The relationship between economic growth and FDI: evidence from Nam Dinh province in Viet Nam

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Abstract
The purpose of this study is to examine the relationship between economic growth and foreign direct investment (FDI) in Nam Dinh province for the period 1987-2019. The paper uses a Vector Autoregression model (VAR) to process the time-series data set. Moreover, the Granger causality test was done via four economic variables, namely gross regional domestic product (GRDP), foreign direct investment (FDI), the labor force (LF) and openness of the economy (OPEN). The empirical results show that GRDP positively effects on FDI at lag 1 while only FDI in the previous two years is considered as effecting on current economic growth at 10% statistically significant. Eventually, the paper suggests some policy implications for attracting more FDI for further supporting economic growth in Nam Dinh province.
Keywords: *FDI, economic growth, provincial level, labor force, openness.*
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INTRODUCTION

Foreign direct investment (FDI) plays an important role in economic growth in developing countries. FDI not only contributes to economic growth through capital and technology transfer (Blomstrom et al., 1996; Borensztein et al. 1998), contributing to the accumulation of human capital through labor skills training courses in recipient countries (De Mello, 1997), but also a driving force for competition for domestic enterprises. A developing country like Vietnam desperately needs the positive spillover of the FDI sector to utilize foreign capital to promote economic growth, investment in education, concern for social security and environmental protection. It will not take advantage of promoting positive effects without analyzing the cause of FDI attraction policy. In contrast, the risks of environmental pollution, revenue loss, etc. is inevitable.

Nam Dinh is a province located in the southern part of the northern coastal region. In 2019, Nam Dinh was the 10th largest administrative unit in Vietnam. In terms of population, ranked 15th and ranked 25th in GRDP per capita. With 1,780,393 people, GRDP reached 96.429 billion VND (equivalent to 4.1880 billion USD), GRDP per capita reached 52 million VND (equivalent to 2,358 USD), GRDP growth rate reached 8.86 %. According to the report of Nam Dinh People's Committee, by the end of 2019, the whole province has 98 valid FDI projects with a total registered capital of nearly 3.7 billion USD. Foreign investors have invested in all three areas including agriculture, industry and services. In particular, the field of garment industry-which is the traditional industry of the province, leather and footwear account for the majority with more than 60 projects. Nam Dinh takes advantage of agricultural development, but the number of FDI enterprises operating in this field is still few, only 7 projects with registered capital account for 0.8% of the total.

Currently, there are 17 countries and territories investing in Nam Dinh province. Leading the number of projects is South Korea with 29 projects, the total investment of 228.2 million USD. Hong Kong (China) ranked second with 16 projects, total investment capital of more than USD 183 million. Over the past years, Nam Dinh has also begun to attract FDI projects from the US, Japan, France, Italy, Netherlands and New Zealand. Most FDI projects in the province are invested in the form of 100% foreign capital, only a number of investment projects in the form of joint ventures or business cooperation contracts. FDI projects are present in all 10 districts and cities in the province.

The goal by 2030 is that Nam Dinh will become a city under the Central Government, one of the major cities in the North. To this end, FDI is considered as one of the important capital sources. So far, there are many empirical types of research on the relationship between economic growth and FDI in the world as well as in Vietnam, using various methods for different results. However, the research from a local perspective is still few. This is the first quantitative study on FDI in Nam Dinh. Is this study conducted to determine the role of FDI in

Nam Dinh's economic growth? Moreover, it also tests the causal relationship, thereby suggesting measures to enhance the attraction of effective FDI management and promote economic growth in Nam Dinh province.

LITERATURE REVIEW

There are many papers studying the relationship between FDI and economic growth rate. Some of the major papers are reviewed hereafter. Neo-classical economists develop models indicating the nexus between FDI and economic growth. Assuming that technical progress and labor force are exogenous variables and FDI affects positively on technology, Solow (1956) argues that it also positively contributes to economic growth. De Gregorio (1992), in his study on twelve Latin Americans in the period 1950-1985, discovers that FDI indeed has a positive impact on economic growth. This positive contribution is also found on a larger scale as Blomstrom et al. (1994) conduct their study in 78 developing and 23 developed countries over the period 1960-1985. Later, in research spanning, from 1970 to 1989 in 69 developing countries, Borenzsteinet et al. (1998) discover that FDI not only has a positive influence on economic growth but also contributes strongly to the development of human capital in the host country. The consistently positive role of FDI in economic growth is asserted once more in the study of Campos and Kinoshita (2002) upon examining 25 Central and Eastern European and former Soviet Union transition economies. More interestingly, Chowdhury and Marvrotas (2003) study the causal interplay between FDI and growth in the cases of Chile, Malaysia and Thailand during the period 1969-2000. They discover that gross domestic product (GDP) leads to FDI for Chile while there is bi-directional causality between the two in Malaysia and Thailand. The paper of Khawar (2005) confirms FDI's positive impacts on economic growth in an empirical cross-country study in the period 1970-1992. Yao (2006) arrives at the same conclusion in the case of China during the 1978-2000. Similarly, Bhandari et al. (2007) show similar results in the case of East European countries. In 2014, Omri and Kahouli demonstrated that FDI positively affects economic growth in the Middle East and North Africa countries. Jorge B. C. & Richard A.W (2018) studied the impact of FDI on economic growth in Spain during the period 1984-2010. They found that the favorable Spanish circumstances yield no evidence for FDI to stimulate economic growth. The Spanish-EU and euro entry are also found to have had no positive effect on growth. The findings call for a fundamental rethinking of methodology in economics. Recently, Huyen et al. (2019) conducted the nexus between FDI and economic growth in developing countries in the 2000-2014 period. The results of this study show that FDI helps stimulate economic growth in the long run, although it has a negative impact in the short run for the countries in this study. Other macroeconomic factors also play an important role in explaining economic growth in these countries.

Regarding FDI, upon analyzing Vietnam's FDI statistics from 1988 to 2003, Mai (2003) finds that FDI has a positive effect on the growth of the economy as a whole. Huong and Nhuong (2003) compare and analyze the movements of FDI inflows to Vietnam and China in the period 1979-2002 and draw some lessons for Vietnam. They verify the important role of FDI on Vietnam's development in terms of economic growth, structural change and job creation. Then, Hoa (2004) concludes that FDI positively impacts on economic growth through the formation and accumulation of capital assets. In addition, there is evidence to support the relationship between FDI and human resources. Phuc (2004) argues that Vietnam's growth rate is largely dependent on the foreign invested sector and demonstrates the considerable contribution of FDI to value added of industry sector, capital formulation, job creation and balance of payments. Anh et al. (2006) indicate how FDI influences capital formation and growth rate in Vietnam's economy. Lan (2006) confirms the positive role of FDI not only on economic growth but also on domestic investment. Anwar and Nguyen (2011) reaffirm the positive effect of FDI on Vietnam's economic growth over the period 1996-2005. Contrary to this wealth of research on the national level, there are few types of research on the role of FDI on economic growth at the provincial level. Ha (2016) studied the relationship between FDI and economic growth in Tra Vinh province from 1999 to 2013. The author uses the VAR model, Granger causality and variance decomposition to conduct the research. The findings are that there exists a causal relationship between FDI and economic growth in Tra Vinh province. Mai & Thuy (2016) examined the relationship between FDI and economic growth in Khanh Hoa

province in the period of 1995-2014. They found that economic growth is positively affected by FDI capital, but the FDI capital is not affected the economic growth in Khanh Hoa province.

METHODOLOGY

Data was collected by year for the period 1987-2019 (33 observations) from Nam Dinh statistical yearbook and reports of Nam Dinh Department for Planning and Investment, General Department Statistics of Viet Nam. The variables in the empirical model are in the form of natural logarithm form to run estimation by Eview software (version 9).

This paper uses the VAR model proposed by Christopher A. Sims (1980) to examine the impact of FDI on economic growth, testing Granger causality to determine whether a causal relationship exists between economic growth and FDI in Nam Dinh province. The VAR model is actually a combination of the two models: univariate autoregression (AR) and simultaneous equations (SEs). The VAR model combines the advantages of AR as easy to estimate by the method of ordinary least square (OLS) and the advantage of SEs is to estimate multiple equations simultaneously in the same system. Additionally, the VAR model can overcome the disadvantages of SEs as it does not need to pay attention to the endogeneity of variables. That is, macroeconomic variables are often endogenous when they interact with each other. This attribute makes the classical method of multiple regression sometimes deviate when estimating. These are the basic reasons why the VAR model is popular in macroeconomic research. However, the requirement of the VAR model is that variables must be stationary and select the optimal lag.

EMPIRICAL RESULTS

Variable and model

The paper proposed an empirical model that analyzed the relationship between economic growth and FDI in Nam Dinh province for time-series data in the period of 1987-2019 as follows:

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \cdots + \alpha_p Y_{t-p} + \beta_1 X_{t-1} + \cdots + \beta_p X_{t-p} + \varepsilon_{yt} \quad (1)$$

In which: t is the time; X_t and Y_t are the time sequences; ε_{it} is error term; p is the lag of variables. The dependent variable is:

GRDP: economic growth, measured by the gross domestic product in Nam Dinh province at 2010 price (billion VND). Some independent variables are:

FDI: annual implemented FDI in Nam Dinh measured by billion VND at 2010 prices.

OPEN: trade openness measured by a percentage of GRDP of the total annual export-import value in Nam Dinh province.

LF: labor force measured by a number of working people.

The results

Table 1 shows that Nam Dinh's GRDP averaged is 23.1 billion VND (at 2010 prices) in the period of 1987-2019. Of which, the highest GRDP was 46.2 billion VND in 2019, an increase of 5.9 times with the lowest year of 7.8 million VND in 1987. FDI implemented in Nam Dinh province is also nearly 15 times higher from 1.1 billion VND in 1987 to 16.4 billion VND in 2019, an average of 7.1 billion VND in the period of 1987-2019.

Table 1: Descriptive statistics

	Maximum	Mean	Median	Minimum	Std.Dev.
GRDP	46.2	23.1	19.6	7.8	11.5
FDI	16.4	7.1	5.4	1.1	4.2
OPEN	58.3	32.4	31.0	15.6	11.3
LF	668,150	469,588	519,728	258,879	141,052

Source: Author's estimation

Table 2: Unit root test

Variables	ADF			
	t-statistic	1%	5%	10%
LnGRDP	2.11	-2,58	1.86**	-1.60
LnFDI	4.03	-2,58***	1.86	-1.60
LnOPEN	1.25	-2,58	-1.86	-1.60
LnLF	3.28	-2,58***	-1.86	-1.60
DLnGRDP	-0.33	-2,60	-1.86	-1.60
DLnFDI	-2.59	-2,59	-1.86**	-1.60
DLnOPEN	-2.31	-2,60	-1.86**	-1.60
DLnLF	-3,38	-2,59***	-1.86	-1.60

*Note: The asterisks ** and *** denote the statistical significance at the 5 and 1 percent levels, respectively*

Source: Author's estimation

The paper applies Eview 9 software to employ the augmented Dickey-Fuller (ADF) test to verify the stationary of the four time series variables. The results of the ADF test are reported in Table 2. As demonstrated, all four variables are stationary in level form except OPEN variable is integrated of order one, I(1). As such, the VAR model is regressed with variables LnGRDP, LnFDI, LnLF and DLnOPEN.

As well-known, economic variables do not affect immediately right after the time of investing. In other words, they often have different lags. Through 5 selection criteria as LR, FPE, AIC, SC, HQ, Eview software determines the optimal lag is 2 as indicated in Table 3.

Table 3: Optimal lag selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	51.14731	NA	2.54e-09	-5.596433	-5.325372	-5.567175
1	145.7436	121.2488	8.75e-12	-14.73290	-12.15456	-13.58677
2	235.4492	60.35986*	1.79e-15*	-21.01442*	-18.41081*	-20.64966*

Source: Author's estimation

Granger causality

Table 4 shows a one-way causal relationship between economic growth in Nam Dinh and FDI, between GRDP, FDI and labor force. GRDP has an impact on FDI, in this case GRDP is the causal variable and FDI is the outcome variable. However, the study also found that economic growth was not affected by FDI at a significant level of 5%.

Table 4: Granger causality

Null hypotheses	Lag 1		Lag 2	
	F-stat.	p-value	F-stat.	p-value
LnGRDP does not impact on LnFDI	6.84	0.01	3.35	0.06
LnFDI does not impact on LnGRDP	0.69	0.41	0.62	0.58
LnLF does not impact on LnFDI	1.07	0.32	2.15	0.15
LnFDI does not impact on LnLF	4.51	0.04	1.86	0.19
DLnOPEN does not impact on LnFDI	1.49	0.23	0.67	0.51
LnFDI does not impact on DLnOPEN	0.01	0.96	0.67	0.51
LnLF does not impact on LnGRDP	3.11	0.08	0.33	0.77
LnGRDP does not impact on LnLF	0.52	0.49	1.25	0.34
DLnOPEN does not impact on LnGRDP	0.05	0.84	0.14	0.88
LnGRDP does not impact on DLnOPEN	0.18	0.68	1.27	0.33
DLnOPEN does not impact on LnLF	0.37	0.55	0.38	0.66
LnLF does not impact on DLnOPEN	0.36	0.55	0.34	0.71

Source: Author's estimation

Following are two estimated equations after erasing some variables which are not statistically significant in the empirical study.

$$\text{Ln GRDP}_t = 0.056\text{LnFDI}_{t-2} + 1.244\text{LnGRDP}_{t-1} + \varepsilon_t \quad (2)$$

$$\text{LnFDI}_t = 0.395\ \text{LnRGDP}_{t-1} + 0.343\text{LnFDI}_{t-1} + 0.326\text{LnLF}_{t-1} + \varepsilon_t \quad (3)$$

Equation (2) shows that the economic growth of the current year is affected by that of a previous year at 5% statistical significance, but not affected by FDI. However, FDI in the previous two years is considered as effecting current economic growth at a 10% statistically significant level. Equation (3) indicates that GRDP positively effects on FDI at lag 1. It means that after one year, 1% in the average economic growth will help increase in FDI flow 0.395%. In addition, FDI also gets from its own impact, meaning the change of current

FDI capital will affect FDI in one year later. Subsequently, labor force positively impacts on FDI at the 10% significance level. Specifically, a 1% increase in the labor force in year t will have a positive impact on attracting 0.326% increase in FDI after one year.

The research results show that economic growth in Nam Dinh province positively impact on attracting FDI inflows while FDI has no impact on local economic growth at a significant level of 5%. This can be explained as Nam Dinh has a low rate of implemented FDI growth, ranging from -0.05 to 1.06%, although this is a fairly developed province compared to the country. Specifically, the economic growth rate of Nam Dinh was high and stable, ranging from 5.4 to 9%, the average growth rate from 1987-2019 was 7.15% at a fixed price of the year 2010. The contribution to the state budget is largely dependent on domestic investment while the FDI sector contributed to the Nam Dinh budget in 2019 accounted for 3.84% compared to the total. Concurrently, the results also indicate labor force positively impacts GRDP and FDI, meanwhile, the study has not found the evidence to demonstrate the effect of trade openness on GRDP and FDI.

CONCLUSION AND RECOMMENDATION

In the context of international economic integration, taking advantage of foreign capital to develop the economy of Nam Dinh province is necessary. The analysis results partly show that FDI has played an important role in Nam Dinh's economic growth over the past 3 decades. Although, the contribution of the FDI sector to economic growth in the province is limited. This is the empirical evidence to offer some recommendations to attract more FDI inflows. The empirical results indicate that there is a one-way causal relationship between FDI and economic growth in Nam Dinh province. In order to attract more FDI, the authorities should focus on developing high quality human resources, expanding foreign investment promotion activities, encouraging and selecting FDI projects to develop supporting industries to create sustainable links between foreign and domestic enterprises on the principle of mutual benefits. At the same time, strengthening inspection and examination of FDI enterprises on taxes, labor and environment to minimize the negative impact of FDI inflows to the localities. The objective of foreign investors is profit, so it is necessary to apply synchronous measures to promote the positive aspects of FDI inflows effectively. The limitation of the paper is to cover some main variables, it can omit some control variables. Based on this study, further studies should be focused on each sector to consider the impact between FDI and economic growth in Nam Dinh province.

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