

THE NEXUS BETWEEN FDI, EXPORTS, LABOR, AND GDP: EMPIRICAL EVIDENCE FROM VIETNAM

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ABSTRACT : This study examines the dynamic relationship between Foreign Direct Investment (FDI), Exports (EX), Labor (L), and Economic Growth (GDP) for the period 2000–2024. By applying the ARDL Bounds Testing approach and the Error Correction Model (ECM), the study confirms the existence of a long-run cointegration relationship among the variables when GDP and FDI serve as the dependent variables. The empirical results indicate that FDI has a strong positive impact on growth in the long run, contrary to findings in transition economies like Croatia. The adjustment speed of GDP toward long-run equilibrium is approximately 20% per year, while FDI inflows exhibit an almost instantaneous self-adjustment capability to short-run shocks.

KEYWORDS - FDI, Economic Growth, ARDL, Cointegration, Vietnam.

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I. INTRODUCTION

Foreign direct investment (FDI) plays an important role in economic growth of developing countries. FDI not only contributes to economic growth through capital and technology transfer (Blomstrom *et al.*, 1996; Borensztein *et al.* 1998), contributes to human capital accumulation via labor skill training courses for recipient countries. investment (De Mello, 1997), but also is the driving force to promote competition among domestic firms. Vietnam, a developing country, is in need of positive effect from FDI to take advantage of external capital, promote economic growth, invest in education, and social security and environmental protection. In recent years, the processing and manufacturing industry has always been the leading industry in attracting FDI. The relationship between Foreign Direct Investment (FDI), exports, and economic growth is a central theme in development economics. The landmark study by Dritsaki and Stiakakis (2014) in Croatia suggested that FDI does not always yield positive impacts due to limitations in technological absorption capacity. This paper inherits that theoretical framework to analyze the actual data context, aiming to find evidence of the effectiveness of foreign capital on internal economic strength

II. THEORIES AND METHODOLOGY ON FDI, EXPORTS, LABOR AND ECONOMIC GROWTH

2.1. Basic concepts

2.1.1 Foreign Direct Investment (FDI)

According to the IMF, FDI is an economic organization (direct investor) deriving long-term benefits from an enterprise located in another economy. The aim of a direct investor is to have a lot of influence on the management of the business located in that economy.

According to the Organization for Economic Co-operation and Development (OECD): Direct investment is an investment that is made to establish long-term economic relationships with a business, providing the ability to make an influence on business management.

In general, FDI is the investment of individuals and companies (mostly transnational and multinational companies) in order to build overseas establishments or branches and own these branches partly or wholly. This is a type of investment in which foreign investors contribute a sufficiently large amount of capital to the production or provide services allowing them to directly participate in the management and administration of the investment object with the aim to obtain higher profits through the deployment of production and business activities abroad.

2.1.2. Exports

According to Article 28, Clause 1 of the Commercial Law (2005), the export of goods is defined as the act of moving goods outside the national territory or into separate customs areas. This legal framework provides the basis for measuring the Export (EX) variable in this study, which is a key driver of Vietnam's GDP growth.

Exports are a critical component of the Gross Domestic Product (GDP). It reflects the value of goods and services produced domestically and sold to foreign entities.

2.1.3. Labor

According to the Labor Code 2019, the concept of an employee (laborer) is specified as follows:

"An employee is a person who works for an employer under an agreement, is paid a salary, and is subject to the management, direction, and supervision of the employer."

Empirical Definition (For Research)

In empirical studies regarding the relationship between macroeconomic variables, the Labor (L) variable is typically defined as:

"The number of employed persons aged 15 and over working within the economy."

2.1.4. Economic growth

Economic growth can be understood as an increase in the ability to produce goods and services, or an increase in the size of the economy over a certain period of time, often reflected in a percentage increase of real gross domestic product (GDP) (after inflation has been adjusted), or the real per capita income growth rate.

Sustainable economic growth is a modern concept used to define goals and factors which are good for an economy through sustainable growth. Accordingly, growth is not only simply understood as increasing per capita income, but it must be associated with sustainable development, focusing on all three factors: economy, society and environment. In order to maintain high growth rates in the long run, income increases must be associated with increase in quality of life or welfare and poverty. The growth rate doesn't have to be too high, it just needs to be reasonably high but sustainably.

2.2. Theory of the relationship between FDI, EX, Labor and Economic growth

Theory of Exogenous growth

The theory of exogenous growth, also referred to as the neoclassical growth model or the Solow-Swan model pioneered by Solow (1956), identifies capital, human capital, and technology as the fundamental input factors for economic expansion. However, this framework primarily evaluates these components in terms of quantity and treats them as exogenous variables. In contrast, endogenous growth theory suggests that Foreign Direct Investment (FDI) serves as a long-term catalyst for economic growth through technology transfer channels and the accumulation of human capital via labor training programs within host countries (De Mello, 1999).

Theory of Endogenous growth

By the mid-1980s, exogenous growth theory had become increasingly inconsistent in explaining the fundamental determinants of long-term economic development. To address these limitations, the endogenous growth theory, pioneered by Romer (1986), shifted the focus toward two core drivers: human resources and technological change. This theory defines economic growth through the introduction of innovative technology production processes within the host country, where Foreign Direct Investment (FDI) is assumed to be significantly more efficient than domestic investment. Consequently, FDI catalyzes economic growth by facilitating technology diffusion, promoting labor mobility, and enhancing organizational and management skills. Ultimately, foreign investment serves as a vital stimulant for increasing the productivity of the host economy, acting as a catalyst for both domestic investment and technological progress.

Furthermore, the role of labor is often examined through the lens of Endogenous Growth Theory. Romer (1990) and Lucas (1988) emphasize that FDI only truly promotes sustainable economic growth when the host country possesses a high-quality labor force capable of absorbing and operating advanced technologies. Specifically, Mankiw, Romer, & Weil (1992) extended the traditional production function to prove that the combination of foreign capital (FDI) and human capital (skilled labor) is a key determinant in creating a breakthrough in national income.

In addition, the Eclectic Paradigm (or OLI Framework) developed by Dunning (1981) provides a complementary analysis of the relationship between economic growth and FDI. According to this theory, the attraction of FDI depends on specific advantages held by the host country, categorized as: Ownership (technology, capital, resources); Location (investment environment, low-cost labor); and Internalization.

The multidimensional nexus between Foreign direct investment (FDI), exports (EX), labor (L), and economic growth (GDP) has been extensively documented through classical economic theories and empirical research. According to Pajouyan & Nasab (2007), there is a strong bidirectional causal relationship between FDI and exports; FDI not only provides capital but also facilitates the host country's integration into global distribution networks, thereby driving GDP growth through the export channel. This hypothesis is further reinforced by Sun & Parikh (2001) in their study of developing economies, which demonstrates that FDI generates significant technological spillover effects, enhancing the productivity of export-oriented industries.

2.3. Methodology and data sources

Methodology

Qualitative methods including statistics, synthesis, comparison, etc. combined with graphs, tables are used to analyze research problems. Specifically:

- Analyzing and synthesizing method: Systematizing general theoretical issues on FDI, EX, L and economic growth.

- Data collection and statistical method: exploiting and using secondary data sources from domestic and international official information channels related to topics such as: General Statistics Office, Ministry of Planning and Investment, ... to analyze the impact of FDI, EX and L economic growth of Vietnam.

This study utilizes the Autoregressive Distributed Lag (ARDL) model developed by Pesaran et al. (2001). This model possesses superior advantages in handling time series with different integration orders ($I(0)$ and $I(1)$) and is suitable for small sample sizes. The general equation for the growth function is established as follows:

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^p \alpha_i \Delta GDP_{t-i} + \sum_{j=0}^q \gamma_j \Delta FDI_{t-j} + \lambda_1 GDP_{t-1} + \lambda_2 FDI_{t-1} + \dots + \varepsilon_t$$

Table 2.1. Expected Signs of Variables in the GDP Growth Model

Variable	Expected Sign	Economic Rationale
Exports (EX)	(+)	Increasing exports expands market scale, generates foreign exchange, and stimulates domestic production, thereby driving GDP growth.
Implemented FDI (FDI)	(+)	FDI provides capital, technology, and managerial expertise, creating new production capacity and fostering long-term growth.
Labor Force (L)	(+)	Labor is a fundamental factor of production; increases in both quantity and quality of labor lead to higher national output.

Sources: Compiled by the authors

Data sources: Secondary data taken mainly from statistics of the General Statistics Office, Foreign Investment Department - Ministry of Planning and Investment.

III. SITUATION OF FDI, EX, LABOR AND ECONOMIC GROWTH IN VIETNAM IN THE PERIOD OF 2000 - 2024

3.1. An overview of the situation of FDI, Exports, Labor in Vietnam in the period of 2000 - 2024

3.1.1. The current situation of FDI attraction in Vietnam

The foreign direct investment (FDI) landscape in Vietnam from 2000 to 2024 represents a remarkable journey of economic integration, transitioning from a nascent market to one of the most attractive investment hubs in Southeast Asia. This period can be characterized by four distinct phases: initial preparation, the post-WTO surge, a decade of manufacturing professionalization, and a resilient recovery following global disruptions.

In the early 2000s, Vietnam's FDI performance was stable but relatively modest, with new projects hovering around 391 to 811 annually. During this stage, implemented capital was also low, starting at just 2.4 billion USD in 2000. This phase was primarily characterized by institutional reforms as the country prepared for deeper global integration. The turning point occurred in 2007 and 2008, following Vietnam's official accession to the World Trade Organization (WTO). This period saw an unprecedented explosion in investor interest, with registered capital skyrocketing to a historic peak of 71.7 billion USD in 2008. This massive spike reflected a wave of "mega-projects" in heavy industry and real estate. However, the vast gap between registered capital and the 11.5 billion USD implemented that year highlighted a significant challenge: the country's limited "absorptive capacity" to realize such vast commitments immediately.

Following the 2008 surge, the decade from 2009 to 2019 marked a period of stabilization and professionalization. Vietnam shifted its focus toward high-quality manufacturing, attracting global giants like Samsung and Intel. The number of new projects surged steadily, reaching a record high of 3,883 in 2019. More importantly, the quality of investment improved, evidenced by the consistent upward trajectory of implemented capital. Unlike the volatile registered capital, realized investment grew reliably, doubling from 10 billion USD in 2009 to 20.4 billion USD by 2019. This trend indicates that the investment environment became more substantive, with projects moving more quickly from registration to actual operation.

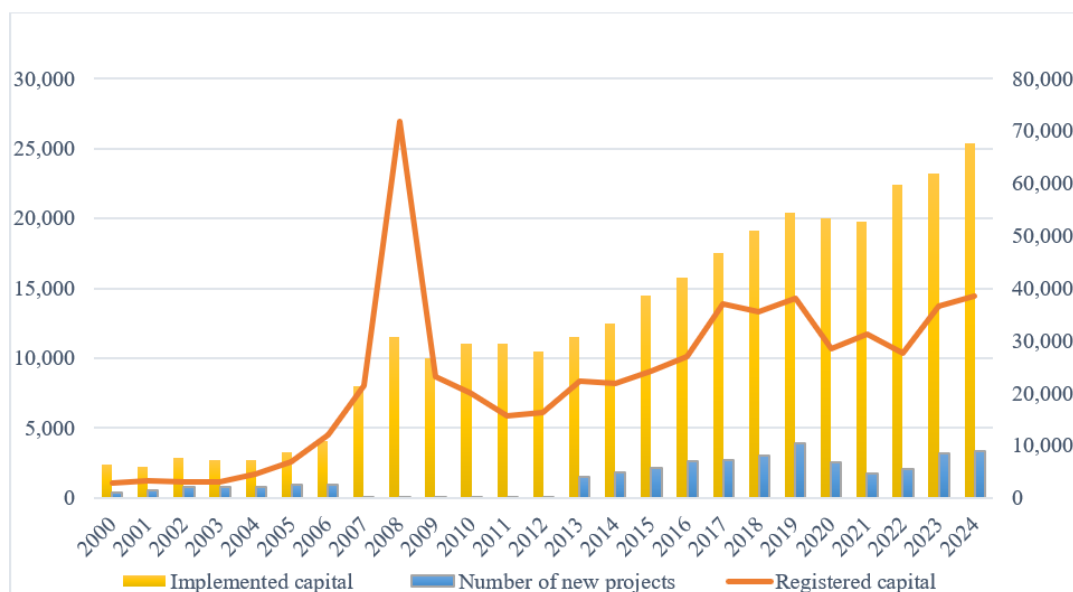


Figure 3.1. The current situation of FDI in Vietnam from 2000 to 2024

Unit: Billion USD, number of projects

Source: Foreign Investment Department

The most recent phase, from 2020 to 2024, highlights the resilience of the Vietnamese economy. The global COVID-19 pandemic caused a temporary contraction, with new project approvals bottoming out at 1,738 in 2021. Despite this, implemented capital remained surprisingly resilient, staying near the 20 billion USD mark throughout the crisis. This suggests that existing investors maintained their confidence in Vietnam's long-term prospects. The post-pandemic recovery has been robust; by 2024, the number of new projects climbed back to 3,375, and implemented capital reached a new all-time high of 25.3 billion USD.

In conclusion, the data from the past 25 years reveals a maturing investment destination. The narrowing gap between registered and implemented capital in the 2020s suggests that FDI inflows are now more aligned with actual economic output rather than mere speculation. As Vietnam continues to solidify its position in global supply chains, the record-high implementation figures in 2024 signal a transition toward high-quality, sustainable growth, providing a strong empirical foundation for the country's future GDP expansion.

3.1.2. The current situation of Exports, labor and GDP in Vietnam

The economic data from the past quarter-century illustrates Vietnam's successful transition from a closed, centrally planned economy to one of the most dynamic, export-oriented nations in the world. This transformation is underpinned by a strategic synergy between trade expansion, demographic utilization, and foreign capital absorption.

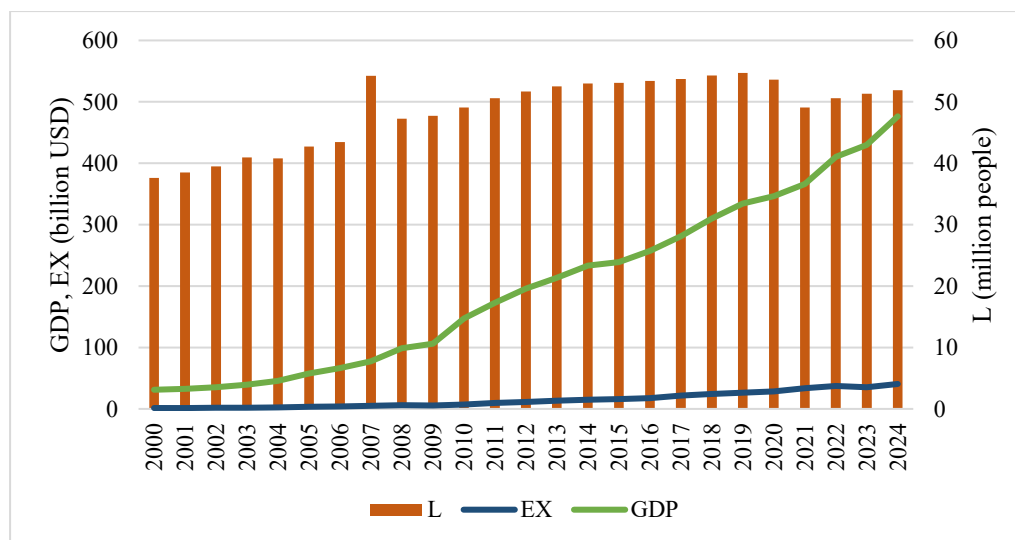


Figure 3.2. The current situation of EX, L and GDP in Vietnam from 2000 to 2024

Unit: Billion USD, million people

Source: General Statistics Office

The Dynamics of Export-Led Growth

Vietnam's export sector has undergone a remarkable expansion, with the total value of goods and services surging from 1.45 billion USD in 2000 to an astounding 40.59 billion USD by 2024. The data reveals a consistent upward trajectory, but the most significant acceleration occurred post-2007. This period coincides with Vietnam's official accession to the WTO, which facilitated deeper integration into global value chains.

While the sector faced a minor contraction in 2009 (5.71 billion USD) due to the global financial crisis, its resilience was notable. The sector rebounded swiftly, maintaining a steep growth curve that reflects Vietnam's strengthening comparative advantage in manufacturing. This exponential rise in exports has not merely provided foreign exchange; it has functioned as the primary engine for national economic vitality, driving industrialization and technological adoption.

Labor Force and the Shift Toward Productivity

The labor force (L) increased from 37.6 million people in 2000 to 51.9 million in 2024. While the sheer quantity of workers provided a "demographic dividend" during the early stages of development, the data suggests a qualitative shift in recent years. The growth in labor quantity has been significantly more gradual compared to the massive surges in export volume and GDP. This widening gap indicates that Vietnam's economic gains are no longer solely dependent on an increasing headcount. Instead, growth is increasingly driven by improvements in labor productivity and capital intensity. Notable fluctuations between 2021 and 2022 (49.1 million to 50.6 million) highlight the structural shifts and temporary disruptions caused by the global pandemic. The subsequent recovery suggests a labor market that is becoming more specialized and integrated into higher-value-added sectors.

GDP Expansion and the FDI Catalyst

The most striking indicator of this era is the Gross Domestic Product (GDP), which skyrocketed from 31.17 billion USD in 2000 to an impressive 476.4 billion USD in 2024 a more than 15-fold increase. The tight correlation between GDP and Export (EX) growth suggests that Vietnam has successfully utilized its trade sector to accumulate national income and reinvest in infrastructure.

Crucially, this growth has been catalyzed by Foreign Direct Investment (FDI). Implemented FDI capital, which reached 25.35 billion USD by 2024, has acted as a bridge between domestic resources and global markets. FDI firms have provided the necessary capital and "know-how" to modernize production processes, allowing Vietnamese goods to meet international quality standards and climb the global value chain.

In summary, the 2000-2024 period represents a "golden growth" era for Vietnam. By effectively matching abundant labor resources with an aggressive export strategy and stable foreign investment, the nation has achieved a massive scale-up in total economic output. As the disparity between labor growth and GDP growth continues to widen, it is evident that Vietnam is successfully transitioning toward a more sophisticated, value-added economic model. This evolution secures its position as a rising star in the global economy and provides a robust blueprint for sustainable development in the decades to come.

IV. EMPIRICAL RESULTS

4.1. Unit Root Test

Prior to estimating the ARDL model, a unit root test was conducted to determine the integration order of the time series to avoid spurious regression. The Augmented Dickey-Fuller (ADF) unit root test method was used with the null hypothesis (H_0) that the data series has a unit root (is non-stationary).

Table 4.1. ADF Unit Root Test Results

Variable	Level		1st Difference (Δ)		Conclusion
	t-Stat	Prob.	t-Stat	Prob.	
2-3 (l)4-5					
FDI	0.4931	0.9828	-4.3839	0.0034	$I(1)$
GDP	3.5879	1.0000	-2.9770	0.0522	$I(1)$
EX	5.0198	1.0000	-1.1231	0.6865	$I(1)$
L	-2.0923	0.2491	-6.6461	0.0000	$I(1)$

Source: Authors' calculations from Eviews

The results in Table 4.1 show that all research variables are non-stationary at the level at the 5% significance level. However, after taking the first difference, all data series tend to become stationary. Specifically, FDI and L are strongly stationary at the 1% significance level, while GDP achieves stationarity at the 10% level. Thus, the variables in the model can be considered integrated of order one, i.e., $I(1)$. This satisfies the necessary condition for applying the ARDL Bounds Test to determine long-run cointegration.

4.2. ARDL Bounds Test for Long-run Relationship

After confirming that the variables are not integrated of order two, the study proceeds with the Bounds Test to determine the existence of a long-run cointegration relationship among FDI, GDP, EX, and L. The test results for the four models are presented in Table 4.2.

Table 4.2. ARDL Bounds Test Results for Cointegration

Model	F-statistic	Critical Values (5%)		Conclusion
		Lower $I(0)$	Upper $I(1)$	
3-4				
EQ_{FDI} (FDI as dependent)	16.455***	4.090	4.663	Cointegrated
EQ_{GDP} (GDP as dependent)	5.985**	4.090	4.663	Cointegrated
EQ_{EX} (EX as dependent)	0.574	4.090	4.663	No cointegration
EQ_L (L as dependent)	3.609	4.090	4.663	No cointegration

Note: ***, ** denote significance at 1% and 5% levels respectively.

Source: Authors' calculations from Eviews

Based on the results in Table 4.2, the F-statistics for EQ_{FDI} and EQ_{GDP} are 16.455 and 5.985 respectively, both exceeding the upper critical bound $I(1)$ at the 5% significance level. Consequently, the null hypothesis H_0 of no long-run relationship is rejected. This confirms the existence of long-run cointegration between FDI and GDP growth.

4.3. Long-run Coefficients and Error Correction Model (ECM)

The estimation of long-run and short-run coefficients from the ARDL model for the dependent variable GDP is detailed in Table 4.3.

Table 4.3. Long-run and Short-run Estimation Results (GDP Function)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Part A: Long-run Coefficients (Levels Equation)				
FDI	7.235201	2.134638	3.389428	0.0048
EX	-0.117566	1.365060	-0.086125	0.9327
L	-1.485917	0.910196	-1.632524	0.1265
C	60.74985	35.92727	1.690912	0.1147
Part B: Short-run Model (Error Correction Form)				
COINTEQ(-1)	-0.200155	0.043971	-4.551979	0.0004
D(FDI)	7.235201	1.517175	4.768863	0.0002
D(GDP(-1))	0.311919	0.171839	1.815185	0.0895

Source: Authors' calculations from Eviews

In Table 3, results show that FDI has a significant positive impact on GDP growth in the long run with a coefficient of 7.235. Notably, this result contrasts with the study by Dritsaki and Stiakakis (2014) in Croatia, where FDI had a negative sign and did not contribute to growth. The error correction coefficient $COINTEQ(-1)$ is -0.200 and is statistically significant at the 1% level, satisfying theoretical conditions for sign and magnitude. This indicates that the economy tends to self-adjust to return to long-run equilibrium at a rate of 20.01% per year after short-run shocks.

Stability Tests

After estimating long-run and short-run coefficients, testing model stability is mandatory to ensure results are not distorted by structural fluctuations. The study uses Cumulative Sum of Recursive Residuals (CUSUM) and CUSUM of Squares (CUSUMSQ) tests following Brown et al. (1975).

Stability of the Economic Growth Model (EQ_GDP)

The results for the GDP model are shown in Figures 1 and 2. Both CUSUM and CUSUMSQ plots lie entirely within the critical bounds at the 5% significance level, confirming that parameters in the GDP function are stable throughout 2000–2024.

CUSUMSQ - Model GDP

Stability of the FDI Model (EQ_FDI)

Similarly, the stability of the FDI model is verified through Figures 3 and 4. The fact that residual plots remain within the critical bounds demonstrates the consistency of FDI inflows and the reliability of estimated coefficients.

CUSUMSQ - Model FDI

The confirmation of stability through both types of plots for the two most important models reinforces the reliability of the analysis regarding FDI's impact on growth.

V. CONCLUSION AND POLICY IMPLICATIONS

This study analyzed the dynamic relationship between FDI, exports, labor, and economic growth in the 2000–2024 period using the ARDL model. Key empirical findings include:

First, the Bounds Test confirms long-run cointegration between FDI and GDP, asserting the endogenous and mutual nature between foreign capital and economic scale.

Second, long-run estimation results show FDI is a key driver of growth with an impact coefficient up to 7.235. This contrasts with Croatia's findings, indicating that technological spillover effects in this research context are highly effective.

Third, stability tests confirm that regression coefficients are robust over time, giving research conclusions high reliability for forecasting and policy planning.

Policy Implications

Based on empirical evidence, the study proposes several policy recommendations:

- On FDI Attraction: The government needs to persist in attracting FDI but should shift from quantity to quality. Priority should be given to high-tech projects with strong links to domestic supply chains to maximize the 7.235 impact coefficient.
- On Absorption Capacity: To maintain FDI's positive impact, continuous improvement of human resources and technical infrastructure is necessary.
- On Macroeconomic Stability: With an ECM coefficient of -0.20, governments should use fiscal and monetary tools to help the economy respond faster to shocks.

In summary, FDI remains the most important lever for growth in the research model.

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