УДК 330.332.5

Unlocking the Secrets: Private Investments and the Remarkable Evolution of Vietnam's Economy

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In recent years, the Vietnamese economy has achieved significant accomplishments, with private investment playing a crucial role in these contributions. As the country entered the 21st century, the private sector's significance in Vietnam's economic development has been increasingly evident through the rising levels of investment, increased employment, greater contributions to the state budget, and overall GDP growth. This article aims to provide robust evidence of the short-term and long-term contributions of private investment to the remarkable economic growth of Vietnam from 2000 to 2022. The study collected data from all 63 provinces and municipalities of Vietnam during the period from 2000 to 2022. Using the collected data, the study employed the results of the Panel Mean Group (PMG) model, selected among three models (PMG, MG, DFE) through Hausman testing. Through the Dynamic Panel Threshold Model, the study accurately identified a maximum threshold ratio of Private investment/GDP at 32.2754%. Surpassing this ratio would lead to a situation of high inflation, an overheated economy, and exceeding production limits. Finally, causal inference from the panel data was utilized to analyze the relationship between private investment and other variables in the model. The study expanded the perspective on private investment's impact on economic growth. In the initial period, private investment activities encountered difficulties leading to inefficient investments and a negative impact on economic growth. However, with flexibility and good adaptability to the market, and efficient utilization of input factors, private investment made positive contributions to economic development over time. Furthermore, through causal inference testing, the study demonstrated a causal relationship between private investment and infrastructure investment, human capital, employment, government expenditure, and trade openness. Finally, the study proposed policy implications for the Vietnamese government to enhance the effectiveness of private investment and further contribute to economic growth.

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The article was received: 25.05.2023/The article is accepted for publication: 08.02.2024.

***Key words*:** economic growth; private investment; PMG, MG and DFE model; economic growth theory; dynamic panel threshold model.

JEL Classification: B30, B40, M20, G10, O10, O02.

DOI: 10.17323/1813-8691-2024-28-1-159-183

For citation: Dinh Trong An. Unlocking the Secrets: Private Investments and the Remarkable Evolution of Vietnam's Economy. *HSE Economic Journal.* 2024; 28(1): 159–183.

1. Introduction

Private investment is a crucial element for sustainable economic development, especially in developing countries like Vietnam. Private investment stimulates economic growth, generates employment opportunities, and reduces poverty disparities in many regions. Achieving sustainable economic growth requires countries to efficiently utilize resources and maximize their potential, accurately determining the quantity and quality of investment to achieve the highest outcomes. According to Kumo's (2006) study, private enterprise investment refers to activities aimed at generating profits. Bonga et al. (2017) defines private investment capital as tangible or financial assets owned by individuals, with decisions regarding its utilization made for the benefit of individuals. In this research, private investment refers to the utilization of investment capital owned by individuals in a market economy under the general oversight of the state, with the aim of generating profits.

Private investment increasingly plays a significant role in the development of each country [Attefah, Enning, 2016]. The contribution of the private sector to economic growth is greater than that of the public sector because the private sector tends to use capital effectively [Nwakoby, Alajekwu-Udoka, 2016; Omojolaibi et al., 2016]. Public investment activities primarily focus on political purposes such as infrastructure development and improving the material well-being of the population, with less emphasis on profit considerations in investment [Kaputo, 2012].

Private investment depends heavily on the investment environment, including administrative procedures, trade policies, local labor force, regional finances, etc. If the investment environment is unstable, with high corruption rates and economic instability, it becomes a barrier to the development of private economic components, leading to long-term ineffective investment and negative impacts on economic growth [Isaac et al., 2012; Nguyen et al., 2020; Popoola et al., 2022]. Consequently, many governments have utilized public investment to build infrastructure and improve the investment environment. This is considered an important input "fuel" that reduces production costs and strengthens the power of private sector economic growth in each country [Kahuthu, 1999]. To increase attractiveness for private investors, many governments have implemented various measures to enhance competitiveness in the region, such as increasing regular expenditures, improving income for state employees, and streamlining administrative procedures to reduce corruption rates [Modebe et al., 2012]. Furthermore, localities actively expand both domestic and international trade through trade agreements, establishing global supply chains, and proactively integrating into the global economy. This helps private enterprises expand their market opportunities and engage in international cooperation in production and business [Mohsen et al., 2013]. Currently, with the rapid development of science and technology,

businesses are adopting new techniques in production, requiring a large number of high-quality labor. Localities have proactively developed plans for human capital, ensuring an adequate and high-quality labor supply [Nguyen, Trinh, 2018; Pham, 2023]. Moreover, private enterprises face challenges in accessing financial resources, particularly affordable financing. Many countries have called for domestic and foreign financial resources to meet capital needs at a low cost, enabling businesses to increase profitability and continue expanding investment [Canh, Phong, 2018; Dang et al., 2020].

The focal point of this study is to ascertain the role and transformations brought about by private investments in the economic growth of Vietnam. Drawing upon data from the General Statistics Office, an evaluation of the contribution of private economy to the overall economy is derived. In order to establish clear evidence of the impacts of private investments on economic growth, the research employs the PMG model, which is selected from the three PMG, MG, and DFE models and utilizing data collected from 63 provinces and municipalities of Vietnam spanning the period from 2000 to 2022. Furthermore, through the Dynamic Panel Threshold Model, the study precisely determined the maximum threshold ratio of Private Investment/GDP at 32.2754%. The author further employs causal inference tests to firmly establish the causal relationship between infrastructure investment, human capital, labor, recurrent expenditure, trade openness, and private sector financials with private investments. Based on the findings of this research, the author puts forth policy recommendations aimed at fostering private investments, thereby making an increasingly substantial contribution to the economic growth of Vietnam.

2. Literature Review

2.1. Theories on Private Investment Impact on Economic Growth

2.1.1. Neoclassical Growth Model

The classical growth models represent the initial studies highlighting the role of investment, including private investment, in economic growth. Notable examples are the works of Robert Solow and Trevor Swan (1956). These models are developed based on the Cobb – Douglas production function, which addresses certain limitations by explaining long-term economic growth through technological progress, resulting in increased labor productivity, higher levels of human capital, and capital accumulation. During this period, researchers did not differentiate between private and public investment, each having different roles in the economy. Public investment often focuses on infrastructure and social welfare, thus enhancing the effectiveness of private investment and mostly exerting indirect effects on economic growth [Canh, Phong, 2018]. On the other hand, private investment involves investments in high-profit sectors and measures aimed at improving the efficiency of production inputs [Dang et al., 2020]. Therefore, the classical growth models are considered fundamental research that explores the impact of private investment on economic growth. Additionally, private investment serves as a crucial factor driving technological progress, explaining why poor countries with high capital accumulation rates gradually catch up in terms of output and economic development with developed nations, and their economic growth rates surpass those of wealthier countries [Barro, 1997]. Despite their significant academic contributions, these studies still have limitations, such as the inability to fully capture the complex relationship between the factors generating returns on private investment. The

contributions of technological progress and economic growth are not adequately represented and are only determined through investment capital, leading to distorted assessments of capital efficiency, especially through indicators like the Incremental Capital-Output Ratio (ICOR): countries with low technology but high investment capital can have similar ICOR values to those of high-technology countries with low investment capital [Favara, 2003]. With these identified shortcomings, they serve as a foundation for future research that aims to elucidate the intricate relationship between private investment and economic growth [Mankiw et al., 1995].

2.1.2. Endogenous Growth Model

Romer's growth model (1986) explains the long-term economic growth based on the stock of human capital, which is significantly contributed by private investment. Private enterprises, aiming to increase productivity and reduce production costs, heavily invest in technology. This strategy helps extend the product life cycle, avoid obsolescence compared to competitors, and generate long-term profits [Nguyen, Trinh, 2018]. On a macro level, strong investment in technology creates income disparities per capita among countries, while the growth rate tends to decrease. This phenomenon drives the strong investment in science and technology, with private investment being at the forefront [Mohsen et al., 2013; McCulloch et al., 2013]. Currently, a significant proportion of start-up businesses are privately owned enterprises, which pioneer the application of new technologies in daily life, leading to rapid profit growth and market dominance [Tung, 2019]. Therefore, these private enterprises contribute greatly to a nation's growth, particularly allowing slower-developing countries to catch up with others.

Lucas's endogenous growth model (1988) is one of the significant models explaining long-term economic growth based on the rate of human capital accumulation. Additionally, the model clarifies the allocation of time for acquiring skills and the level of worker skills based on human capital. This research further elucidates the role of technology in general and human capital in particular in economic growth, with private investment serving as a solid support for human capital [Anwar et al., 2021]. Private investment aims to generate returns for investors, thereby motivating investors to efficiently combine production inputs to achieve optimal results [Attefah, Enning, 2016]. Private enterprises are willing to implement favorable policies to attract workers, which is an essential strategy for competition. Workers' initiatives and inventions reduce production costs, enhance product quality, and meet market demands, making them valuable assets for private enterprises [Anh et al., 2021; An, 2023]. During work processes, businesses invest in machinery, scientific research, and enhance workers' skills, thereby increasing labor productivity and contributing to the development of individual enterprises and overall economic growth. To reinforce these assertions, Rebelo's study (1991) argues that capital is the key input in the production function. Through optimal combination of input factors, private investment overcomes production constraints such as labor shortage and material scarcity to create high-quality products that meet market demand. In the macroeconomic context, private investment serves as a robust bridge for establishing reasonable input parameters and supports the development of science and technology. This helps different countries achieve exceptional and sustainable growth rates at various stages of development [Ortigueira, Santos, 1997].

2.2. Previous Empirical Studies

Economists worldwide have long engaged in extensive debates regarding the impact of private investments on economic growth. However, it was not until the early 1990s that systematic studies on the effects of private investments on economic growth emerged, facilitated by relatively comprehensive and reliable statistical data on economies of various countries and territories. In this study, the author aims to provide specific evidence concerning the outcomes and research methodologies employed in previous studies. The following are some notable exemplars of such studies:

In Mohsin et al.'s study (1990), the impact of private investment and economic growth in 26 developing countries was evaluated using variables such as private investment, public investment, labor, exports, and imports. The research findings indicated that private investment had a greater direct impact on economic growth compared to public investment, primarily due to its higher efficiency and productivity. Nevertheless, these results do not diminish the role of public investment, as it serves as the foundation for more effective utilization of private investment capital, including improving infrastructure, enhancing the quality of education, and fostering a conducive investment environment.

In the study conducted by Greene et al. (1991) on the factors influencing private investment across 23 developing countries during the period from 1975 to 1981, it was found that private investment is influenced by economic growth, external debt, public investment, and inflation rate. Specifically, inflation and external debt had a negative impact on private investment, while the remaining variables had positive effects. However, for periods when external debt became more prevalent and its ratio increased, it had a positive impact on private investment.

In the research by Khan & Kumar (1997), an assessment was made regarding the impact of private investment on economic growth in developing countries. Data collected from 1970 to 1990 for 95 developing countries in four regions, namely Africa, Asia, Europe and the Middle East, and Latin America, were analyzed. The results of the study indicated that private investment had a positive impact on economic growth. Additionally, the study examined other variables such as human capital, implied rate of convergence, population and technical change, human capital enrollment ratio, average years of schooling, and fiscal balance. With the obtained evidence, the research supported policy measures aimed at promoting integration, enhancing competitiveness, and facilitating technology transfer among nations.

Kaputo (2012) assessed the impact of macroeconomic policies on private investment in Zambia. The study employed an error correction model (ECM) to examine the short-term and long-term positive relationship between private investment and economic development from 1980 to 2008. Macroeconomic policies such as bank credit for the private sector, exchange rates, and real interest rates were identified as crucial factors influencing private investment decisions. The results also indicated that public investment had a greater impact than private investment in both the short and long term. This demonstrates the significant role of domestic resources in sustainable economic development, laying the foundation for infrastructure development to attract domestic and foreign private capital.

Numerous studies have demonstrated the positive impact of foreign private investment on economic growth. In a study conducted by Herzer (2012), data was collected from 44 developing countries over the period from 1970 to 2005. By utilizing heterogeneous panel cointegration techniques that account for omitted variables and endogenous regressors, the study re-

vealed that foreign private investment had a counterproductive effect on economic growth in certain countries. This phenomenon can be attributed to the relatively unstable economic conditions in these countries, where foreign private investors face significant risks that lead to inefficient investments. Conversely, domestic private investment continues to have a positive impact on economic growth. Therefore, it is essential for governments to establish a stable investment environment that allows different forms of investment to effectively fulfill their roles.

Anwar et al. (2021) assessed the impact of private investment on the economic growth of Pakistan using time series data from 1980 to 2017. The study employed the ARDL approach, with real GDP as the dependent variable and the independent variables including domestic credit to the private sector, foreign direct investment (FDI) inflows, GDP inflation rate, and bank interest rates. The study revealed a negative impact of private investment on economic growth in both the short and long term. This can be explained by Pakistan's dependence on foreign loans and aid, which do not incentivize private investment. Additionally, private investment lacks the application of science and technology, and the low level of labor skills leads to inefficient investment. Furthermore, political instability, institutional factors, and an unfavorable business environment are important factors contributing to the negative relationship between private investment and economic growth.

Popoola et al. (2022) utilized a two-stage least squares model to assess the impact of the exchange rate regime and private investment on the economic growth of Nigeria during the period of 1960–2020. The authors employed GDP as the dependent variable and the independent variables included private investment capital, total labor force, expenditure on health and education, inflation rate, trade openness, and a simulated exchange rate variable. The research findings revealed an inverse relationship between the inflation rate and economic growth, while the remaining variables had a positive impact. Furthermore, the study also highlighted the significance of private sector credit, as it stimulates the development of the private sector economy and enables businesses to utilize capital more effectively. However, if not tightly controlled, it can lead to high inflation rates and have negative consequences on the economy. Sulaiman et al. (2021) employed the panel regression method using data collected from several ASEAN countries, highlighting the significant role of labor resources in economic development, particularly skilled labor. Skilled labor contributes to innovation, the application of advanced technology in production, increased labor productivity, and modern economic development.

3. Research Methods

3.1. Research Model

Investment in infrastructure will facilitate the attraction of private investment. Infrastructure investment is measured relative to the local GDP.

Through these investments, private investment becomes more efficient, reducing transaction costs. Typically, these investments are substantial and carried out by the government. Therefore, if these investments are not utilized effectively, it will have a negative impact on economic growth. Additionally, to address difficulties in administrative procedures and improve the investment environment, local authorities allocate regular funding to reduce the cost and time of administrative procedures and enhance the accountability of government officials in carrying out these tasks. Furthermore, the government acts as a bridge between domestic businesses and the

international market through trade agreements and the creation of global supply chains. This not only expands trade openness but also provides opportunities for private enterprises to seek new markets [Mohsin, Carmen, 1990; Kumo, 2006; Kaputo, 2012; Attefah, Enning, 2016; Shabbir et al., 2020; Anwar et al., 2021; Pham, 2023].

Numerous studies have demonstrated that the labor force, human capital, and private sector credit are not only inputs to the economy but also crucial inputs to private investment activities. Regions with favorable input conditions are attractive to private investors because businesses can reduce production costs and generate new products that effectively meet local demands, thus easily creating spillover effects in other areas within the region [Ade, 2016; Omojolaibi et al., 2016; Nwakoby, Alajekwu, 2016; Luat, Trung, 2019; Popoola et al., 2022; An, 2023]. Description of variables employed in the model is presented in Table 1.

Table 1.

Description of variables

Variables	Notation	Calculation	Sources
Dependent variable			
Economic growth	GDP	Annual growth rate of local real GDP (%)	Khan, Kumar (1997); Mohsin, Carmen (1990)
Independent variables			
Infrastructure investment	II	Infrastructure investment /GDP (%)	Mohsen et al. (2013); Nguyen, Trinh (2018) ; Pham (2023)
Private investment	PI	Private investment/GDP (%)	Nwakoby et al. (2016); Shabbir et al. (2020); Tung (2019)
Human capital	HC	Percentage of high school graduates enrolling in vocational schools/Total number of high school graduates (%)	Sulaiman et al. (2021); Nguyen, Nguyen (2021)
Labor	LA	Percentage of local labor force aged over 15/Total population (%)	Luat, Trung (2019); Nguyen, Nguyen (2021)
Recurrent expenses	RE	Recurrent expenses /GDP (%)	Nguyen, Nguyen (2021); Pham (2023)
Trade openness	TO	Import & Export/GDP (%)	Popoola et al. (2022); Tung (2019)
Credit to the private sector	CP	Credit to the private sector/GDP (%)	Kaputo (2012); Anwar et al. (2021)

3.2. Static Models

To investigate the short-run and long-run impacts of private investment on economic growth in Vietnam, the author utilizes the ARDL panel data research model. Following Pesaran and Shin's (1996) study, the ARDL (p, q) model is defined as follows (equation 1):

$$Y_{i,t} = \sum_{j=1}^{p} \varphi_{i,j} Y_{i,t-j} + \sum_{j=0}^{q} \mu_{i,j} X_{(i,t-j)} + \nu_i + \varepsilon_{i,t}. \quad (1)$$

Where: *i* represents the number of provinces in Vietnam; *t* is the time period (measured in years); *j* is the number of lags; $X_{i,t}$ denotes the vector of independent variables, and ν_i is the specific fixed effect. To consider the adjustment coefficient and the long run dynamics, equation (2) is reparametrized as follows:

$$\Delta Y_{i,t} = \alpha_i \left(Y_{(i,t-1)} - \rho_i X_{i,t} \right) + \sum_{j=1}^{p-1} \varphi'_{i,j} \Delta Y_{i,t-j} + \sum_{j=0}^{q-1} \mu'_{i,j} \Delta X_{i,t-j} + \nu_i + \varepsilon_{i,t}. \quad (2)$$

Where: α_i represents the speed of long-run adjustment; ρ_i denotes the long-run equilibrium coefficient; X represents the independent variables in the model; φ' and μ' are the coefficients of the short-run relationship between the dependent variable and corresponding lagged independent variables. The indices i and t correspondingly represent the country (region) and time. To estimate equation (2), three estimation methods are employed: the Mean Group (MG) estimator developed by Pesaran and Smith (1995), the Panel Mean Group (PMG) estimator developed by Pesaran et al. (1999), and the Dynamic Fixed Effects (DFE) estimator.

PMG Model. An essential characteristic of the PMG model is the consideration of short-run coefficients, including the intercept, the speed of adjustment to long-run equilibrium values, and country-specific heteroscedasticity. Meanwhile, the long-run coefficients are constrained by country-specific homogeneity. This allows studies to assess the long-run relationships between variables that are the same across different countries (regions). Additionally, the model takes into account country-specific short-run coefficients with rapid changes that impact the economy, such as financial crises, external shocks, and monetary policies [Blackburne, Frank, 2007].

Mean Group (MG) Model. The Mean Group (MG) estimation method was introduced by Pesaran and Smith (1995). This method allows for estimating separate regressions for each country (region) and computing the coefficients as the unweighted means of the estimated coefficients for each country (region). Therefore, there are no constraints involved. This method allows for changing and heterogeneous regression coefficients both in the short run and the long run. To achieve this, the model requires a sufficiently large time series and a large enough sample size of countries (regions) to ensure the consistency and effectiveness of the method [Favara, 2003].

Dynamic Fixed Effect (DFE) Model. The estimation of the DFE model is similar to that of the PMG model, and it restricts the coefficients of the cointegrating vectors to be the same across all panels in the long run. Additionally, the DFE model is also limited by the speed of adjustment coefficients and the equality or similarity of short-run coefficients. The DFE model has a cluster option to estimate the correlation between groups with standard errors [Blackburne, Frank, 2007]. However, Baltagi, Gri, and Xiong (2000) have pointed out that for small sample cases, there may be simultaneous equation bias due to the endogeneity between error terms and lagged dependent variables. The Hausman test helps assess the endogeneity level in the model.

Model Selection. The estimation method using the PMG model is more efficient than using the MG and DFE models because this study assumes homogeneous slopes in the long run. Fur-

thermore, to choose between the three models (PMG, MG, DFE), the Hausman test is employed to examine the differences. One limitation of using the Hausman test is the lack of significant differences between PMG and MG or between PMG and DFE. In the case where the test's null hypothesis is supported (not rejected), indicating no significant difference between PMG and MG, the PMG model is chosen based on its efficiency. In the case where the test's null hypothesis is rejected, indicating a significant difference between PMG and MG or between PMG and DFE, the appropriate model choice will be either MG or DFE. In the presence of outliers, the method of estimating the mean can have a large variance, and the use of the Hausman test may be less effective. The selected estimation result is the PMG if the is insignificant at the 5% level. Conversely, if it has a significant value, then the estimation result of the MG or DFE model would be more appropriate.

Dynamic Panel Threshold Model. Hansen (1999) proposed a static threshold model to address non-linear issues. However, this method still faces two unresolved issues: First, in numerous instances, economic variables are defined by their behavior in the past. Therefore, it is imperative to incorporate the lag term of the dependent variable into the regression equation, thereby transforming the static panel data model into a dynamic one. Second, the static threshold approach requires a wholly exogenous selection of the threshold variable, potentially leading to biased estimations. To address this issue, Seo & Shin (2016) proposed a dynamic threshold model based on an endogenous threshold variable, thereby resolving the limitations associated with static threshold models.

In this study, the authors employ a dynamic threshold model to assess the impact of private investment on economic growth. The dynamic threshold model is presented by the following equation (3):

$$(3) \qquad Y_{i,t} = \left(1, X_{i,t}^{'}\right)\theta_1 1\left\{q_{i,t} \le \varsigma\right\} + \left(1, X_{i,t}^{'}\right)\theta_2 1\left\{q_{i,t} > \varsigma\right\} + \varepsilon_{i,t}, i = 1,2....,N; t = 1,...,T.$$

Where: $Y_{i,t}$ is dependent variable; $X_{i,t}$ are time-varying explanatory independent variables which also consider the presence of a lagged dependent variable. $1\{.\}$ represents an indicator function, and $q_{i,t}$ stands for transition or threshold variable. ς stands as a threshold parameter. $\varepsilon_{i,t}$ is the error term. θ_1 and θ_2 are the slope parameters of various regimes.

Furthermore, this method can address the phenomenon of correlation between explanatory variables and individual effects. Therefore, the author has employed the first-difference transformation method as suggested by Arellano & Bond (1991), presented in the following equation (4).

$$(4) \qquad \Delta Y_{i,t} = \beta^{'}\Delta X_{i,t} + \phi^{'} X_{i,t} 1_{i,t}(\varsigma) + \Delta\varepsilon_{i,t}.$$

Following the first difference specifications, the unknown parameters $\gamma = \left(\beta^{'}, \phi^{'}, \varsigma^{'}\right)$ are estimated through the Generalized Method of Moments (GMM) model.

The dynamic threshold model allows the threshold variable to be an endogenous variable $E\left(q_{i,t}, \Delta\varepsilon_{i,t}\right) \neq 0$. According to the study by Seo and Shin (2016), the generalised method of moments (first difference) uses to estimate the unknown parameters. Thus, conditions of sample moment are following equation (5):

(5) $$\overline{g_n}(\nu) = \frac{1}{n}\sum_{1}^{n} g_i(\nu).$$

Where

(6) $$g_i(\nu) = \begin{pmatrix} Z_{i,t_0}\left(\Delta Yi, t_0 - \beta'\Delta X_{i,t_0} - \phi' X'_{i,t_0} 1_{i,t_0}(\varsigma)\right) \\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \\ Z_{i,t_0}\left(\Delta Y_{i,T} - \beta'\Delta X_{i,T} - \phi' X'_{i,T} 1_{i,T}(\varsigma)\right) \end{pmatrix}.$$

Assume that $E\left(g_i(\nu)\right) = 0$ for $\nu = \nu_0$, $g_i(\nu_0) = \left(Z'_{i,t_0}\Delta\varepsilon_{i,t_0}, \ldots\ldots, Z'_{i,t_T}\Delta\varepsilon_{i,t_T}\right)'$ and $\Omega = \left(g_i, g_i'\right)$. Let W_n represent the positive definite matrix that satisfies $W_n \xrightarrow{p} p\Omega^{-1}$, $\overline{J}_n(\nu) = \overline{g}_n(\nu)' W_n \overline{g}_n(\nu)$. It is possible to achieve the GMM estimator of υ by equation (7):

(7) $$\hat{\nu} = \arg\min \hat{J}_n(\nu).$$

Next, the two-stage GMM estimation formula is as follows: In the first stage, we obtain $\Delta\hat{\varepsilon}_{i,t}$ by minimising $\hat{J}_n(\nu)$ with W_n and second stage estimate υ by minimizing $\hat{J}_n(\nu)$ with: (equation 8).

(8) $$W_n = \left(\frac{1}{n}\sum_{i=1}^{n}\hat{g}_i\hat{g}_i' - \frac{1}{n^2}\sum_{i=1}^{n}\hat{g}_i\sum_{i=1}^{n}\hat{g}_i'\right)^{-1}.$$

Where

(9) $$g_i' = \left(Z'_{i,t_0}\Delta\hat{\varepsilon}_{i,t_0}, \ldots\ldots Z'_{i,t_T}\Delta\hat{\varepsilon}_{i,t_T}\right)'.$$

According to the model proposed by Seo and Shin (2016) and expressed by the following equation (10):

(10) $$\begin{aligned} Y_{i,t} = {} & \beta_0\left(1, PI'_{i,t}\right)\phi_1 1\left\{PI_{i,t} \le \varsigma\right\} + \left(1, PI'_{i,t}\right)\phi_2 1\left\{PI_{i,t} > \varsigma\right\} + \left(1, X'_{i,t}\right)\ni_1\left\{PI_{i,t} \le \varsigma\right\} + \\ & + \left(1, X'_{i,t}\right)\ni_2\left\{PI_{i,t} > \varsigma\right\} + \varepsilon_{i,t}, i = 1, \ldots\ldots, N; t = 1, \ldots\ldots T. \end{aligned}$$

Where: $Y_{i,t}$ is the dependent variable; $X_{i,t}$ represents the time-varying independent variables which also consider the lag term of $Y_{i,t}$. The function $1\{.\}$ denotes an indicator function. ϕ_1, ϕ_2, $\ni_1$, $\ni_2$ are the slope parameters. $\varepsilon_{i,t}$ is the error term. $PI_{i,t}$ (private investment) is the threshold variable. The instrumental variables include the lagged dependent variable, exogenous variables, and other covariates.

Panel Causality Test. In this study, the author employs the panel causality test with panel data introduced by Dumitrescu and Hurlin (2012). The equation for the Dumitrescu – Hurlin (D-H) causality test is as follows (equation 11):

$$Y_{i,t} = \alpha_i + \sum_{k=1}^{k} \phi_i^k Y_{i,t-k} + \sum_{k=1}^{k} \mu_i^k X_{i,t-k}. \quad (11)$$

Where: Y and X show observables; ϕ_i^k indicate the autoregressive parameters and μ_i^k show the regression coefficients. According to the null hypothesis, there is no causality in the panel. Alternative hypotheses show causality in the smallest cross-section element. We can test hypothesis based on an average Wald statistic as presented in the following equation (equation 12):

$$W_{n,t}^{Hnc} = \frac{1}{N} \sum_{i}^{N} W_{i,t}. \quad (12)$$

Hypothesis is defined as: the average statistic $W_{n,t}^{Hnc}$ associated with the null Homogeneous Non Causality (Hnc). Where $W_{i,t}$ denotes the individual Wald statistics for the ith cross-section unit corresponding to the individual test $H_0 : \mu_i = 0$.

3.3. Data

The research data was collected in panel data format, covering the period from 2000 to 2022 for all 63 provinces and municipalities in Vietnam. The data was obtained from the General Statistics Office of Vietnam. The GDP figures represent current prices. To mitigate the impact of inflation, variables such as infrastructure investment, private investment, regular expenditures, trade openness, and private sector financials are expressed as percentages (%). The labor variable is calculated as the ratio of the local workforce over 15 years old to the total local population. Human capital is measured as the ratio of graduates enrolling in vocational schools to the total number of graduates in the locality.

4. Results and Discussion

4.1. Private Investment in Vietnam

Entering the 21st century, private investment (domestic and foreign) in Vietnam has increasingly become a crucial resource for economic development. According to data from the General Statistics Office of Vietnam, private investment accounted for over 25% of the country's GDP during the period from 2000 to 2017, and the trend continued to increase and stabilize from 2017 to 2022 (see Fig. 1). To achieve these results, various policies encouraging private investment have been implemented and proven effective in practice, such as.

The 5th Central Committee of the 9th term issued Resolution No. 14-NQ/TW on March 18, 2002, "Continuing to innovate mechanisms, policies, incentives, and conditions for private

economic development," which included several important measures to promote private economic and investment development. Furthermore, the 5th Central Committee of the 12th term issued Resolution No. 10-NQ/TW on June 3, 2017, "Developing the private economy as a vital driving force of the socialist-oriented market economy." These resolutions serve as the basis for enhancing incentives and support for the development of private investment projects in Vietnam.

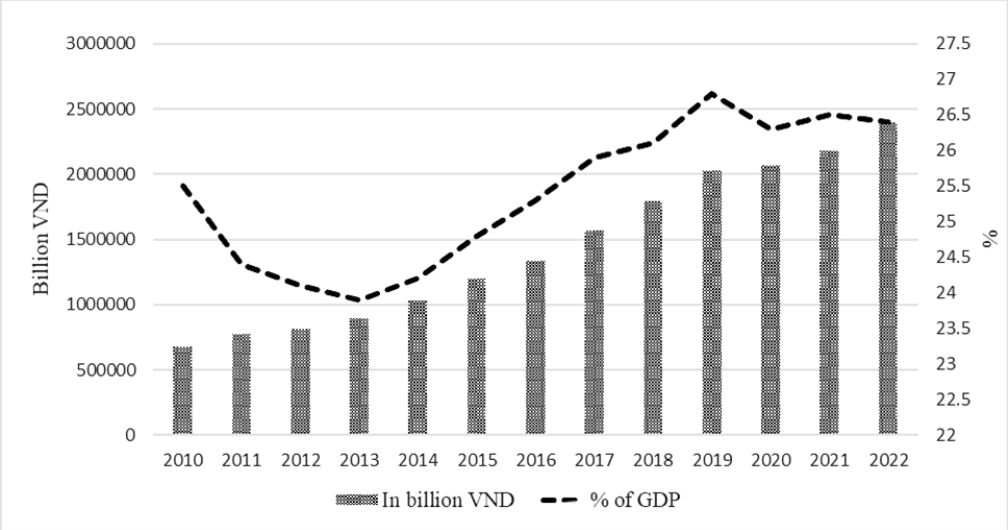

Fig. 1. Private investment in Vietnam, 2010–2022

Source: General Statistics Office of Vietnam (2022).

The mechanisms and policies for the development of the private economy have been continuously improved through the issuance of a system of laws, such as the Law on Private Enterprises and the Law on Companies (1990), the Enterprise Law (1999, 2004, 2014, 2020), the Investment Law (2004, 2014, 2020), and the Competition Law. Moreover, the legal framework has been increasingly perfected, without differentiation based on ownership form, and has become more aligned with international standards. Property rights and the freedom to conduct business for individuals and organizations are institutionalized to protect investors. Private investors enjoy freedom in conducting business activities and are treated equally under the law compared to state-owned enterprises. Vietnam has increasingly created favorable conditions for private investment development by improving tax policies, technology, and administrative procedures.

The Fig. 2 shows, the processing and manufacturing industry has consistently held the highest proportion of private investment in Vietnam in recent years. This sector's contribution typically exceeds 20% of the country's GDP and represents over 70% of the total import-export turnover during the period from 2018 to 2022. It encompasses various products such as crude oil, coal, and gemstones. Particularly noteworthy are high-value economic items like computers, electronic products, and components, which have seen a steady increase in export value, reaching $45.75 billion in 2022. These achievements are a result of improvements in the investment environment and intensified trade promotion, attracting major global technology companies such

as Samsung, Apple, and Google to invest in Vietnam. Furthermore, there is an expanding wave of investment relocation, creating opportunities for Vietnam to attract an increasing number of large international investors.

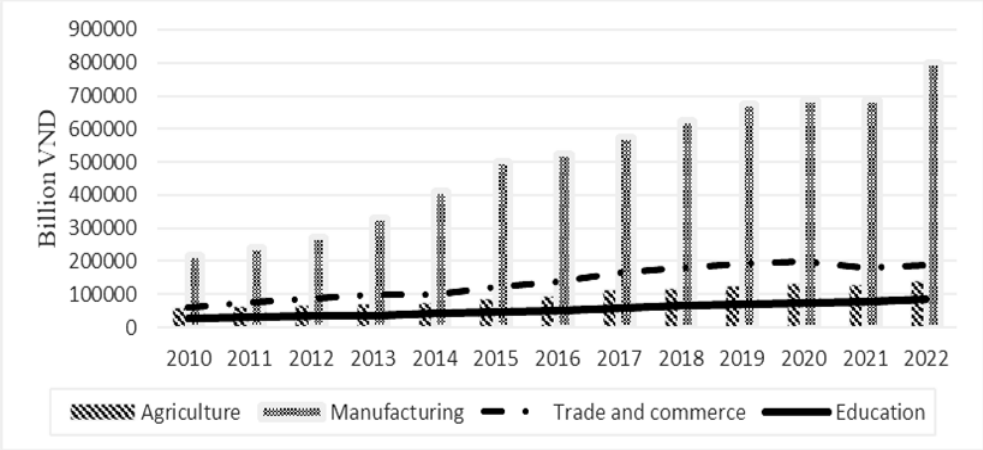

Fig. 2. Private investment in some industries

Source: General Statistics Office of Vietnam (2022).

Vietnam is increasingly demonstrating the diversification of supply sources for multinational corporations by diversifying investment locations and repositioning production facilities in the aftermath of the Covid-19 pandemic. The second-ranking sector in terms of investment is trade and commerce, and its positive outcomes can be attributed to Vietnam's deepening integration, the expansion of transportation and logistics systems, and close connectivity with the international transportation network. Currently, Vietnam is a participant in 15 free trade agreements (FTA), among which the Vietnam-European Union Free Trade Agreement (EVFTA) has made significant contributions to the country's economic development since its implementation on August 1, 2020. Despite the economic difficulties faced due to the impact of the Covid-19 pandemic from 2021 to 2022, the EVFTA has helped Vietnam's export turnover to the EU reach $45.8 billion in 2021 and $46.7 billion in 2022. These notable achievements reflect the substantial efforts of the Vietnamese government in promoting private investment and the development of the private sector's economy. Therefore, the private sector has made significant contributions to Vietnam's economic growth in recent years. These contributions include:

The private economy has experienced robust growth. On average, during the period from 2010 to 2021, over 100,000 new enterprises were established annually. Particularly, in the period from 2018 to 2022, over 130,000 new enterprises were established each year. Correspondingly, the registered capital reached over 500 trillion VND annually. In the period from 2018 to 2022, the annual registered capital exceeded 150 trillion VND. Additionally, the private economic sector plays a significant role not only in the economy but also in society, particularly in terms of labor and employment. Although the proportion of the labor force aged 15 and above in the private economic sector decreased from 86.3% in 2010 to 82.6% in 2021, this sector still provides employment for over 90% of the labor force in the national economy. The average an-

nual growth rate of the labor force in the private economic sector during the period from 2010 to 2022 exceeded 3.5%, with the private enterprise sector reaching nearly 5.4%. Consequently, the private sector's contribution to the economy consistently accounts for a high proportion, consistently over 70% of the national GDP during the period from 2010 to 2022. The private economy's contribution to the state budget has also increased significantly, from 11.7% in 2010 to 18.5% in 2022. These are remarkable results of policy improvements and investment environment enhancements aimed at encouraging domestic and foreign private investors to seek investment opportunities in Vietnam.

4.2. Results from the Research Model

Unit Root Test. In this study, the author employs three-unit root tests, namely: (1) Im, Pesaran, and Shin (2003), (2) Breitung (2001), and (3) Levin, Lin, Chu (2002), to determine the stationarity of the dataset. However, for the application of the ARDL model, testing the stationarity of the data is not crucial as long as the research data are stationary at levels 0 and 1 [Pesaran, Smith, 1995; Pesaran, 1997; Pesaran et al., 1999]. Therefore, we will conduct tests to ensure that no series in the data are stationary beyond order 1.

Table 2.

Unit root test

	LLC	Breitung	IPS	ADF- Fisher	PP-Fisher
			The level		
GDP	–18.831***	–3.834***	–17.829***	513.491***	593.220***
II	–18.723***	–7.693***	–14.136***	551.727***	606.677***
PI	–6.743***	2.150	–7.691***	318.309***	330.499***
HC	–21.145***	–12.3293***	–21.122***	606.093***	757.309***
LA	–23.7331***	–13.215***	–20.292***	600.920***	771.121***
RE	–22.237***	12.483***	–20.426***	594.934***	942.837***
TO	–16.774***	–7.243***	–16.676***	492.282***	610.353***
CP	–24.829***	–12.495***	–23.531***	671.409***	1118.96***
			The First Difference		
GDP	21.424***	–12.243***	–30.014***	860.120***	40008.33***
II	–29.978***	–12.804***	–33.658***	963.536***	4637.97***
PI	–16.840***	–12.595***	–20.170***	611.550***	3361.46***
HC	–24.629***	–14.050***	–31.445***	924.141***	7855.95***
LA	–27.622***	–10.379***	–33.932***	986.852***	8205.83***
RE	–25.168***	–12.890***	–33.607***	978.585***	8156.44***
TO	–26.397***	–9.515***	–32.107***	917.839***	5117.21***
CP	–22.103***	–11.243***	–32.377***	939.494***	9322.73***

Note: ***, **, and * denote a signi*f*icance of 1%, 5%, and 10%, respectively.

The results of the unit root tests are presented in Table 2 and were selected based on the Schwarz information criterion (SC). At a significance level of 5%, variable PI according to the Breitung test is not stationary at level I(0) but stationary at the first difference level I(1). On the other hand, the remaining variables are all stationary at level I(0). Therefore, following Pesaran & Shin (1996), when the variables in the study do not have the same level of stationarity at I(0) or I(1), applying the ARDL model is appropriate.

Correlation test among variables in the model. Before proceeding with the next steps, the author examines the correlation among the variables through a correlation matrix.

Table 3.

The Correlation between Variables in the Research Model

	GDP	II	PI	HC	LA	RE	TO	CP
GDP	1.0000							
II	0.0956	1.0000						
PI	0.0600	–0.0414	1.0000					
HC	0.0337	0.0381	0.0072	1.0000				
LA	0.0893	0.0366	0.0056	0.00653	1.0000			
RE	0.3468	0.0223	0.0430	0.0324	0.0484	1.0000		
TO	–0.0278	0.0240	–0.0552	–0.0744	0.0078	–0.0665	1.0000	
CP	0.1123	–0.0117	0.020	–0.0079	0.2599	0.0477	0.0249	1.0000

The results of the correlation matrix are shown in Table 3. From the data, it can be observed that the correlation among the variables in the study with regard to private investment is moderate. The correlation coefficients between variable pairs do not exceed the standard threshold of 0.5 (as proposed by [Gujarati, 2003]). Therefore, there is no issue of multicollinearity in the research model. This condition allows us to proceed with the next steps.

The selection of the optimal lag order. Another important issue in the ARDL panel data model is determining the optimal lag order based on certain criteria of information consistency.

Table 4.

The selection of the optimal lag order

Lag	LogL	LR	FPE	AIC	SC	HQ
0	–35025.38	NA	1.95e+14	55.60855	55.64117	55.62081
1	–33646.73	2737.604	2.42e+13	53.52180	53.81545*	53.63215
2	–33442.64	402.6858	1.94e+13	53.29942	53.85410	53.50786*
3	–33337.21	206.6676*	1.82e+13*	53.23367*	54.04936	53.54020

Note: * indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error, AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan – Quinn information criterion.

Based on the results of determining the optimal lag order for the ARDL panel data model, the author uses the SC criterion (Schwarz information criterion). Therefore, the selected optimal lag order for variables such as economic growth, infrastructure investment, private investment, human capital, labor, recurrent expenditure, trade openness, and private sector finance is (1,1,1,1,1,1,1,1) (Table 4).

Cointegration test. To examine the existence of long-term relationships among the independent and dependent variables, the study employs the Kao (2000) cointegration test for panel data.

Table 5 presents the results of the cointegration test, indicating that all statistical values are below 5%. Thus, there exists a cointegration relationship, providing the basis for estimating the three methods: PMG, MG, and DFE.

Table 5.

Cointegration test

Test stats	Statistic	p-value
Modified Dickey-Fuller *t*	–7.3512	0.0000
Dickey-Fuller *t*	–12.1210	0.0000
Augmented Dickey-Fuller *t*	–3.3497	0.0004
Unadjusted modified Dickey-Fuller *t*	–36.8707	0.0000
Unadjusted Dickey-Fuller *t*	–22.9965	0.0000

Results of PMG, MG, and DFE. Table 6 presents the estimation results obtained using the PMG, MG, and DFE methods, along with the Hausman test to measure the efficiency and consistency of the model. The Hausman test was used to justify the long-term heterogeneity restrictions among provinces in Vietnam. The test results indicate that PMG is a more efficient estimation tool compared to MG and DFE.

The result shows that private investment has an impact on Vietnam's economic growth in the short and long term. Interestingly, in the short term, private investment (β = -0.0448) has an opposite effect on economic growth. This said that in the short term, private investment is ineffective because private investment in Vietnam is mainly small and medium-sized enterprises, business owners have little experience in operating enterprises, in addition to the ever-fluctuating market and many costs incurred. But in the long run, the disadvantages are gradually overcome, these businesses are sharp and willing to make changes so that they can adapt to the market so that they have the same impact as economic growth (β = 0.0505). Infrastructure investment both in the short term (β = 0.1537) and in the long term (β = 0.1655) impacts the same way as economic growth. This is a huge loss of the Vietnamese government in improving the investment environment such as: building many highways, connecting industrial centers together and creating a network of close links, convenient for travel in import and export of goods. Power systems, communications, ICO industrial parks also regularly invest, renovate and repair, which helps domestic and foreign investors reassure investment with the guarantee of the legal system.

A rather special point is that private sector finance in the short term (β = –0.0431) has an opposite effect on economic growth but in the long term the opposite (β = 0.0828). This is explained also in part due to ineffective short-term private investment, short-term corporate loans that have not yet had time to repay the debt leading to overdue debt and bad debt. With

long-term loans, after the private enterprise has been operating effectively should be ready to repay the bank when it is due and continue to implement new loans. Credit has always been a solid platform for private investment, so the Government of Vietnam always strictly manages this field to control the economy and actively urges foreign banks to invest in Vietnam, support domestic capital. A very important point in the results of the study is that the short-term labor variable (β = –0.2029) has an opposite effect and in the long-term (β = 0.2475) has the same effect. This reflects the fact that the integration into the working environment of Vietnamese workers is often difficult due to low level, not high job consciousness, especially many workers after recruitment have to retrain. After a while, workers have gradually promoted such strengths as creativity in work, hard work, productivity increases, contributing to economic growth.

Table 6.

MG, PMG and DFE estimators: empirical results

Dependent Variable	Model					
	PMG		MG		DFE	
	Coef	Std. Err	Coef	Std. Err	Coef	Std. Err
Long-Run Coefficients						
II	0.1655***	0.0386	0.0982	0.2783	0.1012**	0.0475
PI	0.0505***	0.0126	0.1618**	0.0709	0.0667***	0.0188
HC	0.0199***	0.0050	0.0008	0.0264	0.0112	0.0070
LA	0.2475***	0.0161	0.2747**	0.1369	0.2456***	0.0218
RE	0.1170***	0.0282	0.2521	0.1639	0.1750***	0.0363
TO	0.0057***	0.0018	0.0007	0.0084	0.0004	0.0023
CP	0.0828***	0.0105	0.0934**	0.0376	0.1021***	0.0140
Short-Run Coefficients						
Error Correction	–0.7651***	0.0379	–0.9678***	0.0448	–0.8421***	0.0247
ΔII	0.1537*	0.0865	0.1427	0.1440	0.0531	0.0343
ΔPI	–0.0448**	0.0201	–0.1069***	0.0380	–0.0460***	0.0154
ΔHC	–0.0054	0.0035	–0.0102	0.0087	–0.0031	0.0043
ΔLA	–0.2029***	0.0339	–0.1126	0.1186	–0.1881***	0.0127
ΔRE	0.0899***	0.0233	0.0013	0.0490	0.0756***	0.0230
ΔTO	0.0042	0.0027	0.0053	0.0049	0.0001	0.0016
ΔCP	–0.0431***	0.0077	–0.0650***	0.0183	–0.0678***	0.0083
Const	–15.592***	0.8129	–20.125**	8.0490	–18.958***	1.5473

Hausman Test: PMG is more efficient estimation than MG under null hypothesis. Chi2(7)= 2.95 (0.854)
Hausman Test : PMG is more efficient estimation than DFE under null hypothesis Chi 2(7) = 2.75 (0.907)

Note: ***, **, and * denote a signi*f*icance of 1%, 5%, and 10%, respectively.

It is precisely for these reasons that the long-term human capital variable (β = 0.0199) positively impacts economic growth. A surprising point is that regular short-term variables (β = 0.0899) and long-term variables (β = 0.1170) have the same impact as economic growth. Because, Vietnam has introduced a lot of wage reforms for workers in the government apparatus, but control work very closely, limit embezzlement, making it difficult for people and businesses. In addition, in government agencies, there are communication channels for people and businesses that reflect difficulties and difficulties to the authorities. At the agencies always encourage creativity, reform administrative procedures to reduce time and costs for society.

In recent years, the Vietnamese economy has experienced remarkable growth, particularly during the Covid pandemic. The purpose of this article is to provide a comprehensive perspective on the role of private investment in driving economic growth in Vietnam. By examining the subject holistically, the study aims to elucidate the impact of private investment on economic growth.

The proportion of private investment has been increasing in relation to GDP, which is the result of the government's reform efforts in Vietnam. The government has issued various regulations to address difficulties in private investment and streamline administrative procedures, particularly by establishing a list of investment-promoted sectors. These measures have facilitated the expansion of investment scale [Tung, 2019]. Moreover, there have been changes in the structure of private investment, with a growing emphasis on capital-intensive and technology-oriented sectors, reducing reliance on natural conditions and taking advantage of the availability of cheap labor [Anh et al., 2021].

The study has identified both long-term and short-term relationships between private investment and economic growth in Vietnam, as well as their interactions with other economic factors such as infrastructure investment, human capital, labor, recurrent expenditure, trade openness, and private sector finance. Based on the estimation results of the model, the following findings are derived:

In the short term, private investment has a negative impact on economic growth due to inefficient investment, underutilized equipment, market instability, and the inadequate response of new market products to customer preferences. The results of this study partially support the studies of Kumo (2006), Isaac & Samwel (2012) Anwar et al. (2021), who have not clearly identified the short-term impact of private investment and inefficiencies in the beginning when making an investment. Similarly, credit loans also have a negative short-term impact on economic growth. However, over time, private enterprises have become more efficient in their investments and have increasingly contributed to economic development, this is also shown in the studies of Attefah & Enning (2016), Popoola et al. (2022), Ade (2016), Omojolaibi et al. (2016). Recurrent expenditure has a positive impact on economic growth by improving the investment environment and reducing time and costs for private investment procedures, which has an immediate effect in the short term [Dang et al., 2020]. Infrastructure investment has a positive short-term and long-term impact on economic growth, indicating that infrastructure projects have an immediate effect on the economy, stimulating economic components, especially private sector activity even in economically disadvantaged regions [Luat, Trung, 2019]. Additionally, in the short term, an increase in the labor force may create pressure on the economy, but in the long term, it becomes an important input for businesses to select high-skilled labor at a low cost [Canh, Phong, 2018; Luat, Trung, 2019; Tung, 2019; Dang et al., 2020; Anh et al., 2021; An, 2023].

Dynamic panel threshold results. To study the non-linear impact of private investment on economic growth, the authors in this study employ the dynamic panel threshold model proposed by Seo & Shin (2016).

Before estimating the dynamic panel threshold model, we conducted test for the threshold and linearity effect. As suggested by Seo & Shin (2016), the robust bootstrap approach is employed to assess these issues. For the linearity test, through the bootstrap p-value in Table 7, it is observed that there is no linear relationship between private investment and economic growth. Furthermore, we can reject the hypothesis of no threshold effect at the 1% significance level, with the threshold value is 32.2754.

Table 7.

The results of the private investment ratio threshold and its impact on economic growth

Dynamic panel threshold	Lower regime	Higher regime
Lag of GDP	–0.2718**	0.3368
II	1.7776***	–0.9526**
HC	–0.1353	–0.0275
LA	–0.1632	0.2184
RE	–0.3732	1.4378***
TO	–0.0263*	0.0351***
CP	–0.0568	0.1119
PI	2.6347***	–1.8888**
Constant		–6.8021
Threshold	32.2754***	
Bootstrap linearity test	0	

Note: ***p < 0.01, **p < 0.05, and * p < 0.1. The stata command "xthenreg" is used to estimate the results. The value of grid point, trim rate and bootstrapping are set as 100, 0.3, and 100, respectively.

Results from the table 7 indicate that the coefficient of private investment is 2.6347 below the threshold which is at the 1% significance level. This mean that one standard deviation increase in private investment will lead to increase 2.6347 standard deviations in economic growth. However, above the threshold point, the coefficient of private investment is –1.8888, indicating that an increase in private investment by one standard deviation results in a decrease of 1.8888 standard deviations in economic growth. Through this, it can be inferred that the ratio of private investment/GDP should not exceed 32.2754%. Crossing this limit may lead to phenomena such as high inflation, an overheated economy, and exceeding production limits [Csanádi, 2015]. This robust evidence provides a basis for the Vietnamese Government to formulate economic policies that align with the country's situation, ensuring economic development without surpassing limits and maintaining equilibrium in the market.

Test the causal relationship between private investment and other variables. To examine the relationship between private investment and infrastructure investment, human capital, labor,

recurrent expenditure, trade openness, and private sector finance, the Dumitrescu-Hurlin causality test was employed by the author. The results in Table 8 indicate the presence of a causal relationship between private investment and the aforementioned variables.

Table 8.

Results of Dumitrescu & Hurlin causality test

Null hypothesis	W-bar	Z-bar	p-value
II does not Granger-cause PI	3.6327	6.4794	0.0000
HC does not Granger-cause PI	3.0841	4.3025	0.0000
LA does not Granger-cause PI	3.1646	4.620	0.0000
RE does not Granger-cause PI	2.5931	2.3537	0.0186
TO does not Granger-cause PI	2.8489	3.3692	0.0008
CP does not Granger-cause PI	2.8543	3.3904	0.0007

Note: The Dumitrescu Hurlin test is estimated with 2 lag and Zbar-statistics.

Private investment plays a significant role in Vietnam's economic growth. Therefore, it is necessary to implement measures to promote private investment activities. The Vietnamese Government has been utilizing state budget funds to develop infrastructure such as electricity systems, roads, airports, bridges, and ports, particularly in remote and disadvantaged areas. This condition facilitates the development of the private sector economy and reduces income disparities among regions nationwide. Additionally, the government encourages graduates to participate in vocational training institutions by providing support for tuition fees, investing in the construction of vocational schools, and enhancing the qualifications of teachers. Furthermore, private enterprises increasingly invest in scientific and technical fields, requiring a highly skilled workforce. These enterprises are willing to invest in areas with a high level of education. Admi-nistrative procedures often pose challenges for private enterprises, so the government allocates resources to regularly reform administrative procedures, reducing negative impacts within the government system that affect private investment attraction, such as corruption, legal circumvention, and lax controls. Moreover, the Vietnamese government calls on domestic and foreign banks to allocate more funds to the private sector to reduce loan interest rates and stabilize the monetary market, particularly exchange rates. Vietnam has also been actively engaged in international trade negotiations to expand trade. After 15 years of WTO membership (2007–2022), Vietnam has signed 15 Free Trade Agreements (FTAs), with negotiations underway for an additional 4 agreements (Center for WTO and Integration, 2023). To expand exports, the government encou-rages high-value economic goods for export and reduces the proportion of raw and unprocessed exports. This presents an opportunity for private enterprises to export their products to international markets, explore new customers, and develop products that better meet demand and preferences.

5. Conclusions

This study evaluates the contributions of private investment to Vietnam's economy. To clarify the hypothesis regarding the relationship between private investment and economic growth,

in conjunction with other factors such as infrastructure, human capital, labor, recurrent expenditure, trade openness, and public sector finance, the study uses data from 63 provinces in Vietnam from 2000 to 2022 and the study used regression results from PMG model, which was selected from 3 models: PMG, MG, DFE as the estimation tool. Additionally, the study examines the causal relationship between infrastructure investment, human capital, labor, recurrent expenditure, trade openness, and private sector finance with private investment. The following conclusions are drawn.

In the long term, infrastructure investment, private investment, human capital, labor, recurrent expenditure, trade openness, and public sector finance have a positive impact on economic growth. In contrast, in the short term, private investment, labor, recurrent expenditure, and private sector finance have a negative impact on economic growth, while infrastructure investment has a positive impact on economic growth. Moreover, all variables in the research model have a causal relationship with private investment, providing a basis for proposing measures to attract private investment to Vietnam in the coming years.

Enhancing Infrastructure Investment: Infrastructure has always been a concern for private investors before making investment decisions. Currently, infrastructure investment still faces several challenges that need to be addressed, such as insufficient industrial zones, delayed projects, and failure to deliver on commitments to private enterprises. The main reason behind these phenomena is the slow land clearance process. Local authorities have encountered difficulties in land clearance due to low compensation prices compared to market prices, resulting in people not handing over land for infrastructure construction, such as roads and industrial zones. To overcome these obstacles, the urgent task is to amend the Land Law and land compensation price framework by collecting market real estate prices six months prior to compensation for individuals. This collection process should be transparent to avoid group interests and personal benefits.

Expanding Credit for Private Sector Investment: Private enterprises currently face significant challenges in accessing low-interest bank credit. Due to high capital demand, banks have mobilized funds at high interest rates, leading to high-interest lending. To lower interest rates and facilitate private enterprises' access to affordable capital, local authorities need to promptly implement measures such as setting interest rate ceilings for lending and mobilization rates of banks. Any bank that violates these regulations should be strictly penalized, and state budget support should be used to assist enterprise capital investment in priority areas. Additionally, the government should act as a bridge to help banks mobilize low-interest funds from non-governmental organizations and non-profit organizations, which would enable banks to lower lending rates.

Increasing Regular Expenditure on Administrative Procedure Reform: Currently, private enterprises in Vietnam encounter numerous difficulties in resolving administrative procedures. According to VCCI (2022), 35% of enterprises surveyed reported hassles in taxation and fees, 29% in land clearance, 20% in social insurance, and 13% in construction. Regarding taxation and fees, businesses face challenges in tax settlement and subsequent tax exemption, reduction, and refund procedures. Therefore, it is necessary to implement a coherent set of administrative procedure reform solutions, especially in the tax and fee sector. Urgent measures include enhancing information technology in tax management, expanding services such as electronic tax declaration, electronic tax payment, and electronic tax invoices. Furthermore, it is crucial to promote e-government, digital transformation, and provide online public services and online payments to reduce time and costs for businesses.

Enhancing labor quality and human capital through training. A major drawback for Vietnam is that graduates from vocational training schools often fail to meet the demands of businesses. The primary reasons behind this situation are the mismatch between training content and the practical needs of enterprises, outdated workshop facilities, and outdated knowledge. Consequently, businesses are compelled to retrain their employees upon recruitment. Therefore, the initial solution is to revamp the training content based on the needs of businesses and establish partnerships between training centers and enterprises. Additionally, it is necessary to establish links between domestic training centers and international training centers to adequately meet the demand for high-quality labor in foreign businesses investing in Vietnam.

Expanding trade openness through strengthened free trade agreement signings. In recent years, participating in free trade agreements has significantly contributed to private enterprises expanding their markets, yet it still falls short of meeting development needs. Therefore, Vietnam continues to negotiate and sign additional free trade agreements. To achieve this, several tasks need to be accomplished, including improving development mechanisms, investment responsiveness, and alignment with the integration context. It is crucial to refine trade policies to align with Vietnam's conditions and avoid conflicts with existing or future free trade agreements. Proactive adjustments to the export-import market structure and the domestic market based on Vietnam's import-export orientation and strategy are also necessary in the coming period.

Although the significant role of private investment in Vietnam's economic growth has been demonstrated in recent years, there are still certain limitations in research. These limitations include the failure to consider changes in the structure of private investment, the effectiveness of private investment, and the contribution of policies encouraging private investment. For future research, the author strongly desires comprehensive evaluations of private investment from both a macro perspective and a micro perspective regarding Vietnam's economic growth.

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Раскрывая секреты: частные инвестиции и значительная эволюция экономики Вьетнама

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В последние годы экономика Вьетнама достигла значительных успехов, причем частные инвестиции сыграли решающую роль в этом вкладе. По мере того, как страна вступила в XXI век, значимость частного сектора в экономическом развитии Вьетнама становилась все более очевидной благодаря росту уровня инвестиций, росту занятости, увеличению взносов в государственный бюджет и общему росту ВВП. Целью данной статьи является предоставление надежных доказательств краткосрочного и долгосрочного вклада частных инвестиций в значительный экономический рост Вьетнама с 2000 по 2022 год. В исследовании собраны данные из всех 63 провинций и муниципалитетов Вьетнама за период с 2000 по 2022 годы. На основе собранных данных исследование использовало результаты модели средней группы панели (PMG), выбранной из трех моделей (PMG, MG, DFE) с помощью тестирования Хаусмана. С помощью динамической пороговой модели панели исследование точно определило максимальное пороговое отношение частных инвестиций к ВВП на уровне 32,2754%. Превышение этого отношения привело бы к ситуации высокой инфляции, перегрева экономики и превышения пределов производства. Наконец, причинно-следственный вывод из данных панели использовался для анализа связи между частными инвестициями и другими переменными в модели. Исследование расширило перспективу влияния частных инвестиций на экономический рост. В начальный период частная инвестиционная деятельность столкнулась с трудностями, что привело к неэффективным инвестициям и отрицательному влиянию на экономический рост. Однако, благодаря гибкости и хорошей адаптации к рынку, а также эффективному использованию факторов ввода, частные инвестиции со временем внесли положительный вклад в экономическое развитие. Кроме того, посредством проверки причинно-следственных связей исследование продемонстрировало причинно-следственную связь между частными инвестициями и инвестициями в инфраструктуру, человеческим капиталом, занятостью, государственными расходами и открытостью торговли. Наконец, исследование предложило политические последствия для правительства Вьетнама для повышения эффективности частных инвестиций и дальнейшего содействия экономическому росту.

***Ключевые слова*:** экономический рост; частные инвестиции; модель PMG, MG и DFE; теория экономического роста; динамическая панельная пороговая модель.

JEL Classification: B30, B40, M20, G10, O10, O02.