



## Transmission mechanisms of credit growth quota on Vietnam's economic output

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### Abstract

*The credit growth quota policy, introduced by the State Bank of Vietnam in 2011, functions as a macroprudential instrument directly constraining the lending capacity of individual banks. While primarily designed to safeguard financial stability, this policy exerts spillover effects on economic output. This research investigates the impact of credit growth quota on Vietnam's economic performance and the transmission mechanisms. Using multivariable regression techniques on quarterly time series data from the first quarter of 2005 to the third quarter of 2023, the analysis reveals that credit growth quota has a positive impact on output through the financial stability and the credit channels, but a negative impact through the real lending rate channel.*

**Keywords:** macroprudential policy, financial stability, credit, lending rate.

**JEL classification:** E44, E52, E58, G21, G28, O11.

## 1. Introduction

Since the 1800s, the development of the financial sector has been recognized as a key driver of economic growth. Advanced financial systems foster growth and reduce poverty (Beck *et al.* 2000), yet they also generate vulnerabilities, particularly financial crises. Consequently, macroprudential policy has gained prominence in macroeconomic regulation, particularly following the onset of the 2007-2009 global financial crisis (Vollmer, 2022). Policymakers advocate for the application of macroprudential policy to regulation and supervision to ensure the stability of the financial market, utilizing new instruments to directly influence the credit supply (Galati and Moessner, 2013). Direct credit control is deemed necessary because although monetary and credit expansion do not invariably lead to financial crises, all financial crises are associated with credit booms (Kindleberger and Aliber, 2005). Specifically, Minsky (1992) suggests that during extended periods of economic growth, the financial system can become unstable due to credit booms. Essentially, credit expansion during the growth phases of the business cycle leads to increased imbalances and amplifies crisis-inducing factors during subsequent recessionary phases. Brunnermeier *et al.* (2009) note that crisis indicators tend to underestimate risks during periods of growth and overestimate them during recessions. Therefore, macroprudential policy is employed to counterbalance the inherently distorted signals from financial crisis indicators. By doing so, it helps mitigate the accumulation of systemic risk and reduce the costs that arise when a crisis occurs.

As an emerging market economy, Vietnam confronts numerous challenges in promoting economic development and ensuring sustainable growth. A primary obstacle is the underdeveloped state of the financial sector, where the role of financial intermediation is restricted within the banking system. To ensure financial stability, Vietnam has implemented a credit growth quota policy since 2011. According to the OECD (2021), “limits on credit growth and volume” represent the only macroprudential instrument employed by the State Bank of Vietnam as of April 30, 2021, to maintain financial stability.

The onset of the COVID-19 pandemic further exacerbated economic vulnerabilities by weakening borrowers’ debt repayment capacity. Against this backdrop, the credit growth quota of the State Bank of Vietnam (SBV) has become a subject of considerable debate. Critics argue that by restricting access to capital, the policy hinders the post-pandemic economic recovery. Consequently, the SBV has conducted analyses, evaluations, and expert consultations - through workshops and conferences - to assess the possibility of phasing out this instrument (Do, 2023).

Discontinuing the credit growth quota policy, however, requires the SBV to develop and operate alternative macroprudential instruments capable of fulfilling its stabilizing role. The implementation of new instruments requires a transition period, during which their effectiveness can be evaluated, adjusted and refined before the gradual elimination of credit limits. Therefore, this research evaluates the impact and transmission mechanism of the credit growth quota on Vietnam's economic output. The objective is to assist the SBV in managing more effectively during the phase of developing and operationalizing new instruments. Furthermore, the effectiveness of the credit growth quota serves as a benchmark for new instruments. The implementation of these new instruments, following the discontinuation of the credit growth quota, aims to achieve financial stability and promote robust economic growth more effectively.

## **2. Literature review**

### **2.1. Macroprudential policy and economic output**

According to Galati and Moessner (2013), the primary objective of macroprudential policies is to mitigate financial instability. However, there is no universally accepted definition of financial stability. In practice, abnormal credit expansion is often regarded as a critical indicator of systemic risk and is used as a specific proxy for measuring financial instability (Vollmer, 2022). Research primarily focuses on the impact of specific macroprudential tools on the transmission of credit shocks to macroeconomic factors that reflect the level of financial stability. Regulating banking activities plays a crucial role in reinforcing systemic resilience and achieving the objectives of macroprudential policy. For instance, consider the regulation of bank capital. A bank required to hold more capital has a greater capacity to absorb adverse shocks and recover after losses, relative to those with lower capital holdings (Vollmer, 2022).

Beyond the primary role in safeguarding financial and macroeconomic stability, macroprudential policies have been shown to produce diverse and sometimes unintended effects on economic output, as reflected in the varied empirical evidence in published academic literature. Specifically, Richter *et al.* (2019) highlight a trade-off between mitigating the negative impact of the financial cycle and the economic output in relation to macroprudential policies. Furthermore, the instruments of macroprudential policy have an asymmetric effect, where tightening has a more significant impact than loosening, particularly in emerging economies. Empirical evidence from Rojas *et al.* (2022) also

supports the findings indicated by Richter *et al.* (2019). The authors emphasize that research on the impact of macroprudential policy must distinguish between endogenous changes, where macroeconomic factors lead to changes in policy tools, and exogenous changes, where policy changes aim for financial stability. Failing to make this distinction leads to biased results concerning the influence of macroprudential policy on output. However, the trade-off between financial stability and economic output is more pronounced in developing countries and less pronounced in developed nations (Belkhir *et al.*, 2022).

In contrast, Boar *et al.* (2017), based on an analysis of 64 advanced and emerging market economies, provides evidence that refutes the trade-off hypothesis. Their findings show that countries using macroprudential tools more frequently are more likely to achieve stronger and less volatile GDP growth. The effectiveness of macroprudential policies depends on structural conditions; they tend to be effective in economies characterized by either high financial development or high financial openness alone, but demonstrate greater efficacy when both features are present simultaneously. Therefore, the implementation of macroprudential policies should take into account the specific characteristics of the economy under consideration, such as its degree of financial openness and level of financial development, to strike a balance between enhancing financial stability and promoting long-term economic growth.

Furthermore, Klingelhöfer and Sun (2019) finds that macroprudential policy may exert no impact on economic output. A plausible explanation for the observed decline in loans without a corresponding fall in real output following macroprudential tightening is that these policies are carefully targeted. Such careful targeting ensures that the flow of credit to the real economy remains unaffected by the tightening. A clear example of this is the implementation of macroprudential measures designed to curb credit flows that are exclusively directed to asset markets. Consequently, the contraction in credit is confined to asset markets, leaving the aggregate economic output unaffected.

The above studies illustrate the heterogeneous effects of macroprudential policies on economic output across different countries. This variation can be attributed to multiple factors, including the level of financial development, degree of financial openness, the structure of the financial market, and the level of economic development. The most critical factor, however, appears to be the varying effectiveness of the specific macroprudential policy tools used.

## 2.2. Credit growth quota and economic output

The credit growth quota is a measure of macroprudential policy classified within the group of instruments designed to limit credit concentration and credit growth (Dell'ariccia *et al.*, 2014). In the literature, this measure may be referred to by various other terms, including credit growth ceilings. In Vietnam, the term “credit room” is also used to describe this instrument. Conceptually, a ceiling can be applied either to the total credit of a bank or to the credit for a specific sector (Lim *et al.*, 2011). A credit ceiling applied to the total credit or the credit growth rate within the banking system can mitigate the pro-cyclicality of credit capital. By contrast, a sector-specific ceiling, such as one imposed on real estate lending, could prevent excessive asset price inflation and limit systemic exposure to a particular risk.

The credit growth ceiling is used in a few countries, including China and Croatia, but their operational mechanism varies by country. These differences contribute to divergence in their effectiveness in both stabilizing the financial system and influencing economic output. In Vietnam, some research has investigated the influence of credit growth quota on economic output from both macroeconomic and microeconomic perspectives.

At the macro level, Pham (2023) examines the moderating impact of credit growth quota on the linear relationship between bank credit and the size of the Vietnamese economy from 2005 to 2022. The results indicate that bank credit has a positive impact on economic output, and the application of the credit growth quota enhances this positive relationship. In other words, each unit of bank credit injected into the economy generates a greater output when constrained by the quota framework than when it is not. At the micro level, Pham (2024) examines the performance of real estate enterprises, a crucial component of GDP. The findings suggest that the implementation of the credit growth quota did not affect the performance of real estate enterprises during the 2007-2021 period. Thus, the credit growth quota has contributed to Vietnam's output growth without causing adverse effects on the real estate sector.

The impact of macroprudential policy on economic output has garnered significant attention from researchers; however, few studies specifically address the effects of the credit growth quota on output. The author makes a theoretical contribution by addressing the gap concerning the mechanism of the impact of credit growth quotas on economic output, utilizing empirical data from Vietnam. Furthermore, the research holds practical significance by evaluating the influence of this measure on economic output, thereby providing policy implications for the State Bank of Vietnam. The novelty of this study lies in its focus on the

direct impact and transmission mechanism of credit growth quota on the size of the economy, distinguishing it from the work of Pham (2023) and Pham (2024), who primarily examined their moderating effect.

### 3. Research methodology

This paper adopts GDP as the proxy for economic output and proceeds to develop the research models. The model for investigating the transmission mechanism of the credit growth quota is adapted from the work of Pham (2023), which is based on Beck *et al.* (2012). The primary modification involves replacing the interaction term MP\*CREDIT, which is used to study the moderating effect, with the credit growth quota (MP) to analyze its direct impact on output. The author also develops three different models to examine the transmission channels of this measure. The baseline research model is formulated as follows:

$$GDP_t = \beta_0 + \beta_1.MP_t + \beta_2.CREDIT_t + \beta_3.RATE_t + \delta_kOTHERS_t + \varepsilon_t \quad (1)$$

This model controls for the CREDIT and RATE variables, which helps to explain the transmission mechanism of the credit growth quota on output after isolating the influence of these two channels. Consequently, the coefficient  $\beta_1$  in this model is used to determine the direct impact of the credit growth quota through the financial stability channel, as the objective of this instrument is to ensure financial stability to promote economic growth. To investigate the transmission mechanism through the bank credit channel, the following model is considered:

$$GDP_t = \alpha_0 + \alpha_1.MP_t + \alpha_2.RATE_t + \zeta_kOTHERS_t + \varepsilon_t \quad (2)$$

Model (2) removes the CREDIT variable compared to model (1). As Wooldridge (2012) points out, the coefficient  $\alpha_1$  in model (2) and the coefficient  $\beta_1$  in model (1) have the following relationship:

$$\alpha_1 = \beta_1 + \beta_2 * \theta$$

The coefficient  $\theta$  represents the impact of the credit growth quota (symbol: MP) on the CREDIT variable. When  $\beta_1 > 0, \beta_2 > 0$  and  $\alpha_1 > \beta_1$ , implying  $\theta > 0$ , it suggests that bank credit is a positive transmission channel for the effect of the credit growth quota on economic output. In other words, CREDIT is an intermediary variable in the relationship between MP and GDP. Specifically, a positive relationship between MP and CREDIT combined with a positive relationship between CREDIT and GDP creates an overall positive relationship between MP and GDP.

Similarly, to study the transmission mechanism through the real lending rate channel, the author considers the following model:

$$GDP_t = \gamma_0 + \gamma_1 \cdot MP_t + \gamma_2 \cdot CREDIT_t + \eta_k OTHERS_t + \varepsilon_t \quad (3)$$

In these models, t denotes the observation in year t. The terms  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\zeta$ ,  $\eta$  and  $\delta$  are the parameters of the models to be estimated. The term  $\varepsilon_t$  is the error term of the regression model in year t. A detailed description of the variables and their calculation methods is provided in Table 1.

TABLE 1: Variable symbols and calculation methods

Variable symbol	Variable name and calculation	Data source
GDP	Natural logarithm of nominal gross domestic product	Fiinpro
CREDIT	Natural logarithm of outstanding bank credit divided by nominal gross domestic product	International Monetary Fund; Fiinpro
RATE	Lending interest rate minus inflation rate	International Monetary Fund
MP	Dummy variable for the credit growth quota: equals 1 for quarters from 2011 onwards, 0 otherwise.	
CPI	Consumer price index, year-on-year rate	International Monetary Fund
TRADE	Total import and export turnover (million USD) divided by nominal gross domestic product (trillion VND)	International Monetary Fund; Fiinpro
BUDGET	Budget revenue minus budget expenditure divided by nominal gross domestic product	Vietnam Ministry of Finance; Fiinpro

Source: Author’s synthesis and recommendations.

The research employs the ordinary least squares (OLS) estimation method, using quarterly time-series data spanning from the first quarter of 2005 to the third quarter of 2023, resulting in a total of 75 observations.

#### 4. Empirical results

TABLE 2: Unit root test results

Variable	Have constant and no trend		Have constant and trend	
	ADF	PP	ADF	PP
GDP	-1.432	-1.904	-5.546***	-9.342***
CREDIT	-2.978**	-2.388	-3.167*	-1.728
CREDIT <sup>2</sup>	-2.815*	-2.282	-3.156*	-1.507
RATE	-3.594***	-3.516***	-4.328***	-4.128***
CPI	-4.206***	-2.572*	-5.665***	-3.184*
TRADE	-5.483***	-8.938***	-5.517***	-8.949***
BUDGET	-8.123***	-15.367***	-8.085***	-15.312***

Note: \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Author's calculations.

In time-series analysis, it is crucial to ensure the stationarity of the data series used to study the relationships between variables because non-stationarity can result in spurious regression outcomes. To address this issue, the research employs unit root test methods: (i) the Augmented Dickey-Fuller (ADF) test and (ii) the Phillips-Perron (PP) test. The test results, reported in Table 2, show that all independent variables used are stationary at the level, making them suitable for estimation using the ordinary least squares method.

However, the dependent variable in the model (GDP) is found to be trend-stationary, which requires the removal of the trend component before estimation to avoid biased results. To overcome this issue, the research includes a time trend variable (T) as an additional independent variable in the model. This approach yields results similar to de-trending the dependent variable before estimation (Wooldridge, 2012). Therefore, the inclusion of the trend variable provides a robust solution to address the trend-stationarity of the dependent variable, ensuring the validity of the statistical inferences drawn from the estimation results.

TABLE 3: Estimation results

Independent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MP	0.182***	0.208***	0.168***	0.193***	0.146***	0.158***
	(0.044)	(0.048)	(0.047)	(0.049)	(0.050)	(0.047)
CPI	0.011***	0.014***	0.007**	0.009***	0.005*	0.010***
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
TRADE	-0.130***	-0.126***	-0.122***	-0.114***	-0.118***	-0.127***
	(0.010)	(0.011)	(0.012)	(0.014)	(0.012)	(0.008)
BUDGET	-0.002	-0.003	-0.003	-0.004	-0.003	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
T	0.026***	0.030***	0.026***	0.030***	0.027***	0.027***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)
RATE	-0.017*	-0.022**				-0.021**
	(0.010)	(0.010)				(0.008)
CRE	0.434***		0.472***		5.708***	6.558***
	(0.113)		(0.106)		(2.036)	(2.105)
CRE <sup>2</sup>					-0.570**	-0.667***
					(0.220)	(0.227)
Constant	11.584***	13.469***	11.228***	13.214***	-0.808	-2.430
	(0.538)	(0.150)	(0.486)	(0.134)	(4.739)	(4.861)
No.Obs	75	75	75	75	75	75
R <sup>2</sup>	0.982	0.979	0.981	0.977	0.983	0.984
F-statistic	618.321	494.907	585.842	422.316	628.715	598.287
P-value	0.000	0.000	0.000	0.000	0.000	0.000

Note: \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.

The standard errors are presented in parentheses below the estimated coefficients.

Source: Author's calculations.

The estimation results of the baseline model (Model 1) indicate that, after controlling for the influence of other independent variables, the application of the credit growth quota to stabilize the financial system in Vietnam since 2011 has had a positive impact on economic output. Accordingly, compared to the pre-implementation period, the economic output in Vietnam increased by an additional 18.2% when the State Bank of Vietnam regulated annual credit growth in the banking system. The other models reported in Table 3 also yield positive and statistically significant coefficients, confirming the robustness of this finding. This positive result is consistent with the findings of Luu *et al.* (2023), Gupta and Dubey (2023), Kim *et al.* (2023). By applying the credit growth quota as a macroprudential policy, the State Bank of Vietnam has enhanced financial stability, contributed to macroeconomic stability, and created a favorable business environment for economic agents to participate in the process of wealth creation.

Regarding the impact of bank credit on economic growth, the results of Model 1 and Model 3 confirm a statistically significant positive relationship. Such a relationship suggests that the growth in the volume of credit supplied by the banking system had a promotional effect on the increase in economic output in Vietnam during the 2005-2023 period. This result is consistent with the findings of Nguyen and Pham (2023), who found a similar relationship for the 2005-2022 period. Accordingly, Vietnam's economy still relies heavily on credit capital to finance the investment needs of businesses, as well as the education and consumption demands of households.

Model 5 and Model 6 reveal that the relationship between bank credit and economic output in Vietnam follows an inverted U-shape. This finding suggests that the marginal effect of bank credit on economic output diminishes as credit grows. As a result, an optimal credit threshold exists, below which the level of credit has a positive impact on the economy; however, once credit exceeds this threshold, its impact on economic output becomes negative. This finding aligns with Cecchetti and Kharroubi (2012), Law and Singh (2014), and Lay (2020), who argue that excessive credit development can fuel overheated growth, create market instability, and hinder business activities. The adjusted R-squared further confirms that a non-linear relationship between bank credit and economic output is more appropriate than a linear relationship for the study in Vietnam.

Regarding the bank credit transmission channel of the credit growth quota, the estimated coefficient of the MP variable in Model 2 is larger than in Model 1 and Model 6. Such a larger coefficient indicates that the application of the credit growth quota has increased economic output by affecting the amount of available credit. More specifically, the credit growth quota directly restricts the ability of commercial banks to expand credit too quickly within a year, thereby preventing a situation of overheated credit growth.

Meanwhile, the non-linear relationship indicates that excessive credit expansion would have a negative impact on output; therefore, the application of the credit growth quota has mitigated the adverse effects of this on credit.

Regarding the impact of the real lending rate on output, the regression results in all models indicate that an increase in the real lending rate will reduce output. This result aligns with expectations, as numerous studies have shown a similar impact of the real lending rate on output across various economies. High interest rates reduce the incentive for investors to undertake investment projects, as the increased cost of borrowing raises the cost of capital and lowers investment efficiency (Asafo and Moszynski, 2022). Moreover, high real interest rates hinder educational attainment in developing economies, as they create constraints on accessing capital for education investment. Such constraints reduce the supply of human capital and adversely affect economic growth (Shaukat *et al.*, 2019). Furthermore, higher interest rates make purchases financed by credit more expensive, leading to a reduction in consumer spending (Adem, 2023).

Regarding the interest rate transmission channel of the credit growth quota, the estimated coefficient of the MP variable in Model 3 is smaller than in Model 1, and in Model 5 is smaller than in Model 6, implying that the implementation of this measure has increased the real interest rate, thereby exerting a negative impact on output. This result remains robust across different functional forms for the relationship between bank credit and output. Accordingly, while the credit growth quota enhances output through the financial stability channel, it simultaneously dampens output by raising the real interest rate. This finding is consistent with the practical observation that banks often pass on lending restrictions, which increase their cost of capital, to customers by widening the spread between lending and deposit rates (Rojas *et al.*, 2022; Malmierca, 2023).

## 5. Conclusions and policy implications

The quantitative analysis has provided empirical evidence on three transmission channels through which the credit growth quota impacts economic output in Vietnam. This evidence, in turn, contributes to a foundation for future research to develop further theoretical frameworks on these three transmission channels of credit growth quotas.

First, in its role as a macroprudential policy tool, the application of annual credit growth limits on the banking system since 2011 has enabled the State Bank of Vietnam to control the stability of the financial system and restrict financial imbalances. Financial stability has helped promote the stability of macroeconomic factors, creating a favorable macroeconomic environment for businesses and individuals to expand their production and business activities, thereby boosting economic output.

Second, this tool directly restricts the volume of overheating credit growth, which is the amount of credit that exceeds the optimal threshold and has a negative impact on economic output. This helps maintain a positive marginal effect of bank credit, contributing to an increase in output.

Third, the analysis reveals a negative impact on output resulting from an increase in the real lending rate, as banks tend to pass on the disadvantages of macroprudential policy to customers. This adverse impact, in turn, widens the spread between lending and deposit rates. Nevertheless, the positive impacts of the credit growth quota on Vietnam's economy (through the financial stability and credit channels) still outweigh the negative impact (through the real interest rate channel).

With the orientation towards operating more market-based macroprudential policies, such as loan-to-value limits, debt-to-income limits, and reserve requirements, the State Bank of Vietnam should evaluate the effectiveness of each new instrument before starting the roadmap to discontinue the credit growth quota. Notably, the current credit growth quota has a direct impact on the volume of credit helping to control overheated growth. Therefore, any new macroprudential measures applied must also ensure they have an effect in restricting the volume of this overheating credit growth. Without effective restrictions on credit access, there is a risk of crowding out good credit from the economy, which not only fails to stabilize the financial system but also reduces economic output.

This research examines the impact of the credit growth quota by utilizing a time-based dummy variable for the period before and after its implementation. While this approach provides insights into the overall effectiveness of the tool, it does not capture the different effects of changes in the credit limit (tightening or loosening) in recent years. Future research should therefore adopt alternative methodologies to provide a more nuanced understanding of the dynamic effects of credit growth quota on economic output.

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