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Affiliation	Economic Development Universitas Sriwijaya Indonesia
Email	<a href="mailto:mukhlis.fe@unsri.ac.id">mukhlis.fe@unsri.ac.id</a>
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## #62 (1570604492): Assessing Small Industrial Agglomeration and Economic Growth in South Sumatra



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Conference and track		5th Sriwijaya Economics, Accounting, and Business Conference 2019 - Economics																					
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### 1 Manuscript review

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1. research questions are clearly illustrated
2. Some words in the figure still using BAHASA

# Assessing Small Industrial Agglomeration and Economic Growth in South Sumatra

**Abstract**—Small industrial agglomeration linkages with economic growth are urgent to do in-depth empirical study. The determination of South Sumatra as a center for the development of small and medium industries indicates that economic growth is the effect of small industrial agglomeration. The data in this study consisted of qualitative and quantitative descriptive. To determine the relationship between the small industrial agglomeration and economic growth used secondary data, such as South Sumatra economic growth data with the scope of the nine districts/ cities. Small industrial agglomeration measured using the Balassa-Hoover index. Consideration of using the country's nine regions as the area was the district/ city before enlargement and has diverse industry types. The analysis technique used in the form of a simple linear regression with panel data. The result indicates that there is a link between small industrial agglomeration and economic growth in South Sumatra.

**Keywords**—small industries, agglomeration, economic growth

## I. INTRODUCTION

A small industry plays a social role and politically strategic in Indonesia. The social role of a small industry seen by its ability to absorb labor. While the visible political role of small industrial capability in the face of external shocks, such as changes in exchange rates and others. Generally, only a few small industries in need of capital goods from the outside, so it can survive the current changes in the external.

During the period 2009-2018, a small industry in Indonesia grew an average of 3.25 percent per year, with the employability of 97.15 percent. Small industrial contribution to the formation of the Gross Domestic Product (GDP) of Indonesia in 2018 amounted to 60.01 percent of total GDP at current prices. As for the share of non-oil exports, overall small industry accounted for 16.02 percent of the total Indonesian non-oil exports, while the share of non-oil exports amounted to only 3.05 percent.

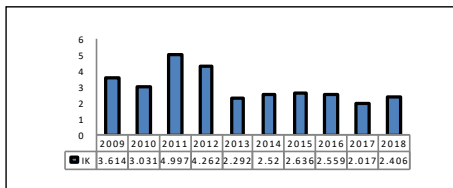


Fig. 1. Growth of Small Industry in Indonesia, 2009-2018  
Source: Ministry of Cooperatives and Small and Medium Enterprises, 2018

A small industry has a major contribution to the economy in South Sumatra. It is seen from the development of the business units, employment, and investment value. Based on the employment, and small industrial sectors such as food, chemicals, and building materials, as well as metals and services, employment dominate with an average absorption of 5.45 percent during 2009-2018.

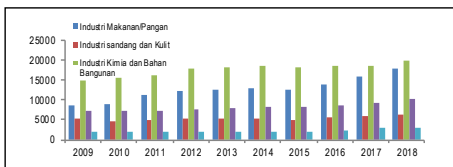


Fig. 2. Labor Small Industry in South Sumatra, 2009-2018  
Source: Central Statistics Agency, South Sumatra in Figures 2019

Small industries will be more quickly developed when agglomerate in a region to achieve economic savings [2], especially for areas that make the small industry as a leading sector. Related to this, a small industry in South Sumatra has great potential for agglomeration. Support the availability of raw materials, labor, and transportation costs become a force to support the process. Agglomerated small industries in an area do not have any difficulty accessing raw materials, distribution of goods, and markets its products [3] and [4].

The small industrial area that has agglomerated, will grow faster than areas that do not have small industries agglomerated. Therefore, which has a lot of industrial activity, it also has a lot more capital accumulation. So that the region's economic growth will be faster.

South Sumatra in 2018 had 14,457 small industry business units spread over the district. Agglomerated small industry will have a strong competitive edge, being able to take advantage of the collective efficiency in the purchase of raw materials, labor, and marketing [5]. Agglomeration of small industries in an area believed to be beneficial to the development of the area, especially in supporting the economic growth of the economy.

In relation with this phenomenon, this research focused on small industrial agglomeration in South Sumatra. Agglomeration will be calculated using the Balassa index, will then be linked to economic growth.

## II. LITERATURE REVIEW

### A. Industry

The concept of the industry has two meanings: 1) broadly, the industry covers all efforts and activities in the economic field is productive; 2) narrowly, covering the processing industry to change the basic stuff of mechanical, chemical, or by hand so that semi-finished goods or finished goods.

The industry can be classified by several groups of commodities. The most universal classification is based on the International Standard of Industrial Classification (ISIC). ISIC classification is based on the approach according to commodity groups: 1) ISIC 31: Manufacture of food, beverage, and tobacco; 2) ISIC 32: Manufacture of textiles, apparel, and leather; 3) ISIC 33: Manufacture of wood and products of wood, including home furnishings; 4) ISIC 34: Manufacture of paper and paper products, printing and publishing; 5) ISIC 35: Manufacture of chemicals and

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chemical, petroleum, coal, rubber and plastic; 6) ISIC 36: Manufacture of nonmetallic mineral products, except petroleum and coal; 7) ISIC 37: Manufacture of basic metals; 8) ISIC 38: Manufacture of metal goods, machinery and equipment; and 9) ISIC 39: Manufacture of other processing.

Ministry of Industry and Trade in assessing the success of small industries using criteria the total labor force, production, and sales amount. The small industry is generally labor-intensive. Through the addition of the labor force, the number of production and sales, the small industries to withstand environmental changes [6].

### B. Agglomeration

Agglomeration arises because economic agents seek to obtain the agglomeration savings (savings localization and urbanization savings), through its location adjacent to each other. Agglomeration system reflects the interaction between economic operators of the same (between companies in the same industry, companies in different industries, individuals, companies, and households).

Another approach by linking the agglomeration as a spatial form with the concept of agglomeration savings through the concept of externalities. Economists distinguish between 1) internal and external savings; 2) savings caused by economies of scale and scope [5]. The savings due to economies of scale will occur when companies increase production by increasing plant (economies of scale). The cost savings occur by increasing the scale of the plant, in that turn, the per-unit production costs can be reduced.

Myrdal and Pred in Kuncoro [5], stated the positive impact of the cumulative causality of group business is called agglomeration economies. Such as the formation of new industries, the creation of further employment opportunities, increased attractiveness of work and capital, increased population skills, development of related industries, expansion of local services at lower unit costs, and the availability of good services and entertainment.

When agglomeration in a region achieve maximum economies of scale, the expansion after this point will only lead to negative effects (agglomeration diseconomies) for the region. Competition among companies and industries, ultimately increasing prices of raw materials and production factors, so the cost per unit will rise and cause the relocation of economic activity to other areas that have not reached the maximum production scale. Agglomeration economies in the region will encourage economic growth because of production efficiency [4].

Agglomeration is measured in several ways: 1) using the proportion of the urban population in the total population of a province; 2) using the concept of agglomeration production, using a proportion of Gross Domestic Product (GDP) of the district/city to GRDP the Province; and 3) Using the concept of the proportion of total employment in the industrial sector of the district/ city to the amount of labor in the industrial sector of the province. According to Sbergami[7], The three concepts above are proxies of agglomeration called the Ballasa Index (IB).

In this study, to measure the proportion of agglomeration using the concept of industrial sector workforce in the region, so that the calculated level of agglomeration is a reflection of

the state of industrial agglomeration in the region. As for calculating the index Ballasa, use the formula;

$$LQ = ISIT = \frac{\left( \frac{E_{ij}}{\sum_j E_{ij}} \right)}{\left( \frac{\sum_j E_{ij}}{\sum_j \sum_j E_{ij}} \right)} \quad (1)$$

where: LQ = ISij = coefficient of regional specialties; Eij = labor sector i in region j;  $\sum_j E_{ij}$  = total employment in the sector i j;  $\sum_j E_{ij}$  = employment in region j; and  $\sum_j \sum_j E_{ij}$  = total employment in the region j.

The more concentrated an industry, the greater the index value Ballasa. The strength of agglomeration can be divided into 1) Strong, if the figure Ballasa Index above 4; 2) Medium, if the index number Ballasa between 2 to 4; 3) Weak, if Ballasa index numbers between 1 to 2; and 4) does not occur agglomeration, if Ballasa index numbers between 0 and 1.

### C. Endogenous Growth Theory

Endogenous Growth Theory pioneered by Romer [8], An early awakening of a new understanding of the factors that determine economic growth in the long term. Endogenous growth theory explains that economic growth is a process that is source from within a system. Endogenous growth theory emerged as a critique of the neoclassical growth theory about the diminishing marginal productivity of capital and income convergence in various countries.

Endogenous growth theory emphasizes the determinants of long-term growth so that the impact on economic growth in the short and medium-term neglect. The economic growth of developing countries is hampered due to various problems such as the infrastructure is still lacking, inadequate institutional structures, as well as capital and goods markets, are not perfect.

Endogenous growth theory has three basic elements, namely: 1) endogenous technological change through the process of accumulation of knowledge; 2) the creation of new ideas by the company as a result of the spillover mechanism and learning by doing; and 3) the production of consumer goods produced by the production function of knowledge that grows without limit.

Endogenous growth theory is expressed in an equation:  $Y = AK$ , where Y is the output level, A shows the factors that affect the (technology, while K is the stock of physical capital and human resources). In the growth model, not a decline in proceeds from capital (diminishing marginal of capital) as in the neo-classical theory.

Endogenous growth theory provides a theoretical framework for analyzing endogenous growth, that growth of GNP set by the system governing the production process and not by forces outside the system. Endogenous growth theory explains the increasing returns to scale and long-term growth patterns differ between countries.

To illustrate the endogenous growth approach, then discussed in Romer endogenous growth model, we assume the growth process from a company or industry:

$$Y_t A = AK_i \alpha L_i^{1-\alpha} K^{\beta} \quad (2)$$

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Each industry will use capital and labor at the same level so that the production function can be written as follows:

$$Y_t = AK\alpha + \alpha \beta L^{1-\alpha} \quad (3)$$

Endogenous growth models assume that 'A' is constant and does not increase over time, and at the moment there is no technological progress:

$$g_n = \beta / [1 - \alpha + \beta] \quad (4)$$

Where:  $g$  = growth rate of output, and  $n$  = the rate of population growth. As well as the Solow model with constant returns to scale,  $\beta = 0$ , then the per capita growth to zero (without technological progress). But Romer assumes, by collecting the three sectors are capital externalities;  $\beta > 0$ , so that  $g_n > 0$  and  $Y/L$  will grow.

### III. RESEARCH ACCOMPLISHED

Research conducted by Xiao-Ling, Yu-Xian, and Jie [9] on the spatial agglomeration of industrial culture in China using the Ellison and Glaeser Index (EG), and the Herfindahl Index (IH) found: 1) industrial agglomeration can drive economic growth, and the EG index of an industry has a strong correlation with the value of industrial gross output; 2) geographical location has an important impact on industry, and eastern China has a significant advantage due to strategic geographical location; 3) there are regional developments that provide capital, markets and other conditions for industrial development, which are the dominant factors of industrial agglomeration; and 4) the number of resources is one of the factors of industrial agglomeration, but when economic development is weak and low, many resources cannot be the dominant factor of industrial agglomeration.

Research on the relationship between agglomeration and socio-economic changes in Bekasi done by Santoso and Prabatmodjo [10]. By using descriptive and multiple regression analysis, slowly but surely finding industrial agglomeration in Bekasi able to position itself as the "prime mover" the region's economy through a significant contribution to the GDP District / County. Socio-economic changes can be seen from the components of population growth, the population of productive age, the population is illiterate, the welfare of the population, and the contribution of the industrial sector in the GDP. The linkage between industrial agglomeration with socio-economic changes indicated by the employment and an increase in value-added (GDP industrial sector) which encourages socio-economic changes, especially in component count and population growth, the population of productive age, and the level of welfare of the population.

Yang and Liao [11] in their research on industrial agglomeration in Hong Kong and Taiwan industrial investment in Dongguan China by using an index Ellison and Glaeser (EG) found that agglomeration of manufacturing industries in Hong Kong and Taiwan has evolved into sectoral and spatial patterns that vary during the past two decades, although there are similarities in the early stages. Their research also identified that the agglomeration industry in Hong Kong is more likely to be driven by the formation of one or two large-scale enterprises. While in Taiwan due to geographical location, which means that there is a difference substantially to both countries. This is due to differences in

the pattern of linkages between industry and industry comparative advantage in each area.

Tilaar [4] in his study of the distribution of agglomeration locations in Indonesia, found the increasingly important role of the industrial sector in the economy of a region. In Indonesia, the industrial sector has acted as the largest contributor to the formation of Indonesia's GDP over the past ten years. Regions that have agglomerated small industries will benefit in the form of agglomerated economies. Economic agglomeration has a positive influence on economic development.

Nuryadin and Sodik [12], doing research on the role of agglomeration and the characteristics of economic growth in Indonesia. The variables used were variable agglomeration, labor, inflation, economic openness, and human resources. The analytical method used General Least Square (GLS) to poll the data, found that regional economic growth is influenced by labor, inflation, and economic openness. While the variable of human resources and agglomeration does not affect economic growth.

Fan and Scott [13] in their research on industrial agglomeration and economic issues in South Asia spatial and statistical analysis on Chinese territory, found that regional development in China has in common with countries in Southeast Asia. Based on estimates was found that the manufacturing sector is reflected by a strong positive relationship between agglomeration and productivity. This phenomenon is especially the case in areas dominated by central planning, where liberalization is growing rapidly. The results showed a strong correlation between industrial clusters and productivity, in particular, the electronics industry, clothing, and computers. Thus, it can be concluded also that the relationship between industrial agglomeration and productivity are able to separate from the role of government as a policymaker.

### IV. METHODOLOGY

The scope of the research is focused on a small industrial agglomeration in South Sumatra and how they affect economic growth in the South Sumatra period 2008-2018. Observations were made for nine regencies/cities in South Sumatra, among others Ogan Komering Ilir Regency, Prabumulih City, Musi Banyuasin Regency, Lubuk Linggau City, Muara Enim Regency, Lahat Regency, Pagaralam City, Palembang City, and Ogan Komering Ulu Regency. The consideration of these areas is the district/ city before expansion and has data completeness and diversity of small industries.

The data in this study consisted of secondary data and primary data. Secondary data Gross Regional Domestic Product (GRDP) District, Municipal and Provincial Upper Constant Prices 2010, the population and the total labor force in the province of South Sumatra, labor absorbed small industry by Regency/City and Province, per capita income, and output the resulting industry small in the district/city and province of South Sumatra. While the primary data obtained from the field survey in the form of data on production, absorption of labor, economies of scale, and more.

Data source obtained from several agencies, such as the Central Statistics Agency of South Sumatra Province, the Central Bureau of Statistics and the Ministry of Industry and

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Trade of South Sumatra Province. Besides, data were also obtained from the literature in the form of textbooks, scientific articles/ journals, and other resources related to the topics discussed.

**Mechanical analysis using qualitative and quantitative approaches.** A qualitative approach was used to give a general overview of small industries in South Sumatra and the characteristics of the variables involved in the study. These variables are small industrial agglomeration and economic growth.

A quantitative approach is used to see small industrial agglomeration effects on economic growth in South Sumatra using a simple linear regression model with panel data. The independent variable is the agglomeration of Small Industry (IBit) and the dependent variable is Economic Growth (PEit).

Agglomeration variables in the model are calculated using the Balassa index (IBit), as follows: [7]

$$IBit = \frac{\left( \frac{E_{ij}}{\sum_j E_{ij}} \right)}{\left( \frac{\sum_i E_{ij}}{\sum_i \sum_j E_{ij}} \right)} \quad (5)$$

where: IBit = Balassa index to determine the spatial concentration (agglomeration);  $E_{ij}$  = labor sector  $i$  in region  $j$ ;  $\sum_j E_{ij}$  = the total workforce in the sector  $i$ ;  $\sum_j E_{ij}$  = employment in region  $j$ ; and  $\sum_i \sum_j E_{ij}$  = total labor force in the area  $j$ .

Variable economic growth (PEit) using secondary data from the Central Statistics Agency published. The model is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + e_{it} \quad (6)$$

Specifically formulated;

$$PE_{it} = \gamma_0 + \gamma_1 IBit + e_{it} \quad (7)$$

where: PEit = economic growth, IBit = small industrial agglomeration, and  $\gamma_0, \gamma_1$  = regression coefficients, and  $e_{it}$  = error term.

After estimation, the next step is to choose the best model through 1) Chow-test to determine whether the model used is Pooled Least Square or Fixed Effect. The Chow test follows the F-statistical distribution which is FN-1, NT-N-K. If the value of Chow statistics (F-stat) is greater than F-Table, then  $H_0$  is rejected, so the model used is fixed effect, and vice versa; 2) Hausman-test to determine whether the fixed effect or random effect model is the best model. The statistical value of the Hausman test is compared with the Chi-square statistical value. The Hausman statistics are formulated:  $H = (\beta_{REM} - \beta_{FEM})' (M_{FEM} - M_{REM})^{-1} (\beta_{REM} - \beta_{FEM}) \sim \chi^2(k)$ . Where M is the covariance matrix for the parameter  $\beta$  and k is free degrees. If the value of H is greater than  $\chi^2$  table, then  $H_0$  is rejected, so the model used is the fixed-effect model, and vice versa; and 3) LM tests are used if the final results through the two previous tests are not consistent with the final results. The basis for rejecting the null hypothesis ( $H_0$ ) by looking at the value of Prob. Breusch-Pagan (BP). If Prob BP is  $< 0.05$  then  $H_0$  is rejected, and vice versa [14] and [15].

The next step is to test the hypothesis of Gauss-Markov form of 1) Test the data residual normality to test whether the regression model panel, residual values are normally distributed or otherwise; and 2) Test heteroscedasticity,

heteroskedasticity problems led to the results of T-test and F-test becomes useless.

Concurrent last perform a partial statistical test (t-test) to test whether the independent variables individually have a significant influence on the dependent variable.

## V. RESULTS AND DISCUSSION

The small industry is an industry that needs to be developed into an efficient business and being able to evolve independently. So as to increase incomes, create jobs, and provide goods and services, as well as various components for markets at home and abroad. Although initially small industry is regarded as important in providing a source of employment and a major driving force in economic development in rural areas, along with the process of globalization and free trade, the small industry became one of the important sources of the increase in non-oil exports.

The importance of the role of small industry to make the government give serious attention to its policies. Likewise, the government of South Sumatra Province is paying attention and policies to encourage the development of small industries to foster community interest in each area to create superior products from their respective regions. It is important from the use of factors affecting regional economic growth is a pattern of convergence, where there is a collection of various types of industries at a particular place, resulting in the emergence of external benefits in the form of savings agglomeration. Industrial sector resulting in the accumulation of the factors supporting the industry, and the concentration of industrial activity in certain regions.

### A. Economic growth in South Sumatra Province

Economic development is essentially a continuous process in an effort to strengthen the economy's ability to produce goods and services. The effects of this continuous process are often associated with economic growth because the magnitude of the effect of such development is successful if their achievements higher than the previous year.

Based on Figure 3, during the 2008-2018 period of economic development in South Sumatra grow volatile, with an average growth of 5.30 percent per year. The normative economic growth should be felt by the entire region and not concentrated in one region.

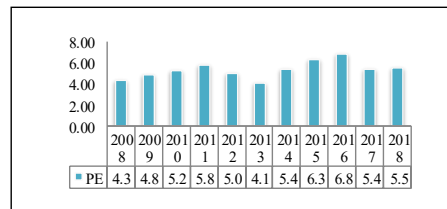


Fig. 3. Economic Growth of South Sumatra Province, 2009-2018  
Source: Central Bureau of Statistics, Statistical Area South Sumatra in 2018

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South Sumatra's economic growth in 2018 was dominated by the three main business fields: Manufacturing (19.52 percent), Mining and Quarrying (19.09 percent), Agriculture, Forestry and Fisheries (15.86 percent).

### B. Balassa index of South Sumatra Province

Potential agglomeration calculated using the Balassa index. The more concentrated an industry, the greater the index. Agglomeration is said to be strong if Balassa index number above 4; Average - average or medium if value is between 2 and 4; weak when the value is between 1 to 2; whereas a value of 0 to the mean does not occur agglomeration or the region does not have a comparative advantage for the agglomeration.

TABLE I. VALUES BALASSA INDEX IN SOUTH SUMATRA

PROVINCE	BALASSA INDEX						
	2012	2013	2014	2015	2016	2017	2018
SUMSEL	1.03	1.03	1.10	1.01	1.01	1.01	1.01

Source: author

Table 1 shows the result of the index calculation Balassa Small Industry in South Sumatra province with a mean value between 1 and 2. This indicates that agglomeration in South Sumatra is still weak, meaning that the concentration of economic activity in South Sumatra relatively not clustered. In other words, the new manufacturing industrial sector activity leads to the potential formation of agglomeration.

### B. Relations between Small Industrial Agglomeration and Economic Growth in South Sumatra Province

Analysis of the estimation results is done after obtaining the best model from the panel data estimation results between the Common Effect, Fixed Effect, and Random Effect models. After obtaining the best model based on the results of the Chow test, Hausman Test, or LM Test, the next step is to carry out the "t" statistical test for the selected model. After that, an analysis of the model parameters will be carried out to see the interrelationships between small industry agglomeration (IBit) and economic growth (PEit).

### C. Selection of the Best Model

Table 2 presented an overview of the results of the selection of the best model using the Chow test, Hausmann test or LM Test;

TABLE II. SUMMARY OF BEST SELECTION MODEL

Item	prob-F	Conclusion
Chow-test	0.0291	Fixed Model
Hausman-test	0.7015	Random Model
LM-test	0.1038	Fixed Model

Source: author

Based on the results of the selection of the best model, using the two previous methods, the final result is inconsistent. So it is continued with the LM test to obtain accurate results for the model. The LM-test that is used as a comparison is the Random Effect and Fixed Effect models.

Based on the results of testing with the three methods above, the conclusion is the best model is the fixed effect model.

### D. Gauss-Markov Hypothesis Testing

*Residual Normality Test Data-* The normality test was conducted to see the distribution of residual data and see the value of Prob Jarque Berra (JB). Residual normality test results are shown in Figure 4.

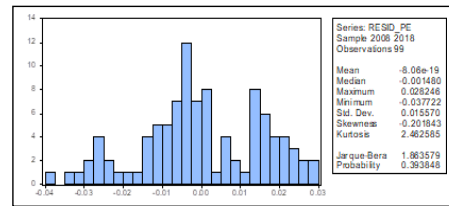


Fig. 4. Normality Residual Test

Source: author

Visible JB value of 1.863579, while the value of Prob JB amounted to 0.393848 > 0.05. Thus concluded that the (residual) data are normally distributed.

*Heteroskedasticity test-* was conducted by regression between the absolute value of residual and variable Agglomeration (IBit). The estimation results are shown in Table 3 below:

TABLE III. HETEROSKEDASTICITY TEST

Variables	Coefficient	Std-Error	t-statistic	Prob
C	-0.009549	0.025074	-0.380823	0.7042
IBit	0.021852	0.024915	0.877039	0.3828

Source: author

α = 5 percent

Based on test results obtained Glejser probability value of each independent variable. Agglomeration variable probability value (IBit) of 0.3828 > 0.05. Thus H<sub>0</sub> is rejected, and the model is said to be free from the problem of heteroscedasticity.

### E. Statistical Test (t-test)

Statistical test results' t "represents a positive relationship between the variables of potential agglomeration of Small Industry (IBit) with Economic Growth (PEit). Seen from the value prob (t-statistic) of 0.0285 and a significant level of 5 percent. There is a positive relationship between the variables Agglomeration Small Industries (IBit) with Economic Growth (PEit).

Here is presented the results of the estimation model Fixed Effect;

TABLE IV. ESTIMATION RESULTS

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.051258	0.043463	-1.179346	0.2414
Ibit	0.096180	0.043189	2.226961	0.0285 *)
R-squared	0.2138 = 21.38%			
F-statistic	2.689988 *)			

Source: author

\*) significant level of 5 percent

In summary, it can be rewritten as follows;

$$PEit = -0.051258 + 0.096180IBit \quad (8)$$

Based on equation (8) obtained a constant value of -0.051258, meant that small industrial agglomeration processes that drive economic growth should be faster than the development of technology. Small industrial agglomeration allows an increase in output will create profits. But on the other hand, the centrifugal forces of the transaction costs in contrast with the centripetal force of economies of scale. The concentration of economic activity, in addition to allowing the increase in the value of output, also causes an increase in transaction costs, so the utility is low. This is the reason why in the short term, agglomeration may not necessarily be positive. In some cases, changes in the value of agglomeration show the results in the long term. Where the rate of economic growth per capita in accordance with the growth rate of technology, making it easy to identify the balance between the two.

The coefficient of independent variables (IBit) amounted to 0.096180, meaning that there is a positive relationship between the variables Agglomeration Small Industries (IBit) with Economic Growth (PEit). The implication is that, when there is an increase/ strengthening of small industrial agglomeration by one percent, the economic growth will increase by 9.6189 percent.

Value of determination ( $r^2$ ) of 0.2138, we can conclude the contribution of the potential agglomeration of Small Industry (IBit) towards the establishment of Economic Growth (PEit) amounted to 21.38 percent. The remaining portion of 78.62 percent due to other factors such as infrastructure, investment, technology, and policy.

The relatively small value of determination ( $r^2$ ) in this study due to data obtained sourced from many respondents at the same time. So that the differences between each variation of industry groups observed to cause the value of determination becomes small. Some literature mentions, for which survey data are cross-section, then the value of determination ( $r^2$ ) range of 0.2 or 0.3 is good enough.

In the fixed effect, the model values for the individual effect of each district/ city. Individual value effect on the fixed-effect model is shown in Table 5 below:

TABLE V. EFFECT OF INDIVIDUAL VALUE (C1)

No.	District/ City	Ci
1	Palembang (PLG)	-0.002433
2	Musi Banyuasin (MUBA)	0.004819
3	Lubuk Linggau (LLG)	0.003058
4	Pagaralam (PGA)	-0.002150
5	Lahat (LHT)	-0.001176
6	Muara Enim (ME)	0.001812
7	Prabumulih (PB)	0.006378
8	Ogan Komering Ilir (OKI)	0.006507
9	Ogan Komering Ulu (OKU)	-0.016816

Source: author

Through the effect of individual values of each district / city, then the estimation model for each area can be rewritten as follows:

1.  $PE_{PLGt} = -0.002433 + 0.096180IBit$
2.  $PE_{MUBAt} = 0.004819 + 0.096180IBit$
3.  $PE_{LLGt} = 0.003058 + 0.096180IBit$

4.  $PE_{PGA t} = -0.002150 + 0.096180IBit \quad (9)$
5.  $PE_{LHT t} = -0.001176 + 0.096180IBit$
6.  $PE_{MEt} = 0.001812 + 0.096180IBit$
7.  $PE_{PBMt} = 0.006378 + 0.096180IBit$
8.  $PE_{OKIt} = 0.006507 + 0.096180IBit$
9.  $PE_{OKUt} = -0.016816 + 0.096180IBit$

Value individual effect on each regency/ city in the fixed effect model meant that when there is no agglomeration of small industries (IBit), the economic growth of each regency/ city in South Sumatra will be changed by the value of the individual effect of each.

Based on equation (9), it can be described as economic growth in each regency/ city in South Sumatra during the period 2008-2018. There are differences in economic growth for every district/ city in South Sumatra.

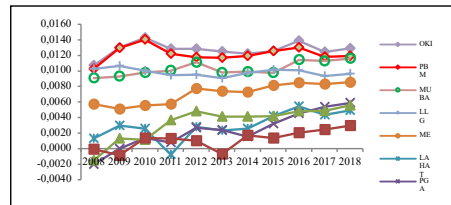


Fig. 5. Growth Regency/ City in South Sumatra Province, 2008-2017 (%)  
Source: author

Table 6 shows the final intercept values for each region that have been sorted from the largest to the smallest. The results obtained from the addition of the model constant value of -0.051258. There are five regencies/ cities that have relatively high intercept scores compared to others, namely Ogan Komering Ilir Regency; Kota Prabumulih; Musi Banyuasin Regency; Lubuk Linggau City; and Muara Enim Regency. If it is assumed that the independent variable has no effect, then the five districts/ cities have the highest economic growth compared to the other four districts/ cities in South Sumatra.

TABLE VI. SEQUENCE INDIVIDUAL VALUE EFFECT (C<sub>i</sub>)

No.	District / City	Final value C <sub>i</sub>
1	Ogan Komering Ilir (OKI)	-0.0448
2	Prabumulih (PB)	-0.0449
3	Musi Banyuasin (MUBA)	-0.0464
4	Lubuk Linggau (LLG)	-0.0482
5	Muara Enim (ME)	-0.0494
6	Lahat (LHT)	-0.0524
7	Pagaralam (PGA)	-0.0534
8	Palembang (PLG)	-0.0537
9	Ogan Komering Ulu (OKU)	-0.0681

Source: author

Nowadays South Sumatra area has undergone rapid changes in the economic structure. One of them is the manufacturing industry, which is inseparable from the economic concentration that occurs through infrastructure support and access to information and transport is growing rapidly. This condition can also support the establishment of small industrial agglomeration in South Sumatra.

In line with Crawley's research results and Hill[16], It was found that the size of the company in a state concentrated in

a few areas in South Wales has been explored, indicating the potential for agglomeration manufacturing.

In 2018 the contribution of the manufacturing sector to the oil and gas amounted to 19.52 percent or 15.01 percent without oil and gas. This number suggests that the role of small industrial agglomeration is essential to support economic growth through the creation of value of output and employment in South Sumatra.

Small industrial agglomeration leads to savings in every industry that are located in the same place in a district/ city in South Sumatra. With locations in one place, then the cost of raw materials, promotions, and other supporting facilities can be saved. Seeing the conditions that exist in South Sumatra, the diversity of this small industrial sector has been supported by the ease of obtaining raw materials, abundant labor resources in industrial locations, as well as marketing costs, are inexpensive. This indicates that there is a saving of localization as it lies adjacent industries.

This positive relationship between industrial agglomeration and economic growth has a lot to prove, especially for medium and largescale industries. Agglomeration produces spatial differences in income levels. Increasingly agglomerated an industry in an area, it will increase the economic growth of the region. Results of previous studies found that the industrial agglomeration of economic variables has influence significantly to the economic growth of the district/city in West Java. Similarly, the level of industrial diversity, have a positive influence on economic growth. The more diverse types of industrial activities on the meal will encourage economic growth and vice versa.

By doing agglomeration, small industries can reduce the externalities of technology led to higher production costs. Besides, it will facilitate workers to seek employment in the area of the agglomeration, as well as accelerate the mobility of their work, because work is relatively so much closer. Another advantage is speeding up the distribution of output because distributors do not difficult in finding materials/products they marketed in the area of industrial agglomeration.

This phenomenon has been predicted by Kuznets and Murphy, linking industrial agglomeration problems with the economic growth of a country. Geographic concentration has the added benefit of lowering the cost of innovation due to competition. By looking at the empirical information, it was concluded that industrial agglomeration is one alternative to the acceleration of economic growth. Moreover, for developing countries, such as Indonesia, which is still in the stages of the infant industry which usually still has many problems, especially capital and expertise are still low.

## VI. CONCLUSION

Based on estimates using the regression approach using panel data, obtained: 1) small industrial agglomerations positively affect economic growth. Increasingly agglomerated small industry, the higher the economic growth of South Sumatra; 2) statistical test results partially support the positive relationship between the pattern of industrial agglomeration of small (IBit) and economic growth (PEit) were significant at the 5 percent level; and 3) the coefficient of determination ( $r^2$ ) of 0.2138, meant that the contribution of

small industrial agglomeration (IBit) on the formation of economic growth (PEit) amounted to 21.38 percent. The remaining portion of 78.62 percent due to other factors.

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