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# The Impact of Investments on Economic Growth: Evidence from Vietnam

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## Abstract

The impact of investment on economic growth has been studied by many authors around the world with different times and research methods. Therefore, there are conflicting opinions about the impact of investment on economic growth. To contribute empirical evidence, the objective of this study is to assess the impact of investment sources such as public investment, private investment, and foreign direct investment on economic growth in Vietnam in the short-run and long-run. The data used for the study is panel data from 63 Vietnamese provinces between 2000 and 2020. The inquiry method is PMG (Pool Mean Group) regression for economic growth (GDP) after testing the stationarity of the variables that meet the PMG regression condition as suggested by Pesaran et al. (1996) and Hamuda et al. (2013). The results show that: factors such as labor and trade openness have a negative impact on economic growth in the short term. In the long run, public investment has a negative effect on economic growth, while domestic private investment, foreign direct investment, trade openness, and labor have positive effects on economic growth. Labour contributes the most, followed by trade openness, foreign direct investment, and domestic private investment. Finally, the study provides policy implications for the Government of Vietnam.

**Keywords:** FDI, Economic Growth, Investment, Trade Openness

**JEL Classification Code:** C33, D24, D73, H53, H10

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## 1. Introduction

The theory of investment and economic growth has been researched by many authors around the world using different times and models. The results of the studies showed that there were conflicting statements about the

impact of investment on economic growth. According to studies of Aschauer authors (1989a, 1989b), Hadjimichael and Ghura (1995), Jwan and James (2014), Blomstrom and Persson (1983), and Tiwari and Mutascu (2011), public investment, private investment, and foreign direct investment (FDI) have a positive impact on economic growth. Meanwhile, the studies of Devarajan et al (1996), Karikari (1992), and Carkovic and Levine (2002) did not find a relationship or found an inverse relationship between investment and economic growth.

In Vietnam, the study of this issue is also of interest to many researchers. However, no researchers have developed a research model that includes three types of investment sources: public investment, domestic private investment, and foreign direct investment, combined with other factors such as labor force and trade openness to consider the impact of each factor on economic growth in Vietnam. Therefore, the main research objective of the paper is to assess the impact of the factors on economic growth in Vietnam in the short and long term, contributing to verify the theoretical basis of investment and economic growth.

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## 2. Literature Review

### 2.1. Theoretical Foundation

The theory of the investment multiplier model was presented in “General Theory of Employment, Interest, and Monetary” by Keynes in 1936. He said that to increase national income (national output), investments must be increased. Keynes (1936) also added, investment is considered in terms of total supply, which meant whenever output changes, it would change the investment. Investment multiplier shows a relationship between initial increment in investment and the resulting increment in national income. It is a measure of change in national income caused by a change in investment. Thus, it explains the relationship between the increase in investment and the resultant increase in income.

Based on Keynes’s thought, in the 1940s, two economists - Harrod in England and Domar - in the United States, came up with a model, known as the Harrod–Domar growth model, which explained the relationship between economic growth and unemployment in developed countries (Harrod, 1939; Domar, 1946). This model has been also widely used in developing countries to examine the relationship between the growth of the economy and the demand for investment capital.

Due to the disadvantages of the Harrod-Domar model, based on neoclassical theory, Solow (1956) built a growth model with new perspectives, called the Solow economic growth model. The theory of the Harrod-Domar model only considered the effect of productive capital (through savings and investment) on economic growth. With the Solow model, labor and technology elements were added to the growth process. He also affirmed that technical progress being a decisive factor to the growth, both in the short term and in the long term. This model shows how population, technological progress, and savings had an impact on the level of production and the growth of an economy over the period of time.

### 2.2. Previous Empirical Studies

Economists around the world have long debated the impact of investment on economic growth. However, it was not until the late 80s of the 20th century, with the rise of the economy, abundant data on the economy, political and social indicators of nations and territories, many empirical kinds of research on the impact of investment on new economic growth have been conducted systematically.

With the desire to obtain specific evidence on the foundation of collected secondary data, the quantitative research method was used by the author in this study. Some typical relevant related studies are as follows:

Researching 7 countries - in Group of Seven (advanced economic countries) - from 1967 to 1985 on the effects of investment towards the economic growth, Aschauer (1989a) studied through series of time series data with latency for both public investment and private investment variables. The results showed that public investment was a key factor that positively affects labor productivity of the economy as well as a private investment also had a positive impact on the growth. However, public spending had the opposite effect on growth. More importantly, the study also found that public investment had a stimulating effect on economic growth via providing infrastructure to make the economic activity of the private investment sector better.

Aschauer (1989b) considered the relationship between aggregate productivity and stock and flow government-spending variables. The empirical results indicated that (i) the nonmilitary public capital stock is dramatically more important in determining productivity than is either the flow of nonmilitary or military spending, (ii) military capital bears little relation to productivity, and (iii) a ‘core’ infrastructure of streets, highways, airports, mass transit, sewers, water systems, etc. has most explanatory power for productivity. The paper also suggested an important role for the net public capital stock in the ‘productivity slowdown’ of the last fifteen years.

In assessing the effectiveness of investment and public expenditure with economic growth rates in 98 countries between 1960 and 1985, Barro (1991) established a research model of control variables. The results indicated that there is no evidence to determine whether public investment had an impact on economic growth or not, but that government spending had a negative effect on economic growth.

In a study on the impact of public policy, private investment, and savings in the private sector on economic growth, including a sample of 41 sub-Saharan African countries from 1981 to 1992, Hadjimichael and Ghura (1995) assessed empirically the role of public policies in stimulating private savings and investment in sub-Saharan African countries, based on data for the period 1986–92. The main findings of the analysis were as follows: (i) policies effective in stimulating private savings and investment include those that keep the rate of inflation low, reduce macroeconomic uncertainty, promote financial deepening, and lower the external debt burden; (ii) measures that promote structural reforms and reduce the budget deficit (without lowering government investment) help to raise private investment; and (iii) declines in government savings are only partially offset by increases in private savings.

Devarajan et al. (1996) focused on the link between the level of public expenditure and growth and derived conditions under which a change in the composition of expenditure leads to a higher steady-state growth rate of the economy. The conditions depended not just on the

physical productivity of the different components of public expenditure but also on the initial shares. Using data from 43 developing countries over 20 years they showed that an increase in the share of current expenditure has a positive and statistically significant growth effect. By contrast, the relationship between the capital component of public expenditure and per-capita growth is negative. Thus, seemingly productive expenditures, when used in excess, could become unproductive. These results implied that developing-country governments have been misallocating public expenditures in favor of capital expenditures at the expense of current expenditures.

Hung et al. (2020) studied the simultaneous relationship between fiscal decentralization, corruption, and income inequality among Vietnamese provinces. They use a balanced panel data set of 63 provinces/cities in Vietnam in the period from 2011 to 2018. Empirical evidence showed a strong simultaneous relationship: increased corruption will increase regional income disparities, income inequality, and increase fiscal decentralization. In addition, the results also suggested that an increase in per-capita income will reduce the level of corruption, or better control corruption of each province. The degree of increase in income inequality, which reduces fiscal decentralization, is the same for trade liberalization. All demonstrated that there is a simultaneous relationship between fiscal decentralization, corruption, and income inequality. In a region of high public governance quality, fiscal decentralization positively affects its economic growth. This issue will indirectly increase income inequality between provinces within a country. Their findings implied that a country's fiscal decentralization strategy should be linked to improving corruption control and local governance effectiveness, indirectly improving income inequality between localities or regions.

Khan and Kumar (1997) examined the relative contribution of public and private investment to per capita GDP growth in developing countries. It extends the basic neoclassical model of growth by separating investment into its public and private components and estimates this model for a sample of 95 developing countries over the period 1970–90 using both cross-sectional and panel data. Using data on relative supplies of public and private capital stock, rates of return to public and private investment are also computed. The results suggested that once other determinants of growth, such as human capital formation, population growth, and technical progress, are taken into account, public and private investment have different effects on growth and that these effects are characterized by marked regional and inter-temporal variations

Le and Suruga (2005b) studied the simultaneous impact of public expenditures and foreign direct investment (FDI) on economic growth. To the best of the authors' knowledge, this was the first study that took into account the interaction

between FDI and public expenditures in determining the economic growth rate. Using a sample of 105 developing and developed countries for the period 1970–2001, the main findings were (i) FDI, public capital, and private investment play important roles in promoting economic growth, (ii) public non-capital expenditure has a negative impact on economic growth, and (iii) excessive spending in public capital expenditure can hinder the beneficial effects of FDI.

Syed et al. (2007) made a novel attempt to study the interactions among macroeconomic variables with the help of 1971–2000 heterogeneous dynamic panel data from Korea, Singapore, and Taiwan. The premise of this study was that public spending may contribute to economic growth in different ways. They explored this using a variety of econometric techniques. The analysis suggested that both public and private investment and public consumption have a long-term dynamic impact on economic growth in all the countries of the sample and a panel of sample countries. The pair-wise analysis showed bidirectional causality between public investment and economic growth, and the homogeneous non-causality hypothesis suggested that non-causality results are completely homogeneous in a small sample of these mentioned countries.

Vietnam is a developing country with many interesting issues. There is income inequality between provinces. Provinces are encouraged to attract foreign investment for economic development, but they were concerned about corruption in the locality. Export value is forced back by investing capital in the host country in the process of exploiting low-cost labor, transferring technology and knowledge approach (Nguyen & Do, 2020), preferential policies in trade liberalization agreements, as well as positive exchange rate policies of countries to trading partners.

Some research on FDI and regional economic growth in China was carried out from 1979 to 2003 by using the regression data table technique, and it was uncovered that FDI has always had a positive impact on economic growth (Wei, 2008).

Using the framework of an endogenous growth model, Kandenge (2010) analyzed the impact of public and private investment on economic growth in Namibia over the 1970–2005 periods. Cointegration and error correction modeling approaches were adopted. The results suggested that in addition to public and private investment-exports, imports, economic freedom, labor, and human capital significantly and positively impact short- and long-term economic growth. In contrast, terms of trade and real exchange rate, are found to have a negative effect on short and long-term economic growth. The short-term dynamic behavior of this relationship was investigated by estimating an error correction model. The error correction term was found to be statistically significant and with the correct sign.

Based on the neoclassical growth model of Solow (1956), Jwan and James (2014) analyzed the macroeconomic determinants of economic growth, examining the effect of public and private investment on economic growth in Iraq from 1970 to 2010. Cointegration and error correction models were applied to the time series data, followed by a Johansen cointegration test of trace and maximum eigenvalue statistics to establish long-run equilibrium relationships among the variables in the model. This study also estimated an error correction model (ECM) and the significance of the coefficient on the error correction term confirms the long-run relationship between the explanatory variables and economic development. The empirical results suggested that, in the long run, private investment, public investment, growth in the labor force and growth in oil revenues affect real gross domestic product (GDP) positively and significantly; however, price and exchange rate volatility are found to have an adverse impact on real GDP. In light of these results, several policy recommendations are made to conclude. Che and Nor (2021) argued that human capital and innovation capacity are important determinants of economic growth. Skilled human resources contribute significantly to a country’s economic growth and development.

### 3. Model and Methodology

#### 3.1. Empirical Model

In the model, the authors conduct the investment decomposition of the economy into three types of constituent investment sources, namely State investment (si); Domestic private investment (di); Foreign direct investment (FDI). The author used Cobb-Douglas’s production function to conduct the research analytical framework for development.

Cobb-Douglas’s production function:

$$Y = F(s_{it}, d_{it}, f d_{it}, l_{it}, x_{it})$$

Where, *Y* is the income of the economy - the usage target, GDP (Gross Domestic Product) is the gross domestic

product. “*l*” is labor, “*x*” is other factors such as trade openness, recurrent expenditure of local governments.

Some authors in the world and Vietnam, namely Wei (2008) and Nguyen (2014), when developing an experimental research model with their dialectics, have added explanatory variables to the model to demonstrate the impact of factors on economic growth. The author of the article conducts an experimental research model as follows:

$$gdp_{it} = \alpha + \beta_1 si_{it} + \beta_2 di_{it} + \beta_3 fdi_{it} + \beta_4 se_{it} + \beta_5 open_{it} + \beta_6 lb_{it} + e_{it}$$

Where “*i*” is representative of provinces/cities, including 63 provinces and cities of Vietnam, and “*t*” is the year of study from 2000 to 2020. The variables in the model are datum of the provincial level. The symbol “GDP” is an expression of economic growth, using real gross domestic product per capita to reflect economic health. “Si” is a public investment; “Di” is a private investment; “fdi” is a foreign direct investment; “Se” is the regular expenditure; “Open” is the total value of imports and exports - a sign of trade openness; “Lb” is labor.

According to previous studies, independent variables in the model could have positive or negative effects on economic growth. In this study, the author expects the independent variables in the model to have a positive (+) impact on the growth process, as this is consistent with several hypotheses in recent days (Table 1).

The article uses Eviews 9.0 software to examine the form of distribution functions of variables. From this distribution form, the authors choose the form of the approximation normal distribution function as a principle to select the function type for the variable. The test’s results showed that quantitative variables (both dependent and independent) work under the distribution approximation model, transferred in the form of logarithms (Ln). Taking the logarithm of variables, the data focus on the average of the variables. All variables in the logarithm form had an approximation to the normal distribution, except the variable called “di” (domestic private investment). The “lb”

**Table 1:** Calculation and Expectation Symbols of Variables in the Model

Abbr	Name	Calculation	Expectation
Gdp	Economical growth	Ln Real GDP per capita	Dependent Variable
Si	Public investment	Ln Public investment/current GDP	+
Se	Recurrent Expenses	Ln Recurrent Expenses/current GDP	+
Di	Private Investment	Private investment/current GDP	+
Fdi	Foreign Direct Investment	Ln FDI/current GDP	+
Open	Trade openness	Ln Import&Export/GDP	+
Lb	Labour	Numbers of labor/Population	+

variable means labor, which was already in the form of an approximation normal distribution before being converted to logarithm form.

### 3.2. Research Methodology

The author applied the quantitative research method by using PMG (Pool Mean Group) regression technology based on the expansion of Cobb-Douglas's production function (included variables affecting economic growth as per the research of Wei (2008) and Nguyen (2014)), to assess the degree of impact of investment sources on economic growth.

The paper used five different types of data unit root tests. They were Levin et al. (2002) or LLC for short, Breitung (2000), Im et al. (2003) also known as IPS, ADF-Fisher; Philips Perron (PP). LLC and Breitung tested the assumption unit root of common units for all provinces, i.e.  $\rho_i = \rho$ .

Im et al. (2003), also known as IPS, ADF-Fisher; and Philips Perron (PP), allowed testing of different units by provinces (Maddala & Wu, 1999). In the PMG regression method, to avoid fraudulent regression and the limitations of estimates, to assess the impact of variables, the first thing to do was to test the unit root of variables and then assume that variables would not be stationary at  $I(0)$  or  $I(1)$ , also there was no variable stationary at  $I(2)$ .

Based on the satisfaction of the stationery and features of the research data, the author conducted empirical research based on the PMG method to assess the short-term and long-term impact of the factors on economic growth. The actual model is as follows:

$$\Delta \text{gdp}_{it} = \alpha + \sum_{k=1}^n \beta_{i0} \text{gdp}_{it-k} + \sum_{k=1}^n \beta_{i1} X_{it-j} + \beta_2 \text{open}_{it} + \beta_3 \text{se}_{it} + \varphi^i [\text{gdp}_{it-1} - \{\gamma_0^i + \gamma_0^i X_{it-1}\}] + e_{it}$$

With:  $\Delta \text{gdp}_{it}$  is the dependent variable of the model;  $\text{gdp}_{it-k}$  is the  $k$ -lagged variable of  $\text{gdp}$  (dependent variable);  $X_{it-j}$  is the  $j$ -lagged variable of the model including public investment (si), domestic private investment (di), foreign direct investment (fdi), and labor (lb).  $\varphi^i$  is the adjustment component of long-term equilibrium.

### 3.3. Research Data

The research data is collected in the form of panel data for main variables (si, di, fdi, and  $\text{gdp}$ ) and control variables in the empirical research model for analyzing the relationship between investment and economic growth. The survey is conducted between 2000 and 2020 for all 63 provinces of Vietnam, and data is collected from the General Statistics Office of Vietnam.

GDP data is the real GDP per capita of each province (million Vietnam dong per person), and this value is taken from the current GDP price converged with the CPI to eliminate inflation. At the same time, to minimize the inflation rate of the variables in the research model, the values of public investment, domestic private investment, foreign direct investment, recurrent expenditure, and trade openness are calculated in percentage (%). The labor variable is calculated based on the ratio of labor per the total local population.

## 4. Research Results

### 4.1. The Statistics of Variables

The data set used in the study is balanced data in form of a table with all observations (province) from 2000 to 2020 (Tables 2 and 3).

### 4.2. Stability Test (Panel Unit Root Test)

The unit root test results are shown in the following table for both the Level and first difference. The optimal lag is selected by the Schwartz Information Criterion (SIC) standard (Table 4).

With a significant level of 5%, the variable "di" (domestic private investment) is not stationary at the root level but stops at the first difference  $I(1)$ , while the remaining variables are all stationary at the root level  $I(0)$ . All variables must stop at the root level. That means the table data did not integrate with  $I(1)$  or  $I(0)$ . According to Pesaran et al. (1996) and Hamuda et al. (2013), when the variables in the model do not have the same level of linkage - either  $I(1)$  or  $I(0)$ , applying the PMG procedure is appropriate for this study.

### 4.3. The Estimated Results

With the PMG method, processed by Eviews 9.0, we see "the adjustment coefficient of long-term equilibrium" in the long term  $\varphi_i = -0.454205$ , and statistically, the significance of  $p$ -value = 0.0000 (<5%), which means variables of public investment, domestic private investment, foreign direct investment, trade openness, and labor tend to affect long-term economic growth (there is a long-term co-linked relationship term) (Tables 5 and 6).

In the short term (Table 5), factors such as trade openness and labor have a negative impact on economic growth with a significance value of 5%. Other variables were not statistically significant, so it was impossible to conclude the extent of their impact on economic growth in the short term. In the long run, some factors such as public investment, domestic private investment, foreign direct investment,

**Table 2:** The Number of Variations in the Research Model

	LNGDP	LNSI	DI	LNFDI	LNSE	LNOPEN	LB
Mean	2.488.462	2.947.439	2.242.208	-0.97057	2.613.980	3.654.071	5.667.029
Median	2.379.333	2.781.367	1.790.799	0.480657	2.573.244	3.785.646	5.678.571
Maximum	5.830.613	5.536.505	7.966.557	5.261.668	4.484.671	7.381.257	6.985.686
Minimum	0.556106	1.281.941	0.74309	-9.420340	-0.08656	-2.680949	3.678.148
Std. Dev.	0.928634	0.829386	1.285.112	3.751.602	0.655285	1.468.931	5.656.881
Observations	1323	1323	1323	1323	1323	1323	1323

Source: The author's calculation based on the statistics of the General Statistics Office of Vietnam.

**Table 3:** The Correlation Between Variables in the Research Model

	LNGDP	LNSI	DI	LNFDI	LNSE	LNOPEN	LB
LNGDP	1.00000						
LNSI	-0.395956***	1.000000					
DI	0.004269**	0.150353**	1.000000				
LNFDI	0.388899***	-0.152201***	0.052882***	1.000000			
LNSE	-0.448036***	0.633052***	0.210296***	-0.334508***	1.000000		
LNOPEN	0.458982***	-0.372823***	-0.047018***	0.471238***	-0.619974***	1.000000	
LB	0.458945***	-0.170485***	0.229125***	0.171378***	0.185317***	0.033387***	1.000000

Note: (\*\*\*) and (\*\*) denote significance at 1% and 5% respectively.

trade openness, and labor affected economic growth with statistical significance ( $p$ -value) <5%.

In the long run (Table 6), public investment has a negative effect on economic growth, while domestic private investment, foreign direct investment, trade openness, and labor have positive effects on economic growth. The largest contributor is labor followed by openness, foreign direct investment, and domestic private investment.

## 5. Conclusion and Recommendations

### 5.1. Conclusion

First, in the long run, the coefficient of independent variables such as public investment, domestic private investment, foreign direct investment, labor, and trade openness are all statistically significant at 5%. However, public investment has a negative impact on economic growth. In the short term, only labor and trade openness variables have a negative impact on economic growth and are statistically significant. Second, long-term public investment has a negative effect on economic growth. This can be explained by the current state of public investment

in Vietnam. Third, in the long term, factors such as domestic private investment, foreign direct investment, labor, and trade openness have a positive impact on economic growth. This conclusion confirms the important role of the factors impacting economic growth. In particular, the strongest impact level is labor followed by the openness of trade, foreign direct investment, and domestic private investment. However, the level of contribution to the economic growth of foreign direct investment is many times higher than that of domestic private investment. This is an indication of the internal strength of the Vietnamese economy, which is still poor and has not fully exploited its existing potentials. Fourth, in the short term, labor and trade openness have a negative effect on economic growth.

### 5.2. Recommendations

#### *Public investment in the economy*

The goal of public investment should be clearly defined based on the role of the local authorities towards socio-economic development. It mainly provides public services and goods to serve people's livelihood. The government only invests in national defense, security, and infrastructure to

**Table 4:** The Results of Verifying Root Unit on Table Database

The Level	LLC	Breitung	IPS	ADF-Fisher	PP-Fisher
Ingdp	-11.2806***	6.69571***	-3.50669***	187.627***	288.799***
	(0.0000)	(1.0000)	(0.0001)	(0.0003)	(0.0000)
Insi	-7.55587***	0.77406***	-3.19555***	193.341***	178.950***
	(0.0000)	(0.8864)	(0.0007)	(0.0001)	(0.0014)
Di	-6.05077***	-0.55672***	-1.71760***	140.756***	141.562***
	(0.0000)	(0.2823)	(0.0346)	(0.0656)	(0.0601)
Infdi	-11.9674 ***	-2.56343***	-7.13636 ***	251.496***	243.000***
	(0.0000)	(0.0039)	(0.0000)	(0.0000)	(0.0000)
Inopen	-6.58460 ***	4.30426***	-1.32456***	164.206***	193.921***
	(0.0000)	(1.0000)	(0.0671)	(0.0109)	(0.0001)
Inse	-10.7075***	-1.65987***	-5.52927**	224.542***	225.006***
	(0.0000)	(0.0395)	(0.0000)	(0.0000)	(0.0000)
Lb	-5.86849***	1.17946**	-2.72891***	159.283***	132.558***
	(0.0000)	(0.8729)	(0.0023)	(0.0051)	(0.1387)
The First Difference	LLC	Breitung	IPS	ADF-Fisher	PP-Fisher
Ingdp	-13.7871***	-4.38376***	-8.319872***	288.612***	365.352***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Insi	-22.4342***	-8.65122***	-14.1502***	355.112***	522.754***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Di	-21.2330**	-14.9983**	-15.5940**	427.636**	625.666***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Infdi	-31.8449***	-12.2584***	-21.7588***	442.147***	550.407***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Inopen	-21.5486***	-7.75594***	-13.2950***	338.482***	554.639***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Inse	-22.5341***	-5.62774***	-17.7263**	563.959***	651.826***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Lb	-16.3615***	-8.873504***	-13.6852***	389.679**	619.803***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Note: (\*\*\*) and (\*\*) denote significance at 1% and 5% respectively.

facilitate the socio-economic development of the community (bridges, airports, ports, health facilities, education, etc.). The ones who decide to invest in these projects are the Government or Prime Minister, ministries, and localities (provincial or grassroots level). Besides, it is necessary to specify and confirm the scheme of public investment, the competence and responsibilities of organizations or individuals who are assigned by the State to carry out the projects. That is the basis for ensuring the effectiveness of public investment. The authorities should narrow the scope

of public investment of state-owned enterprises in areas that the private sector does not invest. All activities of state enterprises must be able to freely do trade by themselves and take full responsibilities as other economic sectors. The Government needs to examine specific features of each region before approving and conducting public investment.

#### *Domestic private investment and FDI in the economy*

For FDI, Vietnam needs to select potential businesses, good reputation brands, advanced technology,

**Table 5:** The Estimated Results of Short-Term Influence

Variables	Coefficient	Standard Error
Public Investment	-0.014754***	0.015642
Domestic private investment	0.002239**	0.003337
Foreign direct investment	0.003708*	0.008687
Trade openness	-0.099888***	0.021827
Labour	-0.014468**	0.005793
Recurrent Expenses	-0.076258*	0.058381
The adjusted coefficient for long-term equilibrium	-0.454205***	0.039779

Note: (\*\*\*), (\*\*) and (\*) denote significance at 1%, 5% and (10%) respectively.

**Table 6:** The Estimated Results of Long-Term Influence

Variables	Coefficient	Standard Error
Public investment	-0.019590**	0.006141
Domestic private investment	0.002332***	0.000482
Foreign direct investment	0.009672***	0.000565
Trade openness	0.019319**	0.006465
Labour	0.032277***	0.000787

Note: (\*\*\*), (\*\*) denote significance at 1% and 5%, respectively.

environmentally friendly products which do not only serve the country of Vietnam but also supply global values. The Government should encourage further investment projects in remote and difficult economical conditions to gradually narrow the gap between rich and poor provinces to create a healthy environment or stable, sustainable, and strong development in the future.

*For domestic private investment*, capital needs to be used to participate in supporting industries which is the foundation to attract high-quality projects from FDI. The Government also needs to take measures to stimulate domestic private investment with preferential policies on loans, taxes, land and also create good infrastructure conditions for domestic investors country.

*Human resources used for economic growth:* It is necessary to develop a strategy for human resource development in association with the strategy for socio-economic development, industrialization and modernization, and international economic integration. Along with talent discovering, fostering, and appreciating of talents, human resource development should also focus on nurturing human

values and beliefs in the current era such as citizenship rights and responsibility, thirst for knowledge, self-awareness, and developing the capacity to control themselves and govern society, as well as, living more with love, with local culture, and with aspiration. It should be noted that the development of human resources must be associated with improving the quality of people's health care, salary, and allowance policies, ensuring social security, improving the quality and efficiency of health care. As a whole, the human resource can meet the requirements of the industrialization and modernization process but with knowledge economy in the integration phase, fierce competition, and high labor intensity. On the other hand, it is necessary to improve and enhance information on human resources broadly and democratically; thus, people are made aware of the importance of human resource development in our country and globally. At the same time, it is necessary to have regular research and summation of Vietnam's human resources so that it can formulate human resource policies for every period of the economy.

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