

Business Environment, FDI and Economic Growth in Vietnam's North Central Provinces

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Abstract: - This study analyzes the roles of private investment, the business environment, and labor productivity in economic growth in the North Central provinces of Vietnam during the period 2010–2023. Based on a panel dataset of six provinces in the region, the study employs Ordinary Least Squares (OLS), Random Effects Model (REM), and Fixed Effects Model (FEM). In addition, the Driscoll–Kraay standard error estimator is applied to address potential issues commonly found in panel data. This study examines the roles of domestic private investment, foreign direct investment (FDI), institutional conditions, and labor productivity in shaping economic growth in Vietnam's North Central provinces during the period 2010–2023. The empirical results indicate that foreign direct investment (FDI) and the business environment, measured by the Provincial Competitiveness Index (PCI), do not show statistically significant effects on economic growth when controlling for province-specific characteristics. This suggests that these factors have not been directly translated into short-term economic growth in the region. In contrast, domestic private investment and public investment, particularly labor productivity, play a more significant role in promoting regional economic growth. The findings imply that the impacts of FDI and the business environment may be indirect and depend on the absorptive capacity of local economies. Policy implications suggest the need to enhance the quality of FDI, improve the effectiveness of the business environment, and strengthen linkages between the FDI sector and domestic enterprises in order to promote deeper and more sustainable economic growth.

Key-Words: - Institutional quality; private-sector investment; foreign direct investment; regional economic growth

Received: March 29, 2026. Revised: May 2, 2026. Accepted: June 19, 2026. Published: July 21, 2026.

1 Introduction

In the context of globalization and increasingly deep international economic integration, investment is considered one of the key drivers of economic growth, particularly for developing economies. In Vietnam, the domestic private sector has increasingly played a pivotal role in expanding production, generating employment, and enhancing local economic capacity. At the same time, foreign direct investment (FDI) is expected to supplement capital, technology, and modern managerial skills. However, empirical evidence shows that the impact of investment flows on economic growth is not uniform across regions, and largely depends on local socio-economic conditions as well as the quality of the business environment in each locality.

From a theoretical perspective, Keynes [1] emphasized the role of investment in stimulating aggregate demand and promoting short-term economic growth. In contrast, the Solow model and endogenous growth theories suggest that capital

accumulation, labor productivity, and the quality of human capital constitute the foundation for long-term economic growth [2], [3], [4], [5]. Within this framework, private investment reflects the internal capacity of an economy, while foreign direct investment (FDI) can promote growth through technology spillovers and productivity effects. However, many empirical studies indicate that FDI does not automatically generate economic growth. Its effectiveness largely depends on the quality of the business environment and the absorptive capacity of the host economy. In the context of an unfavorable business environment, FDI may not produce a significant impact or may only indirectly influence economic growth.

In the North Central region of Vietnam, the period 2010–2023 witnessed an increase in various investment sources. Domestic private investment and public investment maintained a relatively stable upward trend, reflecting the increasingly important role of internal resources in local economic

development. In contrast, FDI inflows fluctuated considerably over the years and accounted for a relatively modest share of total social investment. Specifically, the scale of FDI capital changed significantly, rising from approximately VND 7,842 billion in 2010 to VND 97,857 billion in 2015, then declining to around VND 22,351 billion in 2020 and fluctuating between VND 20,000 and 28,500 billion in recent years. Meanwhile, total social investment increased relatively steadily, reaching over VND 230,000 billion in 2023, indicating that FDI has not played a dominant role in the region's investment structure. At the same time, the number of FDI projects in the region ranged only from 31 to 48 projects, significantly lower than the overall scale of Vietnam [6]. In addition, the business environment, reflected by the Provincial Competitiveness Index (PCI), has generally improved over time but remains unstable, with scores increasing from approximately 55–60 to above 63–69, while considerable disparities persist among provinces [7]. These characteristics suggest that the roles of FDI and the business environment in promoting economic growth in the North Central region remain unclear, highlighting the need for systematic empirical verification in this study.

Based on this context, the study focuses on analyzing the relationship between foreign direct investment (FDI), the business environment, and economic growth in the North Central provinces of Vietnam. At the same time, it examines the roles of internal factors such as domestic private investment, public investment, and labor productivity. The study aims to clarify whether FDI and the business environment play a direct role in economic growth or influence it indirectly through the underlying conditions of local economies.

2 Literature review

Numerous theoretical and empirical studies confirm that foreign direct investment (FDI) plays an important role in economic growth through channels such as capital supplementation, technology transfer, and productivity enhancement. However, empirical evidence indicates that the impact of FDI is not necessarily direct and depends significantly on the quality of the business environment and institutional framework of the host economy. Specifically, Hayat employed a dynamic GMM model with data from 104 countries and found that FDI has a positive effect on economic growth only in countries with at least moderate institutional quality. Moreover, the interaction coefficient between FDI and institutions is positive and statistically significant, indicating that

institutional quality amplifies the growth effects of FDI [8]. Similarly, Saha et al. analyzed data from 28 lower-middle-income countries and showed that different institutional components have heterogeneous effects on FDI: corruption control and regulatory quality promote FDI inflows, whereas the rule of law has a negative effect and does not yield the expected outcomes [9]. These findings suggest that the business environment is a multidimensional factor with complex influences on the effectiveness of FDI. Conversely, some studies indicate that the impact of FDI may be unstable or even insignificant in certain contexts. Edrees found that FDI has a negative effect on long-term economic growth in Sub-Saharan African countries [10]. Likewise, Bénétix et al. demonstrated that the relationship between FDI and economic growth varies over time, with negative interaction coefficients observed in certain periods [11]. These results emphasize that the effects of FDI are conditional and largely depend on the institutional context and the quality of the business environment.

In addition, internal factors of the economy, such as domestic investment and labor productivity, also play an important role in determining the effectiveness of FDI in promoting economic growth. Tam shows that human capital has a positive effect on GDP growth, and the interaction between human capital and investment further amplifies growth effects [12]. Similarly, Ritahi et al. indicate that in the long run, human capital and capital formation play dominant roles, while FDI alone does not show statistical significance [13]. At the micro and sectoral levels, Narula and Marin demonstrate that FDI spillover effects occur only in firms with high absorptive capacity, with a positive impact coefficient [14]. Likewise, Khordagui and Saleh find that FDI becomes significant only when interacting with education levels, highlighting the importance of fundamental conditions [15]. In addition, Hung et al. show that labor productivity and absorptive capacity help mitigate the negative competitive effects from FDI firms and enhance spillover benefits [16]. These findings suggest that although FDI has the potential to promote economic growth, its effectiveness largely depends on internal economic factors, including labor productivity and the level of development of the domestic investment sector.

From the above studies, it can be concluded that the impact of FDI on economic growth is not uniform but depends significantly on the quality of the business environment and the fundamental conditions of the host economy. At the same time, internal factors such as domestic investment and labor productivity play an important role in

transforming FDI inflows into substantive economic growth. However, most existing studies have been conducted at the national level or across large economic regions, while empirical evidence at the provincial level or within specific regions remains limited. In Vietnam, in particular, previous studies often examine the roles of FDI or institutional factors separately, rather than analyzing the relationship between FDI, the business environment, and internal factors within a unified analytical framework at the local level—especially in regions with moderate development conditions and relatively limited FDI attraction, such as the North Central region.

Based on this research gap, this study aims to analyze the impact of foreign direct investment (FDI) and the business environment, measured by the Provincial Competitiveness Index (PCI), on economic growth in the North Central provinces of Vietnam during the period 2010–2023. The study employs commonly used econometric models, including Pooled Ordinary Least Squares (OLS), the Fixed Effects Model (FEM), and the Random Effects Model (REM). In addition, it controls for the roles of domestic private investment, public investment, and labor productivity. Through this approach, the study provides more comprehensive empirical evidence on the relationship between investment, institutions, and economic growth within the specific context of the region.

3 Research Methodology

3.1 Data

This study uses a panel dataset collected from the Statistical Yearbooks and annual socio-economic reports of six provinces in the North Central region of Vietnam, including Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, and Thua Thien Hue, for the period 2010–2023. Variables reflecting economic growth, foreign direct investment (FDI), domestic private investment, public investment, labor productivity, and the business environment were compiled and standardized from the official statistical system of the General Statistics Office and local government agencies.

The period 2010–2023 not only reflects the process of increasingly deep international economic integration following the global financial crisis, but also captures significant changes in investment attraction policies and improvements in the business environment at the local level. Therefore, the dataset allows for a relatively comprehensive assessment of the relationship between investment sources, the

business environment, and economic growth in the North Central region. Table 1 presents the variables used in the research model in detail.

Table 1. Description of Variables Used in the Model

Variable	Symbol	Measurement	Source
Economic growth	LnY	Natural logarithm of provincial GDP at constant 2010 prices (billion VND)	Provincial Statistical Yearbooks, General Statistics Office (GSO)
FDI	LnFDI	Natural logarithm of realized foreign direct investment capital (billion VND)	Provincial Statistical Yearbooks, General Statistics Office (GSO)
Domestic private investment	LnPI	Natural logarithm of investment capital from the non-state sector (billion VND)	Provincial Statistical Yearbooks, General Statistics Office (GSO)
Public investment	LnIG	Natural logarithm of investment capital from the state sector (billion VND)	Provincial Statistical Yearbooks, General Statistics Office (GSO)
Business environment	PCI	Provincial Competitiveness Index	VCCI (Vietnam Chamber of Commerce and Industry)
Labor productivity	LnLP	Natural logarithm of labor productivity, measured as GDP per worker (million VND per person) [17]	Authors' calculation

3.2 Research Model

Based on the theoretical foundations of economic growth and previous empirical studies concerning the roles of investment, the business environment, and labor productivity, this study develops an econometric model to examine the impacts of these factors on economic growth in the North Central region of Vietnam. Specifically, the research model is specified in panel data form as follows:

$$\text{LnYit} = \beta_0 + \beta_1 \text{LnFDIit} + \beta_2 \text{LnPIit} + \beta_3 \text{LnIGit} + \beta_4 \text{PCIit} + \beta_5 \text{LnLPit} + \varepsilon_{it}$$

where

LnYit: the natural logarithm of provincial gross domestic product of province *iii* in year *ttt*, representing economic growth

LnFDIit: the natural logarithm of foreign direct investment capital, reflecting the channels of capital inflows and technology transfer

LnPIit: the natural logarithm of domestic private investment capital, representing the internal capacity of the local economy

LnIGit: the natural logarithm of public investment capital, reflecting the role of the state sector in infrastructure development and growth support

PCIit: the Provincial Competitiveness Index, representing the quality of the local business environment and institutional conditions

LnLPit: the natural logarithm of labor productivity, reflecting resource-use efficiency and the absorptive capacity of the economy

Eit: the random error term

The study converts the variables into natural logarithmic form (except for the PCI index variable) in order to reduce heteroskedasticity and to allow the estimated coefficients to be interpreted in the form of elasticities. The estimation procedure is conducted to ensure the reliability of the results through the following steps: the study estimates the Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM), while the Hausman test is used to select the most appropriate model [18]. Subsequently, model diagnostic tests are conducted through the Modified Wald test of Greene [19], the Wooldridge test [20], and the Pesaran test [21]. The study applies the Driscoll and Kraay robust standard error estimation method to correct model deficiencies and uses the corrected estimates as the main regression results [22]. In addition, to confirm the robustness of the research findings, the Fixed Effects model with cluster-robust standard errors (FE-Cluster), following Arellano [23] and Wooldridge [20], is employed as a robustness check.

3.3 Research Hypotheses

H1: Foreign direct investment (FDI) has an impact on economic growth in the North Central provinces of Vietnam.

Foreign direct investment may promote economic growth through capital accumulation, technology transfer, and productivity spillover effects [24], [25]. However, other empirical evidence suggests that this impact is unstable and depends on institutional conditions and the broader economic context [10].

Therefore, the study does not impose a specific expectation regarding the sign of the coefficient, but rather tests the impact of FDI within the context of the North Central region.

H2: The business environment (PCI) influences economic growth in the North Central provinces of Vietnam.

A favorable business environment helps reduce transaction costs, improve resource allocation efficiency, and encourage investment activities. Recent studies indicate that institutional quality not only directly affects economic growth but also indirectly influences growth through improving the efficiency of investment capital flows [8], [9]. This suggests that the business environment may affect economic growth through different channels depending on the specific context.

H3: Domestic private investment (LnPI) has a positive impact on economic growth in the North Central provinces of Vietnam.

Domestic private investment reflects the internal dynamism of the local economy, including its capacity to expand production and adapt to market demand. Studies on economic growth indicate that the private sector often serves as a more stable and sustainable growth driver than external capital flows, particularly in developing economies [26], [12]. Therefore, the study expects domestic private investment to exert a positive impact on regional economic growth.

H4: Public investment (LnIG) has a positive impact on economic growth in the North Central provinces of Vietnam.

Public investment, particularly investment in infrastructure and public services, may create favorable conditions for production activities and investment attraction. However, the effectiveness of public investment may depend on the quality of governance and resource allocation; therefore, the direction of its impact should be empirically tested.

H5: Labor productivity (LnLP) has a positive impact on economic growth in the North Central provinces of Vietnam.

According to endogenous growth models, labor productivity and human capital are key determinants of the ability to sustain long-term economic growth. Empirical evidence from Vietnam and other developing countries shows that labor productivity not only directly affects economic growth but also determines the capacity to absorb and transform FDI into value-added outcomes [16], [13]. Therefore, the study expects labor productivity to have a positive effect on regional economic growth.

4 Empirical Results

Descriptive statistics of the key variables used in the empirical model

Table 2. Descriptive Statistics

	Mean	Std.dev	Min	Max
LnY	10.415	0.763	6.952	11.926
LnFDI	7.128	2.018	3.347	10.864
LnPI	9.293	0.834	7.654	11.04
LnIG	8.002	0.810	4.641	9.615
PCI	61.166	4.033	52.38	69.36
LnLP	3.548	0.653	1.176	4.724

Descriptive statistics reveal substantial disparities among the provinces in the North Central region over the period 2010–2023. The variable LnY has a mean value of 10.415 with a standard deviation of 0.763, indicating a relatively stable economic scale while still reflecting noticeable differences across provinces.

With respect to investment capital, the variable LnPI has a mean value of 9.293 with moderate variability (standard deviation of 0.834), indicating that domestic private investment remains relatively stable and plays an important role in the regional economy. The variable LnIG exhibits moderate variation and a relatively even distribution across provinces, with a mean value of 8.002 and a standard deviation of 0.810. In contrast, LnFDI shows a large standard deviation (2.018), reflecting strong fluctuations and substantial disparities in FDI attraction capacity among provinces. This result reflects differences in economic conditions and investment environments across localities within the region.

In addition, LnLP records a mean value of 3.458 with a standard deviation of 0.653, suggesting that differences in labor productivity across provinces are not excessively large. The PCI index exhibits relatively low variability, indicating that the business environment in the region remains at a moderate level but is not yet uniform across provinces.

Overall, the descriptive statistics suggest that regional economic growth tends to be associated with domestic investment sources, including both private and public investment, while FDI and the business environment display considerable variation and heterogeneity across localities.

	LnY	LnFDI	LnPI	LnIG	PCI	LnLP
LnY	1.0000					
LnFDI	0.5944* 0.0000	1.0000				
LnPI	0.8607* 0.0000	0.3776* 0.0006	1.0000			
LnIG	0.9086* 0.0000	0.6117* 0.0000	0.7557* 0.0000	1.0000		
PCI	0.3230* 0.0027	0.1749 0.1208	0.3657* 0.0006	0.0849 0.4428	1.0000	
LnLP	0.4039* 0.0001	0.1299 0.2507	0.4002* 0.0002	0.1813 0.0989	0.1709 0.1201	1.0000

Fig. 2: Correlation Matrix

The correlation matrix indicates that LnY is positively and statistically significantly correlated with most of the explanatory variables. With a correlation coefficient of 0.861 ($p < 0.01$), LnPI confirms the important role of domestic private investment in promoting economic growth in the North Central region. The variable LnIG also exhibits a strong positive correlation with LnY, suggesting that public investment is closely associated with the scale of the local economy.

LnFDI is also positively correlated with LnY ($r = 0.594$; $p < 0.01$), although the magnitude is lower than that of private investment, indicating that the role of FDI in regional economic growth has not yet been particularly prominent.

Both LnLP and PCI show positive correlations with LnY ($r = 0.404$ and $r = 0.325$, respectively), and both are statistically significant. This suggests that labor productivity and the business environment are associated with economic growth, although their impacts appear to be relatively modest. The correlation coefficients among the independent variables are not sufficiently high to indicate severe multicollinearity, confirming the suitability of the dataset for further estimation using OLS, FEM, and REM regression models.

Table 3. Regression Results (OLS – REM – FEM)

	OLS	REM	FEM
LnFDI	0.0193 (0.0148)	0.0193 (0.0148)	0.0056 (0.0063)
LnPI	0.192*** (0.053)	0.192*** (0.053)	0.083*** (0.0216)
LnIG	0.637*** (0.0554)	0.637*** (0.0554)	0.229*** (0.0297)
PCI	0.0286*** (0.0064)	0.0286*** (0.0064)	0.0024 (0.0023)
LnLP	0.1932*** (0.0376)	0.193*** (0.0376)	0.723*** (0.0291)
regression coefficient	0.958** (0.420)	0.958** (0.420)	5.075*** (0.283)
R-squared	0.9379	0.9201	0.9872

Hausman test : Chi2 = 69.42, Prob > chi2 = 0.000

Modified Wald test: $\text{Chi}^2(6) = 13.74$, $p\text{-value} = 0.0327$

Wooldridge: $F(1,5) = 47.297$, $p\text{-value} = 0.0010$

Pesaran CD test = 2.177, $p\text{-value} = 0.0295$

Note: () represent standard errors; *, **, and *** denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The regression results reveal notable differences across the estimated models. In the OLS model, domestic private investment (LnPI), public investment (LnIG), the business environment (PCI), and labor productivity (LnLP) all exhibit positive and statistically significant effects on economic growth, with estimated coefficients of 0.192 ($p < 0.01$), 0.637 ($p < 0.01$), 0.0286 ($p < 0.01$), and 0.193 ($p < 0.01$), respectively. Meanwhile, LnFDI shows a positive coefficient (0.0193) but is statistically insignificant, indicating that FDI does not exert a clear impact on economic growth. However, these results may be biased because the OLS model does not adequately control for unobserved and time-invariant provincial characteristics. When the estimation shifts to the REM specification, the estimated coefficients remain broadly similar to those obtained from the OLS model. In particular, LnPI, LnIG, PCI, and LnLP continue to retain statistical significance, whereas LnFDI remains statistically insignificant.

The FEM estimation results show considerable changes in several variables. Specifically, LnPI (0.083; $p < 0.01$) and LnIG (0.229; $p < 0.01$) continue to exert positive and statistically significant effects, confirming the important role of domestic investment sources in promoting regional economic growth. Meanwhile, LnFDI remains statistically insignificant (coefficient of 0.0056), indicating that FDI inflows have not generated a direct impact on economic growth once province-specific characteristics are controlled for. In contrast, PCI is no longer statistically significant (coefficient of 0.0024), implying that although the business environment has improved, such improvements have not yet been strong enough to directly influence economic growth. Labor productivity (LnLP) exhibits a relatively large and highly significant coefficient (0.723; $p < 0.01$), highlighting its role as a key driver of economic growth in the provinces of the region. This finding reflects the importance of resource-use efficiency and the absorptive capacity of local economies.

The Hausman test yields a $p\text{-value}$ of 0.000, confirming that the FEM specification is the most appropriate model. The model also exhibits a very high coefficient of determination ($R^2 = 0.9872$), indicating a strong explanatory power for variations in economic growth.

The diagnostic test results indicate the presence of several violations of panel data assumptions. Specifically, the model exhibits heteroskedasticity across observational units according to the Modified Wald test ($p = 0.0527 < 0.05$) [27]. In addition, the error terms display serial correlation over time, as confirmed by the Wooldridge first-order autocorrelation test ($p\text{-value} = 0.0010 < 0.01$), which may bias the estimated coefficients. The Pesaran CD test also reports a $p\text{-value}$ of $0.0295 < 0.05$, confirming the existence of cross-sectional dependence among provinces. Therefore, to simultaneously address these econometric problems, the study employs the Driscoll-Kraay robust standard error estimation method (FEM-DK) as the main estimation result. At the same time, clustered standard errors at the provincial level (FEM-cluster) are applied as a robustness check to ensure the stability of the estimated coefficients. The regression results are presented in Table 4:

Table 4. Kết quả hồi quy FEM -DK và FEM- cluster

	FEM-DK	FEM-cluster
LnFDI	0.0056 (0.0048)	0.0056 (0.0056)
LnPI	0.083*** (0.0187)	0.083* (0.0327)
LnIG	0.2296*** (0.0371)	0.2296*** (0.055)
PCI	0.0024 (0.002)	0.0024 (0.002)
LnLP	0.723*** (0.031)	0.723*** (0.067)
R-squared	0.9872	0.9872

Note: Standard errors are reported in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The estimated coefficients obtained from the two estimation methods are relatively consistent, confirming the reliability and robustness of the model. Based on the FE-DK results, several conclusions can be drawn.

Hypothesis H1 is not supported. The coefficient of FDI (LnFDI = 0.0056) carries a positive sign but is statistically insignificant ($p = 0.26 > 0.05$), indicating that during the study period, FDI did not generate a clear impact on economic growth in the North Central provinces. This finding is consistent with the empirical study of Chornyi et al. [28], which suggests that the relationship between FDI and economic growth is unstable and highly dependent on the macroeconomic context. The result also supports the arguments of Narula and Marin [14], as well as Hayat [8], that the growth effect of FDI depends largely on the absorptive capacity and internal conditions of the host localities.

Hypothesis H2 is also not supported. Although the coefficient of PCI is positive, it is statistically insignificant (coefficient = 0.0024, $p = 0.305$), implying that the business environment in the North Central region of Vietnam has not yet been sufficiently strong to generate a direct impact on economic growth. This finding is consistent with the results of Saha et al. [9], which suggest that certain institutional dimensions may not exert positive effects and may even produce negative impacts. The result further implies that the role of PCI may operate indirectly through supporting FDI attraction and improving the efficiency of FDI utilization.

Domestic private investment (lnPI) exerts a positive and statistically significant effect on economic growth (coefficient = 0.083, $p = 0.001$), thereby supporting Hypothesis H3. This finding confirms the important role of the private sector in promoting regional economic growth and is consistent with the study by Emako et al. [26], which indicates that domestic capital makes the largest contribution to economic growth.

The coefficient of lnIG reaches 0.2296 and is highly statistically significant ($p < 0.01$), thereby supporting Hypothesis H4. This finding indicates that public investment is one of the key drivers of economic growth, particularly in the North Central provinces of Vietnam, where infrastructure and development conditions remain relatively limited.

Labor productivity (lnLP) also exerts a positive effect on economic growth, with an estimated coefficient of 0.723 and a high level of statistical significance, strongly supporting Hypothesis H5. This variable exhibits the largest impact in the model, suggesting that labor productivity plays a crucial role in promoting regional economic growth. The result is consistent with the findings of Dankyi et al. [24] and Ritahi et al. [13], as well as empirical evidence from Vietnam indicating that human capital and labor productivity are decisive factors in absorbing FDI effectively [16].

The FEM–DK model demonstrates a high explanatory power ($R^2 = 98.72\%$), indicating that economic growth in the region depends primarily on labor quality. Meanwhile, the roles of FDI and the business environment should be considered in relation to institutional conditions and the absorptive capacity of the North Central provinces.

5 Conclusion

Based on the empirical findings, the study indicates that economic growth in the North Central provinces during the period 2010–2023 has been unevenly influenced by different investment sources, in which

internal factors of the local economy play a dominant role. Domestic private investment and public investment are identified as two important drivers of economic growth, while labor productivity serves as a key determinant, reflecting both growth quality and the efficiency of resource utilization.

The role of FDI has not been clearly demonstrated in promoting regional economic growth. In practice, most large-scale FDI projects in the North Central region are concentrated in heavy industries that are resource- and energy-intensive, with limited technology spillovers and weak linkages with local enterprises. As a result, the contribution of FDI to endogenous regional growth remains disproportionate to the scale of investment capital.

In addition, the local business environment, measured by the PCI index, has not shown a clear supportive role in stimulating short-term economic growth. Although institutional and governance quality has shown signs of improvement, such changes may require more time to be transformed into actual economic efficiency, particularly given the disparities among provinces within the region. The economic growth model of the North Central region of Vietnam continues to rely mainly on traditional investment factors, especially public investment and labor advantages. Meanwhile, the domestic private sector is still dominated by small and medium-sized enterprises with limited competitiveness and weak technological absorptive capacity, which constrains the transition toward higher-quality growth. From these findings, the North Central region faces an urgent need to transform its growth model toward greater efficiency and deeper development. This requires policies that not only focus on expanding investment scale but also emphasize improving the quality of FDI, strengthening linkages with domestic enterprises, enhancing the business environment in a substantive manner, and promoting labor productivity. These conditions constitute an essential foundation for investment resources to complement one another effectively and contribute to sustainable economic growth in the context of international economic integration.

References:

- [1] J. M. Keynes, “The Supply of Gold,” *Econ. J.*, vol. 46, no. 183, p. 412, 1936, doi: [10.2307/2224879](https://doi.org/10.2307/2224879).
- [2] R. M. Solow, “A Contribution to the Theory of Economic Growth,” *Q. J. Econ.*, vol. 70, no. 1, p. 65, 1956, doi: [10.2307/1884513](https://doi.org/10.2307/1884513).
- [3] P. M. Romer, “Capital, Labor, and Productivity,” *Brook. Pap. Econ. Act.*

- Microecon., vol. 1990, p. 337, 1990, doi: [10.2307/2534785](https://doi.org/10.2307/2534785).
- [4] P. M. Romer, "Increasing Returns and Long-Run Growth," *J. Polit. Econ.*, vol. 94, no. 5, pp. 1002–1037, 1986, doi: [10.1086/261420](https://doi.org/10.1086/261420).
- [5] R. E. Lucas, "On the mechanics of economic development," *J. Monet. Econ.*, vol. 22, no. 1, pp. 3–42, Jul. 1988, doi: [10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7).
- [6] "Tài khoản quốc gia," General Statistics Office of Vietnam. Accessed: Oct. 04, 2025. [Online]. Available: <https://www.nso.gov.vn/tai-khoan-quoc-gia/>
- [7] VCCI, "Chỉ số năng lực cạnh tranh cấp tỉnh (PCI)." Accessed: Oct. 04, 2025. [Online]. Available: <https://pcivietnam.vn>
- [8] A. Hayat, "Foreign direct investments, institutional quality, and economic growth," *J. Int. Trade Econ. Dev.*, vol. 28, no. 5, pp. 561–579, Jul. 2019, doi: [10.1080/09638199.2018.1564064](https://doi.org/10.1080/09638199.2018.1564064).
- [9] S. Saha, Md. N. Sadekin, and S. K. Saha, "Effects of institutional quality on foreign direct investment inflow in lower-middle income countries," *Heliyon*, vol. 8, no. 10, p. e10828, Oct. 2022, doi: [10.1016/j.heliyon.2022.e10828](https://doi.org/10.1016/j.heliyon.2022.e10828).
- [10] A. Edrees, "Foreign Direct Investment, Business Environment and Economic Growth in Sub-Saharan Africa: Pooled Mean Group Technique," *J. Glob. Econ.*, vol. 03, no. 02, 2015, doi: [10.4172/2375-4389.1000144](https://doi.org/10.4172/2375-4389.1000144).
- [11] A. Bénétrix, H. Pallan, and U. Panizza, "The Elusive Link Between FDI and Economic Growth," presented at the Policy Research Working Paper, World Bank. [Online]. Available: <http://www.worldbank.org/prwp>
- [12] P. H. Tam, "Global evidence on human capital and economic growth: The role of investment and demographics," *VNUHCM J. Econ. - Law Manag.*, vol. 8, no. 4, pp. 5807–5821, Dec. 2024, doi: [10.32508/stdjelm.v8i4.1506](https://doi.org/10.32508/stdjelm.v8i4.1506).
- [13] R. Oussama, E. Abdellah, and E.-S. Abdelouahad, "Impact of human capital, FDI on economic growth: Empirical evidence from MENA region," *Asian Dev. Policy Rev.*, vol. 13, no. 2, pp. 238–253, Jul. 2025, doi: [10.55493/5008.v13i2.5449](https://doi.org/10.55493/5008.v13i2.5449).
- [14] R. Narula and A. Marin, "FDI Spillovers, Absorptive Capacities and Human Capital Development: Evidence from Argentina," *Dep. Int. Econ. Manag.*, vol. 52, 2003, doi: [10.26481/umamer.2003016](https://doi.org/10.26481/umamer.2003016).
- [15] N. H. Khordagui and G. Saleh, "FDI and Absorptive Capacity in Emerging Economies," vol. 15, no. 1, 2013.
- [16] T. K. Hung, D. T. Binh, T. V. Trang, H. V. Hoa, D. Q. Anh, and P. H. Tu, "Impact of FDI absorptive capacity on labor productivity in Vietnam," *J. Soc. Econ. Res.*, vol. 11, no. 2, pp. 143–152, Jan. 2024, doi: [10.18488/35.v11i2.3627](https://doi.org/10.18488/35.v11i2.3627).
- [17] "Labour productivity and utilisation," OECD. Accessed: Apr. 04, 2026. [Online]. Available: <https://www.oecd.org/en/data/indicators/labour-productivity-and-utilisation.html>
- [18] J. A. Hausman, "Specification Tests in Econometrics," *Econometrica*, vol. 46, no. 6, p. 1251, 1978, doi: [10.2307/1913827](https://doi.org/10.2307/1913827).
- [19] W. Greene, *Econometric analysis*, 5th ed. Prentice Hall, 2003.
- [20] J. M. Wooldridge, *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press, 2010.
- [21] M. H. Pesaran, "Testing Weak Cross-Sectional Dependence in Large Panels," *Econom. Rev.*, vol. 34, no. 6–10, pp. 1089–1117, May 2015, doi: [10.1080/07474938.2014.956623](https://doi.org/10.1080/07474938.2014.956623).
- [22] J. C. Driscoll and A. C. Kraay, "Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data," *Rev. Econ. Stat.*, vol. 80, no. 4, pp. 549–560, Nov. 1998, doi: [10.1162/003465398557825](https://doi.org/10.1162/003465398557825).
- [23] M. Arellano, "PRACTITIONERS' CORNER: Computing Robust Standard Errors for Within-groups Estimators*," *Oxf. Bull. Econ. Stat.*, vol. 49, no. 4, pp. 431–434, Nov. 1987, doi: [10.1111/j.1468-0084.1987.mp49004006.x](https://doi.org/10.1111/j.1468-0084.1987.mp49004006.x).
- [24] A. B. Dankyi, O. J. Abban, K. Yusheng, and T. P. Coulibaly, "Human capital, foreign direct investment, and economic growth: Evidence from ECOWAS in a decomposed income level panel," *Environ. Chall.*, vol. 9, p. 100602, Dec. 2022, doi: [10.1016/j.envc.2022.100602](https://doi.org/10.1016/j.envc.2022.100602).
- [25] T. M. Nguyen, T. D. Duong, and T. M. P. Nguyen, "Impact of foreign direct investment on economic growth in Vietnam," *Sci. Technol. Dev. J. - Econ. - Law Manag.*, pp. 4653–4671, 2023, doi: [10.32508/stdjelm.v7i3.1206](https://doi.org/10.32508/stdjelm.v7i3.1206).
- [26] E. Emako, S. Nuru, and M. Menza, "The effect of foreign direct investment on economic growth in developing countries," *Transnatl. Corp. Rev.*, vol. 14, no. 4, pp.

382–401, Dec. 2022, doi:
[10.1080/19186444.2022.2146967](https://doi.org/10.1080/19186444.2022.2146967).

- [27] W. Greene, “Econometric Analysis: Fourth Edition,” Int. Ed., Jan. 2000.
- [28] R. Chorny and N. Chorna, “The role of foreign direct investment in promoting economic growth: Evidence from Poland, Ukraine, and Vietnam (2004–2024),” Res. Glob., vol. 12, p. 100337, Jun. 2026, doi: [10.1016/j.resglo.2026.100337](https://doi.org/10.1016/j.resglo.2026.100337).

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

The authors equally contributed in the present research, at all stages from the formulation of the problem to the final findings and solution.

Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself

No funding was received for conducting this study.

Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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