

Factors affecting the attraction of foreign direct investment: A study in northwest of Vietnam

Phuong Tran Hoa^{a*}, Ha Nguyen Thi Thu^b and Duong Nguyen Duc^b

^a*Institute of Political Economics, Ho Chi Minh National Academy of Politics, Vietnam*

^b*Hanoi University Natural Resource and Environment, Vietnam*

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ABSTRACT

Foreign direct investment (FDI) plays an important role in economic growth for developing countries where there is always a shortage of investment capital. Its role is manifested through promoting economic restructuring, expanding markets, promoting exports, developing human resources and providing new technologies for development. Therefore, FDI has always been addressed as the top concern of governments in developing countries. However, FDI inflows often fluctuate because of many factors related to the competitive environment, such as market size, economic openness, competition in labor resources, etc. There are many empirical studies related to FDI inflows. However, most of these studies are carried out in developed countries. Meanwhile, in developing countries, there is not as much as this kind of study. On the other hand, the empirical research results are not consistent. This article will analyze the factors affecting FDI in the Northwest region of Vietnam in the context of global economic integration in the period of 2000 - 2019, from which we draw out the policy implications that can be applied to Vietnam.

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1. Introduction

Foreign direct investment (FDI) is one of the important capitals and necessary for the economic development of countries in general and Vietnam in particular. According to UNCTAD (2012), in recent years, the global FDI capital has tended to increase strongly, but the amount of FDI into developing countries has tended to decrease instead. According to the Ministry of Planning and Investment (2020), the amount of FDI in Vietnam is not evenly distributed among provinces in the country. The FDI enterprises often invest in big cities such as: TP. Ho Chi Minh City, TP. Hanoi, Binh Duong, etc. The Northwest region, which includes Lai Chau, Dien Bien, Son La, Hoa Binh, Yen Bai, Lao Cai, is a mountainous area with many difficulties and inadequacies in transportation between localities. Transport infrastructure is a major barrier to the investment in this region, leading to increasing product costs and reducing the competitiveness of enterprises. This also causes difficulties and affects the inflow of foreign investment into the region.

Among the six provinces in the Northwest Vietnam, Lao Cai has led in attracting foreign investment with 35 projects, total registered investment capital is 875 million USD (accounting for 50.5% of total investment capital), followed by Hoa Binh with 33 projects, total registered investment capital is 435.4 million USD; Son La has 10 projects with 280 million USD, Yen Bai 23 projects with 137.6 million USD, Lao Cai with 5 projects with a total capital of 4 million USD, Dien Bien province has 1 project with a total capital of 129 thousand USD but already converted into domestic investment.

* Corresponding author.

E-mail address: thphuong6888@gmail.com (P. T. Hoa)

According to the statistics of Foreign Investment Agency - Ministry of Planning and Investment (2020), up to now, the Northwest region has 106 investment projects with a total capital of 1.73 billion USD. The FDI in the Northwest provinces is mainly invested in manufacturing and processing industry with 68 projects, total investment capital of 90.5 million USD, (accounting for 78% of investment capital); followed by the mining sector with 3 projects with total registered investment capital of 151.5 million USD (accounting for 27.5% of investment capital), arts and entertainment sector ranks 3rd with 3 projects and 86 million USD, accounting for 5% of investment capital. There are 18 countries and territories investing in the Northwest provinces, Chinese investors reach the 1st place with 40 projects, total investment capital of 890 million USD (accounting for 51.4% of total investment capital), followed by partners from Japan, Australia with capital of 147.8 million USD, and 136 million USD respectively. Among the six provinces in the Northwest, Lao Cai has led in attracting foreign investment with 35 projects, total registered investment capital is 875 million USD (accounting for 50.5% of total investment capital), followed by Hoa Binh with 33 projects, total registered investment capital is 435.4 million USD; Son La has 10 projects with 280 million USD, Yen Bai 23 projects with 137.6 million USD, Lao Cai with 5 projects with a total capital of 4 million USD, Dien Bien province has 1 project with a total capital of 129 thousand USD but already converted into domestic investment. Recently, the Northwestern region has not mobilized this capital effectively from FDI enterprises. What are the main factors affecting FDI into the Northwest region? The objective of the research is to determine the factors that affect the amount of FDI in this region and make comparisons between the differences in the whole country, thereby proposing solutions to help the Northwest attract more FDI and boosting economic growth of provinces in the Northwest.

2. Literature review

2.1. Theoretical basis

According to Young et al. (1989), foreign direct investment is an investment that is made to establish long-term economic relationships with an enterprise by establishing or expanding an enterprise or a branch which is under the management of the investor, by acquiring all existing businesses, by participating in a new business or providing long-term credit (over 5 years). FDI capital is determined by these two following criteria: (i) Foreign investment capital and assets are licensed to do business in Vietnam (ii) This investment capital and assets are listed in the report of FDI of the Foreign Investment Agency of the Ministry of Planning and Investment of Vietnam or the General Statistics Office of Vietnam or other Government agencies.

In the Harrod-Domar model cited by David (2012), the source of economic growth is an increase in the amount of capital (K) put into production. The Harrod - Domar model describes the relations of economic growth in which GDP growth (g) is directly proportional to the rate of national saving (s) and inversely proportional to the capital-output ratio (k): $g = s / k$. Growth model Harrod - Domar said that in order to promote economic growth, it is necessary to have new investment, also known as net investment.

Solow's (1956) model of economic growth initially sees output (Y) as a function of capital (K) and labor (L), then another input to the economy is technological progress. Technical innovation is the source of productivity improvement. If E is the productivity of labor, the production function takes the form $y = f(K, L \times E)$ According to Solow's model, in poor countries, economic growth is based on basic inputs such as population and working hours, in industrial countries, is technology.

According to Heckscher – Ohlin (Heckscher & Ohlin, 1991), the shift of foreign investment is determined through the ratio of different input factors (main factors such as capital, technology, labor). International investment capital tends to shift from surplus to deficit countries, from a country with low marginal productivity of capital to high marginal productivity of capital. These international investments benefit both countries.

Kojima (1973) said that FDI should focus on countries with no advantages in high technology and lack of relative capital. According to this theory, FDI creates relations of investment and trade among countries, FDI helps to shift economic structure, especially agricultural structure. Monetary capital is an important element of the production process, its movement can lead to production expansion and higher equilibrium point of output

2.3. Factors affecting FDI

Demirhan and Masca (2008) on public spending and economic growth in 14 OECD countries shows that government spending on health, transportation and communication has a negative impact on GDP, while expenditures on national security and education have no impact on GDP (Folster & Henrekson, 2001; Hsiao & Shen, 2003). According to Tien (2014), budget revenue has a positive impact on economic growth (GDP) in the North but has a negative impact (negative impact) on the South and from there on FDI. At the same time, the author also does not find a relation between the government's recurrent expenses to FDI capital as well as GDP. According to Oshikoya (1994), if the increase in public investment is mainly in social infrastructure,

it will be the driving factor for private investment. However, excessive public investment could make private investment apart from the picture, and public investment will be a burden for the Government in the future.

Some other arguments say that FDI capital outweighs domestic investment (DI) and has a negative impact on growth. Research by Huang (2003), Braunstein and Epstein (2002) shows that FDI can replace DI capital in long term. According to research by Acar et al. (2012) in 13 countries in the Middle East and North Africa (M NA) in the period 1980 – 2008, FDI actually outweighed DI. According to Muhammad et al. (2013), FDI has an impact on GDP, but this impact is lower than the impact of exports on GDP. Research of Demirhan and Masca (2008) in 38 developing countries from 2000 to 2004 showed that such factors as: market size (measured by GDP), infrastructure (represented by the number of telephone lines) and trade openness have a positive effect on FDI in these countries. The lower inflation and taxes are, the more FDI will increase. Azam (2010) said that market size and official development assistance have a positive impact on FDI capital and inflation has a negative impact on FDI.

According to Spatz and Nunnenkamp (2002), an important determinant of FDI in 28 countries is the average number of education years of the total population aged 15 and over. According to Deyo (1989), highly educated labor is less important than the market, cheap labor, and abundant natural resources for FDI enterprises when investing in developing countries. According to Masaru Ichihashi (2011), the labor factor has a significant impact on FDI capital and due to the imbalance of development between regions, the effects of FDI are different. Solomon (2011) used the GMM estimation method with a data sheet of 111 countries from 1981 to 2005. The results showed that the level of economic development, human resources and the quality of the politics systems in host countries have a positive effect on total FDI as well as economic growth.

Research by Liu (2008) was aimed to find out the causes leading to the disparity of FDI in the regions of China. The study was conducted in 31 provinces of China which are divided into 3 regions (coastal area, central area and western region). The results confirm that FDI is attracted by different factors as regional characteristics have a strong impact on FDI attraction. Research by Ei (2008) in economic regions of China in the period 1979 - 2003 also shows that there is an uneven distribution of FDI and FDI has a differential impact on economic growth of each region.

Phúc and Hiệp (2011) carried out a research on the factors affecting the foreign investment attraction of provinces in Vietnam from 2006 to 2009 with 252 observations. The independent variables are the total PCI index and its 7 component indices. They found that gross industrial product, legal system, infrastructure, and business support services have an impact on FDI attraction in the provinces of Vietnam. Altunc and Senturk (2010) and Tien (2014), the economic crisis in 1994 and 2008 did not affect FDI inflow but did affect the economic growth of the countries. The higher economic openness is, the more influence the countries get.

3. Method

3.1. Data

Subject and scope of research: All FDI enterprises investing in the Northwest. Data collected from the Statistical Yearbook of the Statistical Office and Provincial Competitiveness Index (PCI) over 10 years (collected from VCCI website at: www.vcci.com.vn). The valid number of observations is 630.

3.2. Models

$$FDI_{it} = \beta_0 + \beta_1 \times GDP1_{it} + \beta_2 \times CDTC_{it} + \beta_3 \times VONNN_{it} + \beta_4 \times VONTN_{it} + \beta_5 \times OPEN_{it} + \beta_6 \times CPI_{it} + \beta_7 \times LDLV_{it} + \beta_8 \times DTHOAI_{it} + \beta_9 \times BANLE_{it} + \beta_{10} \times CFTT_{it} + \beta_{11} \times HTDN_{it} + \beta_{12} \times KHKT$$

With

i : Typical for the i^{th} locality; $i = 1, \dots, 63$

t : Typical for year t ;

$t = 1, \dots, 10$ (10 years from 2010 to 2019)

u : Error

β_0 : Coefficient of origin

$\beta_1 - \beta_{12}$: Estimated coefficient of the independent variables.

Table 1

Description of the variables in the research model

Variable	Definition
FDI	FDI: is the total newly registered FDI capital every year in Vietnam's localities, including capital increase (unit: million USD).
GDP1	GDP1: is the annual gross domestic product in all regions of Vietnam, calculated at 2010 prices. (unit: Billion VND)
CDTC	Balance of revenue and expenditure (Total revenue - total expenditure) of the local budget (unit: Billion VND)
VONNN	Total state investment capital in localities (unit: VND billion)
VONTN	Total domestic private investment in localities (unit: VND billion)
OPEN	The openness of the economy (Total exports, imports / GDP)
CPI	Consumer price index or local inflation rate (%)
LDLV	Labor force (unit: million people) is counted by the total number of employed workers aged 15 and over.
DTHOAI	The numbers of landline telephone subscribers are one of the variables that represent a group of local infrastructure variables. (Unit: Number of subscribers / 1,000 people)
BANLE	Total sales revenue in localities - is the variable representing the market size of the provinces (unit: billion VND).
CFTT	The cost of entering the market is a variable that represents the characteristics of the locality (unit: point)
HTDN	Enterprise support or private economic development policy is a variable that represents the local characteristics (unit: point)
KHKT	Economic crisis, this variable takes value = 1 if FDI capital is registered before 2015 and value = 0 if FDI capital is registered from 2015 to 2020.

3. Results

3.1. Correlation and Multicollinearity Test

According to the results of correlation analysis, the variable of state investment capital and the variable “Total retail sales” and the variable “Labor force” have a correlation higher than 0.5, indicating that these two variables have correlated closely with some other variables. However, considering the VIF, we see that the VIF coefficients are less than 10, the variable with the largest VIF is the total retail sales of goods, which is only 7.07. At the same time, the tolerances of the variables are small. Thus, the variables in the model do not have the phenomenon of multicollinearity.

Table 2

VIF coefficient

Observed variables	Dependent variable : FDI		Observed variables	Dependent variable : FDI	
	VIF	Tolerance		VIF	Tolerance
GDP	4,64	0,216	LDLV	3,48	0,288
CDTC	1,68	0,598	DTHOAI	1,76	0,571
VONTN	4,65	0,215	BANLE	6,38	0,157
VONNN	3,19	0,314	CFTT	1,31	0,769
OPEN	1,49	0,674	HTDN	1,36	0,740
CPI	1,11	0,908	KHKT	1,82	0,553

Heteroskedasticity Test: Conduct the Heteroskedasticity test by Breusch & Pagan method (1979), based on Prob index of Chi-square test value to decide whether to accept or reject Hypothesis H₀. If Prob $\geq \alpha = 5\%$, the hypothesis H₀ cannot be rejected, which means there is no heteroskedasticity.

Table 3

Results of Heteroskedasticity and serial correlation test

Heteroskedasticity test	Uncalibrated model		Calibrated model	
	F-statistic	Chi-square	F-statistic	Chi-square
Country	0,0001	0,0000	0,2745	0,2672
Northwest region	0,7012	0,7015	0,7503	0,7534
Serial correlation test (U)			0,0000	0,0000

Serial correlation test: Wooldridge (1991) determined if there was a first-order serial correlation test by regressing the residue obtained in the original model with its hysteresis as model $\varepsilon = \rho\varepsilon(t-1)$ then proceeded Wald test for this model. If the first-order serial correlation occurs, the coefficient ρ will take the value -0.5. Hypothesis H₀ of the Wald test is $\rho = -0.5$, it means that there is a first-order serial correlation. If the p-value \leq significance level α , we reject the hypothesis H₀, which means serial correlation phenomenon does not occur and vice versa (Panel Least Squares Method). According to the analysis, the model doesn't contain any serial correlation and the Heteroskedasticity has been solved.

3.2. Difference Test

The results of testing the difference (by Levene's Test and t-test) of FDI capital in Northwest provinces and the whole country give $F = 77,761$ and $Sig = 0,000$ (Table 5). This shows the difference in FDI capital of localities. At the same time, the average value of FDI of the Northwest provinces is very small compared to the whole country.

Table 4
Results of testing the differences in FDI capital

		Total FDI capital		
		Equal variances	Equal variances not	
Levene's Test for Equality of Variances	F	77,761		
	Sig.	0,000		
t-test for Equality of Means	t	-5,384	-8,022	
	df	428	328,260	
	Sig. (2-tailed)	0,000	0,000	
	Mean Difference	-4000	-4000	
	Std. Error Difference	743	499	
	Observations	Average	Variance	Standard deviation
The northwest region	130	658,836	1251,642	109,776
Country	630	4658,884	8424,966	486,416

3.3. Regression results

In the whole country: The Wald test results give the value of Chi-square = 353,1253 and Prob = 0.0000 $< \alpha = 0.05$, so we reject the hypothesis H_0 , thus, there is a difference of the vertical axis coefficient among independent variables, so the FEM model is more suitable than the POOL model. In case of the Northwest region, where the value of Chi-square = 123.565 and Prob = 0.0000 $< \alpha = 0.05$, so we reject the hypothesis H_0 , thus, there is a difference between the vertical axis coefficient among independent variables, Therefore, the FEM model is more suitable than the POOL model.

Table 5
Results of FEM model

Dependent variables	Country	SCL	Dependent variables	Country	SCL
<i>GDP</i>	1,084*	-0,261	<i>LDLV</i>	1,452*	5,057*
<i>CDTC</i>	-0,015***	-0,036*	<i>DTHOAI</i>	0,330*	0,444*
<i>VONTN</i>	-0,107	-0,549*	<i>BANLE</i>	0,137	0,004
<i>VONNN</i>	0,056	0,551*	<i>CFTT</i>	0,092*	0,156**
<i>OPEN</i>	0,014*	0,134*	<i>HTDN</i>	0,079*	0,106**
<i>CPI</i>	-6,92E-05	-0,005	<i>KHKT</i>	-0,102	-0,140
<i>Observations</i>	300	130	<i>R2</i>	0,9725	0,9049
<i>Durbin-Watson</i>	1,3095	1,3866	<i>Calibrated R2</i>	0,9682	0,8832

Note: *** Significance level 1%, ** Significance level 5%, * Significance level 10%.

4. Discussion

Variable GDP: With a significance level of 1%, the variable GDP has an impact on the attraction of FDI into the country and there is no relation between GDP and FDI in the Northwest provinces. Hence, GDP has a positive impact on FDI attraction and varies depending on economic region. The specificity of each region is of great importance to creating regional differences and affecting FDI attraction. Vietnam is a developing country, there is always a need for high-tech machine and equipment for production-business process. It is also essential to carry out a product value chain according to closed line.

Variable LDLV: With the significance level of 10%, the labor force has a positive impact on FDI capital (as expected). Research results are consistent with previous studies of Solomom (2011). This result shows that foreign investors pay their attention to GDP yet it does not mean that all provinces with high GDP will attract more FDI.

CDTC variable: The variable "balance of revenues and expenditures" of localities always has a negative impact on FDI attraction in the whole country and the Northwest region. With a significance level of 1%, the balance of revenues and expenditures in the Northwest region has contradictory effects with the attraction of FDI into this region. Results are in line with initial expectations and with results of Folster and Henrekson (2011), Fu et al (2003). Most of the provinces in the Northwestern region are not able to cover expenses (budget deficit). In case of some developing and underdeveloped provinces, there is always a deficit as a result of the necessity of increasing expenditures in boosting economic growth, improving infrastructure, people's education.

Variable OPEN: With a significance level of 1%, the openness of the economy has positive impact on FDI of the whole country and the provinces in the Northwest region. Research results are in line with initial expected sign and consistent with research results of Demirhan and Masca (2008), Nguyen Minh Tien (2014). The increase of economic openness as well as export turnover will benefit the economy. However, for Vietnam, increasing import turnover is still beneficial, but the importance is what to import? Both FDI and domestic enterprises are interested in the labor force when making decisions because these are factors that affect enterprise costs, labor productivity, and production- business efficiency. According to research, in order to attract more FDI, it is necessary to develop the labor force in terms of both quality and quantity.

DTHOAI variable: In this study, the infrastructure variable is represented as the number of telephone subscribers per 1,000 inhabitants. With a significance level of 10%, infrastructure has a positive impact on FDI (in line with initial expected sign). This result is also in line with the research results of Demirhan and Masca (2008). Development of infrastructure in general and in transport and communication infrastructure in particular are essential to attract more FDI. Communication and traffic are two factors related to production-business costs, freight transportation, business management, so all-level authorities need to study and complete the infrastructure system.

CFTT variable and HTDN variable: Market entry costs and supporting polices for private economic development (KTDN) are two component indicators of the Provincial Competitiveness Index (PCI). Research by Phuc and Dai Hiep (2011), using the component indices: business support services (HTDN), legal system, infrastructure, etc. shows that these variables have a positive impact on FDI. Hence, FDI enterprises does not focus on the total PCI, but only a few component indicators that have a strong influence on enterprises in terms of investment process and production-business activities or in other words, enterprises only focus on a few of the important local characteristics when deciding to invest.

VONTN: Domestic private investment capital has an impact on FDI, however, private investment capital and FDI capital have a negative relationship (with a significance level of 10%). This result shows that there is a dominance between FDI capital and domestic private investment capital. This result proves that the research results of Acar et al. (2012) are suitable. Considering the whole country, domestic private investment capital does not affect FDI capital, in other words, FDI capital and domestic private investment capital are not in a relationship. In the Northwest region, FDI outweighs domestic private investment (negative relationship). Thus, depending on the characteristics of each locality, FDI capital may either dominate or not dominate domestic private investment capital.

VONNN variable: State investment capital has a positive effect on FDI boosting (positive effects on FDI attraction) in Northwest provinces. The more state capital invested in the Northwest region, the more FDI attraction put into this region, which shows through the regression coefficient $B = 0.551$, with the significance level of 10%. Research results are in line with research by Huang (2003). State capital has a positive impact on FDI attraction into Vietnam.

5. Conclusion and recommendation

5.1. Conclusion

From the research results, it can be concluded that the factors affecting the FDI attraction to the Northwest in recent years are: Low growth rate, the labor force is the main contributor to economic growth and FDI capital attraction (FDI invested in labor-intensive industries), domestic private capital and state investment are still very modest and overweighed by FDI. Especially the variables of market entry cost and business support have a strong influence on FDI capital. However, considering two above variables, the Northwest provinces have not carried out well, the market entry costs are still high, and the policies to support the development of the private economy have not been paid attention to.

The country's economic growth has a positive impact on FDI attraction but the relation between GDP and FDI of the Northwest provinces has not been found. The balance of state budget revenues and expenditures has an inverse impact on the overall FDI capital of the whole country and the provinces in the Northwest region.

Domestic private investment has no relation to FDI in the country but FDI capital outweighs domestic private investment capital in the Northwest provinces. FDI capital and state investment in the Northwest provinces have a positive relationship, but the relation between the state investment capital and FDI capital in the country has not been found.

The consumer price index, the total sales of goods and the economic crisis do not affect FDI capital into Vietnam and the Northwest provinces. The global economic crisis does not affect the amount of FDI capital into Vietnam because in recent years, the amount of FDI capital invested in Vietnam is not significant, there are no world-class projects. The domestic market is still a promising land for foreign investors.

5.2. Recommendation

Infrastructure is always one step ahead. Although there are 60,000 km of roads, including about 10,000 km of national highways, with all kinds of roads, railways, waterways, and airways, but due to isolated hills, traffic in Northwest is still very difficult, adversely affecting investment - business costs.

Even the Noi Bai - Lao Cai expressway has made this area closer to the centers of economic development, it is not enough to create a breakthrough when the provincial connection still remains plans.

Therefore, it's necessary to continue to improve the transportation system such as highways connecting the Northwest region with the surrounding regions. These expressways are invested by the State budget, ODA or investment in the form of PPP.

In parallel with investment in roads, it is necessary to synchronize electricity, water, information systems and credit.

Human resource development: Foreign investors bring money to invest in other countries to exploit the advantages of abundant raw materials, abundant, cheap human resources or high-quality human resources. But the Northwest region has a very small population density, low educational level, so, in order to attract investors, it is necessary to develop human resources in both quantity and quality.

Completing legal environment: It's necessary to attach importance to the administrative procedures which are listed publicly, clearly, specifically at agencies; at the same time promote communication on the mass media, the province's website, the investment and cooperation promotion website, the website of the departments. It is also needed to simplify administrative procedures, eliminating unnecessary bureaucracy.

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