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Threshold of Lending Interest Rate and Macroeconomic Indicators: Impact on Investment by Ownership in Vietnam

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Abstract: There was incomplete literature on the threshold effect of interest rates on investment, particularly investment by source of capital. This study investigated key macroeconomic factors, such as lending interest rates, inflation, exchange rates, growth in gross domestic product (GDP) and money supply, together with their impact on the proliferation in public capital, private capital, foreign direct investment, and total investment in Vietnam. Threshold regression (TR) was applied to analyze secondary data spanning from year 1996 to 2022; it was discovered that the threshold of interest rate was significant only for the public investment model across four funding sources. Although the threshold test of interest rates was not statistically significant for three of the funding sources, the threshold values of interest rate influenced investment in ownership ranked from low to high, i.e., foreign direct investment, public investment, total investment, and lastly private investment. The gap in the literature and the findings in this study highlighted the response of investment with different ownership to macroeconomic changes, especially in emerging economies like Vietnam. The results illustrated that lending interest rates and inflation negatively impacted private investment, which was subject to the effect of monetary tightening. However, these factors had minimal effects on total investment and foreign direct investment. Public investment and foreign direct investment are primarily influenced by fiscal policies. As regards private investment, it reacts more strongly to changes in exchange rate than foreign direct investment; policy adjustments are therefore recommended to weather the periods of economic instability and high interest rates.

Keywords: Investment; Ownership; Lending interest rate; Macroeconomic indicators; Threshold regression; Vietnam

1. Introduction

Interest rates, acting as both a cost of capital and a signal of macroeconomic conditions, are vital in investment decisions. Neoclassical investment theory suggests firms invest when expected profits exceed capital costs, with interest rates playing a key role (Hansson, 1986). High interest rates raise borrowing costs and limit investment, while low interest rates encourage investment. However, the relationship between interest rates and investment is often non-linear, especially in emerging economies with complex financial factors (Bernanke & Gertler, 1995). The threshold of lending interest rate (LIR) varies by country, industry, and source of capital, to reflect the interaction between monetary policy and investment behavior (Alalade et al., 2023; Dang et al., 2020; Olaniyi, 2017). This is because public, private, and foreign direct investment (FDI) responds to interest rates differently in accordance with the theory of cost of capital (Marinescu et al., 2019; Maugu et al., 2023; Olanrewaju, 2021; Sharpe & Suarez, 2014). Private investment is generally more sensitive to interest rates due to its reliance on external financing, whereas public investment is less affected as it is based on budgets and long-term plans (Didi za et al., 2023). The "crowding-out" effect indicates that high interest rates tend to limit private investment more than public investment (Chuba, 2021; Dreger & Reimers, 2016; Erden & Holcombe, 2005).

Interest rates and macroeconomic factors such as inflation, exchange rates, growth in gross domestic product (GDP), and money supply influence investment decisions by affecting borrowing costs and capital availability (Anwar et al., 2023a; Fei et al., 2021). Cost of capital theory suggests firms invest when expected profits surpass

capital costs, which are shaped by interest rates (Li et al., 2015; My Tran et al., 2019; Sharpe & Suarez, 2014). High inflation can reduce the purchasing power of profits and hinder investment, whereas stable or low inflation may encourage long-term investment (Mtunya et al., 2017). However, public investment acts as a complement to private investment, so the relationship between these capital sources has uneven influence on each other (Gurara et al., 2021; Marinescu et al., 2019; Nguyen & Trinh, 2018). Exchange rates, particularly in open economies, affect the competitiveness of exports and the cost of imports, thereby influencing both domestic and foreign direct investment (Fei et al., 2021; FoEh et al., 2020; Gao, 2023). Growth in GDP reflects economic health and opens market opportunities, stimulating investment from both the public and private sectors (Hatmanu et al., 2020; Rathnayake et al., 2023; Tripathi et al., 2015). Expansion in money supply, controlled by central banks, can adjust interest rates and liquidity, hence affecting the access to capital by firms and governments (Alalade et al., 2023; Oyadeyi et al., 2025). In emerging economies like Vietnam, these macroeconomic factors are closely interconnected, exerting varying impacts on investment across different sources of capital (Anwar et al., 2023b; Anwar & Nguyen, 2010).

Investment from different sources responds differently to macroeconomic factors such as interest rates, inflation, and fiscal policies, and is shaped by distinct theoretical frameworks. Private investment, according to the McKinnon-Shaw hypothesis, is highly sensitive to interest rates and the financial environment (Odhiambo, 2016; Tung, 2022). This hypothesis suggests that the development of credit markets will reduce interest rates and stimulate investment. In a low-inflation environment, the cost of capital remains manageable to encourage private investment. Conversely, high inflation often leads to increased instability and higher real interest rates to discourage investment (FoEh et al., 2020; Oyadeyi et al., 2025). Private investment responds strongly to these macroeconomic conditions, especially when interest rates exceed a certain threshold. FDI, typically responding to stable and predictable macroeconomic conditions about exchange rates and interest rates, is primarily followed by interest rate parity theory, which states that international capital flows are shaped by interest rate differentials between countries (Boateng et al., 2015; Rathnayake et al., 2023; Tripathi et al., 2015). Lastly, as per endogenous growth theory, public investment highlights the role of government spending in fostering long-term growth (Maugu et al., 2023). It can lead to "crowding-in" when public spending stimulates private investment, or "crowding-out" when high public spending raises interest rates and inhibits private investment (Marcos & Vale, 2022).

Traditional linear regression models assume a constant relationship between independent variables and investment. When the effects of variables like interest rates vary across different levels, it would be difficult to capture the complexity of economic behavior. By contrast, threshold regression (TR) models, by identifying breakpoints provide a clearer understanding of their impact on investment. TR models identify varying investment responses to different LIR, essential for understanding investment behavior across public, private capital, and FDI. This approach is especially relevant in emerging economies like Vietnam, where evolving economic conditions and financial markets lead to varying macroeconomic impacts.

Existing research largely examined the impact of macroeconomic factors on total investment, with limited focus on the response of investment to interest rates by capital source. This gap persisted both in Vietnam and around the world, where the differential effects of macroeconomic factors on investment across capital sources remained underexplored. Most studies focused on the general impact of macroeconomic factors on total investment, without examining the response of different ownership groups to these changes. This is crucial in emerging economies like Vietnam, where the interaction between domestic and foreign investment varies due to differences in financial development, institutional factors, and policy interventions.

The LIR in Vietnam has fluctuated significantly, driven by the monetary and fiscal policies of the State Bank of Vietnam (My Tran et al., 2019) and exchange rate stabilization measures (Le & Tran, 2024). Additionally, inflation, exchange rate volatility, and the growth in GDP can enhance or reduce investment momentum, especially in emerging economies like Vietnam (Servén, 2003). This study aimed to (1) identify thresholds of interest rate affecting investment across different capital sources in Vietnam; and (2) analyze macroeconomic factors influencing investment by ownership. It clarified the interaction between the thresholds of interest rate and economic conditions in shaping investment decisions in Vietnam. Apart from the introduction, the structure of this paper consists of the following sections: (1) a review of the literature on interest rate thresholds and macroeconomic factors affecting investment; (2) data and the TR model; (3) an analysis of the relationship between macroeconomic variables and investment by different capital sources; and (4) conclusions and policy implications. This research provided a comprehensive understanding of the impact of the LIR thresholds on investment decisions across various ownership types in Vietnam, with a focus on practical policy recommendations.

2. Literature Review on Interest Rate Thresholds and Macroeconomic Factors Impacting Investment

2.1 Interest Rate Thresholds and Their Impact on Investment by Ownership

The LIR threshold is an important concept in economics, particularly in analyzing the impact of interest rates on investment decisions of firms. The interest rate threshold is typically defined as the minimum interest rate at

which investment becomes feasible, and the returns from investment can offset the borrowing costs. When the interest rate is below this threshold, borrowing becomes cheaper, hence stimulating investment. Conversely, when the interest rate exceeds this level, the cost of financing rises, thus reducing the attractiveness of investment and slowing economic growth (Didi za et al., 2023; Fathia et al., 2021). The accessibility of LIR for the private sector has a more binding effect on developing countries (Table 1).

The relationship between the LIR and investment has been analyzed from both macroeconomic and microeconomic perspectives, with various theories providing insights into the effect of interest rates on investment decisions. One of the most prominent and significant theories is the cost of capital theory, according to which firms make investment decisions based on the cost of financing projects. High interest rates typically increase borrowing costs, which may constrain investment. According to the McKinnon-Shaw theory, interest rate volatility could encourage savings, thereby increasing domestic credit supply and supporting investment (Odhiambo, 2016). The availability of credit, enhanced through financial development with interest rates being a key factor, was considered an effective channel for stimulating investment (Moyo & Le Roux, 2019). In developing economies, private investment is often constrained by a shortage of loan capital due to credit controls and imperfections in the credit market. Factors such as interest rates controlled by the government or high inflation rates could also contribute to the constraints. The disparity in credit access between developed and developing economies suggests that, to achieve a similar level of prosperity as developed economies, these countries need to strengthen investment and develop capital markets to more efficiently allocate resources to private investment.

Agrawal (2006) investigated the impact of real deposit interest rates on the fixed investment-to-GDP ratio in Southeast Asian countries, using the Dynamic Ordinary Least Squares (DOLS) and Error Correction Model (ECM) estimations, despite inconsistencies found between the results of these two methods. When applying the DOLS estimation, the study revealed a positive and statistically significant relationship between real bank deposit interest rates and long-term investment rates in countries such as South Korea, Malaysia, Thailand, and Indonesia. However, when using the ECM model, this effect was statistically significant at the 5% level for Thailand and Indonesia, at approximately 7% for Malaysia, and not statistically significant for South Korea (Table 1). The findings supported the McKinnon-Shaw hypothesis, which argued that higher interest rates promoted investment by increasing access to credit, while refuting the cost of capital theory.

Sharpe & Suarez (2014) conducted a study, based on the data collected from direct surveys of Chief Financial Officers (CFOs), to explore the relationship between investment plans and fluctuations of interest rates. Findings in their study indicated that the majority of CFOs perceived their investment plans not being highly sensitive to changes in interest rates. While sensitivity to the increase in interest rate tends to be higher than its decrease, most CFOs only consider adjusting their investment plans when fluctuations in interest rate has reached a significant level. Key factors influencing this sensitivity include: (1) needs of working capital; and (2) the borrowing plans of a firm. By contrast, factors such as stable financial sources, low interest rates, clarity in investment plans, and expectations of high revenue growth have a lesser impact on this relationship. However, when interest rates exceed the 9% threshold, this relationship gradually disappears in the two countries studied, i.e., Indonesia and South Korea, with interest rate thresholds of approximately 9% and 12%, respectively. The average response to the interest rate threshold is when it reached 14.1%, whereas the median value is 13.4%. Notably, the interest rate threshold in South Korea was significantly lower than that in Nigeria, which Olaniyi (2017) identified as 22.6% through macroeconomic data analysis (Table 1). Specifically, Olaniyi (2017) pointed out that when interest rates exceeded this optimal threshold, high-tech industries benefitted, in contrast to the more developed traditional industries. High-tech industries focus on high-value products/services with long-term market potential and flexible capital-raising capabilities, making them attractive despite high interest rate due to the expectation of significant future profits.

In summary, the impact of interest rates on private capital could be negative with direct capital costs (Mtunya et al., 2017). Conversely, interest rates could have a positive effect by encouraging savings and enhancing credit supply, in line with the McKinnon-Shaw hypothesis (Moyo & Le Roux, 2019; Odhiambo, 2016). This relationship is not necessarily linear and may be subject to complex variations influenced by several other macroeconomic factors (Marcos & Vale, 2022). Additionally, CFOs may be less sensitive to certain internal characteristics of firms, yet demonstrate a pronounced sensitivity to other related factors (Sharpe & Suarez, 2014).

Interest rate parity theory asserts that the interest rate differential between two countries must correspond to the expected fluctuations in the exchange rate between their currencies. The theory plays a central role in the allocation of international capital, as interest rates not only help investors assess risks but also determine the potential returns from cross-border investment. High interest rates have the potential to attract capital flows by offering more attractive returns; however, the effectiveness of this attraction is significantly dependent on the institutional quality and economic stability of the host country (Anwar et al., 2023a; Rathnayake et al., 2023). Conversely, in an environment with a low interest rate, investors tend to redirect capital flows to markets with prospects of higher profits, hence reflecting the close relationship between interest rates and FDI flows.

Many studies incorporated interest rates into models as a key factor determining foreign capital flows. Hatmanu et al. (2020) argued that low interest rates in Romania had a negative impact on macroeconomic performance by

limiting FDI. Washima (2023) found that in contrast, high interest rates in Sri Lanka could reduce foreign capital inflows due to increased financing costs and associated risks. To align with behavioral theory, foreign investors were more cautious in their investment decisions in view of the interest rate volatility. Similarly, Anwar et al. (2023b) indicated a negative relationship between interest rates ranging from 3.5% to 11% and capital inflows, using a fixed effect model in their study on the ASEAN-5 countries during the period of year 2001 to 2019 (Table 1). Therefore, countries with low interest rates or rates below the return rate tend to attract more investors, as they offer opportunities for higher profits.

Table 1. Selected studies of the relationship between interest rate and investment

Study	Areas of Research	Interest Rate Threshold (%)	Impact on Investment	Factors Influencing the Relationship
Investment				
Mtunya et al., (2017)	Countries as emerging markets	18%	Investment is feasible below this threshold but not above it.	Incorporates uncertainty in economic decisions, impacting investment strategies.
Tripathi et al. (2015)	India	Not specified	High domestic interest rates reduce local investment but attract FDI due to higher profit expectations.	Inflation rates and openness to international trade significantly affect investment decisions.
Marcos & Vale (2022)	21 countries in the Organization for Economic Co-operation and Development (OECD)	Real interest rate (1.4%–4.5%)	A nonlinear relationship is observed; threshold levels of public investment can drive responses to private investment.	Government spending multipliers and interest rate levels.
Olanrewaju (2021)	Nigeria	Not specified	Higher interest rates can boost FDI but typically hinder domestic investment.	Interactions with macroeconomic stability indicators shape investment behavior.
Private Investment				
Sharpe & Suarez (2014)	Global Business Outlook Survey	15%	Investment is less sensitive to interest rates beyond the threshold; firms apply a higher hurdle rate.	Firms' inertia towards investment changes concerning expected growth rates.
Moyo & Le Roux (2019)	SADC countries	Not specified	Higher interest rates are detrimental to private investment.	Financial development
Agrawal (2006)	South Korea, Malaysia, Thailand, and Indonesia	Up to 9%	South Korea, Indonesia: a negative relationship up to 9% of the interest rate. Thailand, Malaysia: a positive relationship over 9%.	Growth of real GDP, terms of trade, Net FDI, real exchange rate
Olaniyi (2017)	Nigeria	22.6%	Interest rates boost investment below 22.6% but hinder it when above.	Interest rates above 21.1% hinder rather than help economic growth.
Public Investment				
Bayraktar (2019)	Sub-Saharan Africa	Not specified	When public investment surpasses this threshold, returns diminish due to inefficiencies.	Variability in the effectiveness of public investment across regions.
Maugu et al., (2023)	East Africa	Not specified	Public debt leads to higher interest rates, adversely affecting the levels of public investment.	Relationship between sustainability of public debt and availability of public funding.
FDI				
Fathia et al., (2021)	Indonesia	Not specified	An increase in the interest rate results in higher investment costs, leading to diminished FDI.	Negative correlation between investor income and tendencies of investment.
Alalade et al., (2023)	Nigeria	Not specified	Fluctuations in the interest rate significantly impact growth in investment, which affect economic performance.	Monetary policy effectiveness and market dynamics.
Anwar et al., (2023b)	Association of Southeast Asian Nations (ASEAN-5) Countries	Not specified	Investment is significantly influenced by interest rates; high rates discourage investment activities.	Policy framework and economic environment.

Contrary to the typically observed negative effects using the impulse response function method, indicated that high interest rates tended to stimulate the interest of foreign investors in the host country. The study recommended that the Nigerian government ensured the stability of macroeconomic indicators including interest rates, to attract higher FDI inflows. In contrast, Fathia et al. (2021), through Autoregressive Distributed Lag (ARDL) model, found

a clear distinction between the short-term and long-term effects of interest rates on FDI in Indonesia. Specifically, in the short term, interest rates had a positive and statistically significant impact on FDI, which was inconsistent with the cost of capital theory but aligned with the IRP theory. However, in the long term, interest rates had a negative and statistically significant impact on FDI at the level of 10%. Similarly, Tripathi et al. (2015) conducted a study in India using the interest rates of 91-day treasury bill and the ECM-ARDL method; the study revealed that, in the short term, high interest rates reduced FDI inflows, while the long-term relationship between interest rates and FDI was not found. The impulse response function in their study also indicated that FDI flows respond negatively to shocks in the real economy lasting for approximately 2 months.

In summary, current studies could not reach a consensus on the relationship between interest rates and FDI. This relationship could be positive as seen in Romania, and in Nigeria and Indonesia in the short run; or negative as observed in the ASEAN-5 countries, and in Indonesia in the long run, as well as exhibiting as a short-term trend in India. The relationship was even negligible in certain contexts but in the long term in India. These discrepancies reflected the complexity and context-specific nature of each country, as well as the research time frame. Notably, the existing literature failed to identify any studies that specifically defined the interest rate threshold that affected FDI flows.

Many current studies primarily focused on the role of public investment in economic growth (Bayraktar, 2019), the relationship between public investment and private investment, particularly the phenomena of "crowding-in" and "crowding-out", as well as aspects related to the efficiency and cost of public investment (Gurara et al., 2021). Although studies addressing the impact of interest rate thresholds on public investment were scarce. Public investment is typically financed through tax revenues or public borrowing. The borrowing capacity of the government and borrowing costs depend on interest rates in the market (Marinescu et al., 2019; Maugu et al., 2023). Government fiscal policies, including budget deficits and public spending, may influence interest rates. Endogenous growth theory provides further insights into the dynamics between interest rates and public investment. This theory posits that government spending on infrastructure and public goods could drive economic growth, but the effectiveness of such spending depends on prevailing interest rates.

According to the study by Marinescu et al. (2019) using data from year 1995 to 2017 across European countries, a 10% increase in interest rates could reduce public investment by up to 1.49%. Interest rates play a decisive role in determining the nature of the relationship between public investment and private investment, particularly the effect when public investment creates with "crowding-out" or "crowding-in" on private investment. Marcos & Vale (2022) employed a TR model with panel data from 21 OECD countries to demonstrate the non-linear relationship between these two types of investment. Their study revealed that when public investment was made at an optimal level, it could significantly stimulate private investment, with interest rates and the level of public investment served as key policy thresholds in regulating this effect. Low borrowing costs enable the government to increase public investment, stimulate economic growth, and create favorable conditions for infrastructure projects (Kalaitzidakis & Tzouvelekas, 2011). This not only reduces the financial burden but also opens up opportunities for future public projects, contributing to sustainable development and enhancing the quality of public services. In the context of an economic downturn, public investment not only increases aggregate demand but also stimulates private investment through positive spillover effects, thereby promoting economic growth. Furthermore, public investment provides additional capital to the private sector, especially the infrastructure and public utility sectors (Dreger & Reimers, 2016).

Conversely, the "crowding out" effect suggests that an increase in public investment may drive up interest rates and the tax burden, placing pressure on the capital markets, thereby reducing the incentives for private investment. Not only can excessive public investment have detrimental effects, but a shortfall in public investment can also result in negative impact. Dreger & Reimers (2016) argued that decline in public investment within the Eurozone hindered private investment and weakened the growth of GDP. In an environment with excessively high interest rates, public projects may be restricted or entirely absent, whereas lowered interest rates play a crucial role in influencing private investment. Overall, economic stability, characterized by controlled interest rates, is a necessary condition to foster a favorable investment environment (Li et al., 2015).

Currently, many studies focused on the role of public investment and its relationship with private investment, including the "crowding-in" and "crowding-out" effects, as well as the impact of borrowing costs and market interest rates on public investment. However, no research specifically addressed the interest rate threshold to determine the impact of interest rates on public investment. While studies showed that interest rates significantly influenced investment decisions, the existence or identification of a specific interest rate threshold that affected the efficiency and incentives for public investment remained underexplored. This highlighted a significant research gap in the fields of public finance and macroeconomics, especially in the context of coordinated fiscal and monetary policies aimed at promoting sustainable growth.

2.2 The Impact of Macro Indicators on Investment

2.2.1 Inflation

Inflation has a multidimensional impact on public investment, private investment, and FDI. According to the

uncertainty cost theory, high inflation increases price and return volatility, and creates risks that cause investors to delay or reduce the scale of investment. High inflation reduces the purchasing power of consumers and the confidence of investors in economic prospects, leading to a decline in private investment and negatively impacting economic growth. An unstable economic environment caused by inflation fluctuations reduces real profits and increases production costs, thereby exerting negative pressure on investment, particularly when interest rates rise accordingly. Domestic businesses are affected as input costs, especially imported materials, increase (Chuba, 2021; Oyadeyi et al., 2025). On the other hand, public investment may benefit from moderate inflation. When the government increases investment in infrastructure, it not only enhances production capacity but also stimulates private investment through the "crowding-in" effect (Marcos & Vale, 2022). However, unstable and high inflation increases costs and reduces the efficiency of public investment, adversely affecting projects and the ability to attract private investment (Bayraktar, 2019).

2.2.2 Growth in GDP

Economic growth plays a key role in driving various types of investment, including public investment, private investment, and FDI. As the economy develops, the demand for capital increases to create favorable conditions for expanding investment (Agrawal, 2006). The rate of real growth in GDP not only stimulates public investment but also positively impacts private investment and FDI through various channels. Public investment is often seen as a foundational element for economic growth, while also serving as a catalyst for private investment and FDI. Public capital invested in infrastructure, education, and healthcare creates a conducive environment for economic activity and enhances labor productivity. When economic growth is high, the government tends to increase spending on public investment to meet the demands for infrastructure development and public services, hence creating positive spillover effects to the private sector (Marinescu et al., 2019). However, this relationship is not always straightforward, as some studies suggested that public investment might decrease during periods of strong growth due to reallocation of resources or changes in fiscal policy (Marinescu et al., 2019).

Economic growth directly influences private investment as businesses expand production to capitalize favorable conditions. The acceleration principle suggests that higher GDP growth encourages firms to invest to meet demand and seize profit opportunities (Marcos & Vale, 2022). A stable growth rate boosts investor confidence and fosters long-term investment. Similarly, economic growth also attracts foreign capital, particularly in economies with stable growth and strong infrastructure (Anwar et al., 2023a). The stability of economic institutions and public investment policies further enhances FDI; however, economic volatility, especially in low-income countries, can negatively impact all types of investment and hinder economic growth (Bayraktar, 2019). Therefore, sustainable and stable economic growth is a key factor in maintaining and enhancing various forms of investment.

2.2.3 Exchange rate

Fluctuations in exchange rate affect transaction costs and profits from import and export activities, thereby directly impacting business investment decisions. The domestic currency strengthens relative to foreign currencies, so rises in the exchange rate can have either a positive or negative effect on investment. An increase in the exchange rate can result in more expensive exports from a country on the international market, thus leading to a decline in the competitiveness of businesses and a reduction in FDI inflows. In some cases, a higher exchange rate can benefit importing companies, as they will pay less for foreign goods. While this does not directly increase investment, it may lead to cost savings for companies and expand their investment capacity in the future (Gao, 2023). Conversely, as the domestic currency depreciates along with decreases in the exchange rate, this can stimulate investment inflows from abroad, as domestic goods and services become cheaper for foreign investors. The study by FoEh et al. (2020) indicated that a lower exchange rate led to an increase in FDI inflows, especially when the economy was in need of development and expansion. At the same time, domestic investors may be pressured to invest more due to the rising cost of foreign inputs (Oyadeyi et al., 2025). However, the depreciation of the exchange rate brings risks, particularly related to inflation and higher borrowing costs, which may negatively impact investment decisions.

2.2.4 Money supply

The banking system, monetary policy, and money supply play a crucial role in shaping the investment dynamics within the economy. An increased money supply not only enhances the financial capacity of businesses but also stimulates investment in infrastructure and the manufacturing sector, thus driving overall economic growth (Minea & Villieu, 2009). My Tran et al. (2019) also stated that increased money supply would increase the overall demand in the economy and as a result, create a more favorable environment for investment activities. If interest rates and money supply are effectively managed within a monetary policy framework, this not only encourages investment but also strengthens the stability of the entire financial system (Tekman, 2023). In practice, countries with well-developed financial systems and flexible monetary policies tend to attract more investment flows (Boateng et al., 2015). However, in the short term, growth in money supply may promote private investment by reducing interest rates, but in the long term, this effect can be more complex due to the dependence on factors such as market sentiment and the overall economic situation (Dang et al., 2020; Dang, 2012).

Although some studies suggested that increasing the money supply could stimulate investment, other arguments refuted that this might have negative effects. Increasing the money supply can encourage investment; however, inefficient allocation of resources may occur and this could reduce the capacity for long-term investment. Alalade et al. (2023) specifically pointed out that in an environment with a high public debt, interest rates might rise further to create a "crowding-out" effect, in which private investment diminished when businesses failed to compete with the large-scale public investment. Furthermore, the study by Minea & Villieu (2009) showed that public investment and public debt could be negative factors affecting economic growth, as they increased the financial burden and limited the ability to raise capital for production activities and private investment.

2.3 Research Gaps and Proposed Research Model

The literature review predominantly focused on macroeconomic factors influencing investment, with interest rates being one of the key determinants. The relationship between interest rates and investment was often explored to distinguish between investments from different sources of capital and total investment. Some studies analyzed the impact of one type of investment on another. However, a significant gap remained in the literature as few studies identified the interest rate thresholds influencing investment. The independent variables used in these studies also varied, so it was difficult to compare the sensitivity of investment from different sources to interest rates. In the context of Vietnam, there is a noticeable lack of research comparing the relative relationships between public, private, and FDI. Moreover, no study specifically addressed the threshold of interest rates which affected investment. Most studies tended to focus on analyzing the factors influencing investment based on capital sources without delving into the critical threshold of interest rates that could potentially alter investment patterns. Thus, this research aimed to fill this gap through a comparative analysis of the interest rate thresholds impacting investment from different sources, providing valuable insights into the relative effects of interest rates on public, private, and FDI investment in Vietnam.

The synthesis of research findings indicated that the relationship between LIR and investment could be described in the following equation. This equation not only assesses this relationship but also tests the existence of a threshold effect through the following general model:

$$Y_t = f(LIR, inflation, growth\ in\ GDP, exchange\ rate, money\ supply)$$

3. Features of Data and Methodology

3.1 Features of Data

To estimate the TR model, this study utilized time series data spanning from year 1996 to 2022, a selected sample period based on the availability of consistent data. The data used for analysis were obtained from the General Statistics Office of Vietnam (GSO) and the World Development Indicators (WDI) (Table 2). LIR was chosen to be the key variable due to its strong and direct influence on investment activities.

Table 2. Definitions and sources of variables

Variables	Definitions	Sources
	Threshold Variable	
LIR	Lending interest rate	WDI
	Dependent Variables	
GTC	Growth in total capital	GSO
GPC	Growth in public capital	GSO
GPRC	Growth in private capital	GSO
GFDI	Growth in foreign direct investment	GSO
	Independent Variables	
INF	Inflation	WDI
GDP	Growth in GDP	WDI
OER	Growth in official exchange rate	WDI
BMG	Broad money growth (annual %)	WDI

Descriptive statistics for the four indicators of investment growth (GTC, GPC, GPRC, GFDI) show differences in central tendency and dispersion. GPRC had the highest average growth of 19.4%, followed by total investment of 15.4%, public investment of 13.5%, and GFDI of 12.6%. The coefficient of variation highlights risk differences: GFDI shows extreme volatility of 291.6%, while total investment of 56.9% appears to be more stable (Table 3). Positive skewness and excess kurtosis suggest abnormal increases and potential for high outliers.

Macro factors such as LIR, INF, GDP, OER, and BMG significantly influence investment decisions, each with distinct characteristics of volatility. Growth in GDP, 5.16% in Table 3, and OER suggest stability, while LIR of

10.79% indicates moderate volatility. In contrast, inflation (*SD* = 5.24%) and high broad money growth of 23.99% reflect instability, which would raise investment risks. Stable growth and exchange rates may foster investment, but inflation and interest rate volatility introduce substantial risks.

Table 4 reveals the relationships between macroeconomic factors and investment. GTC strongly correlates with GPRC (0.82) and GFDI (0.40), while GPC weakly correlates with GFDI (-0.18). INF has the strongest impact on LIR, and factors like OER and BMG show weaker relationships with others. GDP has a weak correlation with macroeconomic factors, hence indicating that economic growth results from the interaction of these factors and, in turn, influences them.

The results of the unit root test in Table 5 demonstrate differences in stationarity across the variables. GPC, GPRC, GFDI, INF, and OER are stationary at level 0, with a significance level of 5%. In contrast, GTC, LIR, GDP, and BMG are stationary at first differences, meaning the series are stationary at I(1). The existence of series stationary at I(0) and I(1) allows the application of TR model.

Table 3. Descriptive statistics

Variables	Mean	Standard Deviation (*SD*)	Minimum	Maximum	Coefficient of Variation (%)	Skewness	Excess Kurtosis
GTC	15.386	8.756	3.341	47.409	56.91	1.971	4.938
GPC	13.455	10.232	-2.102	40.881	76.048	1.07	0.908
GPRC	19.415	18.557	3.024	94.113	95.581	2.746	7.976
GFDI	12.586	36.706	-24.73	179.167	291.632	3.583	14.065
LIR	10.792	3.369	6.96	20.1	31.219	0.996	0.44
INF	5.772	5.241	-1.71	23.115	90.8	1.868	4.62
GDP	5.164	1.422	1.667	7.686	27.541	-0.709	0.474
OER	2.852	3.365	-0.209	13.563	118	1.813	2.616
BMG	23.992	12.745	5.679	66.452	53.122	1.476	2.941

Table 4. Correlation matrix

Variables	GTC	GPC	GPRC	GFDI	LIR	INF	GDP	OER	BMG
GTC	1.00								
GPC	0.37	1.00							
GPRC	**0.82**	0.11	1.00						
GFDI	**0.40**	**-0.18**	0.13	1.00					
LIR	0.31	0.56	0.03	0.06	1.00				
INF	0.19	0.00	0.11	0.21	**0.61**	1.00			
GDP	0.37	0.18	0.21	0.16	0.12	-0.12	1.00		
OER	0.20	0.29	0.29	-0.36	0.40	0.26	-0.09	1.00	
BMG	0.40	0.30	0.24	0.26	0.30	0.01	-0.05	0.09	1.00

Table 5. Test results of the Augmented Dickey-Fuller (ADF) statistic

Variables	ADF statistic	*p*-value	Critical Value (5%)	ADF statistic	*p*-value	Critical Value (5%)	Conclusion
	I(0)			I(1)			
GTC	-3.240	0.077	-3.604	-7.110	0.000	-7.110	I(1)
GPC	-4.609	0.001	-3.595				I(0)
GPRC	-3.795	0.017	-3.604				I(0)
GFDI	-3.762	0.019	-3.595				I(0)
LIR	-3.248	0.075	-3.595	-6.143	0.000	-3.604	I(1)
INF	-3.085	0.028	-2.981				I(0)
GDP	-2.839	0.183	-3.612	-6.176	0.000	-3.612	I(1)
OER	-4.236	0.004	-3.604				I(0)
BMG	-2.948	0.147	-3.658	-4.152	0.005	-3.673	I(1)

3.2 Threshold Regression

The non-linear regression models that can be used for time series data include threshold regression (TR), smooth transition regression (STR), and quantile regression (QR). TR is a method used to identify the presence of thresholds in the data, helping to detect potential threshold values where the relationship between the dependent variable and the explanatory variable changes. TR has advantages in model selection over the other two models, because: (1) STR allows gradual transition between different regimes; and (2) QR focuses solely on modeling the regression for the mean values at various quantiles. Therefore, this study employed the TR model to capture abrupt changes at thresholds, which align with the research objective of identifying the interest rate threshold that influences investment activities based on capital sources. For a single-threshold model, the relationship is expressed as follows:

$$y_t = \theta + \beta_1' x_t U(S_t \leq \omega) + \beta_2' x_t U(S_t > \omega) + \varepsilon_t \quad (1)$$

where, $U(.)$ is a binary indicator function, with $U(S_{it} \leq \omega)$ equals to 1 if the condition $S_{it} \leq \omega$ is true and equals to 0 when $S_t \leq \omega$; x_t represents the explanatory variables affecting y_t; β_1', β_2' are the regression coefficients corresponding to the two regimes $(S_{it} \leq \omega)$ and $(S_t > \omega)$, respectively.

The single TR is rewritten in detail as follows:

$$y_t = \begin{cases} \theta_1 + \beta_{i1}' x_{it} + \varepsilon_1 \ (S_t \leq \omega) \\ \theta_2 + \beta_{i2}' x_{it} + \varepsilon_2 \ (S_t > \omega) \end{cases} \quad (2)$$

The single-threshold effect test is performed based on the following hypotheses: $H_0: \beta_{i1}' = \beta_{i2}'$; $H_1: \beta_{i1}' \neq \beta_{i2}'$. The study employed the Chow test to compare the TR model with the no-TR model. Optimization techniques were utilized to estimate the threshold. After establishing the threshold, the study performed tests for heteroscedasticity and autocorrelation.

ω is the threshold value of the interest rate that defines the switching point between the two regimes. When the threshold ω is unknown and needs to be estimated, optimization methods can be employed to estimate the threshold. After identifying the threshold, the Bootstrap test could be used to assess the reliability of the estimated threshold and the regression parameters. This method is particularly useful in cases of small sample sizes or when the model is complex.

The dependent variable *Y* is the growth of investment by ownership (GTC, GPC, GPRC, GFDI). Based on the proposed model in Section 2.3, LIR was the threshold variable; the macroeconomic variables applied in the analysis model included: INF, GDP, OER, and BMG. Eq. (2) was rewritten in the following form:

$$Y_t = \begin{cases} \theta_1 + \beta_{11} INF + \beta_{21} GDP + \beta_{31} OER + \beta_{41} BMG + \varepsilon_1 \ (LIR \leq \omega) \\ \theta_2 + \beta_{12} INF + \beta_{22} GDP + \beta_{32} OER + \beta_{42} BMG + \varepsilon_2 \ (LIR > \omega) \end{cases} \quad (3)$$

4. Discussion

4.1 Results of TR and Testing

This study evaluated the reliability and validity of TR for four dependent variables: GTC, GPC, GPRC, and GFDI. The Chow test for threshold effects showed a significant structural change only for GPC, with an F-statistic of 5.029 and a *p*-value of 0.005 in Table 6. This suggested that when the interest rate exceeded 12.7%, changes in macroeconomic variables significantly impacted public investment in two distinct regimes. In contrast, no significant threshold effects were found for GTC, GPRC, and GFDI, as evidenced by a *p*-value of 0.999, indicating no threshold impact on these models. In the absence of a threshold, the study applied Ordinary Least Squares (OLS) model to validate the relationship and supplement the analysis of macroeconomic factors affecting investment.

Table 6. Tests to determine the reliability of TR

Tests		GTC	GPC	GPRC	GFDI
Diagnostic test	Threshold effect – Chow test	F-statistic = 0.015 *p*-value: 0.999 No significant threshold effect	F-statistic = 5.029 *p*-value: 0.005 Significant threshold effect	F-statistic = 0.009 *p*-value: 0.999 No significant threshold effect	F-statistic = 0.002 *p*-value: 0.999 No significant threshold effect
	Heteroscedasticity test (Breusch–Pagan)	Below threshold: LM statistic = 14.155 *p*-value = 0.007 Heteroscedasticity present	Below threshold: LM statistic = 2.142 *p*-value = 0.710 No heteroscedasticity	Below threshold: LM statistic = 4.603 *p*-value = 0.331 No heteroscedasticity	Below threshold: LM statistic = 9.279 *p*-value = 0.055 No heteroscedasticity
		Above threshold: LM statistic = 3.545 *p*-value = 0.471 No heteroscedasticity	Above threshold: LM statistic = 4.031 *p*-value = 0.402 No heteroscedasticity	Above threshold: LM statistic = 3.545 *p*-value = 0.471 No heteroscedasticity	Above threshold: LM statistic = 4.648 *p*-value = 0.325 No heteroscedasticity
	Autocorrelation test (Ljung-Box)	Below threshold: Q statistic = 6.045 *p*-value = 0.014 Autocorrelation present	Below threshold: Q statistic = 1.756 *p*-value = 0.185 No autocorrelation	Below threshold: Q statistic = 1.797 *p*-value = 0.180 No autocorrelation	Below threshold: Q statistic = 0.337 *p*-value = 0.562 No autocorrelation
		Above threshold: Q statistic = 4.508 *p*-value = 0.034 Autocorrelation present	Above threshold: Q statistic = 1.369 *p*-value = 0.121 No Autocorrelation	Above threshold: Q statistic = 4.508 *p*-value = 0.034 Autocorrelation present	Above threshold: Q statistic = 1.450 *p*-value = 0.228 No autocorrelation

In the Breusch-Pagan heteroscedasticity test, the results indicated the presence of heteroscedasticity below the threshold for GTC (LM statistic = 14.155, *p*-value = 0.007). However, no significant heteroscedasticity was detected for GPC, GPRC, and GFDI. The Ljung-Box autocorrelation test was employed to examine autocorrelation in the residuals and revealed the presence of autocorrelation for GTC and GPRC. For GPC and GFDI, no autocorrelation was found either below or above the threshold. These tests suggested that the model with the dependent variable, GPC, had a significant threshold effect and did not exhibit heteroscedasticity or autocorrelation in the residuals. In contrast, GTC, GPRC, and GFDI did not show a threshold effect, so the study performed time series pooled OLS regression in Table 7.

Table 7. Pooled OLS regression to determine the impact of macroeconomic factors on investment

Dependent Variables	GTC	GPRC	GFDI
Const	-7.014	-1.767	-25.735
	[-0.972]	[-0.107]	[-0.828]
LIR	-0.245	-2.674*	-1.826
	[-0.370]	[-1.770]	[-0.641]
INF	0.423	1.199	3.079*
	[1.112]	[1.381]	[1.880]
GDP	2.749**	4.713*	**5.504**
	[2.466]	[1.854]	[1.147]
OER	0.455	2.184*	-4.514**
	[0.927]	[1.950]	[-2.136]
BMG	0.296**	0.523*	1.030*
	[2.330]	[1.803]	[1.881]
R-squared	0.392	0.296	0.359
Adjusted R-squared	0.248	0.128	0.206
Log-likelihood	-89.660	-111.93	-129.078
F-statistic	2.712	1.764	2.352
Prob (F-statistic)	0.048	0.164	0.076

Note: *, ** and *** denote 90%, 95%, and 99%, respectively

4.2 Interest Rate Thresholds and Macroeconomic Impact on Investment

4.2.1 Threshold of lending interest rates

The analysis of threshold interest rates revealed distinct variations in the impact of lending rates on different sources of investment in Table 8. Specifically, GTC exhibited the highest threshold rate at 13.18%, indicating that it responded less sensitively to interest rate fluctuations compared to other forms of capital. This suggested that the combination of public and private investments rendered total investment less reactive to changes in borrowing costs. The government often has the ability to raise capital at a lower cost due to its credibility and the assurance provided by national financial policies. Additionally, the government can issue government bonds at low interest rates because investors trust its ability to repay debt. Therefore, public investment does not rely entirely on bank lending rates; this explains why the interest rate of 12.7% for public investment is lower than that of private investment. GPRC, with the highest threshold at 13.2%, indicates a strong dependence on the availability of credit and borrowing costs. When the interest rate exceeds this threshold, private investment declines significantly due to the increased financing costs, as per the capital cost theory beyond the interest rate threshold of 13.2%. The threshold of interest rate for private investment is higher than that for public investment, thus leading to a "crowding-out" effect, which reduces private investment. When the government borrows at a low cost, the demand for credit in the market increases, causing banks and financial institutions to raise interest rates on private loans to offset this increased demand. As a result, the increase in public spending has narrowed the financial space available for private investment and led to the "crowding-out" phenomenon.

FDI is the most sensitive type of investment to interest rates, with the lowest threshold being 11.8%. This result can be explained by the cost of capital theory, according to which FDI becomes more attractive when interest rates are low as investors can raise capital at a lower cost to minimize financial risks, thereby promoting rapid growth and yielding high returns. In contrast, IRP does not provide an in-depth explanation of the relationship between interest rates and the FDI investment in Vietnam. Although IRP suggests that changes in the interest rate may affect exchange rates, foreign investors in Vietnam are primarily concerned with the cost of capital and the long-term expected returns from investment projects in respect of FDI. Furthermore, the IRP theory does not directly address the impact of borrowing costs on long-term investment decisions; it is found to be unsuitable for explaining the FDI interest rate threshold. These findings underscored the varying degrees of sensitivity to changes of interest rate across different investment types, with private investment and FDI being more susceptible to financial conditions than total or public investment. Thus, the interest rate threshold in Vietnam is higher compared to the threshold in Indonesia and South Korea, ranging from 9% to 12% (Sharpe & Suarez, 2014), but lower than that in

Nigeria (Olaniyi, 2017).

Table 8. TR of interest rates on investment

Dependent Variable	GTC		GPC		GPRC		GFDI	
Regime	Low	High	Low	High	Low	High	Low	High
const	-7.539	-35.031	2.635	-22.667	-17.444	33.361*	-31.306	-7.752
	[-1.378]	[-0.506]	[0.372]	[-0.632]	[-1.262]	[13.241]	[-0.880]	[-0.147]
INF	1.360***	0.659	0.948	-0.359	2.784**	-0.456*	2.440	1.591
	[2.995]	[0.535]	[1.467]	[-0.506]	[2.428]	[-10.174]	[0.749]	[1.370]
GDP	2.006**	4.345	-0.337	4.636	3.414	-0.089	1.893	3.957
	[2.214]	[1.118]	[-0.294]	[1.687]	[1.492]	[-0.632]	[0.316]	[0.745]
OER	2.186***	0.123	3.371**	0.003	5.304***	0.237	-7.710	-3.620
	[3.480]	[0.114]	[2.669]	[0.004]	[3.343]	[6.004]	[-1.147]	[-3.203]
BMG	0.097	0.860	0.011	0.982	-0.055	-0.812*	1.805*	-0.072**
	[0.987]	[0.540]	[0.083]	[1.340]	[-0.222]	[-14.008]	[2.128]	[-0.139]
R-squared	0.709	0.727	0.417	0.910	0.603	0.999	0.403	0.882
Adjusted R-squared	0.637	-0.364	0.261	0.730	0.504	0.995	0.232	0.724
Log-likelihood	-63.490	-15.192	-65.014	-18.497	-82.948	4.691	-92.155	-27.645
F-statistic	9.760	0.666	2.678	5.058	6.081	260.4	2.362	5.591
Prob (F-statistic)	0.000	0.712	0.073	0.172	0.004	0.046	0.103	0.095
Number of Observations	21	6	20	7	21	6	19	8
Threshold LIR	**13.18%**		**12.7%**		**13.2%**		**11.8%**	

Note: *, ** and *** denote 90%, 95%, and 99%, respectively

For the pooled OLS regression model, the results of the study indicated that LIR had a negative impact on GPRC, with a coefficient of -2.674 and a *p*-value of 0.076 as in Table 7. It also attested to the characteristic of capital scarcity in developing countries (Erden & Holcombe, 2005). For GTC and GFDI, no statistically significant effect was observed, with coefficients of -0.245 and -1.826, respectively. LIR appeared to influence private investment; however, their impact on overall investment and GFDI was limited.

4.2.2 Inflation

The results of the influence coefficients for the INF variable in Tables 7 and 8 highlighted the differences in sensitivity to inflation across investment activities depending on the sources of capital. In a low-interest-rate regime, inflation has a positive and statistically significant impact on GRPC and GTC, with private sector investment being particularly sensitive to inflation compared to investments from other capital sources as in Table 8. Specifically, inflation has a positive and statistically significant effect on the "inflation-hedge" hypothesis. Firms perceive low inflation as an opportunity to invest in tangible assets with the potential to preserve value and appreciate in value, thereby promoting an increasing investment trend when prices are on the rise. However, when interest rates exceed the threshold of 13.2%, the impact of inflation on GPRC turns negative ($\beta^{high} = -0.456$, $p < 0.1$), reflecting the increased borrowing costs. The negative effects of high interest rates outweigh the benefits of inflation hedging, thus leading to a reduction in private sector investment. The inflation-induced reduction in private sector investment aligns with the theory of uncertainty costs. One notable point is that GPC and GFDI do not respond significantly to inflation in the interest rate regime. GPC is less affected by inflation due to public investment being primarily driven by the objectives of fiscal policy. On the other hand, as concluded by Marcos & Vale (2022), the private sector reduces investment under conditions of high inflation, while the public sector increases investment to stimulate the "crowding-in" effect. Similarly, GFDI may be less sensitive to inflation because foreign investors are primarily concerned with profitability, institutional stability, and long-term market conditions. In the linear model, inflation has a positive impact on FDI with a coefficient of 3.079, which is statistically significant at the 10% level. This suggested that foreign investors might leverage advantages from an inflationary environment in Table 7.

4.2.3 GDP

GDP predominantly influences public investment, particularly when interest rates are elevated ($\beta^{high} = 4.636$). The impact transitions from negative to positive for public investment, while the reverse effect occurs for private investment in Table 8. This phenomenon explained that the government raised capital spending during periods of high interest rates to compensate for the reduction in private investment, thereby sustaining the momentum to grow and stabilizing the macroeconomy. Nevertheless, GDP did not demonstrate a statistically significant relationship between GPC and GPRC. Furthermore, GDP growth influenced total investment only under favorable credit conditions; this indicated that when borrowing costs were low, both businesses and governments could easily

access capital to fund investment projects.

In the linear model, GDP growth positively and significantly impacted both total investment and private investment, with coefficients of 2.749 and 4.713, respectively, highlighting a strong relationship between economic development and investment, particularly private investment as demonstrated in Table 7. However, the study did not find a statistically significant relationship between GDP growth and FDI. Despite observing a positive regression coefficient of 5.504, this result was not statistically significant enough to affirm that GDP directly influences FDI flows. This result was consistent with the findings of FoEh et al. (2020) in 11 Asian countries. Combining both the TR and linear regression models demonstrates that public investment in Vietnam dominates and regulates domestic investment activities to stimulate economic growth.

4.2.4 Exchange rate

OER had the strongest impact on domestic private investment when borrowing costs were low (β^{low} = 5.304, $p < 0.01$), indicating that domestic firms tended to increase investment when the domestic currency depreciated. This reflected the fact that when the exchange rate depreciated, firms often took the opportunity to expand production and invested in productive assets to meet rising domestic demand, especially in import-substituting industries. Similarly, OER had a positive and statistically significant impact on GPC and GTC, with influence coefficients of 3.371 and 2.186, respectively, indicating that a depreciation of the domestic currency not only stimulated private investment but also boosted public investment and total capital investment, as the government could leverage the currency devaluation to attract investment and promote infrastructure development. The results indicated that exchange rate depreciation had no significant impact on FDI, with a negative but statistically insignificant coefficient, hence suggesting that a weaker domestic currency failed to attract foreign investment. Le & Tran (2024) found that from year 2013 to 2019, depreciation of the Vietnamese Dong against the US dollar gradually increased the exchange rate, thus boosting product competitiveness, private sector growth, and economic development.

Results from both threshold and OLS regression model indicated that a strong exchange rate positively impacted private investment and encouraged domestic enterprises to invest and expand. However, a strong exchange rate negatively affected attractiveness of FDI, especially with currency fluctuations. As noted by Fei et al. (2021), while stable exchange rates supported domestic investment, they might reduce FDI amid high volatility in particular.

4.2.5 Board money growth (BMG)

The impact of BMG on investment varies across capital sources, though some similarities exist. BMG exerts the strongest influence on FDI, followed by private investment, while public investment is less affected. In the low-interest-rate regime below the 11.8% threshold, BMG strongly drove FDI with a positive impact coefficient of 1.805*, hence reflecting the attractiveness of the low-interest-rate environment to foreign investors. However, the impact of BMG on private investment in this regime was relatively weak and statistically insignificant, indicating that other factors such as interest rates, inflation, and exchange rates exerted a stronger influence than BMG. The studies by Dang et al. (2020) and Dang (2012) indicate that an increase in the money supply only stimulates private investment in the short term and has a positive impact at low interest rate thresholds. Conversely, at high interest rates, BMG has a negative impact on both FDI and GPRC, particularly on GPRC, with a statistically significant negative coefficient of -0.812, reflecting a "crowding-out" effect that reduces private investment incentives. The impact of BMG for public investment was not statistically significant in both interest rate regimes; this indicated that public investment was less sensitive to fluctuations in monetary policy, mainly depending on socio-economic development goals.

The TR model aptly explained macroeconomic effects on investment than linear regression by distinguishing different regimes. The linear model showed that BMG positively impacted investment, with effects strongest on private investment, then total investment, and least on FDI. These results indicated that expansionary monetary policy played an important role in encouraging investment. Increasing money supply promoted investment, however, the overall literature review did not clarify the impact of BMG on investment by each source of capital.

5. Conclusions and Policy Implications

This study analyzed the impact of macroeconomic factors such as interest rates, inflation, exchange rates, the GDP growth, and money supply growth in GPC, GPRC, GFDI, and GTC. The TR model indicated that only GPC exhibited a statistically significant threshold effect, suggesting that factors influencing public investment might change when a certain threshold was reached. In contrast, investment from other sources, including private investment, FDI, or total investment, did not respond to structural changes. This is because the goal of these forms of investment is to maximize profits even when facing greater uncertainty, and each sector has a different interest rate threshold. Conversely, public investment is made by the government, who can adjust and control it. To validate the robustness of the relationship, the current study employed the pooled OLS method.

LIR and inflation had a negative impact on GPRC, owing to a statistically significant inverse relationship. A

tightening monetary policy, through an increase in interest rates, may reduce the incentive for private investment. Therefore, interest rate policies need to be adjusted appropriately, especially during economic downturn, to avoid diminishing the attractiveness of private sector investment. In contrast, the effect of interest rates on total investment and FDI was negligible, thus indicating that these forms of investment were less directly affected by fluctuations in interest rates. Inflation did not have a significant impact on public investment and FDI, suggesting that investment decisions in these areas were primarily influenced by other factors such as fiscal policy and institutional factors. Fiscal policy needs to remain stable while simultaneously improving the institutional environment to attract investment, particularly FDI.

In Vietnam, domestic investment is highly sensitive to fluctuations in the exchange rate, despite the stable exchange rate policy implemented by the government. FDI, however, remains less affected as attracting FDI and ensuring long-term economic stability requires complementing exchange rate policy with measures to enhance the business environment and strengthen institutions. Finally, BMG has a positive impact on FDI and private investment in a low-interest-rate regime, but this impact is reduced in a high-interest-rate regime. Expansionary monetary policy can boost investment, but it should be adjusted cautiously during periods of high interest rates to avoid crowding out credit and reducing the incentives for private investment.

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Data Availability

The data are available from the General Statistics Office of Vietnam (GSO, https://www.nso.gov.vn/so-lieu-thong-ke/) and World Development Indicators (WDI, https://databank.worldbank.org/source/world-development-indicators?l=en).

Conflicts of Interest

The author declares no conflicts of interest.

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