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THE SPILLOVER EFFECTS OF FOREIGN DIRECT INVESTMENT ON DOMESTIC ENTERPRISES IN SAVANNAKHET PROVINCE, LAOS

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Abstract: The objective of this study is to examine the spillover effects of foreign direct investment (FDI) on domestic firms in Savannakhet province, Laos. The author uses the fixed effects model (FEM) and the random effect model (REM) with the help of Eviews software and Hausman test to analyze the spillover effects of FDI on domestic firms. in Savannakhet province in the period 2013-2018. Table I-O 2018 is used to structure the relationship between domestic firms and FDI enterprises through the horizontal and vertical spillover effect of FDI on domestic firms. With the data set of sectors from 2013 to 2018, the author estimated the impact of FDI on production and business activities of FDI enterprises. The result of this study is that there is empirical evidence of the effect of the spillover effect of FDI on domestic firms in Savannakhet province.
Keywords: FDI, spillover effects, horizontal spillover, vertical spillover, fixed effects model, random effects model.

1. Introduction

In the period of industrialization and modernization today, in order to catch up with the trend of the times, the opening of Savannakhet to attract FDI is a right and reasonable step. FDI can affect all sectors such as economy, culture, and society. However, with developing countries such as Laos in general and Savannakhet province in particular, economic development goals are always on top priority. In addition to bringing abundant capital for domestic development investment, improving the increasingly depleted capital, FDI inflows also bring great benefits through a spillover effect namely new technology., new management methods. The influx of new technology and operations of FDI enterprises can create huge spillover benefits for domestic firms. Domestic firms learn the technology of foreign firms by observing or imitating products or

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technologies introduced, labor mobility when FDI firms employ workers in the host country and teams. This qualified workforce leaves FDI enterprises to move to work in domestic enterprises or possibly establish a new company. From there, knowledge and technology can be transferred or spread from FDI enterprises to domestic enterprises through the process of training workers and managers, which brings significant benefits to businesses. inland. In addition, FDI enterprises often require high quality input materials to meet the creation of their quality products. Therefore, if domestic enterprises want to supply to FDI enterprises, they have no choice but to consolidate and improve the quality and reliability of their products. FDI firms also bring great competition to domestic firms in the same industry, forcing them to invest in technology or products to keep the market. In the long run, FDI provides a more positive outlook for a market economy.

As one of the leading provinces in economic development, Savannakhet province has also attracted a considerable amount of FDI. With the benefits that FDI can bring, how has the province achieved? To answer that question, this article focuses on researching the spillover effects of FDI on domestic firms in Savannakhet province, Laos in the period 2013-2018.

2. Theoretical basis

2.1. Theoretical framework of spillover effects of FDI

The spillover effect assessment of FDI can be performed by both qualitative and quantitative methods or a combination of both. However, the results of the qualitative assessment are mainly descriptive, determining the possibility of whether or not manifestations can produce spillover effects, but cannot assess whether the spillover effects are actually current or not and the magnitude of those effects. Quantitative assessment overcomes this weakness on the basis of applying econometric models which are increasingly used. From there it is possible to draw more concrete results and thus have implications for policy makers.

The emergence of FDI can have a spillover effect through many different channels. However, these effects can often only be perceived through changes in production results, which can be measured by firm productivity. In theory, the emergence of FDI can change the labor productivity of all domestic firms, for example due to competitive pressure. To test the existence of spillover effects, first of all, it is necessary to consider the relationship between the degree of foreign participation and the change in labor productivity of domestic firms. In quantitative analysis, many different indicators can be used to estimate the level of foreign participation, the criteria to measure the position of the business or is used as the revenue generated by the FDI enterprises in the industry, the proportion of FDI in the industry or a criterion of labor ...

Various methods have been used, depending on the data availableif using quantitative analysis. For example, Haddad and Harrision (1993) assessed the spillover effects of FDI on firms in Morocco's manufacturing industry by examining the change in productivity gaps between firms in general and firms. industry with the highest productivity in the same industry. The results show that the spillover effect only appears when the productivity gap between domestic and FDI firms is not too large. Sectors with a larger share of FDI are also industries with lower

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productivity disparities and domestic firms gradually narrowing the productivity gap, mainly due to competitive pressures generated by FDI rather than must be due to spillover effects from technology transfer. Based on the above methodology, Barrios (2000) examined the spillover effects of FDI on enterprises in the same manufacturing industry in Spain. The author has expanded the quantitative model by including a number of dummy variables representing the unique characteristics of each industry and using spending on research and development (R&D) activities of the firm as a quantity. measure the technological capabilities of domestic firms. The hypothesis here is that if the technology level of firms does not reach a certain level, the competitive effect of FDI firms will be more dominant and as a result, a positive spillover effect will not appear. This hypothesis has been proven through the Spanish case for industries with low R&D spending or low technological capacity. In addition, the proportion of FDI in FDI enterprises has a positive relationship with the rate and rate of increase in value added of enterprises.

Although the Haddad and Harision methods have many advantages, it can only be implemented when there is enough data available, while the conditions of Savannakhet province do not allow to obtain detailed information about the enterprise. Therefore, this topic uses the analytical framework of Blomstrom and Sjoholm (1999) and extends the model based on the approach of Barrios (2000). To examine the effect of FDI on firm overall firm labor productivity, Blomstrom and Sjoholm begin with a hypothetical production function whereby the labor productivity of firm i in industry j depends on intensity. degree of capital, qualified labor, size of FDI (for example, due to the share of FDI in the firm), some quantities specific to the firm and some that are industry specific. Let Y, K, L and FDI be value added, capital assets (material), number of employees, and foreign contribution to total capital assets of enterprise i, the above relationship is represented by the productivity function of firm i, industry j:

$$\frac{Y_{ij}}{L_{ij}} = F\left[\frac{K_{ij}}{L_{ij}}, \quad FDI_j, trinhdo_{ij}, \quad quymo_{ij}, \quad nganh_j\right]$$

In the productivity function above, $trinhdo_{ij}$ and $quimo_{ij}$ are the two variables representing firm characteristics, with $trinhdo_{ij}$ measuring qualified labor and $quimo_{ij}$representing the size or position of firms in the industry that can be measured by multiple indicators. spending as stated above. $nganh_j$ is a dummy variable specific to a specific industry group j. The hypothesis that needs to be tested through this model is how the change in foreign participation FDI_j affects the labor productivity of firms.

The above model is also used to determine and evaluate the spillover effects of FDI on domestic firms. As mentioned above, although the presence of FDI in this industry may indirectly affect the business performance of firms in other industries, the direct affected objects are still enterprises. in the same industry. Therefore, the spillover effect can be seen through changes in labor productivity of domestic firms when foreign direct investment occurs in the industry in which enterprises are operating. In this model, *vitheFDI* is a quantity reflecting the position of the foreign side in the industry and di is the symbol of domestic enterprises. With the presence of

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FDI in sector j, the labor productivity of domestic firms in that industry may depend on the factors shown in the equation:

$$\left(\frac{Y}{L}\right)d_{ij} = F\left[\left(\frac{K}{L}\right)d_{ij}, \quad vitheFDI_j, nghiencuu_{dij}, \quad trinhdo_{dij}\right]$$

This productivity function can be used to study the spillover effect of FDI on domestic firms and can be changed to consider the spillover effect expressed through the selection of a measure of "position" of FDI firms. industry. The spillover effect is only considered to appear if this "position" variable has an effect on productivity, as shown in the sign and level of statistical significance of the variable in quantitative analysis. In fact, it is difficult to identify and separate the spillover effects of the channel.

In addition to measuring the direct impact, this model allows to consider the effects of some other factors that indicate the firm's ability to absorb spillover effects. The basis for the test is based on the results of many studies that the spillover effects as well as its level depend heavily on the absorption capacity or ability of the business to adjust when the foreign side appears. Two important factors that are often mentioned are technology level and skilled labor. In the above model, $nghiencuud_{ij}$ is the research and development expenditure of domestic firms in the industry that is used to measure the firm's technological capabilities. In addition, research and development spending also shows that R&D is a quantity that directly affects the labor productivity of firms. The variable $trinhdod_{ij}$ has the same meaning as the variable $nghiencuud_{ij}$, both affecting productivity and controlling the role of skilled labor in the process of spillover effects.

The analytical framework presented above is the basis for conducting quantitative analysis. Because the applicability of the theoretical models depends heavily on the collected data

Therefore, quantitative models will have certain changes to suit the situation in Savannakhet province, Laos.

2.2. The Cobb function - Douglas

In economics, the Cobb - Douglas production function is widely used and widely used

variable in the analysis of growth and productivity, it shows the relationship between an input quantity and a quantity of output. It was proposed by Knut Wicksell (1851 - 1926) and tested with statistical evidence by Charles Cobb and Paul Douglas in 1928.

Cobb and Douglas (1928) published a study in which they simulated the development of the US economy during 1899-1922 with a simplified view that the economy, in which production output was determined. determined by the number of employees involved and the amount of capital invested. While there are many other factors that affect the economic efficiency their models prove to be quite accurate. The Cobb - Douglas function looks like this:

$$Y=A\,L^{\alpha}\,K^{\beta}$$

Considering:

Y: Gross output is calculated by the monetary value of all real goods

export for a year.

L: labor input is calculated by the total number of employees working in a year.

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K: input capital is calculated by the monetary value of all machines, equipment, ...

A: a factor in the total factor productivity (TFP), can be science and technology

α, β are output elasticity of labor and capital ($0 <\alpha <1$; $0 <\beta <1$)

In the Cobb-Douglas production function, if labor L is fixed, the marginal output of capital at some point (at a certain level K) is the amount of output that increases with an increase in the unit of capital. The marginal output of capital is:

$$MPK = \frac{\partial Y}{\partial K} = \propto . A . K^{\propto -1} . L^{\beta} > 0$$

The marginal yield of capital in accordance with K is calculated by the following formula:

$$MPK' = \frac{\partial MPK}{\partial K} = \alpha . (\alpha - 1) . A . K^{\alpha - 2} . L^{\beta} < 0 \ (với \ 0 < \alpha < 1)$$

Therefore, the change in marginal output of capital in terms of K is always negative because (α-1) <0. This shows that MPK always decreases with K.

Similarly, the marginal output of labor is the additional output when an additional unit of labor is employed, the marginal output of labor is:

$$MPL = \frac{\partial Y}{\partial L} = \beta A . K^{\alpha} . L^{\beta - 1} > 0$$

The marginal output of labor changing according to L is calculated by the following formula:

$$MPL' = \frac{\partial MPL}{\partial L} = \beta . (\beta - 1) . A . K^{\alpha} . L^{\beta - 2} < 0 \ (với \ 0 < \beta < 1)$$

Therefore, the change in the marginal output of labor according to L is always negative because (β -1) <0. This shows that MPL always decreases with L.

The reason why the marginal product of a factor tends to decrease is as follows: since other factors of production are kept the same, when increasing the quantity of a factor of its own, each Its units increasingly have fewer factors of production to coordinate. Hence, from a certain point of view, inevitably, the additional product from each additional unit of factor of production will gradually decrease. In the case of K, an increase in L may initially cause total output to increase, but the rate of increase tends to slow down. If L continues to increase, the total output will decrease, as too many workers could lead to mutual interference in the production process. Similar explanation for the marginal product of capital (fixed L).

2.3. Translog function

To consider the spillover effects of FDI on domestic firms, the subject uses the translog function estimation model as follows:

$$LnY^{j}_{it} = \alpha + \beta_1 LnK^{j}_{it} + \beta_2 LnL^{j}_{it} + \beta_3 Lnm^{j}_{it} + \beta_4 FS^{j}_{it} + \beta_5 Horizontal_{jt} + \beta_6 Backward_{jt} + \beta_7 Forw_{jt} + \beta_8 Herf_{jt} + \beta_9 R\&D_{jt} + \beta_{10} Grownship_{jt} + \beta_{11} Fownship_{jt} + \alpha_t year + \alpha_i industry + \alpha_r region + \varepsilon_{it}$$

Considering:

Y^{j}_{it}: Output value of firm i, industry j year t.

K^{j}_{it}: Capital of enterprise i, industry j year t, is measured by the value of total assets at the beginning of the year.

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L^j_{it}: Employees of enterprise i, industry j year t;

m^j_{it}: Intermediate inputs of firm i, industry j year t, as measured by the value of intermediate inputs;

FS^j_{it}: Foreign investor's share of capital in firm i, industry j year t.

$Horizontal_{jt}$: shows the level of participation of foreign firms in that industry and is calculated by the average share of foreign capital of all firms in the industry, the weight is equal to the share of the output of each firm in the industry. industry quality. This is the variable measuring horizontal spillover effects:

$$Horizontal_{jt} = \frac{\sum_{i\in j} FS_{ijt} Y_{ijt}}{\sum_{i\in j} Y_{ijt}}$$

Therefore, the value of this variable increases with the output of FDI firms and the share of foreign capital in these firms.

The variable *Backward* represents the extent to which foreign firms are engaged in the input sectors to these firms, and therefore it will reflect the degree of cooperation between domestic suppliers and their customers. FDI enterprises. This is a variable measuring the vertical spillover effect (backlink). It is calculated as follows:

$$Backward_{jt} = \sum_{k\neq j} a_{jk} Horizontal_{kt}$$

Where a_{jk} is the share of sector j's output provided to sector k, and is drawn from the 2018I-O matrix. Density is calculated but omits products intended for final consumption and is added to products import intermediate products. Here, this variable does not take into account the inputs provided internally by the industry as already shown this effect in the variable *Horizontal*. Thus, the greater foreign participation in industries receiving input from industry j and the proportion of intermediate products supplied to industries with a larger presence of FDI firms, the greater the value of this variable. will be bigger. While the coefficients taken from the I-O table are fixed, changes in the position of foreign firms are observed during the study period. Therefore, variables representing the horizontal and vertical linkages are industry-specific variables and change over time.

The variable *Forw* (forward) measures the vertical spillover effect (the downward linkage) and is defined as follows:

$$Forw_{jt} = \sum_{i\ khi\ i\neq j} \delta_{jit} Horizontal_{it}$$

In which the proportion of input δ_{jlt} of industry j purchased from industry i at time t. Inputs purchased within the industry were rejected because they were included in the variable Horizontal.

3. Data and research methods

3.1. Research data

This study uses the GSO's data set from the General Statistics Office to 2018. Accordingly, data is collected from all enterprises in Savannakhet province belonging to different forms of ownership (state-owned enterprises, private enterprises, limited liability companies, joint stock

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companies, companies partnerships, foreign-invested enterprises, cooperatives) operating in all fields in Savannakhet province for the period 2013-2018.

3.2. Research Methods

With data collected from the General Statistics Office, the topic uses the coefficient of the IO table in 2018 to structure the inverse and downward linkages of the spillover effect from FDI to enterprises in Savannakhet province through the Horizontal, Backward, Forward variables. Besides, the topic uses quantitative research methods using the Fixed effects model (FEM) and the Random effects model (REM) with the help of software. Eviews and Hausman tests to analyze the spillover effects of FDI on domestic firms in Savannakhet province in the period 2013-2018.

4. Research results

4.1. Descriptive statistics results

In order to describe all research data, generalize characteristics of dependent variables and explanatory variables, the author uses descriptive statistical methods.

Table 1: Distribution of enterprises by ownership in Savannakhet province in the period of 2013-2018

Type of business	State enterprises		Private enterprises		FDI enterprises	
	Total	Proportion (%)	Total	Proportion (%)	Total	Proportion (%)
Year 2013	0	0.00	260	77.38	76	22.62
Year 2014	0	0.00	255	74.34	88	25.66
Year 2015	0	0.00	224	70.22	95	29.78
Year 2016	1	0.33	201	65.90	103	33.77
Year 2017	1	0.29	229	67.16	111	32.55
Year 2018	0	0.00	235	67.14	115	32.86

Source: Department of Planning and Investment of Savannakhet province

Table 1 shows the research data of 1994 firms operating in Savannakhet province. In which, there are 2 state-owned enterprises, accounting for 0.1% of the total number of enterprises; 1404 private enterprises, accounting for 70.41% of the total number of businesses; the number of FDI enterprises is 588, accounting for 29.49% of the total number of businesses. The number of FDI enterprises has increased gradually and steadily over the years, but compared with the overall number of domestic enterprises, the proportion is not high. Through this, it shows that the policy of attracting foreign investment into the province has not brought into full play.

Table 2: Mean values of some key variables in the model by year

Year	y (USD)	k (USD)	l (person)
2013	58,016,490	47,011,543	97

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2014	59,075,388	47,869,645	96
2015	56,834,811	46,053,942	95
2016	55,616,819	45,066,915	98
2017	58,915,751	47,740,280	96
2018	60,408,802	48,950,208	94

Source: Estimates from the General Statistics Office of Savannakhet province

In which: y is the enterprise's output; k is the capital of the enterprise; l is labor.

It can be seen that the average size of the variables has unstable fluctuations. Specifically, in 2013, the average value of enterprise output reached 58,016 million USD, to 2014 the average value of output increased to 59,075 million USD. The average size of employees in the enterprise tends to decrease from 97 people in 2013 to 96 people in 2014. The average capital of enterprises has increased from 47,011 million USD in 2013 to 47,869 million USD in 2014.

In the period 2015-2016, the average size of the variables tends to decrease. Specifically, in 2015, the average output of the enterprise was 56,834 million USD, to 2014 the average output was 55,616 million USD. The average capital of the business was 46,053 million USD in 46,053 million USD, in 2016 it dropped to 45,066 million USD. In contrast, the average employee employed by firms increased from 95 to 98 in 2016.

In the period of 2017-2018, the value of average output and average capital tends to increase again. Production averaged $ 58,915 million in 2017 and increased to $ 60,408 million in 2018. Average capital was $ 47,740 million in 2017 and increased to $ 48,950 million in 2018. Meanwhile, the average number of employees a downward trend from 96 people in 2017 to 94 in 2018.

To calculate the effect of FDI on the productivity growth of domestic firms, it is necessary to take into account the degree of foreign participation in the industry (the share of FDI firms' capital over the industry's total capital). Thematic use the coefficients of the I-O table in 2018 to structure the vertical and horizontal relationships of the effects of FDI through the variables *Backward, Forward, Horizontal.*

Table 3: Mean values of the variables representing FDI spillover channels based on the I-O table of 2018

Year	Backward	Forward	Horizontal
2013	0.01018322	0.01010058	0.020560122
2014	0.01037433	0.01028776	0.020832292
2015	0.00997111	0.00989283	0.020231362
2016	0.00977284	0.00969864	0.019929753
2017	0.01033649	0.0102507	0.020830631
2018	0.01055583	0.01046552	0.021243796

Source: Estimated from 2018 I-O table

In which:

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Backward is a reverse spillover variable, indicating the level of participation of FDI firms in the input supply sector, reflecting the degree of cooperation between domestic suppliers and FDI firms.

Forward is a diffuse variable in the downward direction, indicating the degree of downward linkages between domestic firms in the downstream sectors and FDI firms in upstream sectors.

Horizontal is a horizontally spread variable, indicating the level of participation of FDI enterprises in the industry, calculated by the proportion of output occupied by FDI enterprises in the industry.

Table 3 shows that the value of the variable *Backward* tends to increase, or decrease is not stable. Specifically, the value of the *Backward* variable in 2013 is 0.01018 and in 2014 is slightly increased to 0.01037. However, by 2015, the value of this variable decreased to 0.009971. In 2016, the value of the *Backward* variable continued to decrease at 0.009772, but in 2017, the value of this variable began to increase again to 0.010336. In 2018, the value of this variable continues to increase to 0.010555. This indicates that the trend of the *Backward* variable is not stable, fluctuating up or down. That is, the inverse linkages between FDI enterprises and domestic enterprises in other industries tend to increase or decrease erratically.

The *Forward* variable tends to be similar to the *Backward* variable. Specifically, in 2013 the value of this variable was 0.0101, in 2014, the value of the *Backward* variable increased to 0.0128. From 2015-2016, the value of the *Backward* variable tends to decrease is 0.009892 in 2015 and 0.009698 in 2016. However, in 2017, the value of the variable *Forward* increased again to 0.01025. In 2018, the value of the variable continues to increase and reaches the value of 0.01046. This indicates that the trend of the *Forward* variable is also erratic, unstable. In other words, the level of downward linkages between FDI enterprises and domestic firms also tends to increase or decrease erratically.

Horizontal variable in 2013 is 0.02056, in 2014 it will increase to 0.02083. From the period 2015 - 2016, the value of this variable tends to decrease, specifically in 2015 it is 0.02013 and in 2016 it is 0.01992. From 2017-2018, the value of the *Horizontal* variable tends to steadily increase again and reach 0.02124 in 2018. This shows that the spillover from FDI enterprises to domestic enterprises in the same industry tends to decrease. in 2015 but increased again until 2018.

4.2. Results of regression analysis

Evaluate the spillover effects of FDI on domestic firms through the effects such as:

First, knowledge and technology can spread from FDI firms to domestic firms through the training of workers and managers. This will gradually benefit domestic businesses.

Second, it can drive progress toward the quality and reliability of inputs provided by local suppliers.

Third, domestic firms can learn from observation.

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Fourth, the influx of FDI can bring about greater competition and force domestic firms ineffective or to innovate or close.

As expected in theory, the coefficients are positive and significant for changes in production inputs as well as changes in the proportion of FDI. This implies that an increase in the proportion of foreign capital in a firm can drive faster output growth. These results indicate a positive and significant correlation between firm productivity and foreign presence in the production chain industry.

Thematic shows estimation results from the first difference model according to different methods: *fixed effects estimation method and random effects. These methods are applicable to different sample groups, including full sample, local firms and firm size.*

Table 4: Regression according to the first difference for the entire sample

The Dependent Variable Y	Coefficient	Standard error	P-value
Fixed effect model	**Observe Number 1994**		
l	-3.17E-05	7.25E-05	0.0000
hori	0.0006	3.53E-05	0.0000
back	0.0030	0.00057	0.0000
forw	-0.0031	0.000598	0.0000
k	0.9995	4.95E-05	0.0000
Constant	0.2210	0.0011	0.0000
Random effects pattern	**Observe Number 1994**		
l	-2.08E-05	5.9E-06	0.0007
hori	0.00026	1.98E-05	0.0000
back	0.0033	0.00051	0.0000
forw	-0.0033	0.00052	0.0000
k	0.9997	1.3E-05	0.0000
Constant	0.2162	0.00029	0.0000
Hausman Test	**Chi2=141.14**		
	Prob>chi2 = 0.0000		

Source: Estimates from data source of the General Statistics Office of Savannakhet province

The results of estimating the first difference form for the whole sample give the following conclusions:

Firstly, the effect of FDI on the economic regions of the province is statistically strong with the estimates of both models. And these models show that FDI has a spillover effect between regions.

Second, the spillover effects of FDI are Horizontal and Backward, which have positive signs and are statistically significant in both models. The Forward variable coefficient in the fixed effects model has a negative sign and is statistically significant at the 1% level.

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Third, the test results according to the Hausman method show that, in the case of estimating two models with random and fixed effects, we should choose a model with fixed effects.

Table 5: Regression by First Variation for Domestic Firms

Independent Variable Y	Random Effects Model	Fixed Effects Model
L	-0.0164*** (0.0026)	-0.0078*** (0.0028)
K	0.4581*** (0.0061)	0.03088*** (0.0152)
Horizontal	0.5847*** (0.0095)	0.4034*** (0.0486)
Backward	0.0801*** (0.0078)	0.1764*** (0.0308)
Forward	-0.1292*** (0.0082)	0.1364*** (0.0542)
Constant	11.9801*** (0.1358)	15.4667*** (0.3597)
Observe Number	1406	1406
Test Hausman	**Chi2=737.6**	
	Prob>chi2=0.0000	

Source: Estimates from data source of the General Statistics Office of Savannakhet province

Notice:

1) *** / ** / * These symbols indicate that the estimated parameters are statistically significant at the 1%, 5% and 10% significance levels, respectively. Standard errors are in parentheses under coefficients.
2) Coefficients without the symbols *** / ** / * are not statistically significant or have a statistical confidence greater than 10%.

The estimation results for domestic firms according to the two models are the random effect and the fixed effect is quite similar to the estimation case for the entire sample. Between random effects and fixed effects models, the fixed effects model should be selected. The coefficients are statistically significant at the 1% level. The coefficients of the variables Horizontal and Backward are positive signs for both methods. However, the coefficient of the variable Forward is negative for the REM method and positive for the FEM method.

The value of the Horizontal variable, which is positive and statistically significant at 1% in both models estimated for domestic firms, indicated that the presence of FDI firms increased output. of domestic enterprises. The reason for the positive horizontal spillover effects in the

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province may stem from the fact that the presence of FDI enterprises forces domestic firms in the same industry to improve product quality, technological level, Management qualifications thereby increasing competitiveness with FDI enterprises.

Besides, the coefficient of the variable Backward shows that the inverse association from FDI also increases the productivity of domestic firms in the province. This shows the presence of technology and resource transfer from FDI to domestic enterprises.

The coefficient of the Forward variable in the fixed effects model has a positive sign also shows the downward connection from FDI to domestic firms that are customers of FDI enterprises. The estimation results show that the presence of FDI enterprises has a positive impact on the forward linkage of domestic firms, increasing the output of domestic firms in the province. This means that the more relationships an enterprise has with FDI firms, the more it can learn and benefit from buying and selling higher quality input products or machinery, and Cheaper costs from FDI enterprises.

To clarify the effect of firm size on the spillover effect of FDI, we will estimate regression for different types of enterprises in Savannakhet province: micro enterprises of 324 enterprises, enterprises with 663 small-sized ones, 776 medium-sized ones, 231 large-scale ones.

Table 6: Regression by First Variation by Firm Size

Dependent variableY	Micro Enterprise			Small Enterprise			Medium Enterprise			Large Enterprise		
	Coefficient	Standard error	P-value	Coefficient	Standard error	P-value	Coefficient	Standard error	P-value	Coefficient	Standard error	P-value
Fixed effects model	**Number of observations: 324**			**Number of observations: 663**			**Number of observations: 776**			**Number of observations: 231**		
L	-3.392	1.9751	0.0903	0.4242	0.1111	0.0003	-0.0357	0.0216	0.1036	-0.0273	0.0116	0.0220
hori	24.298	9.236	0.0105	-2.146	0.5144	0.0001	0.3439	0.082	0.0001	0.3907	0.0465	0.0000
back	-11.05	10.480	0.2953	1.8339	0.5706	0.0020	-0.0007	0.002	0.7226	0.2154	0.044	0.0000
forw	-19.59	11.685	0.0980	2.555	0.656	0.0002	0.5776	0.1033	0.0000	2.9705	0.0011	0.9802
K	-0.176	0.1318	0.1860	-0.055	0.01252	0.0000	0.3513	0.0211	0.0000	0.457	0.0164	0.0000
Constant	8.5716	30.295	0.7781	26.885	1.3006	0.0000	15.212	0.4641	0.0000	12.195	0.3401	0.0000
Random effects model	**Number of observations: 324**			**Number of observations: 663**			**Number of observations: 776**			**Number of observations: 231**		
L	0.4591	0.2213	0.0411	0.2585	0.0306	0.0000	-0.090	0.01699	0.0000	-0.0521	0.0098	0.0000
hori	1.2743	0.2480	0.0000	1.1391	0.0301	0.0000	0.8454	0.0305	0.0000	0.5773	0.0210	0.0000
back	0.2176	0.1863	0.2461	0.1352	0.0193	0.0000	-0.0007	0.0021	0.7364	-0.0635	0.0114	0.0000
forw	-1.383	0.4046	0.0010	-0.666	0.0434	0.0000	-0.1676	0.0254	0.0000	-0.0011	0.001	0.3538
K	0.1752	0.1182	0.1422	0.2000	0.0097	0.0000	0.521	0.010	0.0000	0.5915	0.009	0.0000
Constant	12.451	2.768	0.0000	15.322	0.273	0.0000	11.4398	0.2509	0.0000	9.4352	0.220	0.0000
Test Hausman	**Chi2 = 37.933**			**Chi2 = 1490.65**			**Chi2 = 141.81**			**Chi2 = 159.41**		
	Prob>chi2 = 0.0000			**Prob>chi2 = 0.0000**			**Prob>chi2 = 0.0000**			**Prob>chi2 = 0.0000**		

Source: Estimates from data source of the General Statistics Office of Savannakhet province

From the results of Table 6, between the two models, we should choose the FEM fixed effects model for analysis. Therefore, we can give some analysis on the effect of firm size on the spillover effect of FDI:

For the group of micro enterprises: Estimated coefficients of the variable Forward and the Backward variable are both negative and vice versa, the coefficients of the variable

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Horizontal are positive. The coefficients of the Forward and Backward variables are not statistically significant in the fixed estimation model and the probability of rejecting these coefficients in the accepted fixed model is at 10%. The results thus indicate that the spillover effects of FDI are not linked along the forward and reverse direction in micro firms according to the fixed estimation method. In contrast, the coefficient of the Horizontal variable has an rejection probability at 1%, so the model results show that the spillover effect of FDI on the group of micro enterprises is quite strong. technology and a contingent of skilled and highly qualified workers.

For groups of small businesses: The estimation results of the Backward and Forward variable coefficients are the same as those for the micro enterprises. However, in this case, the coefficients of both variables are statistically significant. This indicates that the spillover effect of FDI according to the backward and forward linkage exists for firms. On the contrary, the coefficient of the Horizontal variable is negative and statistically significant at the 1% level, so having a spillover effect under the cross-linkage is quite a strong effect of the competition effect. Thus, it can be concluded that, for the small group of enterprises, the spillover effects of FDI have a negative horizontal effect and a positive effect both vertically and in the opposite direction. Therefore, it can be seen that for small-scale enterprises, FDI is beneficial for in-depth development such as changes in technology and design, which will be under competitive pressure from FDI enterprises in the same industry.

For the group of medium-sized FDI enterprises: Estimated results show that the coefficients of the variables Horizontal and Forward are positive but not statistically significant. The coefficient of the Backward variable is negative and is statistically significant at the 1% level. Therefore, in this case, the spillover effect of FDI on medium-sized enterprises in the opposite direction is mainly. This group of enterprises is under pressure because they cannot meet the demand for quality inputs for FDI enterprises and may have to reduce their production scale.

For large group of enterprises: Estimated results show that the coefficients of the variables Horizontal and Backward are positive and statistically significant at the 1% level. While the coefficient of the variable Forward is not statistically significant, the implication is that large-scale firms that are able to take initiative in inputs such as raw materials, may not cooperate with FDI firms to purchase raw materials.

From the estimation results, we can see the spillover effect of the presence of FDI on the firms in the sample. This is shown in the coefficients and statistical significance of the variables.

5. Some policy suggestions to promote spillover effects of FDI in Savannakhet province

a) Improving quality of human resources

Receiving and promoting investment in human resource development: human resources are considered the decisive factor to take advantage of and exploit the positive spillover effects of FDI in the country. Therefore, improving the quality of human resources in terms of physical strength, mental strength and skills is an urgent requirement for domestic enterprises in the context of increasingly fierce competition in the market. Training, improving skills for

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employees, improving management skills and foreign language skills for managers in enterprises need to implement the following solutions:

Defining clearly the training content of qualified and skilled human resources to meet the needs of foreign investors: The training content should include both technical and soft skills in fields of management, product design and development, and market research. The training program should address the following:

Technical and professional training: At the professional level, training centers are of importance by providing trained human resources, managing productivity, making optimal use of available capabilities. Supplement the training of human resources at university level, review the training program design closely to reality. Update knowledge and aim to the training content of countries with developed economies, industries and trade in the world such as Japan, America, Korea ...

Management and management professional training: Professional skills need to be developed not only in technical skills but also in management skills such as production management assessment, productivity improvement techniques , marketing, pricing and costing, English specialized, factory organization, competitiveness assessment, strategic management, sales specialist ... For management staff at all levels, both economically and technically, it is necessary to regularly organize training and professional testing. Have clear standards for professional and managerial titles. Those who do not guarantee the request, need to be taken out of managerial positions. Enterprises should regularly visit and learn about typical businesses in the same industry, good management models of joint ventures, including good management models in foreign countries.

Vocational training: Vocational training contributes to support the acquisition of advanced techniques from FDI enterprises. Therefore, the workers and the labor force that directly create the surplus value of production need to be paid attention to constantly improve their skills to meet the increasing demand of the market.

Determining forms of training and retraining of human resources: Combining long-term training with short-term training, between formal training and on-the-job training, between domestic training and sending staff abroad to train. Labor can be trained in the workplace, can both work and learn by good engineers in the working process of workers.

b) Receive and increase investment in science and technology development, improve technology transfer quality and managerial qualifications.

Enterprises need to improve the efficiency of technology transfer and take advantage of the technology spillover effect from FDI enterprises to domestic ones. Raising the level of technological equipment in parallel with the improvement of the quality of human resources are the basic conditions to improve the ability of domestic enterprises to absorb spillover effects from FDI.

Domestic enterprises must pay attention to invest in technology research and innovation. Ensuring uniformity in technological lines: In the selection of equipment, technologies must take into account the synchronization between existing technologies with new investment technologies or synchronization between newly invested technology lines. together. In addition,

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it is necessary to have a suitable training policy for human resources to use technology effectively.

Choosing relatively modern technology to avoid being out of date in a short period of time. In order to choose an appropriate technology, businesses must evaluate a new technology on 4 basic contents: technology performance, technology efficiency, technical and technological level and the impact of technology on the ecological environment and socio-cultural environment of the business. On the basis of determining the amount of capital invested in new technology and the capital mobilized to buy, operate and manage that new technology in the most effective way.

The investment in technology innovation must be in line with the requirements of the mission as well as the financial situation of the business, combined with the inspection and re-evaluation of all machinery and equipment. Technology must be suitable with workers' skills to avoid wastefulness and inefficiency. In addition, focusing on technology improvement in depth, increasing communication with customers to take steps to prepare technology to produce products that fully meet the needs of the market.

c) Attract foreign direct investment from large transnational companies (MNCs), have technological potential and make the most of the research and development strengths of foreign enterprises

This is a breakthrough solution to create and promote positive spillover effects from FDI to domestic enterprises. Currently, the number of MNCs investing in the province is limited, not commensurate with the potentials and strengths of the province and that of MNCs.

Attracting FDI from MNCs is not only a macro task of state agencies, but also a mission stemming from the survival and development requirements of each enterprise. World experience shows that only when enterprises are aware of and actively participate in activities to attract investment, can this process really bring about great and long-term effects on the market. economy.

d) Improve the competitiveness of domestic enterprises.

This solution is designed to overcome the competitive effects of FDI, limit and adapt to the negative spillover effects of FDI on domestic enterprises. The higher the competitiveness of domestic firms, the less chance that negative spillover effects of FDI will appear and the higher the ability of domestic firms to absorb positive spillover effects. At that time, domestic enterprises will make more use and effectively use the advantages created by the spillover effects of FDI enterprises.

Enterprises need to choose products that have strengths, constantly improve, improve quality and diversify products according to increasingly diversified consumer demands and increasingly high demands of society. Enterprises need to pay attention to product adaptation strategy to satisfy the highest level of market demand. In business strategy, enterprises must also consider developing new products, and must consider consumer attitudes towards products in order to promptly offer necessary solutions. Enterprises should attach importance to product strategy associated with product innovation, brand strategy and after-sales service strategies.

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Carrying out activities to upgrade existing machines and equipment, intensifying research and regularly updating information on new production technologies. Depending on your funding sources, it is possible to purchase new or upgrade existing lines. Develop detailed and synchronous plans to invest and renovate production equipment to ensure increased labor productivity and lower product costs. Enterprises need to step by step upgrade the factory system, production organization, management according to the standard system, send staff to participate in training courses on the standard system, make reasonable and appropriate adjustments. after being licensed to maintain the established and registered standard system. Ensuring the quality of export goods to keep reputation with partners in the international market.

In order to compete with the goods of FDI enterprises, domestic firms need to have an appropriate strategy to lower product costs. To do that, it is necessary to raise awareness of all members of the business from management team to employees on the purpose of cutting production costs, lowering product costs and improving product quality. Arouse the creativity, promote the intelligence of each individual and team to minimize production costs. In addition, each member of the business needs to self-improve to improve professional qualifications and skills. In order to reduce raw material costs, enterprises need to gradually replace imported raw materials with domestic ones. Proactively looking for a stable supply of raw materials with good quality and suitable prices will help businesses cope with fluctuations in the world raw material supply market quickly, sensitively, reasonable. Stable inputs will help businesses fully meet customers' needs in terms of product quantity and quality, can reduce costs, and is a necessity to improve product competitiveness. On the other hand, it is necessary to raise awareness in buying, selling, transporting and preserving in order to minimize the rate of wasted materials. In order to reduce product costs, enterprises need to improve labor productivity, reduce administrative costs, reduce electricity consumption in production, and share marketing costs and market information costs among enterprises.

Having a policy of "retaining" labor, preventing "brain drain" The importance of stabilizing employees by taking advantage of the positive spillover effects and limiting the negative spillover effects from FDI of domestic firms is confirmed. However, it is not possible to completely eradicate the human mobility situation between domestic and FDI enterprises, but it can be limited if focusing on the interests of workers as policy is in place. Provide adequate remuneration, perfect the income distribution regime, ensure that employees receive wages in accordance with their working results and on time as committed. Enterprises provide employees with social insurance benefits in accordance with the law. For professionals, engineers and highly skilled workers, it is necessary to have remuneration policies to connect them with businesses, to avoid brain drain ...

6. Conclusion

The above research results show that the presence of foreign factors has both positive and negative effects on the output of domestic firms in the province (reflected in the positive, negative and significant coefficients). statistics), however, the spillover effects of FDI vary with

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each type of firm. Thus, it can be seen that FDI does have a spillover effect on domestic firms in the province. The spillover effects can increase economic growth through the transfer of modern and advanced technology; shifting skilled and qualified labor to domestic enterprises; increase labor productivity; improving the quality of inputs from domestic (back-linked) or foreign (down-linked) suppliers. However, the presence of FDI enterprises does not always bring positive spillovers to domestic firms.

The paper has analyzed and clarified the effect of spillover effects of FDI on domestic firms in Savannakhet province through production functions. Thereby proposing a number of policy suggestions to increase the positive spillover effects of FDI on the domestic enterprises sector to make the most of FDI resources to meet the socio-economic development goals of the province.

References

Aitken, B.J, H. Görg & E. Strobl (1997). Spillovers, Foreign Investment, and Export Behavior. *Journal of International Economics.*

Anwar, S. & Nguyen, L. P. (2011). Foreign Direct Investment and Export Spillovers. *International Business Review.*

Blomström, M. & Kokko, A. (1998). Multinational Corporations and Spillovers. *Journal of Economic Survey.*

Hồ sơ thị trường Làohttp://www.trungtamwto.vn/download/17131/H% E1%BB%93%20s%C6%A1%20th%E1%BB%8B%20tr%C6%B0%E1%BB%9Dng%20L%C3%A0o.pdf

Võ Thanh Thu & Ngô Thị Hải Xuân (2010). Sự mất cân đối trong hoạt động đầu tư trực tiếp nước ngoài và những giải pháp khắc phục. *Tạp chí Phát triển Kinh tế.*

Lê Duy Bình (2017). Phát triển bền vững doanh nghiệp tư nhân từ góc nhìn ngànhcông nghiệp chế biến, chế tạo. Báo Nhân dân.

Meyer, K. E. (2003). FDI Spillovers in Emerging Markets: A Literature Review and New Perspectives. Copenhagen Business School (Mimographed.)

Li, X., X. Liu, & D. Parker (2001), Foreign Direct Investment and Productivity Spillovers in the Chinese Manufacturing Sector. *Economic System.*

Smarzynska Javorcik (2004), 'Does Foreign Direct Investment increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages', *American Economic Review,* số 94.

Markusen và Anthony J.Venables (1999)**, '**Foreign direct investment as a catalyst for Industrial development', *European Economic Review.*

Harris, R. and Robinson, C.,(2004), 'Productivity Impacts And Spillovers From Foreign Ownership In The United Kingdom', *Economic Review*

Blomström, M., & Sjöholm, F. (1999). Technology Transfer and Spillovers: Does Local Participation with Multinationals Matter?. *European Economic Review*

Levinsohn, J. and A. Petrin (2003), *"Estimating Production Functions Using Inputs to Control for Unobservables,"* Review of Economic Studies

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.05.029

Haddad and Harrison (1992), *"Are there positive spillovers from direct foreign investment?"*, *E*vidence from panel dât for Morocco.

Barrios (2004), *"Foreign Direct Investment, Competition and Industrial Development in the Host Country"*

Haskel (2002), *"Does Inward Foreign Direct Invesment Boost the Productivity of Domestic Firms?"*