

CAUSAL RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT, INTERNATIONAL TRADE AND ECONOMIC GROWTH IN VIETNAM

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Abstract

Foreign direct investment and international trade are considered important factors driving a country's economic growth. Using annual time series data from 1988 to 2024, this paper examines the causality relationship between foreign direct investment (FDI), international trade and economic growth in Vietnam. In the vector error correlation model (VECM), the integration and cointegration analysis suggested that there is a relationship among the factors. The results of VECM causality tests find the bidirectional causality between FDI and economic growth as well as the unidirectional causality from FDI and imports to export, and the one-way connection between economic growth and international trade. The paper concludes that FDI invested in Vietnam was attracted by its economic development. Moreover, FDI is an important factor that enhances economic growth and trade in Vietnam.

Keywords: FDI, export, import, economic growth, Granger causality and Vietnam.

MỐI QUAN HỆ NHÂN QUẢ GIỮA ĐẦU TƯ TRỰC TIẾP NƯỚC NGOÀI, THƯƠNG MẠI QUỐC TẾ VÀ TĂNG TRƯỞNG KINH TẾ TẠI VIỆT NAM

Tóm tắt

Đầu tư trực tiếp nước ngoài và thương mại quốc tế được coi là những yếu tố quan trọng thúc đẩy tăng trưởng kinh tế của một quốc gia. Sử dụng dữ liệu chuỗi thời gian hàng năm từ năm 1988 đến năm 2024, bài báo này nghiên cứu mối quan hệ nhân quả giữa đầu tư trực tiếp nước ngoài (FDI), thương mại quốc tế và tăng trưởng kinh tế tại Việt Nam. Trong mô hình vector hiệu chỉnh sai số (VECM), phân tích tích hợp và đồng tích hợp cho thấy có mối quan hệ giữa các yếu tố. Kết quả kiểm định nhân quả VECM cho thấy mối quan hệ nhân quả hai chiều giữa FDI và tăng trưởng kinh tế, cũng như mối quan hệ nhân quả một chiều giữa từ FDI và nhập khẩu đến xuất khẩu, và mối liên hệ một chiều giữa tăng trưởng kinh tế và thương mại quốc tế. Bài báo kết luận rằng FDI đầu tư vào Việt Nam được thu hút bởi sự phát triển kinh tế của đất nước. Hơn nữa, FDI là một yếu tố quan trọng thúc đẩy tăng trưởng kinh tế và thương mại tại Việt Nam.

Từ khóa: FDI, xuất khẩu, nhập khẩu, tăng trưởng kinh tế, nhân quả Granger và Việt Nam.

JEL classification: F23, F43, O11.

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1. Introduction

Since the launch of market-oriented economic reforms in 1986, Vietnam has been among the fastest growing countries in Southeast Asia with the active participation of foreign investors in all fields of the economy. The Vietnamese government has quickly joined competition for FDI into regional and global markets by restructuring the domestic economy; and opening up the economy to external trade and investment to increase its economy. From that time until now, Vietnam has seen remarkable economic achievements in growing gross domestic product (GDP), GDP per capita, foreign direct investment and international trade. Vietnam's economic growth rates have been dramatically increasing since 1986. From

4.4% of average GDP growth rate in 1986-1990, it increased dramatically up to 8.18% in 1991-1995 and 7.48% in 2001-2005 (GSO, several issues). Despite the severe impact of the Covid-19 pandemic (2020) and the Russia-Ukraine military conflict (2021-2024) on Vietnam's socio-economic development, Vietnam's GDP in the period 2011-2024 still maintained an average annual growth rate of 6.09%. In 2024, Vietnam's GDP reached VND 11,511.9 trillion, equivalent to USD 476.3 billion, 3.2 times higher than in 2010 (NSO, 2025). The 2024 World Economic Size Ranking Map shows that Vietnam has made remarkable progress, rising to 31st place globally (an increase of 21 places compared to 2010) and 4th in the ASEAN region (World Bank, 2025).

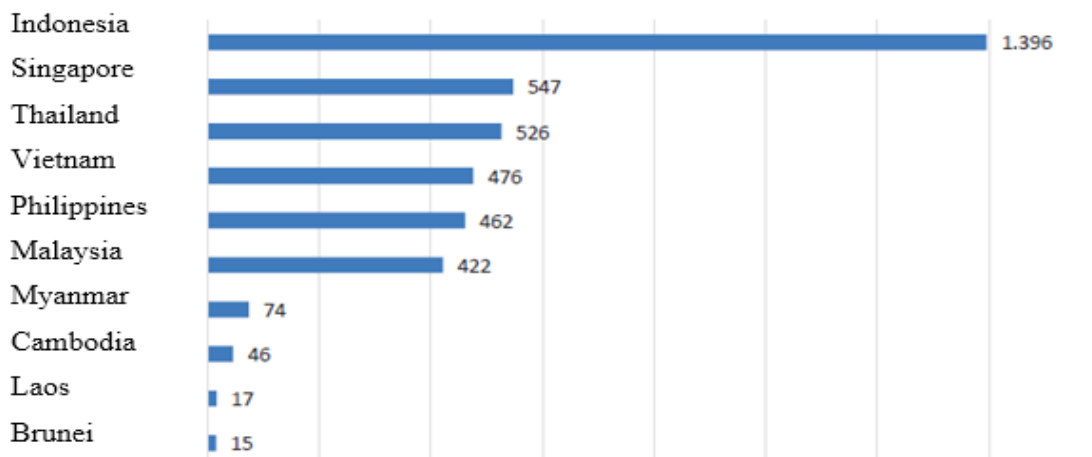


Figure 1: GDP at current prices in 2024 of ASEAN countries (billion USD)

Source: World Bank (2025)

Figure 2 shows that Vietnam international trade has increased significantly. Vietnamese total trade grew from \$2,94 billion in 1986 to \$786,93 billion in 2024, which was up by 267,7 times compared to 1986. Prior to 2012, Vietnam's trade balance was consistently in deficit. During the period 2010-2024, Vietnam's import and export activities developed quite well, with high growth in bilateral trade and a significant reduction in the trade deficit. Except for 2015, when the trade balance showed a deficit of US\$3.76 billion, from 2012 to 2024, Vietnam's trade balance has consistently been in a surplus, reaching US\$19.94 billion in 2020; US\$11.94 billion in 2022; US\$28.11 billion in 2023; and US\$24.94 billion in 2024 (NSO, 2025). Vietnam consistently ranks among the top 30 countries and territories with the largest import and export values globally, ranking 21st in the world in terms of export value and 19th in terms of import value in 2024. In particular, in 2024 alone, many industries and sectors such as seafood, wood, rice, textiles, chemicals, etc., achieved record results. This

demonstrates that Vietnamese businesses have strived to overcome difficulties and effectively utilized free trade agreements.

From the first law on Foreign Investment in the late 1987 that granted legal status for FDI inflows, Vietnam has been greatly attracted attention from foreign investors. FDI inflow into Vietnam increased rapidly during the 1990s and in the first half of the 2000s. After the 2008 global financial crisis, FDI in Vietnam began to increase sharply again due to the openness of its economy. The total number of FDI projects licensed during the period 2010-2024 was 35,018, with a total registered capital of US\$436.3 billion and a total implemented capital of US\$254 billion. Of these, 3,375 projects were licensed in 2024, 2.7 times more than in 2010, and registered FDI capital reached US\$38.2 billion, 1.9 times higher. On average, GDP increased by 6.09% annually during the period 2011-2024, with the FDI sector contributing 24.04% to the overall increase in added value of the economy (NSO, 2025).

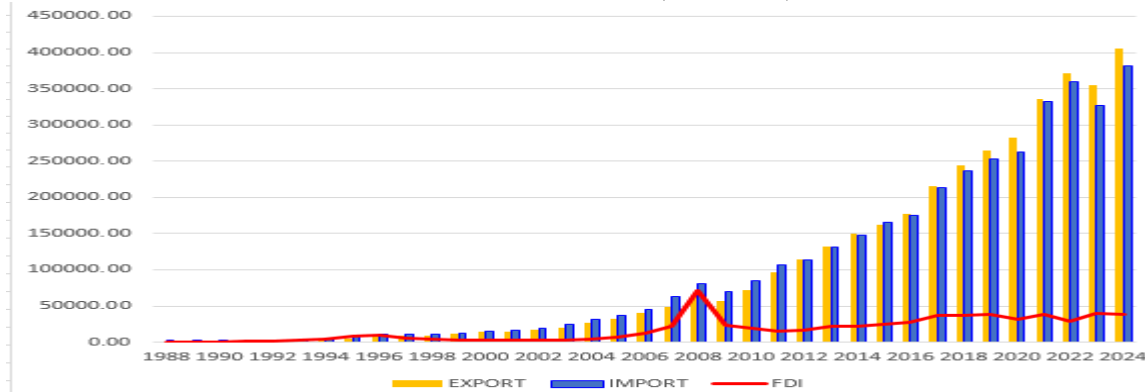


Figure 2: FDI and International trade of Vietnam 1988-2024 (billion USD)

Source: GSO (2025)

As Vietnam has shown signs of increasing FDI, trade and economic growth, there are some previous studies that have investigated the relation between the FDI inflows and other aspects of the Vietnamese economy, such as economic growth and international trade. Some papers test the effects of FDI on economic growth in Vietnam using panel data, which assume one-way causality from FDI to economic growth indicate that high level of FDI inflows in Vietnam could increase Vietnamese's economic growth (Nguyen Phi Hung, 2002; Nguyen Phi Lan, 2006; Nguyen Huu Cung, 2020). There are other papers examining the effect of FDI inflows on Vietnamese exports (Nguyen Phi Lan, 2006; Nguyen Thanh Xuan, 2006; Huynh Thi Dieu Linh at al., 2023). Both empirical results provided a clear complementary relationship between FDI and trade flows. Meyer and Nguyen Vo Hung (2005) investigates the determinants of FDI inflows into Vietnam and show that the rapidly expanding Vietnamese economy is one of the main economic determinants of inward FDI. Huynh Thi Dieu Linh at al (2023) also found that promotions in Vietnam's economic growth will boost exports as well attract more FDI inflow to Vietnam. Although various studies have examined the effect of FDI on economic growth and international trade, few have explicitly

analyzed the relationship between FDI, exports, imports and GDP using the time series approach for Vietnam. Studies on the relationship between FDI, economic growth, and imports are rare. Moreover, most previous studies are still limited in bivariate analysis as the data is short and out of date. The contribution of this paper is to reveal the causal relationship among four macroeconomic variables (such as FDI, exports, imports and GDP) at national level using the newest time series data from 1988 to 2024, so it can update contribution to the empirical literature for researchers who are interested in investigating the interconnection relationship among FDI, exports, imports and GDP. The study also expands to a four-variate VECM model to make a broader view about FDI, international trade (including exports, imports) and economic growth in Vietnam.

2. Literature review

2.1. Theoretical review

International trade and foreign direct investment (FDI) have been well known as vital factors in stimulating the process of economic growth. Growth theories provide the theoretical framework for analysis of foreign direct investment, viewed as a technology factor, and economic growth. In the neoclassical growth model, with the assumption of diminishing

returns to physical capital and technological change being exogenous, FDI has no permanent impact on the growth rate. It may stimulate economic growth only in the short run while the economy is shifting from one short run equilibrium to another. Increasing in FDI, the economy would experience a short run increase in the capital to the labor ratio and output per labor. FDI is restricted to short-term effects and can only affect the level of income under its contribution to capital accumulation in the host country because long run growth can only arise by endogenous technological progress (Solow, 1956, 1957).

In the new growth model, technological change is endogenous and considers various views concerning how knowledge (or technology) is produced and what determines the allocation of resources to knowledge production (Romer, 1986; Barro and Sala-i-Martin, 1995). The diminishing return on investment can be avoided if there are positive externalities associated with investment. Technological spillovers occur when technological knowledge obtained through investment in one company encourages technological development in other companies. Therefore, the total return on investment will be higher and marginal productivity of capital will not necessarily decrease with an increase of the capital to output ratio. If investment brings enough new technologies and knowledge, it can lead to long run economic growth. FDI's main impact is indirectly by increasing production through productivity spillovers and externalities (De Mello, 1997).

Romer (1990) and Grossman and Helpman (1991) developed the Romer's (1986) model with the assumption that endogenous technological change is the main engine of economic growth. Knowledge is regarded as a factor of production, with conscious decisions made regarding its usage. According to Grossman and Helpman (1991), innovation firms produce unique goods and earn monopoly rents as reward for their R & D investments. If the innovative products are intermediate goods, they contribute to total factor productivity of the final goods sector and increase growth. Innovation in a country contributes to endogenous comparative advantage in a high technology sector, encouraging increasing productivity and promoting growth. Romer (1990) and Grossman and Helpman (1991) concluded that economic growth is driven by endogenous technological change. Opening an economy increased competition and innovation, which increased productivity and growth through spillovers and externalities. In addition, they suggested that the long-term growth rate depends on government actions such as taxation, maintenance of law and order, provision of infrastructure services, regulations of international trade, financial market and other aspects of the economy (Barro and Sala-i-Martin, 1995).

Similar to FDI, international trade also has been well known as vital factors in stimulating the process of economic growth. In new growth models, international trade was also considered as an engine of economic growth. International trade enhances economic growth based on technological progress and

a rise in competition in a domestic market. Technological change is a key driver of improvements in the way to access international markets and gain efficiencies from economies of scale through a higher level of trade openness (Grossman & Helpman, 1991; Barro & Sala – I- Martin, 1995). Trade openness can create a bigger size for technological progress and efficiency in allocating inputs by eliminating trade protection regimes which, in turn, stimulates economic growth. When producers are heterogeneous, the degree of competition between them does not only affect aggregate output via mark-ups and dead-weight losses, but also through aggregate productivity due to specialization. As competition tightens, high productivity producers gain market shares at the cost of low productivity ones, generating economic growth through increased aggregate productivity and capital accumulation (Jensen, 2014).

2.2. Empirical studies

In theoretical studies, most of the papers examine bivariate relations between the pairs of GDP and exports (imports), GDP and FDI or exports (imports) and FDI. In empirical works, however, there are a number of studies examining the causality relationship between FDI, trade and economic growth. Fabry (2001) studied the relationship between FDI, economic growth and export on a sample of countries from Central and Eastern Europe using Granger causality test. Research has shown a one-way causal relationship between FDI and economic growth in Albania and Russia; and the unidirectional causality relationship from economic growth to FDI in Hungary, Poland and Romania. The author also concludes that exports have a stronger impact on economic growth than their impact on FDI in Central and Eastern Europe. However, the study found no link between FDI and exports in Central and Eastern Europe countries. Alici and Ucal (2003) developed a VAR model to test the causal relationship between economic growth rate, exports and FDI in the Turkish economy. The paper is investigated by examining unit root properties and the Granger non-causality tests in Turkey's quarterly data from 1987 to 2002. The results showed that there was a unidirectional running from export growth to output growth and did not find any significant positive spillovers from FDI to export. It means that the integration of the Turkish economy with the world economy should be enhanced with policies to attract more FDI in order to gain the spill over effects of FDI to output and FDI-led export growth. Liu, Burrigge and Sinclair (2003) tested the causal relationships between economic growth, FDI and trade in China using quarterly data from 1981 to 1997. The VARECM model showed that there existed a two-way causal connection between economic growth, FDI and export with rather weaker evidence of feedback from import to the other three. The results also showed that failure to account for interaction between FDI, growth and external trade can produce spurious results in the analysis of the relationships between these four variables as may be evident on some previously reported papers. Dritsaki, Ditsaki and Adamopoulos

(2004) also investigated a relationship between trade, FDI and economic growth for Greece over the period 1960-2002. The co-integration analysis suggested that there was a long-run equilibrium relationship. The results of Granger causality test showed that there was a causal relationship between the examined variables. There was a bilateral causal relationship between exports and economic growth, a unidirectional direction from foreign direct investments to GDP and also a unidirectional causal relationship between foreign direct investments and exports with direction from foreign direct investments to exports. These results supported economic growth, trade and FDI appear to be jointly reinforcing under the open-door policy. Hsiao and Hsiao (2006) examined the Granger causality relations between GDP, exports and FDI among the eight rapidly developing countries in East and Southeast Asia (China, Korea, Taiwan, Hong Kong, Singapore, Malaysia, Philippines and Thailand) over 1986 to 2004. The authors, first, estimated the VAR of the three variables for each of the eight economies by using time series data. They were not found any causal relations for Korea and Hong Kong. Other countries, except Thailand, had found only a few causality relations among the three variables and the causality directions are even not consistent. Second, the authors used panel data of the three variables for the eight economies as a group for Granger causality tests. The results showed that FDI has directly unidirectional effects on GDP and indirectly unidirectional effects on exports. There also exists bidirectional causality between exports and GDP for the group. Zuzana (2014) studied the relation between FDI, economic growth and exports in Slovakia using co-integration testing and vector error correction models on quarterly data from 2001 to 2010. The results confirmed the existence of a long-term relationship between FDI, economic growth and exports. The article also revealed a positive impact of FDI and export on economic growth. Etale (2016) examined the relationship between exports, FDI and economic growth in Malaysia from 1980 to 2013 using Granger causality tests. Research showed a bidirectional connection between FDI per capita and GDP per capita in the long-term. The study also revealed a unidirectional relationship from Exports to FDI Inflows and Exports to GDP per capita. Maha and Zghidi (2017) showed the long-term relationship between FDI, international trade and economic growth for 15 selected Middle Eastern and North African countries. The authors, however, failed to confirm a Granger causal relationship between FDI and economic growth and did not highlight the important role of positive spillover effects of FDI.

In the case of Vietnam, there are several empirical studies investigating the relationship between FDI, exports and economic growth in Vietnam using ARDL and error correction models. Nguyen Thi Kim Nhung (2017) demonstrated a positive impact of FDI on economic growth and a negative impact of exports on economic growth in the long run. Pham The Anh and Nguyen Thi Hong Dao (2013) examined the

relationship between FDI and economic growth from 1991 to 2012 and found that there existed a long run relationship of bidirectional causality between the two variables. Sothan (2016) conducted an empirical paper on the long-term relationship among FDI, exports and economic growth for 21 Asian countries, including Vietnam, by applying panel co-integration and causality test and data of FDI, exports and real GDP from 1980 to 2013. The research found that both FDI and exports-led growth have significant effects on Vietnam economic growth. Nam Hoai Trinh & Nguyen Mai Quynh Anh (2015) found the positive impact of FDI and trade openness on Vietnam economic growth based on co-integration methodology over the period from 1990 to 2013. Vu Thi Van et al. (2017) investigated the linkage among export, foreign direct investment and economic growth in Vietnam. By using Granger causality method based on VECM model to analyze data over the period 1990-2015, this study found that both FDI and export Granger cause Vietnamese economic growth and have positive effects on Vietnamese economic growth in the long run. Besides, the short-run influences of FDI on Vietnamese economic growth and export are also demonstrated in this research. Phan Cong Thao Tien, Le Thanh Tung and Nguyen Thi Tuyet Nga (2025) evaluated the impact of FDI and exports on Vietnam's GDP from 1993 to 2022, using a time series analysis approach. The analysis shows a bidirectional causality between FDI and GDP even though the contribution of FDI to GDP growth is both temporary and limited. In contrast, GDP is indirectly influenced by exports as economic expansion is the primary driver of export growth. Nguyen Anh Tru & Poczta-Wajda (2024) explore the nexus between FDI, trade openness, exchange rate, and GDP per capita in Vietnam in the period 1986-2020. The Results address that GDP per capita, FDI, and trade openness may generate an appreciation of the Vietnamese currency in the short run. In the long run, we found that FDI inflows and trade openness support GDP per capita, but the depreciation of Vietnam Dong harms the economic growth of this country in the long run. The results also indicated a unidirectional causality running from GDP per capita and trade openness to FDI and exchange rate. In addition, a bidirectional causality ran from FDI to the exchange rate.

3. Research Methodology

3.1. Research model and procedure

The objective of this paper is to recognize the direct causal relationship between FDI inflows, economic growth and trade (including export and import) in Vietnam based on a systematic approach. Granger's definition of causality is framed in terms of predictability. The basic principle of Granger-causality analysis (Granger, 1969) is to test whether or not lagged values of one variable help to improve the explanation of another variable from its own past. Considering two time series stationary variables X_t and Y_t , according to Granger (1969), Y_t is said to "Granger-cause" X_t ($Y \rightarrow X$) if and only if lagged Y_t 's help predict and improve X_t . Many tests of causality

have been derived and implemented such as Granger (1969), Sims (1972) and Geweke et al. (1982) (see Hamilton (1994)). However, one of the most well-known methods to solve this matter is Vector Auto Regression (VAR). Extended from Granger causality analysis of Granger (1969), the VAR technique in econometric modeling was the first to be introduced in the *Econometrica Journal* by Christopher A. Sims in 1980. To analyze the dynamic impact of random disturbances on the systems of variables, VAR

$$[Y]_t = [A][Y]_{t-1} + \dots + [A^k][Y]_{t-k} + [e]_t \text{ or}$$

$$\begin{bmatrix} Y_t^1 \\ Y_t^2 \\ Y_t^3 \\ \dots \\ Y_t^p \end{bmatrix} = \begin{bmatrix} A_{11} & A_{12} & A_{13} & \dots & A_{1p} \\ A_{21} & A_{22} & A_{23} & \dots & A_{2p} \\ A_{31} & A_{32} & A_{33} & \dots & A_{3p} \\ \dots & \dots & \dots & \dots & \dots \\ A_{p1} & A_{p2} & A_{p3} & \dots & A_{pp} \end{bmatrix} \begin{bmatrix} Y_{t-1}^1 \\ Y_{t-1}^2 \\ Y_{t-1}^3 \\ \dots \\ Y_{t-1}^p \end{bmatrix} + \dots + \begin{bmatrix} A'_{11} & A'_{12} & A'_{13} & \dots & A'_{1p} \\ A'_{21} & A'_{22} & A'_{23} & \dots & A'_{2p} \\ A'_{31} & A'_{32} & A'_{33} & \dots & A'_{3p} \\ \dots & \dots & \dots & \dots & \dots \\ A'_{p1} & A'_{p2} & A'_{p3} & \dots & A'_{pp} \end{bmatrix} \begin{bmatrix} Y_{t-k}^1 \\ Y_{t-k}^2 \\ Y_{t-k}^3 \\ \dots \\ Y_{t-k}^p \end{bmatrix} + \begin{bmatrix} e_{1t} \\ e_{2t} \\ e_{3t} \\ \dots \\ e_{pt} \end{bmatrix}$$

where:

p = the number of variables be considered in the system

k = the number of lags considered in the system.

$[Y]_t, [Y]_{t-1}, \dots, [Y]_{t-k}$ = the $1 \times p$ vector of variables

$[A], \dots$ and $[A^k]$ = the $p \times p$ matrices of coefficients to be estimated

methodology superficially resembles simultaneous-equation modeling (SEM) in that we consider several endogenous variables together. Each endogenous variable is explained by its lagged values and the lagged values of all other endogenous variables.

Mathematically, in a VAR model, each of the random variables in the system is expressed as a linear function of its own past values and the past values of other variables in the system. The system can be presented in the form of matrixes as follows:

$[e]_t$ = a $1 * p$ vector of the stochastic error terms -

called impulses or innovations or shocks in the language of VAR- that may be contemporaneously correlated but are uncorrelated with their own lagged values and uncorrelated with all of the right-hand side variables.

Thus, with the objective is to recognize possible links among FDI inflows, import, export and economic growth, the system of Vector autoregressive model can be formulated as follows:

$$\begin{bmatrix} \ln FDI_t \\ \ln EX_t \\ \ln IM_t \\ \ln GDP_t \end{bmatrix} = \begin{bmatrix} A_{01} \\ A_{02} \\ A_{03} \\ A_{04} \end{bmatrix} + \begin{bmatrix} A_{11} & A_{12} & A_{13} \\ A_{21} & A_{22} & A_{23} \\ A_{31} & A_{32} & A_{33} \\ A_{41} & A_{42} & A_{43} \end{bmatrix} \begin{bmatrix} \ln FDI_{t-1} \\ \ln EX_{t-1} \\ \ln IM_{t-1} \\ \ln GDP_{t-1} \end{bmatrix} + \dots + \begin{bmatrix} A'_{11} & A'_{12} & A'_{13} \\ A'_{21} & A'_{22} & A'_{23} \\ A'_{31} & A'_{32} & A'_{33} \\ A'_{41} & A'_{42} & A'_{43} \end{bmatrix} \begin{bmatrix} \ln FDI_{t-k} \\ \ln EX_{t-k} \\ \ln IM_{t-k} \\ \ln GDP_{t-k} \end{bmatrix} + \begin{bmatrix} u_{1t} \\ u_{2t} \\ u_{3t} \\ u_{4t} \end{bmatrix}$$

where A_0 is a vector of constant terms and A_i and A^k are all matrices of coefficients to be estimated and u_t is a vector of residuals and assumed to be white noise, i.e. $\sim IN(0, 1)$.

In terms of the variables central to the present study, the VAR system can be presented in another form as bellowing:

$$\ln FDI_t = a_{01} + \sum_{i=1}^k a_{1i} \ln FDI_{t-i} + \sum_{i=1}^k b_{1i} \ln EX_{t-i} + \sum_{i=1}^k c_{1i} \ln IM_{t-i} + \sum_{i=1}^k d_{1i} \ln GDP_{t-i} + u_{1t} \quad (1)$$

$$\ln EX_t = a_{02} + \sum_{i=1}^k a_{2i} \ln FDI_{t-i} + \sum_{i=1}^k b_{2i} \ln EX_{t-i} + \sum_{i=1}^k c_{2i} \ln IM_{t-i} + \sum_{i=1}^k d_{2i} \ln GDP_{t-i} + u_{2t} \quad (2)$$

$$\ln IM_t = a_{03} + \sum_{i=1}^k a_{3i} \ln FDI_{t-i} + \sum_{i=1}^k b_{3i} \ln EX_{t-i} + \sum_{i=1}^k c_{3i} \ln IM_{t-i} + \sum_{i=1}^k d_{3i} \ln GDP_{t-i} + u_{3t} \quad (3)$$

$$\ln GDP_t = a_{04} + \sum_{i=1}^k a_{4i} \ln FDI_{t-i} + \sum_{i=1}^k b_{4i} \ln EX_{t-i} + \sum_{i=1}^k c_{4i} \ln IM_{t-i} + \sum_{i=1}^k d_{4i} \ln GDP_{t-i} + u_{4t} \quad (4)$$

where FDI, EX, IM and GDP are registered foreign direct investment inflows, exports, imports and gross domestic production, respectively. a_0, a, b, c and d are parameters; the e 's are error terms; and k is the maximum number of lags in the VAR system. One of the important points that we need to consider in the VAR model is the number of lag's order of variables. The results from Granger-causality tests are highly sensitive to the order of lags in the autoregressive process. Selecting a higher order lag length than the

true lag length causes an increase in the mean-square forecast errors of the VAR and under-fitting the lag length often generates auto-correlated errors (Lutkepohl, 1993). The optimal lag length can be selected by the minimum value of the Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC) statistics.

There are three steps involved in implementing the direction of a VAR causality test.

Firstly, it is important to determine the trending nature of data series, of variables whether they are stationary or not by using standard statistical techniques. A time series is said to be non-stationary or integrated of order $d > 0$, if it achieves stationary after being differenced d times. That is, if the time series contains a unit root, i.e. integrated of order $I(1)$, then first-differencing is necessary for stationarity. Unit root test method is used to test for a stationary (or nonstationary) of variables over the past several years. To detect the existence of a unit root in time series variables, Augmented Dickey Fuller (ADF) statistics are performed. The null hypothesis is that the time series has a unit root, meaning the time series under consideration is nonstationary. By ADF, the estimated t value of the coefficient of the testing variable follows the τ statistic (tau statistic). If estimated absolute value

of $\tau (|\tau|)$ exceeds the DF critical tau values, we reject the null hypothesis, so that the time series is stationary.

If estimated absolute value of $\tau (|\tau|) <$ the DF critical tau values, we do not reject the hypothesis, so that the time series is nonstationary. If the variables are stationary, we can do those variable series in the estimation of a vector auto-regression (VAR) model for Granger causality test.

To find the order of lags in the VAR model, Johansen approach is highly recommended (Bahmani-Oskooee and Brooks, 2003). The optimum lags of Johansen approach are decided on the basis of Akaike information criterion (AIC) and Schwarz information criterion (SC), which are used in the first different variables. If the lag length in the VAR model is m , then the lag length in Johansen test is $m-1$.

The second step is to identify whether all the variables that are included in the system are co-integrated tied in a long run relationship. A widely used approach is Johansen's (1988) and Johansen and Juselius (1990) or Johansen's (1991 & 1995) procedure based on 'Maximum Likelihood method'. Co-

$$\Delta \ln FDI_t = \alpha_1 + \alpha_F e_{t-1} + \sum_{i=1}^{k-1} \beta_{1i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{1i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{1i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{1i} \Delta \ln GDP_{t-i} + \varepsilon_{1t} \quad (5)$$

$$\Delta \ln EX_t = \alpha_2 + \alpha_T e_{t-1} + \sum_{i=1}^{k-1} \beta_{2i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{2i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{2i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{2i} \Delta \ln GDP_{t-i} + \varepsilon_{2t} \quad (6)$$

$$\Delta \ln IM_t = \alpha_3 + \alpha_G e_{t-1} + \sum_{i=1}^{k-1} \beta_{3i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{3i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{3i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{3i} \Delta \ln GDP_{t-i} + \varepsilon_{3t} \quad (7)$$

$$\Delta \ln GDP_t = \alpha_4 + \alpha_H e_{t-1} + \sum_{i=1}^{k-1} \beta_{4i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{4i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{4i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{4i} \Delta \ln GDP_{t-i} + \varepsilon_{4t} \quad (8)$$

where $\Delta \ln FDI$, $\Delta \ln EX$, $\Delta \ln IM$ and $\Delta \ln GDP$ are the first differences of $\ln FDI$, $\ln EX$, $\ln IM$ and $\ln GDP$ respectively. The error-correction term e is a vector of residuals from the long-run equilibrium relationships α , β , γ , λ and δ are parameters; and the ε 's are error terms. Engle and Granger (1987) pointed out that when a linear combination of two or more nonstationary time series is stationary, then the stationary linear combination can be interpreted as a long-run equilibrium relationship between the variables. The causality test statistics will usually have asymptotic Chi-

square distribution (χ^2). Eviews version 8.0 is used to conduct the analysis. The research hypothesis is that these exist positive causal relationships between the FDI, exports, imports, and GDP in the short and long run in the case of Vietnam.

integration is said to exist if the values of computed statistics are significantly different from zero. Thus, variables if found to be co-integrated, implies that there exists a linear, stable and long-run relationship among variables, such that the disequilibrium errors would tend to fluctuate around zero mean. This means that variables tend to move together to its steady state path in the long run.

Lastly, for the causality testing, there are also two choices of serving. (A) If the null hypothesis of non stationary is not rejected at the series level and could be rejected at d level (means that the stability condition for VAR is met at d differencing) and the series are not co-integrated at $I(d)$, the granger causality test for short run relationship between series obtained by d order differentiation of the VAR model.

Under bivariate our VAR equation system (1) – (4), the null hypothesis "FDI does not Granger cause EX, given IM and GDP" is tested via a standard F test (Wald test) and it is rejected if the a_{2i} in equation (2) are jointly significant different from zero (mean all the a_{2i} must be equal to zero). In the same way, the null hypothesis "EX does not Granger cause FDI, given IM and GDP" is rejected if the b_{1i} in equation (1) are jointly significantly different from zero. Similar logic applies to $\{IM_t\}$ and $\{GDP_t\}$.

(B) If the null hypothesis of non stationary is not rejected at the series level and could be rejected at d level, and the series are co-integrated at $I(d)$, the co-integration approach and vector error correction mechanism model (VECM) are recommended to investigate the long run equilibrium relationships between non-stationary variables (Toda and Philips, 1993). An error correction mechanism (ECM), or co-integrated VAR, has to be included in the differenced form to capture the dynamic responses of each of the variables by separating out the short-run deviations of the series from their long run equilibrium path.

We estimate the following four-equation VECM to analyze causality:

$$\Delta \ln FDI_t = \alpha_1 + \alpha_F e_{t-1} + \sum_{i=1}^{k-1} \beta_{1i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{1i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{1i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{1i} \Delta \ln GDP_{t-i} + \varepsilon_{1t} \quad (5)$$

$$\Delta \ln EX_t = \alpha_2 + \alpha_T e_{t-1} + \sum_{i=1}^{k-1} \beta_{2i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{2i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{2i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{2i} \Delta \ln GDP_{t-i} + \varepsilon_{2t} \quad (6)$$

$$\Delta \ln IM_t = \alpha_3 + \alpha_G e_{t-1} + \sum_{i=1}^{k-1} \beta_{3i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{3i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{3i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{3i} \Delta \ln GDP_{t-i} + \varepsilon_{3t} \quad (7)$$

$$\Delta \ln GDP_t = \alpha_4 + \alpha_H e_{t-1} + \sum_{i=1}^{k-1} \beta_{4i} \Delta \ln FDI_{t-i} + \sum_{i=1}^{k-1} \delta_{4i} \Delta \ln EX_{t-i} + \sum_{i=1}^{k-1} \lambda_{4i} \Delta \ln IM_{t-i} + \sum_{i=1}^{k-1} \gamma_{4i} \Delta \ln GDP_{t-i} + \varepsilon_{4t} \quad (8)$$

square distribution (χ^2). Eviews version 8.0 is used to conduct the analysis.

The research hypothesis is that these exist positive causal relationships between the FDI, exports, imports, and GDP in the short and long run in the case of Vietnam.

3.2. Data

The empirical analysis was presented by a time series model of registered foreign direct investment inflows (FDI), gross domestic products (GDP), exports (EX) and Imports (IM) volume. The time period of analysis is annual data from 1988 to 2024 in Vietnam

(37 years). All data on FDI, imports and exports used in the tests are taken and calculated from Vietnam's Statistical Yearbook of the General Statistics Office, Vietnam. Vietnam's GDP is taken from the World Bank and IMF. All data used for this analysis are calculated in US dollars and at current-price.

4. Research results and discussions

4.1. Unit root tests

Prior to testing for a long-run relationship between the time series using Johansen's procedure, it requires that all the series are integrated of the same order (Mohsen and Rhee 1997; Narayan 2003). The distribution of lnFDI, lnEX, lnIM and lnGDP is presented in Figure 3. It shows the existence of random walking and time tendency of four variables, which implies that the variables are not stable at the original level. Then it is needed to test the stationary of variables.

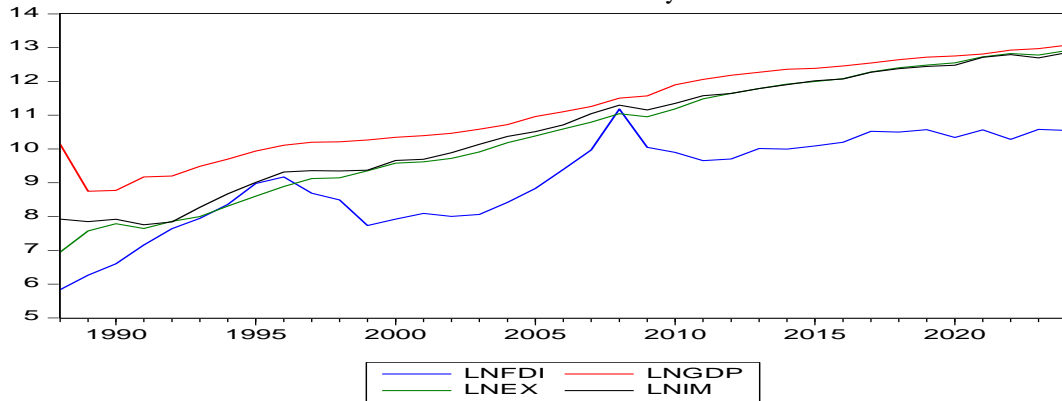


Figure 3: The distribution of lnFDI, lnEX, lnIM and lnGDP

Source: Author's calculation using Eviews 8

We use the Augmented Dickey-Fuller (ADF) model to test unit root of lnFDI, lnEX, lnIM and lnGDP for the stationary. Table 1 presented the results from the ADF unit root tests for the level series in logarithm forms and the difference series. The results suggest that the null hypothesis of a unit test in all variables can not be rejected on the level series, implying that the four variables are nonstationary at their original level. The

four variables of lnFDI, lnEX, lnIM and lnGDP are stationary in their first differences at 1% significant level. Based on the results, all the variables (lnFDI, lnEX, lnIM and lnGDP) are integrated of order one I(1), permitting us to process with the next step, co-integration test, in order to investigate the long run relationships between GDP, imports, exports and FDI.

Table 1: Augmented Dickey-Fuller Unit Root Test

Null hypothesis: lnFDI, lnEX, lnIM and lnGDP contain unit root

Variables	ADF Test statistic (p value)		Conclusion
	Level series	1st difference series	
lnFDI	-2.3328 (0.1677)	-5.0977 (0.0002) ***	I(1)
lnEX	-2.4983 (0.1242)	-6.7734 (0.0000)***	I(1)
lnIM	-0.8231 (0.8004)	-4.6392 (0.0007) ***	I(1)
lnGDP	0.0402 (0.9562)	-6.1711 (0.0000)***	I(1)

Note: ***, denote rejection of null hypothesis at 1% level of significance, respectively. The test includes an intercept.

Source: Author's calculation using Eviews 8

4.2. Lag length selection

As the results are nonstationary of all variables at their levels and there are co-integrating relationships among all variables, we will use a restricted VAR model to recognize the causality directions. The optimal lag length in our VAR is chosen by computer

automatically based on the minimum value of the AIC and SC statistics through the unrestricted VAR estimation. Table 2 suggested the 6 lag intervals are chosen by the criterion since it yields the minimum AIC and SC values.

Table 2: VAR Lag Order Selection Criteria

Endogenous variables: lnFDI, lnEX, lnIM and lnGDP

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-5.0875	NA	2.11e-05	0.5863	0.7713	0.6466
1	132.2602	230.3898	8.50e-09	-7.2426	-6.3174	-6.9410
2	142.6889	14.8019	1.29e-08	-6.8832	-5.2179	-6.3403
3	169.3954	31.0141	7.53e-09	-7.5739	-5.1685	-6.7898
4	191.4601	19.9293	7.02e-09	-7.9652	-4.8196	-6.9398
5	235.2245	28.2351	2.20e-09	-9.7564	-5.8708	-8.4898
6	348.5330	43.8614*	1.53e-11*	-16.034*	-11.409*	-14.527*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error; AIC: Akaike information criterion

SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

Source: Author's calculation using Eviews 8

The residual serial correlation LM test was then employed with the intention to reassure that chosen lag is optimal for the model. If one finds the existence of residual correlation, the selected lag is unsuitable. The p-value results in Table 3 are larger than 0.05, so the

null hypothesis is accepted, which means the residuals are uncorrelated. Hence, the chosen lag is appropriate. Therefore, the optimal lag of VAR is 6, implying that the lag of the VECM model is 5 (one order of magnitude lower).

Table 3: Residual serial correlation LM test

Null hypothesis: No serial correlation at lag order 6 (at 0.05 level)

Lag	LM -Stat	P-value
1	18.26353	0.3087
2	11.09396	0.8036
3	24.76210	0.0741
4	15.26178	0.5056
5	16.83953	0.3961
6	14.70434	0.5464

Source: Author's calculation using Eviews 8

4.3. Co-integration test

The purpose of Johansen's co-integration test is to determine whether our four nonstationary time series are co-integrated, that is to detect whether there are long run equilibrium relationships among the four variables. The interpretation of the co-integration relationship is that if series are linked to form an equilibrium relationship spanning the long run, then they will move closely together over time, even though the series themselves may contain stochastic trends (or non stationary) and the difference between them will be stable (stationary).The co-integration test is performed for the long run relationship among series by using the Johansen approach procedure based on Maximum Likelihood.

The co-integrating rank (r) of the lnFDI, lnEX, lnIM and lnGDP time series are tested using Trace statistics and Max-Eigen Statistics. Reporting in Table 4, the results show that the null hypotheses of no co-integration (r = 0) and one co-integration (r ≤ 1) are rejected at the 5% level of significance as Trace statistics and Max-Eigen Statistics are above the critical values. This indicates that there are two co-integrating equations among variables at the 5% level of significance. It means that there exists a long-term equilibrium relationship between FDI, EX, IM and GDP in Vietnam.

Table 4: Johansen co-integration test

Null hypothesis: lnFDI, lnEX, lnIM and lnGDP are no co-integration

Null	Alternative	Trace statistic	0.05 Critical value	Max-Eigen statistic	0.05 Critical value
Rank r = 0	r ≥ 1	164.6732***	40.17493	124.4241***	24.15921
Rank r ≤ 1	r ≥ 2	40.24903***	24.27596	33.18149***	17.79730
Rank r ≤ 2	r ≥ 3	7.067537	12.32090	6.461865	11.22480
Rank r ≤ 3	r = 4	0.605672	4.129906	0.605672	4.129906

Note: No deterministic trend included in the Test. Lag interval (in first differences): 1 to 5
 *** denotes rejection of null hypothesis at the 0.05 level

Source: Author's calculation using Eviews 8

The study used the Inverse Roots of AR Characteristic Polynomial Test to examine the roots or eigenvalue to test the stability of the VECM Model. If all roots or eigenvalues are less than 1 or do not lie outside the unit circle, then the VECM model achieves

stability. The results in Figure 4 show that no roots lie outside the unit circle, confirming that the VECM model is stable and the estimation results from the VECM model are reliable.

Inverse Roots of AR Characteristic Polynomial

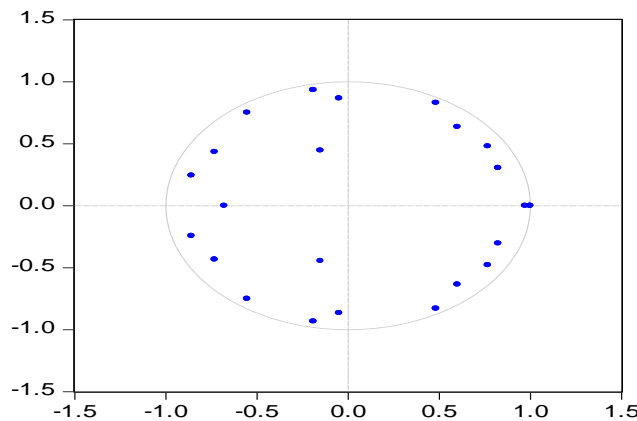


Figure 4: Testing the Stability of the VECM Model

Source: Author's calculation using Eviews 8

4.4. Granger causality results

As the co-integration is exiting, we use vector error correction mechanism (VECM) to recognize the long run and short run causality direction between FDI, EX, IM and GDP in Vietnam. Causality inferences among pairs of variables in the multivariate VECM model are based upon estimating the parameters of the model, subject to the predetermined number of co-

integrating vectors in the system, using the Johansen maximum likelihood method. The causal inferences for VECM estimates are reported in Table 5. The results of Granger causality tests indicate a bidirectional causalities between FDI and Imports, Exports and GDP, Exports and Imports; while there are three one-way directional causalities from FDI to GDP, FDI to exports and GDP to imports in Vietnam.

Table 5: Granger causality results based on VECM
Null hypothesis: column variable does not cause the row variable

Dependent variables	Independent variables Chi square test statistics (P-value)				Causality directions
	$\Delta \ln \text{FDI}$	$\Delta \ln \text{GDP}$	$\Delta \ln \text{EX}$	$\Delta \ln \text{IM}$	
$\Delta \ln \text{FDI}$	-	7.0645 (0.2159)	7.9881 (0.1569)	11.9250** (0.0358)	IM \Rightarrow FDI
$\Delta \ln \text{GDP}$	27.0683*** (0.0001)	-	12.8152** (0.0252)	27.9154*** (0.0000)	FDI \Rightarrow GDP EX \Rightarrow GDP
$\Delta \ln \text{EX}$	111.0879*** (0.0000)	83.3955*** (0.0000)	-	103.7352*** (0.0000)	FDI \Rightarrow EX GDP \Rightarrow EX IM \Rightarrow EX
$\Delta \ln \text{IM}$	97.1577*** (0.0000)	73.9085*** (0.0000)	46.7824*** (0.0000)	-	FDI \Rightarrow IM GDP \Rightarrow IM EX \Rightarrow IM
Final causality directions					FDI \Rightarrow GDP FDI \Rightarrow EX GDP \Rightarrow IM GDP \Leftrightarrow EX IM \Leftrightarrow FDI IM \Leftrightarrow EX

Note: No deterministic trend included in the Test. Lag interval (in first differences): 1 to 5.

*** and ** denote rejection of null hypothesis at the 1% and 5% level of significance, respectively.

As shown in Table 5, there are one-way positive causalities from FDI to exports and Vietnam's short term economic growth (at a 1% significant level). It can be explained that external investment contributed large capitals, new technologies to Vietnam's domestic market, promoting internal competition, accelerates industrial restriction and helped boost economic growth. The results are not only consistent with endogenous growth theories, in which FDI inflow are permanent effect on economic growth, but also in agreement with the finding of Nguyen Phi Hung (2002), Nguyen Phi Lan (2006), Nguyen Huu Cung (2020) and Huynh Thi Dieu Linh et al (2023). The total number of FDI projects are increasing over the years. The total number of FDI projects licensed during 1988-2024 period is 47,027 projects, with a total registered capital of US\$630.8 billion and a total implemented capital of US\$322.1 billion. Moreover, international integration has brought significant progress to the Vietnamese economy. From a poor and food-deficient country, Vietnam has become a major exporter, with many products being among the world's leading exports, such as rice, coffee, and seafood. Vietnam's total import and export turnover of goods is projected to reach US\$786.93 billion in 2024, of which exports will be US\$405.94 billion (GSO, 2025). The trade balance of goods for foreign-invested enterprises has consistently been in surplus and has shown a strong upward trend over the years. In 2010, the FDI sector's

trade surplus was \$2.2 billion, reaching nearly 23 times that amount in 2024 to \$50.27 billion. Overall, the trade surplus for the period 2010-2024 reached \$394.6 billion, accounting for 11.7% of total export turnover. GDP increased by 6.09% annually during the period 2011-2024, with the FDI sector contributing 24.04% to the overall increase in added value of the entire economy (NSO, 2025).

The results in Table 5 show a bilateral relationship between GDP and exports at the significant level of 1%, which is consistent with the finding of Liu, Burrige and Sinclair (2003); Ditsaki and Adamopoulous (2004). In the case of Vietnam, high economic development helps businesses accumulate capital, creating more favorable conditions for investing in modern technology, automation, and improving workforce skills. This produces a large quantity of high-quality, consistent goods that meet stringent standards for export to international markets. In return, an increase in exports could expand production capacity, consumption and national income. In fact, exports are a prominent highlight of Vietnam's participation in international economic integration. Vietnam is among the top 30 countries and territories with the largest value of goods exports and imports globally. Vietnam's total import and export turnover in 2024 reached US\$786.93 billion, five times higher than in 2010 (NSO, 2025). The average growth rate of total trade for the period 2011-2024 was 12.2%

per year and the rate of export reached 13.1%, significantly contributing to boosting production, consumption, and economic growth.

Compared to previous studies in Vietnam, this study added imports as a new variable to the VECM model to investigate the causality relationship between imports and other variables, such as FDI, economic growth and exports. The results shown in Table 5 present that there are two bidirectional causalities between Imports and FDI as well as Imports and Exports. In Vietnam, imports are the prerequisite for exports, leading to an expansion of exports. Imports help compensate for the shortage of raw materials domestically. The textile, footwear, and electronics industries in Vietnam primarily import fabrics, leather, and electronic components for processing and re-export. Along with exports, imports of goods, one of the important factors driving Vietnam's production and consumption, also increased at an average rate of 11.3% per year during the 2011-2024 period. The structure of goods imports remained stable during the 2010-2024 period, with the proportion of consumer goods imports in total import value accounting for 9.9% in 2010 and 11% in 2024; the proportion of means of production accounted for 89% in 2010, 91.1% in 2015, 88.7% in 2020, and remained stable at 88.8-89.4% during the four years from 2021-2024 (NSO, 2025). Imports of production materials account for a high proportion of total import and export

turnover due to the strong development of processing and assembly activities for telephones, electronics, computers, and components in recent years, a result of the policy of attracting FDI. The largest import markets in 2024 still belong to countries in the Asian region such as China (accounted for 37.8% of total import turnover), followed by South Korea (14.7%), the ASEAN region (12.3%), Taiwan (6%) and Japan (5.7%) (GSO, 2025).

5. Conclusion

The study examines the relationship between FDI, export, import and economic growth in Vietnam using annual data for the period 1988-2024. The empirical analysis suggested that all FDI, export, import and economic growth variables used in this study present a unit root, which means that the variables are integrated of order one. As those variables are integrated in I(1) and co-integrated, the VECM framework is used to test the causality relationship between the variables. The paper shows the bidirectional causalities between economic growth and FDI, one-way causal relationship between import, FDI and export, and unidirectional causalities from GDP to exports and imports in Vietnam. This could conclude that FDI invested in Vietnam was attracted by the development of Vietnam's economy. Moreover, it also illustrated that FDI is an important factor that enhances the effects of economic growth and exports in Vietnam.

REFERENCES

- Alici, A. A. and Ucal, M. S. (2003). Foreign direct investment, exports and output growth of Turkey: Causality Analysis. *Paper presented at the European Trade Study Group (ETSG) fifth annual conference, Madrid*, 11-13
- Barro, R. J. and Sala-i-Martin, X., (1995). *Economic growth*. McGraw-Hill, Cambridge, MA.
- Chowdhury, A. and Mavrotas G. (2006). FDI and Growth: what causes what? *The world economy* 29(1), 9-19
- Cuadros, A., Orts V. and Alguacil M. (2004). Openness and Growth: re-examining Foreign Direct investment, trade and output linkages in Latin America. *The Journal of Development Studies* 40(4), 167-192
- De Mello, L. R. (1997). Foreign direct investments in developing countries and Growth: A selective survey. *The journal of development studies* 34, 1, 1 –34
- Dritsaki, M., Dritsaki, C. and Adamopoulos, A. (2004). A Causal Relationship between Trade, Foreign Direct Investment and Economic Growth for Greece. *American Journal of Applied Sciences* 1 (3), 230-235
- Etale, E. L. & Etale, L. M. (2016). The Relationship between Exports, Foreign Direct Investment and Economic Growth in Malaysia. *International Journal of Business Management and Economic Research*, 7(2), 572-578.
- Fabry, N. (2001). The role of inward-FDI in the transition countries of Europe. *4th International Conference on Enterprise in Transition Split, Croatia*.
- Granger, C.W.J. (1969). Investigating Casual Relations by Econometric models and cross-spectral methods. *Econometrica* 37, 424-438
- Granger, C.W.J. (1986). Developments in the Study of the Cointegrated Economic Variables. *Oxford Bulletin of Economics and Statistics* 48, 201-212.
- Granger, C.W.J. (1988). Some Recent Developments in a Concept of Causality. *Journal of Econometrics* 39, 199-211.
- Granger, C.W.J., and Weiss, A. A. (1983). Time Series Analysis of Error Correction Models, pp.255-278, in Karlin, S., Amemiya, T. and Goodman, L.A. (eds.). *Studies in Econometrics: Time Series and Multivariate Statistics*, New York (Academic Press), 255-278.
- Granger, C.W.J., Huang, B.N. and Yang, C.-W. (2000). A Bivariate Causality between Stock Prices and Exchange Rates: Evidence from Recent Asian Flu. *The Quarterly Review of Economics and Finance* 40, 337-354.
- Grossman, G. and Helpman, E. (1991). *Innovation and Growth in the Global Economy*. MIT Press, Cambridge.
- GSO (General Statistics Office of Vietnam). (2025). *Statistical Yearbook of Vietnam 2024*. Statistical Publishing House, Hanoi.
- GSO (General Statistics Office of Vietnam). *Statistical Yearbook of Vietnam, several issues, 2010-2024*. Statistical Publishing House, Hanoi.
- Hsiao, F. and Hsiao, M. (2006). FDI, exports and GDP in East and Southeast Asia-Panel data versus time series causality analyses. *Journal of Asian Economics* 17, 1082-1106
- Huynh Thi Dieu Linh, Nguyen Thuy Duong and Hoang Thanh Hien. (2023). The Relationship among Exports, Foreign Direct Investment, and Economic Growth in Vietnam - A VAR Approach. *VNU University of Economics and Business*, 3(2), 11-20

- Jensen, C. (2014). Competition as an Engine of Economic Growth with Producer Heterogeneity. *Macroeconomic Dynamics*, 1(1), 1-18
- Johansen S. (1988). Statistical analysis of Cointegration vectors. *Journal of Economic Dynamics and Control* 12, 231-54.
- Johansen, S. and Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration-with application to the demand for money. *Oxford Bulletin of Economics and Statistics* 52, 169-210.
- Johansen, S. and Juselius, K. (1992). Testing Structural Hypothesis in a multivariate cointegration analysis of the PPP and the UIP for UK. *Journal of Econometrics* 53, 211-244.
- Kohpaiboon, A. (2003). Foreign trade regimes and the FDI-growth nexus: a case study of Thailand. *The Journal of Development Studies* 40(2), 55-69
- Liu, X., Burrige, P. and Sinclair, P. (2002). Relationship between economic growth, foreign direct investment and trade: evidence from China. *Applied economics* 34, 1433-1440.
- Lutkepohl, H. (1993). *Introduction to Multiple Time Series Analysis*. Springer-Verlag, New York
- Maha, K., and Zghidi, N. (2017). Foreign Direct Investment, Trade, and Economic Growth in MENA Countries: Empirical Analysis Using ARDL Bounds Testing Approach. *Journal of the Knowledge Economy*, 10(1), 397-421.
- Meyer, K.E. and Nguyen Vo Hung (2005). Foreign Investment Strategies and Sub-national Institutions in Emerging Markets: Evidence from Vietnam. *Journal of Management Studies* 42 (1), 63-93
- Nam Hoai Trinh and Nguyen Mai Quynh Anh. (2015). The Impact of Foreign Direct Investment on Economic Growth: Evidence from Vietnam. *Developing Country Studies*, 5(20), 1-9.
- Nguyen Anh Tru and Poczta-Wajda, A. (2024). The relationship between Foreign Direct Investment, trade openness, exchange rate, and Gross Domestic Product per capita in Vietnam. *Journal of Economics and Management*, 46, 189-212.
- Nguyen Huu Cung (2020). The Impact of Foreign Direct Investment, Aid and Exports on Economic Growth in Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(10), 581-589
- Nguyen Phi Hung (2002). Contribution of Foreign Direct Investment to Poverty reduction: The case of Vietnam, *Discussed paper*, CIEM, Vietnam.
- Nguyen Phi Lan (2006). Foreign Direct Investment in Vietnam: Impact on Economic Growth and Domestic Investment. *Discussed paper in Centre for Regulation and Market Analysis*, University of South Australia.
- Nguyen Thanh Xuan and Xing, Y. (2006). Foreign Direct Investment and Exports: The Experience of Vietnam. *Working Paper No. EDP06-11*, Graduate School of International Relations, International University of Japan.
- Nguyen Thi Kim Nhung (2017). The Long Run and Short Run Impacts of Foreign Direct Investment and Export on Economic Growth of Vietnam. *Asian Economic and Financial Review*, 7(5), 519-527.
- NSO (National Statistics Office of Vietnam) (2025). *The socio-economic situation of Vietnam compared with other countries in the region in the period 2010-2024*. Labor Publishing House, Hanoi.
- Pham The Anh and Nguyen Thi Hong Dao (2013). Bound Testing Approach to Cointegration: A Reexamination of FDI and Growth in Vietnam. *Journal of Economic Development* (218), 94-112.
- Phan Cong Thao Tien, Le Thanh Tung and Nguyen Thi Tuyet Nga (2025), Relationship among Foreign Direct Investment, Exports, and Gross Domestic Product in Vietnam -A Vector Autoregression Methodology. *Journal of Development and Integration*, 81(2025), 66-75
- Romer, D. (1986). Increasing returns and long run growth. *Journal of Political Economy* 94, 5, 1002-1037.
- Romer, D. (1990). Endogenous Technological change. *Journal of Political Economy* 98, S71-102
- Sims, C. A. (1980). Macroeconomics and reality. *Econometrica* 48(1): 1-48
- Solow, R.M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics* 70, 65-94
- Solow, R.M. (1957). Technical change and aggregate production function. *The Review of Economics and Statistics* 39, 3, 12-20
- Sothan, S. (2016). Foreign direct investment, exports, and long-run economic growth in Asia: Panel cointegration and causality analysis. *International Journal of Economics and Finance*, 8(1), 26-37
- Vu Thi Van, Huang, D., Hossain, E. and Tran Quang Dung (2017). The Inter-linkage among FDI, Export and Economic Growth in Vietnam: A Causality Analysis, *European Journal of Business and Management*, 9(15), 116-127
- World Bank (2025). Data Bank of World Development Indicators
<https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.CD#>
- Zuzana, S. (2014). A causal relationship between foreign direct investment, economic growth and export for Slovakia. *Emerging Markets Queries in Finance and Business*, 123 – 128

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