economic agents to accumulate goods and speculate of price (Nguyen 1999). Demand, therefore, exceeded supply and intensified the instability.

After the reform in 1986, inflation in Vietnam stabilized. Trade liberalization helped increase the capital inflow and reduce the budget deficit, easing the pressure on inflation. While inflation was dampening to accelerate the targeted growth rate, the economy grew faster since farmers, who were over 80 per cent the population of Vietnam, increased incentives to push agricultural output after having land use rights and autonomy in production (Vo 1992; Tien, 31; Tien et al, 32).

This Vietnamese economy status coincides with the finding of threshold decline after 1986. The finding also correlates with previous findings of Khan and Senhadji (2001) who found that the threshold is high for developing countries and low for developed countries. Specifically, Khan and Senhadji (2001) estimated 1-3 per cent for developed countries and 11-12 per cent for developing countries.

4. Conclusion

Much research about inflation-GDP growth relationship has been conducted among countries. However, the conclusion on the inflation-GDP growth relationship is still debated. Empirical research suggests that the relationship between inflation and

GDP growth is different from one country to another. Therefore, conducting research on inflation-GDP growth relationship for the better policy responses is essential.

In Vietnam, economic reform since 1986 has brought about considerable improvement in GDP output growth and inflation control. In the second period after 1986, inflation was controlled better than it was in the first period 1976-1986 while the GDP growth was enhanced through the institutional and land use reform. Vietnam after 1986 experienced lower and more stable inflation rates that accelerated the GDP growth rate. The findings again support the view of many stakeholders that mild inflation positively effects on GDP growth and too high inflation retards GDP growth.

The existence of the threshold was confirmed in Vietnam at the level of 6 per cent inflation point and decreased after 1986. This existence of the threshold is consistent with the Philips Curve theory and the findings from other researchers such as Khan and Senhadji (2000). The threshold is often high in developing countries and falls to lower levels when these countries become developed.

References:

- [1] ASIAN DEVELOPMENT BANK, (2016). *Key Indicators of Developing Asian and Pacific Countries 2000*, 31: 1-30, Manila: Oxford university Press.
- [2] BARRO, R.J., (1997). *Determinants of Economic Growth – A Cross Country Empirical Study*, The MIT press, Massachusetts Institute of Technology.
- [3] DONBUSCH, R.S., (1996). ‘Determinants of Economic Growth’, Working Paper 6, Reserve Bank of Fiji.
- [4] ENGEL, R. F., (1982). Autoregressive Condition Heterokedasticity and Estimates of the Variance of United Kingdom Inflation, 50: 1433-1439, *Econometrica*.
- [5] FISCHER, S., (1983). ‘Inflation and Growth’, NBER Working Paper 1235, Cambridge: National Bureau of Economic Research.
- [6] GHOSH, A. AND PHILLIPS. S., (1998). ‘Warning: Inflation May Be Harmful to Your Growth’, IMF Staff Papers 45.4, Washington: International Monetary Fund.
- [7] GHOSH, A., (2000). ‘Inflation and Growth’, IMF Research Bulletin, 1:1-3.
- [8] GHOSH, A. AND WOLF, H., (1998). ‘Threshold and Context Dependence in Growth’, NBER Working Paper 6480, Cambridge, MA: NBER.
- [9] GOUJON M., (2006). Fighting inflation in a dollarized economy: The case of Vietnam. *Journal of Comparative Economics*34, 3: 564-581.
- [10] HOSSAIN, A. AND CHOWDHURY, A., (1996). *Monetary and Financial Policies In Developing Countries Growth and Stabilization*, 3rd edn, New York: Routledge.
- [11] HUU M. N., TONY C., AND JOHN K. W., (2012). The Determinants of Inflation in Vietnam 2001–09. *ASEAN Economic Bulletin*29, 1: 1-14.
- [12] KHAN, M. S. AND SENHADJI. A. S., (2000). ‘Threshold Effects in the Relationship Between Inflation and Growth’, IMF Working Paper 110, Washington: International Monetary Fund.
- [13] KOMPAS, T., (2002). *Market Reform, Productivity and Efficiency in Vietnamese Rice Production*, Australian National University, Canberra.
- [14] LE, D. V., (2000). ‘Identifying low inflation and working out a solution, Vietnam economic review 3.
- [15] MACKINNON, J.G., (1991). *Critical Values for Co-Integration Test*. Oxford University Press.

- [16] MINH, H. T. T., TIEN, N. H., TRUONG, P. Q., & ANH, H. Q. (2020). "Principles of Management", Financial Publisher, Ho Chi Minh City, Vietnam
- [17] MUNDELL, M., (1963). 'Inflation and Real Interest Rate', Journal of Political Economy 71.
- [18] NGUYEN, D. T., AND NGUYEN, T. H., (2005). 'Macroeconomic Policy in Dealing with the Relationship between Inflation and Growth in Vietnam 1986-2004', Vietnam Bank Magazine 2.
- [19] NGUYEN, T. H., (1999). 'The inflation of Vietnam in Transition', CAS Discussion Paper 22. Center for ASEAN Studies.
- [20] NGUYEN, T. N., (2000). Fifty Years of Reforms in Policies and Mechanisms in Regulating Price. Hanoi: The Government Price Committee.
- [21] PHILIPS, A. W. H., (2000). Phillips Curve. Available at: www.econlib.org/library/Enc/PhillipsCurve.html [Accessed on 22.07.2017]
- [22] SAREL, M., (1996). 'Nonlinear Effects of Inflation on Economic Growth', IMF Working Papers 43:199-215, Washington: International Monetary Fund.
- [23] SOLOW, R., (1956). 'A contribution to the Theory of Economic Growth', Quarterly Journal of Economics 70.1: 65-94.
- [24] SOLOW, B. M., (1993). 'A Contribution to the Theory of Economic Growth', Quarterly Journal of Economics 70: 79-107.
- [25] STANNERS, W., (1993). 'Is low Inflation an Important Condition for High Growth?', Cambridge Journal of Economics 17: 79-107.
- [26] SWAN, T. AND TREVOR, B., (1956). 'Economic Growth and Capital Accumulation', Economic Record 32: 334-361.
- [27] THRIRWALL, A.P., (1977). 'Inflation and Growth: the International Evidence', Cancanazionale del Lavoro quarterly review 24.
- [28] TIEN, N. H. (2012). 'Competitiveness of Enterprises on a Knowledge Based Economy', PTM Publisher, Warsaw.
- [29] TIEN, N. H. (2013). 'Competitiveness of Vietnam's Economy. Modeling Analysis', PTM Publisher, Warsaw.
- [30] TIEN N. H., & WACKOWSKI, K. (2019). 'Monetary Policy and Financial Stability', International Journal of Research in Management, 1(30), 1-5.
- [33] TOBIN, J., (1965). 'Money and Economic Growth', Econometrica.33: 671-684.
- [34] TRAN, N.Q. AND NGO, L.T., (1997). The relationship between economic growth and inflation in the economic reform in Vietnam. Project of the SSACF. Hanoi: the Political Publishing House.
- [35] VIKESH, G. AND SUBRINA, H., (2004). 'Relationship between Inflation and Economic Growth', Working Paper 6. Reserve Bank of Fiji.
- [36] WORLD BANK, (2017). World Development Indicators CD ROM 4.2, World Bank.