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Evaluation of the Effects of Industrial Zones on the Household Income in Thai Nguyen Province in Vietnam

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Abstract:
In this writing, the author used modeling method to perform (namely least square method) in order to analyze the actual status of industrial zones in Thai nguyen province to find out how it has affected the income of people in this province. On that basis, the author combined descriptive statistics method based on the result of depth interview to analyze the effects of industrial zones on the income of the households. The results of this research also showed the level of impacts of industrial zones on the income of households as well as found out which factors had positive and negative impacts of industrial zones. Also, it showed that developing the industries will create jobs for both inside and outside of the industrial zones, then it contributes to increasing the income and improving the standard of living of people. However, it is negative impacts of the industrial zones, for example, the workers are unable to make the requirements of recruitment from the enterprises in the industrial zones, or they are not capable of adapting to the condition when the environment has been changed. Besides, this writing also used difference testing to test the differences in the people's income living in the industrial zones in Thai nguyen province.

Keywords: *Factors affecting, industrial zone, household income, Thai nguyen province, Vietnam*

1. Introduction

1.1. Introduction to Thai Nguyen Province

Thai nguyen province, one of the provinces has an importantly strategic location of Northern Midlands and Mountainous Area. According to statistical yearbook of Thai nguyen province (2019), the population of the whole province is 1.265 people. From 2016 to 2020, the economic structure of the province has changed positively, increased in the proportion of the industry – construction, decreased in the proportion of agriculture, forestry, and fishery in GRDP, and developed according to the Resolution of the province. In 2020, the economic structure of the province was: Industry – Construction 59%; service 31 %; agriculture- forestry- fishery 10%. The operation attracted many investors, which reached 234 thousand billion VND of society in total and attracted over 90 projects of foreign investors. The outside enterprises of the state developed continuously, which the number of enterprises enrolls for setting up is about 350 every year. Thanks to the policies of developing and attracting the capital investment in order to develop the industrial zones in countryside of Thai nguyen province is really clear namely: The square of land to use for developing the industrial zones and industrial groups in the province by December, 2020 about 2661, 13 ha. And the cost of investment for developing the industrial zones was about 40.000 billion VND from 2009 till now. Besides, that the policies of training human resource to make the requirements of enterprises for the workers acquitted land to serve the development of industrial zones will be allowed to train for the vocational classes and support the cost partly according to Regulations of the Government through Department of Labors, War Invalids and Social Affairs. According to Regulation no.157/2007/QD-TTg dated 27/09/2007 of the Prime Minister in terms of credit for students, they will be allowed to support to borrow capital during the course.

In Thai nguyen province, nowadays, there is about 06 industrial zones as follows: Song Cong industrial zone 1, 2, Southern Pho Yen industrial zone, Quyet Thang industrial zone, especially Diem Thuy industrial zone, of the industrial zones, has a variety of sectors such as manufacturing, electronics assembly, light industry, sewing, weaving, and so on. In 2012, Thai nguyen province ranked as the 44th out of 63 provinces, which attracted foreign-invested capital. By December 2020, the size of manufacturing value of the province reached 803 thousand VND in 2020, ranked as the fourth (the 4th out of 63 provinces) in terms of the size of manufacturing value of industries including the processing industry and engineering industry that have the biggest proportion, about 99% of total manufacturing value. The average GRDP increased from 51 million VND/person in 2015 to 90 million VND/ person in 2020 (1, 76 times as much as that of in 2015). The development of industries has promoted the production, export, and import of the products, namely, the average speed of export reaches 13, 1 %/year. Including that, local export increased averagely about 20 %/ year; the export zone that had foreign-invested capital increased to 98, 2 % of total export. The import value increased by 7,9 %/ year, including that the area that had foreign invested capital increased by 8,4%/ year and accounted for 97,9% of total import value.

1.2. Concept and Characteristics of the Industrial Zone (IZ)
- *Concept: Currently, the concept of industrial zone is seen as a variety of definitions by different nations, authorities, and organizations;*

Based on the international forum UNIDO in 1997, the experts of UNIDO gave several concepts of the industrial zone that were collected as follows: 'The industrial zone is the area that is to produce the products and serve the services, including industrial producing services, entertainment services, shopping malls, offices and housing that have a definitely geographical border.

In Vietnam, based on Decree no.29/2008/ND-CP of the Government in terms of regulations on export processing zone, industrial zone and hi-tech zone. IZ is a zone specializing in manufacturing technology goods and providing services for industrial production, licensed for business registration and has a specific name.

- Characteristics of the IZ: IZ is home to many companies and enterprises doing industrial production and providing services without any residents. According the resolutions of Vietnam, IZ not only is the enterprises that have foreign-invested capital, but also the enterprises that have domestic- invested capital. The industrial zones are built infrastructure systems in order to facilitate to serve the purposes of business production of enterprises. They will design sewers, electricity, drainage inside and outside of the industrial zones to set up scenery and convenience for IZ so as to attract foreign-invested capital. In Vietnam, the industrial zones under the control of Management Board of Industrial zones of province and cities to perform the management function of the state for the activities of business producing of the enterprises within Industrial Zones.

1.3. Household Income

According to Chambers and Conway (1992), they supposed that the income of the households had an impact on their likelihood. If they have a stable and high income, then it will lead to their likelihood improved better.

The income is an amount of property which usually calculated as money that an individual, an enterprise, or an economy is received for a certain period of time from a certain job, service or activity

- The income can include the amount of salary, wage, and money for renting, and profit of business.
- The income can have from different sources such as working, owning the valuable papers, from inheriting or grant.

1.4. Impacts of Industrial Zones on Household Income

In essence, the impact of action on a thing and a phenomenon is the effect of the action on that thing, the phenomenon causes certain changes to the thing, the phenomenon is directed towards. The impact of the development of industrial zones causes changes in income (income) of people in Thai Nguyen province. In the scope of this writing, the people mentioned in the study include people who lose land due to the construction of industrial zones and people who do not lose land. This study chooses people to live around Industrial zones and affected by both the positive and negative impacts of the IZs.

In fact, the development of IZs has created significant changes on all economic, social and environmental means around the built-in IZs. When the IZs were built, it acted as a catalyst contributing to the changes in the economic restructuring of districts and towns, making the process of economic restructuring faster and leading to the Environmental degradation activities in rural areas also happen faster (even in places with IZs and places without IZs).

On the other hand, the development of IZs has a direct impact on the income of specific people: That the impact can reduce income for people whose land is acquired for development of IZs also affects the income of people living around the IZs. Households who are able to quickly adapt to the development of the IZs, their income will change in a positive direction, but households who lose land for the expansion of the IZs have poor adaptability to the development of IZs will be negatively affected.

Inheriting the research results of Le Thi Yen (2018), Saumil Paul et al (2013), Pham Van Hung, Tu Quang Phuong (2012). In the scope of this article, the author analyzes two impact channels of IZs to income of people in Thai Nguyen province.

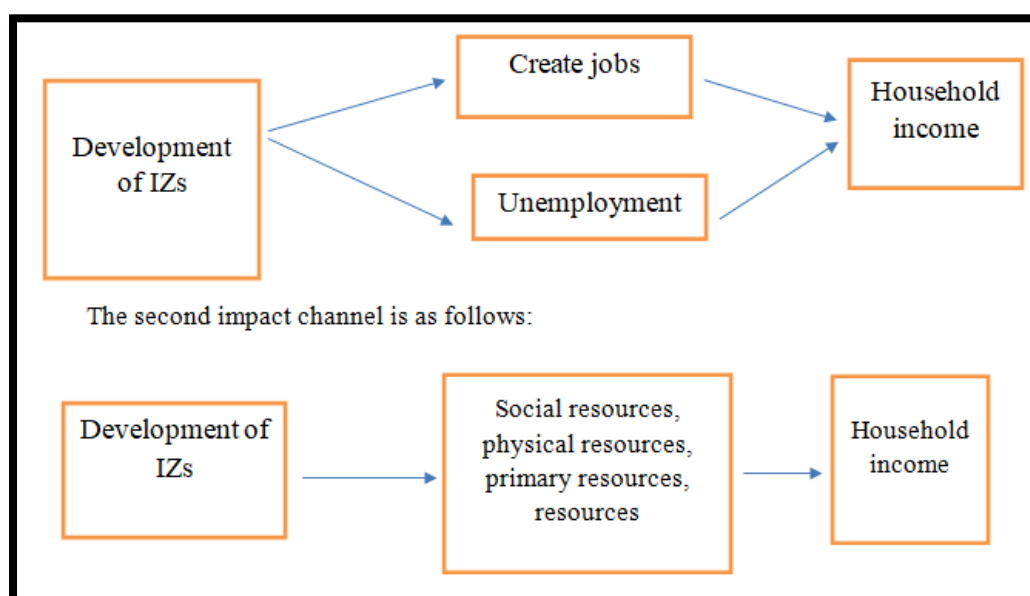The first channel of impact is as follows:

Figure 1

DFID (1999) argues that the analytical framework of sustainable livelihoods (sustainable income) shows the use of investment resources to ensure people's income increases through the ability to overcome period of adapting to the changes of industrial zones.

According to the author's point of view, the development of industrial zones has an impact on people's income as described in the diagram 3 as follows:
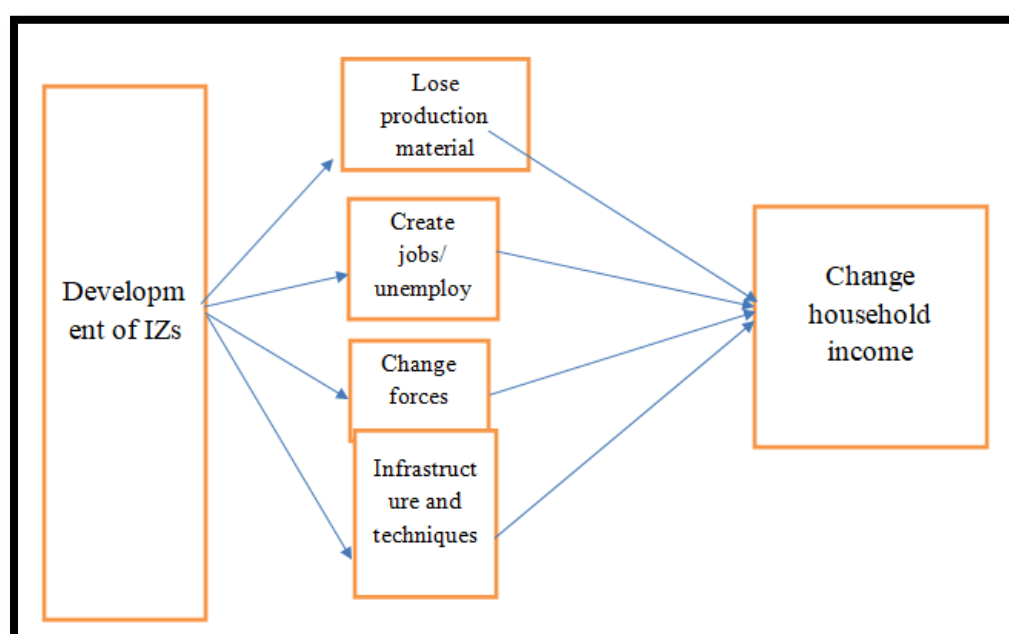

Figure 2

From the research overview and the development status of Industrial Zones in Thai Nguyen province shows that the development of IZs affects the income of people in the province as well as the income of people in some provinces. Therefore, in this study, the author wants to measure the factors affecting the IZs' income and its impact on people's income in Thai Nguyen province. On that basis, proposing solutions to help people realize the importance as well as the impact of the development of industrial zones on people's income in the future.

2. Research Methods

2.1. Theoretical Basis

Optimal choice theory: This theory is presented on the basis of the assumption that an individual or organization has pre-selected alternatives that allow them to state an option they prefer. A. Smit (1977) was one of the earliest to apply this theory to his research in the field of economics. Seeing from the perspective of farming households, this theory is a

tool to support households to have the right to change their views to adapt to a new living environment when the development of the industrial zones occurs.

- *System theory:* In the 60s of the twentieth century, system theory was born that was the research topic of many scientists. One of the founding scientists was L.V. Bertalanffy, L.V (1968) from Austria, argues that 'All organic organizations are systems made up of larger systems'. In which there are characteristics of unity, expressed on two aspects: the unity of the elements that make up the system and the relationship between the elements in the system. The second characteristic is complexity because in a system consisting of goals, interests and how each element works is not the same. The third characteristic is the intentionality that represents the elements in the system that, in order to survive, must achieve a common goal for mutual development.

This theory developed in the second phase from 1970 to 1980. During this period, the theory focused on data source processing, design and effective application of information.

By the early 1990s, this theory gradually interfered with the problem of Leo's management (1998). According to Leo (1998), the research system theory is very specific about the objectives and objects related to information sources, the management process needs to be prepared in order to be effective in planning and controlling information. In the scope of the study, the author uses this theory to analyze the development of the IZs on the income of people in Thai Nguyen province; it is the social policy system of the state that changes resources as well as restructuring the economy in general.

2.2. Research Model

To evaluate the impact of the industrial zones on the income of people around the industrial zones, the author uses the scale of income, denoted by Y. Household income is all income that the household has earned in a year, the unit of income is million / year. The income scale is inherited from studies Nguyen Quoc Nghi et al (2012), Tran Quang Tuyen (2013).

2.2.1. Independent Variables

Area of land lost due to the construction of Industrial Zones (X1): This is the land area that households will be acquired when building industrial zones. According to a study by Nguyen Van Suu (2009), when a household loses land due to building an industrial zone or serving other purposes, some parts of the population will have an increase in income when they have sufficient resources such as taking advantage of the process of industrialization and urbanization. However, many people face insecure lives when losing land and will be unemployed. According to research by Nguyen, V.C …, McGrath, T., & Pamela, W (2006), when losing agricultural land, people will fall into poverty, negatively affecting people's income.

Access to preferential policies (X2): This is a dummy variable used by the author to consider the ability of households to access policies. The dummy variable value will be assumed to be 1 if the household can access preferential policies and return 0 if not accessible. Research results of Nguyen Quoc Nghi (2012), Huynh Thi Dan Xuan (2012) show that accessing to policy has a positive relationship with household income.

Non-agricultural investment (X3): is the household's actual investment for non-agricultural activities such as building inn, business investment … The unit of calculation is million VND / year. Based on the research results of Tu Quang Phuong et al. (2013), when investment increases, household income increases.

Traffic system when there is an industrial zone (X4): A variable evaluating households about the transport system after the construction of the industrial zone, it returns the value 1 if the answer is a very bad, the value is 2 if the answer is bad, the value is 3 if the traffic system is normal, the value is 4 if the traffic system is good and 5 is a very good traffic system. According to research by Paul et al (2013) has shown that better infrastructure system will reduce people's income. This study result is contrary to the study of Nguyen Thi Hong Hanh et al (2013), Nguyen Quoc Nghi (2012).

Number of jobs added (X5): is the number of jobs calculated for each additional household when the industrial park is built, the unit of calculation is the employee. From the research of Le Du Phong (2007), Tran Quang Tuyen (2013), the number of jobs and income increases for people.

Number of unemployed workers (X6): is the number of employees of each unemployed household when the industrial park is built. Feature unit is employee. According to Nguyen Van Suu (2009), Le Du Phong (2007), unemployed work is the cause of the family falling into poverty. The systematic clamp between unemployment and household income is the opposite relationship.

Number of employees in the industrial zone (X7): is the number of employees of households working directly in industrial zones. Feature unit is employee.

Number of employees in the household (X8): Reflects the actual number of employees in the household who can participate in production and business activities to generate income of the household.

2.3. The Basis of Sampling and Research Methods

Basis of sampling: To study the impact of the industrial zone on household income, the author conducted his research on 3 typical districts: Phu Binh district, Pho Yen district and Song Cong town. These are localities with industrial zones in stable operation. Based on the typical characteristics of the selected districts, the author conducted a survey in those communes Diem Thuy (in Phu Binh district), Dong Tien commune, Hong Tien commune, Ba Hang ward (Pho Yen district) and Song Cong town. Based on the 2006 GSO questionnaire (GSO, 2006), the author designed the questionnaire and distributed 300 questionnaires and collected 250 questionnaires. These are households affected by the industrial zone.

Research method: Inheriting from the studies of the authors Tran Quang Tuyen (2013), Nguyen Quoc Nghi (2012), Saumik Paul et al (2013). The author uses the least squares method (OLS) to evaluate the impact of industrial zones on household income.

3. Research Results and Discussion

After having the results of interviewing 250 households about the impact of the industrial zone on the household income, the author conducts analysis and assessment of that impact on the income of households.
First of all, check the suitability of the model:

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.877[a]	.769	.761	.58563249

Table 1: The Result of Testing the Suitability of Model
Source: From Author's Survey Data

From the above result, we see that R Square is 0.769> 0.5. Thus, the independent variable explains 76.9% of the dependent variable. The model used is suitable.

To test the autocorrelation, the author used the Durbin - Watson coefficient. In the study, the coefficient Durbin - Watson = 1.947. Thus, the model does not have the first order autocorrelation.

To check overall conformity, the author used the F-test in the Anova table

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	274.889	8	34.361	100.188	.000[b]
Residual	82.655	241	.343		
Total	357.543	249			

Table 2: Bảng kết quả Anova
Source: From Author's Survey Data

From the above results table we see the test coefficient F = 100,188 and the coefficient Sig = 0.00. Thus, the built-in linear regression model is consistent with the whole.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9.533	1.022		-9.325	.000
	X1	.677	.058	.565	11.672	.000
	X2	.053	.011	.165	4.669	.000
	X3	.148	.083	.061	1.785	.075
	X4	.052	.011	.181	4.645	.000
	X5	.271	.038	.277	7.174	.000
	X6	-.016	.006	-.131	-2.660	.008
	X7	.012	.007	.058	1.823	.070
	X8	.033	.012	.090	2.837	.005

Table 3: Table of Coefficient Result
Source: From Author's Survey Data

To check the phenomenon of multi-collinearity, the author uses the VIF coefficient, from the calculation results the VIF coefficients are all less than 2. Thus, there is no multicollinearity phenomenon here.
From the results table above we see that the variables X1, X2, X3, X4, X5, X7 and X8 are positively related to the household income, which means:

- When households lose a lot of land due to the construction of industrial zones, they will receive compensation money. This helps people increase their income.
- When households access preferential policies, they will increase their income.
- Increased non-agricultural investment will help households improve their income. This is an evidence for people to promote the development of services for industrial zones such as accommodation, business and so on.
- The transport system is improved. This helps to promote the economic development of the region and the economy of the household. Thus, a good transport system helps to increase people's income.
- Number of additional jobs: When the industrial zone develops, this helps the economic development of the area around the industrial zone. This is the driving force to create new jobs for the surrounding households.
- Number of employees in industrial zones: Industrial development attracts many businesses to invest. This is an opportunity to create jobs for workers, this helps reduce unemployment for many households and increase income for these households.

4. Conclusions and Recommendations

Based on the results of the above qualitative and quantitative research, we can see a positive, statistically significant impact of the factors to confirm that the development of industrial zones affects the income of the above residents in Thai Nguyen province. Based on the research results, the author proposes some recommendations as follows:

Creating jobs for households whose land is acquired: In fact, rural laborers have difficulty accessing new jobs, lack of education and low convertibility. Therefore, this study raises the key issue that is still vocational training for rural workers. If this policy is implemented well, it will not only improve skills, increase employment opportunities for employees, but also encourage investors to implement the project. To do this well, local authorities in particular Thai Nguyen province need to consider vocational training and qualification as a top priority and coordinate with businesses to train the right people, the right job, the right address and the right demand. There is a priority policy for people whose land is acquired as a project to participate in apprenticeship and job creation on the spot. At the same time, employment factors make older workers unable to work in factories and workshops with suitable small service occupations. In addition, it is possible to allocate land areas close to industrial zones so that households can create jobs by themselves such as opening grocery stores and making small repairs.

Strengthening access to preferential policies: Thai Nguyen province needs timely capital support for households to move from agriculture to non-agricultural; guide the method of using capital from the transfer, compensation, clearance, restoration, development of craft villages, organization of ecological agricultural farming models and use of high technology in agricultural production ; organize to link farmers with little land into production groups, cooperative groups for the production of specific agricultural products to ensure that farmers and their children live stably.

Some of the commonly used preferential policies are capital, technology and so on. Through these policies, people are provided with knowledge, capital and technology so that households can expand production and business, shifting from agricultural production to services or handicrafts. This contributes to stabilizing people's lives and improving their income.

Enterprises need to fulfill their commitment to create jobs for landless workers. The biggest difficulty for households who lose land leads to not 1 but 3 - 4 people of working age but not having stable jobs and difficult economy while not every place can open shops or services. Therefore, each person has to strive hard to earn income for the family. Therefore, the government needs solutions to require businesses that take land to create the most favorable conditions for local workers, helping local workers to have jobs. Even though they are only unskilled workers, enterprises should have a regime of training, guidance and skill improvement so that employees can stick with the enterprise for a long time, not just seasonal workers. Specifically, Thai Nguyen province requires businesses to be responsible for households whose land is acquired, which is to provide vocational training for the children of the households whose land is acquired and to have preferential policies for admission working in companies in the industrial zone. For households that lack production materials, in addition to guiding households about career change knowledge, technical assistance, technology transfer is required, in addition to providing information systems on market demand, actively seek out output markets for household products.

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