Advances in Social Sciences Research Journal – Vol.4, No.24
Publication Date: Dec. 25, 2017
DoI:10.14738/assrj.424.4019.
Anh, P. Q. (2017). Whether locating within industrial parks raises productivity of manufacturing firms? Evidences from Vietnam. *Advances in Social Sciences Research Journal, (424)* 120-125.

Whether locating within industrial parks raises productivity of manufacturing firms? Evidences from Vietnam

Pham Quynh Anh
VNU University of Economics and Business, Ha noi,Vietnam

ABSTRACT

During twenty years, 1992 -2010, over 200 industrial parks (IP) have been established in Vietnam. IP probably results in economy of agglomeration, reduction in average total cost and increase for labor productivity. In contrast IP may induce diseconomy of agglomeration and opposite results. This study investigates the role, characteristics of firm locating in IP and using econometrics model to investigate the impact of firm locating within IPs on its labor productivity. The results prove that IP locating firms account a small percentage in total number of manufacturing firms in Vietnam but play considerable role for manufacturing sector in general and for manufacturing foreign investment in special. Locating in IP has quite significant positive effect on firm's labor productivity.

Keyword: Industrial park, labor productivity, IP locating firm, foreign investment.

INTRODUCTION

Since the beginning of Doi moi stage in 1986 Vietnamese government has designed several long term plan and a number polices to accelerate economic growth in general and industrialization in particular. Following the experiences of Newly Industrialized Economies first generation such as South Korean, Singapore and the NICs second generation like Malaysia, government has decided establishment of industrial zones of whom the first was signed in 1991. In addition, Law of Foreign Investment enacted in 1994 gave tax preferential treatment to firm operating in industrial zones that located in the province, district where production is difficult due to limited natural and labor resources. The local government gives in-part contributions building infrastructure. Those policy instruments are expected to attract foreign and domestic investment via supporting newly invested firms to have more rapid and favorable access not only to location but comprehensive infrastructure, electricity, water, road to port...) with lesser expensive cost, especially during initial years of production.

Furthermore, IPs is expected to generate the economy of agglomeration that reduces average manufacturing total cost in the long term, As a result, the number of industrial zones have been increasing quite rapid, from zero in 1992 up to overr 200 in the year 2010 and 325 in July 2017.There have been two - third of IP working with average covered rate, land square used by investment projects over total land square in IP, is sapproximate 50 %..

However, according to several reports by Japan businessthe purposes of using IP as indicated in strategic plans, engine to restructre and develop industrial sector, have been not achived. Most IPss serve as a hired land rather than multi –puspose modern infrastructre . Especially, there absent interlectual base close to IPs so that IPs are able to attact investment in high – tech industies. This situation will probobaly be more serious after the year 2009, when incometax reduction for firms operating in remote, poor areas begin. Such a matter needs not only the qualitative survets or reports but quantitative researches on features and weather location within IPs affecting productivity of firms, one of the fundamental factors determining

survival and growth of firms in all industries. Nevertheless, there almost absent such studies in the world and in Vietnam in term of both theoretical and empirical aspects. This study therefore is the first examining the impact of locating in IP on labor productivity of manufacturing enterprises in Vietnam.

This paper is organized as following: after the introductions is the second session analyzing a theoretical background and presenting research method. The third generates the role of IP locating firms for manufacturing sector and characteristics of these firms by ownership and industries types. The fourth analyzes the effects of operating in IPs on labor productivity of manufacturing firms in Vietnam. The last is conclusion.

THEORETICAL GROUND AND RESEARCH METHODS

Theoretical ground

Definitions and types of IP

Industrial zones is defined by UNIDO (1997) as "a tract of land developed and subdivided into plots according to a comprehensive plan with provision for roads, transport and public utilities with or without built-up (advance) factories, sometimes with common facilities and sometimes without them, for the use of a group of industrialists". In Vietnam, according to government regulation of IP, manufacturing-export zone, economic zone(2008), IP is termed as a park specializing in manufacturing or providing services for manufacturing, having determined geographic line, established according to conditions, procedure and proceedings determined by government".

Despite the minor expression differential, the common of IP definitions is area planned by government for industrial development. This therefore is unlike industrial districts which were formed spontaneously.

Economists divide structure of IPs in developing countries in to hard or core infrastructure and soft ones. The hard, normally is established within the first stages of industrializing countries, providing manufacturing firms with basic conditions for production: location, electricity, water, internet, road, sewage treatment and some public services. The soft, largely formed in the late period of industrializing or industrialized countries, includes additionally manufacturing-related services such as finance, technology consultant, training and other social infrastructure around IPs comprising school, hospital, accommodation, sport field to comprehensively support living of managers and people working in each IP. IPs in developed countries provides warehouse and some services not for manufacturing firms.

A theoretical base for government planning and in - part supporting IP is the economy of agglomeration originated by Marshall (1890) for indicating the sources of advantages of industrial districts formed spontaneous in United Kingdom. These benefits of closely located firms had been later analyzed in more details and extended by economists and UNIDO experts as the similar to economy of scale, increasing return to scale and network effects or in short, the advantage of close localization,- agglomeration The geographic location of firms weather in the same or complementary industries probably leads to reductions in average cost of firm's production via reducing transaction, transportation cost, risk and faster spread of knowledge, technology, information across firms.

Based on the possible advantages, IPs is expected by UNIDO (1997) and government in developing countries including Vietnam as a fundamental instrument to increase productivity which, as indicated theoretically (Mankiw 2010, Kaldor 1967) as well as practically in NICs

(World Bank 1994) plays a decisive role for economic development in general and industrialization in particular.

However, concentration of firms in IP may result in disadvantage which typically includes over-competing, congestion, environmental matters. Those diseconomies of agglomeration likely raise firm's average costs, a fall in profits, even driving firms out of IPs or even termination. Therefore, IP barely leads to the economy of agglomeration or increase productivity if it advantages exceed the disadvantages of geographic proximity.

Data and Research Method

Data

This study relies on the General Statistical Office's (GSO) annual survey of total enterprises in Vietnam, began since the year 2000 with technical support of World Bank, combined with a sample of cost of over 3000 manufacturing firms in the year 2010, conducted also by GSO. The sample is selected to ensure representative characteristics in term of principle aspects of firms, operation in IP or not, ownerships, industry, capital.

Model

Table 1 Description of variables

Variables		Description
Dependent		
LPRO	Labor	productivity = total valued/total labor
Explainable		
TECH		Technology level = total fixed capital/total labor
WAGE		Average wage of labor
SIZE		Total capital
IP		1 if firm locating in an IP, 0 otherwise.
Ownership		
SOE		1 if firm is state -owned enterprises, 0 otherwise
Non-SOE		1 if firm is non-state owned domestic enterprises, 0 otherwise
FE		1 if firm is foreign investment enterprises, 0 otherwise
ε		Errow term

A modified model bases on the Cob-Douglas function

$$\textit{Model:}\ \text{LOG}LPRO = \beta_0 + \beta_1\,\text{LOG}TECH + \beta_2\,\text{LOG}WAGE + \beta_3\,IP + \beta_4\,OWN + \beta_6\,\text{LOG}SIZE + \varepsilon$$

THE ROLE AND CHARACTERISTICS OF FIRMS LOCATING IN IPS

Table 2 indicates firstly that IP locating firms had a small share of nearly nine percentages in total number of manufacturing firms, but contributed significant shares, between around 30 - 36 percentages, in total capital, labor, revenue and tax payment, about four times higher than that of numbers.

Secondly, in term of ownership, while non-SOEs represented the total manufacturing firms, accounting for up to 91 percent of firm number , that for IP locating firms was FIEs, making up over a half of total firms operating in IPs. In addition, IP locating FIEs account for more than 50 percent of total number of FIEs in Vietnam. This partly proves that policy for establishing IP in Vietnam has been in part successfully in the goal of quantity investment attracting.

Thirdly, the percentage of number of larger firms, employing over 300 labors, in total firms was nearly three times greater than that of number of IP locating, 7.56 percent against 23 percent. This explained why IP locating firms had substantially larger contribution to both input and output than number firms in manufacturing.

Table 2 The role and structure of IP locating firm in Vietnam, 2010

Firm indicators	Number of total firms	IP firms	IP/ total (%)	Share in total firms	(%) IP firms
Role					
Number	46244	4142	8.957		
Capital	1815853	622883.5	34.3		
Labor	4110775	1283464	31.22		
Revenue	2468756	898373.5	36.39		
Tax payment	144612.6	42091.57	29.11		
Structure					
By ownership					
SOEs	709	82	11.6	1.53	1.98
Non SOEs	42458	1610	3.79	91.8	38.9
FIEs	4495	2450	54.5	9.72	59.2
By size					
Les	3498	952	27.2	7.56	23
SMEs	42746	3190	7.46	92.4	77

Note: IP firms: firms locate in industrial parks, SOEs: state owned enterprises, FIEs: foreign investment enterprises: LEs: large enterprises; SMEs: small and medium enterprises. Source: Own author's calculation from GSO data

REGRESSION RESULT

Table 3 indicates the impacts of underlying and selected factors on labor productivity of manufacturing firms in Vietnam.

Two principle production factors, wage level and technology, had very significantly statistical positive correlations with labor productivity. The degree of effect – coefficients of wage was the highest, followed by technology level or intensive fixed capital per labor. Firm's size also was an important variable to explain its productivity, the larger firm size was, the higher labor productivity.

The result depicts that, locating in IP had a positive effect on firm's productivity with a significantly statistic coefficient despite its lower value as compared to those of fundamental production factors analyzed above. Holding other determinants constant, locating in IPs help a manufacturing firm may raise its productivity by 18 percentage points. Such an effect partly revealed that IP establishing policy had succeeded regarding to quality of investment attracting in general and industrial development in special.

In contrast, ownership type, whether foreign, state-owned or non-state has no impact on productivity although the FIEs accounting the major share in number as well as total capital of all firms operating in IPs in Vietnam.

Table 3: Dependent variables: firm's labor productivity - LPRO

Explanatory Variable	Coefficient
TECH	.28402307***
	(0.027)
WAGE	.7522865***
	(0.055)
SIZE	.2424695***
	(0.023)
IP	.18612289*
	(0.094)
SOE	0.076946
	(0.17)
Non-SOE	-0.03417
	(0.099}
FE	0.185818
	(0.098)
Constant	-3.0220055***
Observation	2419
Prob > F =	0
Adj R-squared =	0.3402

Note: Level of significance *10%;**5%;***1%

CONCLUSION

Despite a small share in term of number, IP locating firms contributed considerable shares in total values of underlying input and output factors, total capital, labor, revenue and tax payment, of all manufacturing firms in Vietnam by the year 2010. IP locating firms had a higher proportion ratio of large firms higher than that of total manufacturing. Over a half of FIEs in Vietnam selected an IP for operation. Locating in IPs increased firm's labor productivity. Policy for establishing IP in Vietnam achieved considerably the goals of encouragement of investment quantity and quality, especially FIEs.

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