



Agglomeration of Manufacturing Industrial, Economic Growth, And Interregional Inequality in South Sumatra, Indonesia

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ABSTRACT

Industrial agglomeration has become common discussion topic, particularly in relation to economic growth and the reduction of regional inequality between regions. The phenomenon that occurs at this time that the agglomeration of manufacturing industries in South Sumatra has not fully happened. However, the determination of South Sumatra province as one of the central regions of industrial growth reflects the high economic growth and low levels of income inequality are the effects of the agglomeration of manufacturing industry. The analysis technique used the simultaneous model with panel data interregional in South Sumatra with two-stage least square approach, during the period 2004-2014. The potential agglomeration of manufacturing industry is calculated using the Balassa index, while regional inequality calculated using Williamson index. The results showed that, (1) economic growth (G_t), income inequality (IW_t) and population (POP_t) exhibited significantly effect on agglomeration of manufacturing industry (IB_t); (2) agglomeration of manufacturing industry, population, per capita income ($YCap_t$) and a per capita income of the previous year ($YCap_{t-1}$) a significant effect on economic growth; and (3) economic growth (G_t), economic growth in the previous year (G_{t-1}) and agglomeration of manufacturing industry significant influence on income inequality.

Keywords: Agglomeration, Economic Growth, Regional Inequality

JEL Classification: L68

1. INTRODUCTION

Economic development indicators are essentially intertwined with each other, as economic growth, income equity and poverty (Todaro, 2000). Each region tries to boost economic growth, reduce income inequality and reduce poverty; it is a multidimensional process that should involve the active role of all people who have the ultimate goal is to increase welfare. The high economic growth should be felt by the entire region; it can happen if the economic growth can be followed also by narrowing the income gap between regions. According to Williamson in Kuncoro (2004) study, in his research found that at early stages of development will generally be concentrated in specific areas, which in turn led to inter-regional income inequality is high. On the other hand, Myrdal in Jhingan (1993) argues that economic development is followed by policies aimed at reducing inequality, it will inhibit the flow of income inequality between regions.

Income inequality itself is usually measured using Williamson index values using data income per capita, population, and employment in a region. Inequality is said to be high if Williamson index value above 0.50, and vice versa. South Sumatra in connection with efforts to increase economic growth and reduce the income gap between regions has essentially given the shape a positive relationship. The high economic growth in South Sumatra has been accompanied by low levels of inequality between regions in South Sumatra. This is evident from the level of the gap described by Williamson index value during the period 1991-2014 which is likely below 0.50. Rapid changes in economic structure in South Sumatra which have an impact on all economic sectors, especially the manufacturing industry sector which is inseparable from the economic concentration occurs through infrastructure support as well as access to information and transport are growing rapidly. These conditions will favor formation of agglomeration process in South Sumatra. Economic

growth in South Sumatra donation itself one of which comes from the manufacturing industry.

Growth in the manufacturing sector, both the oil and non-oil, patterns show highly volatile (Figure 1). However, the manufacturing sector still provides a substantial contribution to the GDRP of South Sumatra. The contribution of the manufacturing sector, both the oil and non-oil from year on year showed a fluctuating pattern and tended to decrease, with the average contributing respectively by 4.79% and 13.26% per year. However, the contribution of the manufacturing sector still occupies a position high enough compared to other sectors, after agriculture, trade, and services.

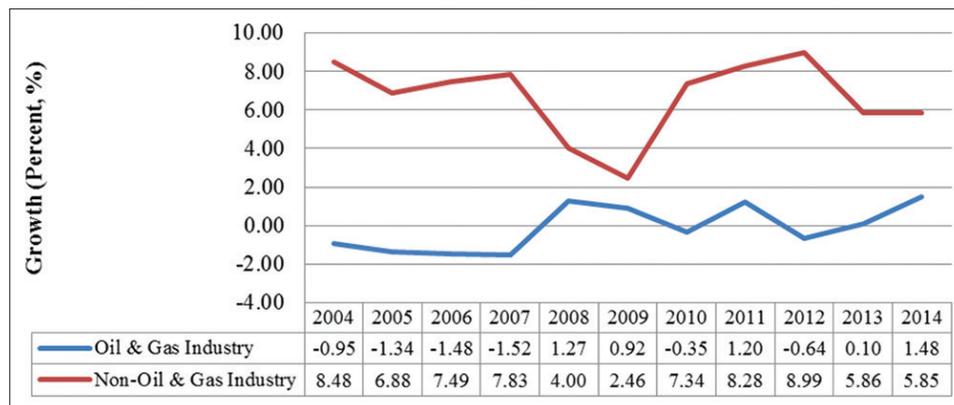
Based on observations, the manufacturing sector is the largest employer of after agriculture, trade, and services with an average of employment absorption by 4.73% annually of the entire workforce in South Sumatra (Figure 2). Thus, the manufacturing sector still remains one of the main focus in terms of employment. In the constellation of national development, emphasized that it is important to continue to improve the competitiveness of the manufacturing sector to remain a strategic sector in national development. According to Sihombing (2005) highlights of the use of factors that affect regional economic growth is a pattern of centralizing various types of certain industry in a region that raises external benefits in the form of savings agglomeration.

In line with the results of research Tilaar (2010) which found that the area had happened agglomeration has a high rate of economic development compared to areas that do not do industrial agglomeration. Through economic development is high, meaning areas that do agglomerations will also have an economic growth rate and per capita income levels are high as a result of the number of workers absorbed in sectors that do agglomeration. So it can be said that there is a positive relationship between agglomeration with economic development in a region. In spite of it all, economic development itself is comprehensive and cannot be separated from the support of all facility and its supporting infrastructure. If all of the facilities and supporting infrastructure have become clumped due to various factors, it will form the agglomeration economies.

Economic agglomeration will produce spatial differences in income levels. The more spatially agglomerated an economy, the higher the economic growth. Areas that have a lot of economic activity grew faster than the area that only a few have little economic activity. The reason that many regions have more economic activity will have a capital accumulation so that economic growth will be faster.

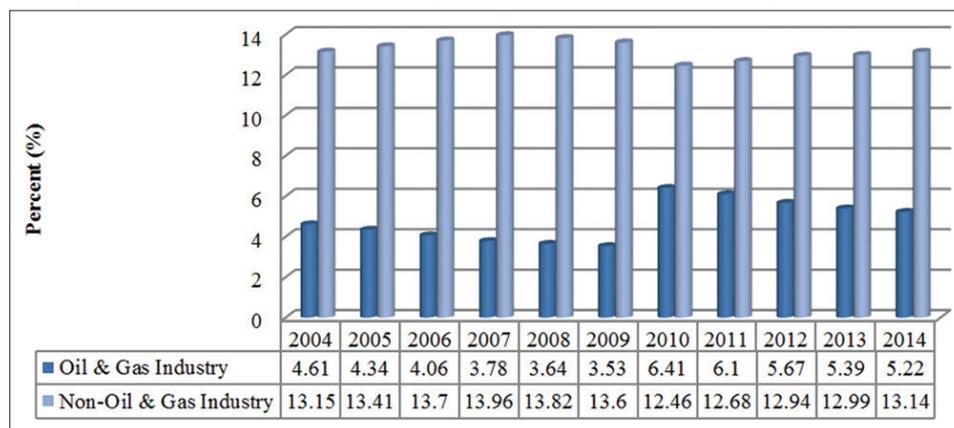
The phenomenon happens when that agglomeration economy in South Sumatra has not fully happened. So that the agglomeration effects on economic growth and the income gap are still very necessary to study empirically. Moreover, the establishment of

Figure 1: Growth of manufacturing industry in South Sumatra, 2004-2014 (%)



Source: South Sumatera in Figures 2015 (BPS, 2015)

Figure 2: Contribution of manufacturing industry to GDRP South Sumatra, 2004-2014 (%)



Source: South Sumatera in Figures 2015 (BPS, 2015)

regional growth by the government that sets South Sumatra as one of the Regional Zone Industrial Growth Centre (WPPI). It is possible that the high economic growth and low levels of income inequality are the effects of the economic agglomeration. This study has a contribution, first, to know how the relationship between agglomeration of industry, economic growth and inequality inter-regional in developing countries such as Indonesia, second, for knowledge, this case is the study that is still very rare for in the case of inter-regional in Indonesia.

The next part is to study literature by presenting the theoretical framework. The third section presents the research methods such as simultaneous equation model with two-stage estimation technique least square (TSLS). The fourth section will present empirical results and discussion of this research model. Furthermore, the last section concludes.

2. THEORETICAL FRAMEWORK

2.1. Agglomeration Industry

The term agglomeration basically started with an idea of Marshall, about savings agglomeration (agglomeration economies) or referred to as a localized industry. According to Montgomery in Kuncoro (2002), agglomeration is the spatial concentration of economic activity in urban areas because of the savings due to a nearby location (economies of proximity) associated with spatial clusters of companies, workers, and consumers.

While Kuncoro (2002) states that the agglomeration is a location that is “not easily changed” as a result of external savings that is open to all companies located adjacent to other companies and providers of their merits, and not as a result of the calculation of the company or the workers individually, Based on a few quotes above definition could conclude that an agglomeration of no more than a collection of industrial clusters and the concentration of economic activity of the population spatially arise because of the savings gained due to nearby locations. According Kuncoro (2002) in this theory that agglomeration arises because the economic actors seeking savings agglomeration (agglomeration economies), either because of savings localization and urbanization savings, by taking a location adjacent to one another.

The new geography of economic theory seeks to reduce the effects of agglomeration of the interaction between the size of the market, transportation costs and increasing returns from the company. In this case, the agglomeration economies are not assumed but are derived from the interaction of economy of scale at the firm level, the cost of transportation and mobility of factors of production. The new geography of economic theory focuses on the mechanism of circular causality to explain the spatial concentration of economic activity (Martin and Ottaviano, 2001). In the model derived from the centripetal force variation or diversity of intermediate consumption good on the production side. Centrifugal force derived from the pressure which is owned by the geographic concentration of local input markets that offer higher prices and widespread demand.

According to Weber in Tarigan (2005), there are three factors which are why companies in the industry in determining

locations, namely: (1) The difference in transportation costs; manufacturers tend to find a location that provides the advantages of saving transportation costs and could lead to efficiency and effectiveness of production. In a broader perspective, Coase in Kuncoro and Wahyuni (2009) argued about saving transaction costs (transportation costs, transaction costs, contract costs, the costs of coordination and communication costs) in determining the location of the company. At the end of this decade slightly reduced transport costs due to innovations that are now more often found companies located in the orientation of the local input rather than oriented to raw materials; (2) differences in wages fee; the existence of an area with high levels of high wages encourages workers to be concentrated in the region. This phenomenon can be found in areas with high population density. Keep in mind that rural areas that are lagging behind most high wage rates will still be lower than in areas that have high levels of business in the industry because there are administrative requirements such as the minimum wage; and (3) the benefits of agglomeration. Agglomeration would create benefits in the form of savings and savings localization urbanization. Saving localization occurs when the cost of production companies in an industry decreases as the total production of the industry increased (occurring increasing returns to scale).

Meanwhile, according to McCann (2001) that there are three sources why increasing returns to scale are always achieved, as (1) the abundance of information (information spillovers); if many companies in the industry are relatively similar, then by agglomeration at the same location, the workforce at a particular company will be relatively easy to relate to labor from other local companies. Thus, the exchange of information both between workers and between companies will be easier and take place at any time; (2) local input not traded (non-traded local inputs); the circumstances in which companies within the same industry group somewhere then there are some specific inputs that become more efficient when used jointly by workers in these companies than if inputs are purchased individually by these companies; and (3) availability of skilled manpower local (local skilled-labor pool); availability of skilled labor in the region will cause a decrease in labor costs for companies in these locations.

2.2. Economic Development

Economic development is an effort to increase the per capita income with the processing power of the economic potential into real economy through investment, the use of technology, the addition of science, improvement of skills and abilities of management and organization. Meanwhile, according to Todaro (2000) in the economic development there are three elements, as: (1) Economic development as a process of meaningful change continuously which contains elements of its own power to new investments, (2) an attempt to increase income per capita, and (3) the increase in per capita income should take place in the long term.

In developing countries such as Indonesia tend to apply the process of industrialization in starting construction. Development strategy was basically seen economic development as a process of transformation of the economic structure with emphasis on the agricultural sector leading to the suppression of industrial

structure. In the absence of industrialization, is difficult to expect the existence of a sustainable economic development (sustained economic growth). In this case, the transformation of the desired structure for the agricultural sector is deemed not to have high value added as well as the terms of trade are low (Tambunan, 2001).

2.3. Regional Inequality

According to Williamson in the McCann (2001), generally regional inequalities tend to be large, at the time of the development process. This is due to the following factors: (1) Migration productive population and have the skill or educated to the area - an area that has grown; (2) investment tends to prevail in the region has grown; (3) government policy tends to result in the concentration of social and economic overhead capital in an area that has grown because of the greater need; and (4) there was no association (linkages) between regional markets, causing obstacles to the transmission (spread effects) innovation and income multipliers.

Tambunan (2001) suggested some factors of inequality, among others: (1) Concentration of regional economic activity, the concentration of the economy is high in certain areas is one of the factors that caused the development gaps between regions. Economy of regions with low economic concentration will tend to have this level of development and low economic growth; (2) the investment allocation, based on the theory of Harrod-Domar was there a positive correlation between the level of investment and economic growth, it can be said that the lack of investment in a region's economic growth and income levels per capita in the region is low because there is no economic activity productive; (3) the level of mobility and production factor low inter-regional, less smooth mobility of factors of production, such as labor and capital is a cause of regional imbalance regional; (4) difference of natural resources inter-regional, basic classical thinking said that economic development in areas rich in natural resources will be more advanced and more prosperous society than poor area of natural resources; (5) inter-regional differences demographic conditions, (also the regional imbalances caused by differences in demographic conditions, particularly in terms of the number and population growth, population density, education, health, public discipline and work ethic); and (6) less smooth commerce, it is also an element that helped create regional imbalances. In addition, also caused by limited transportation and communication.

Myrdal in Jhingan (1993), states that the regional inequality within a country rooted in non-economic basis. Regional inequality is closely related to the capitalization system that is underpinned by the profit motive. The profit motive is what drives the development of a centralized development in the region - a region which has a "high-profit expectations," while other areas neglected. Myrdal explained that the growth of a region will affect the surrounding areas, the effect occurs through a backwash effect and spread effect. Backwash effect occurs when economic growth occurs in a particular area resulted in the transfer of resources (e.g. labor, capital, and so on) from the region around the region. The impact spread effect occurs when economic growth in the region resulted in the growth of the surrounding regions that produce raw materials for the industry growing at such centers and centers that have

consumer goods industry will be stimulated. Furthermore, Myrdal concluded that the unevenness of the region caused by the weak impact of the spread and severity of the effects behind.

2.4. Growth and Inequality Regional

Research examining the relationship of regional disparities with the theory of economic growth by using economic data developed countries and developing countries, Williamson in the McCann (2001) stated that during the early stages of development of regional disparities become bigger and development is concentrated in certain areas. At a more mature stage of growth seen looks a balance between regions where the disparity is reduced significantly. The cause is not balanced regional growth process is the benefits of agglomeration, indivisibility of investment, differences in the competitiveness of natural resources and the unequal spatial distribution of population and market demand.

3. LITERATURE REVIEW

Nakajima et al. (2011) in his research, found (1) approximately half of the manufacturing industry (four digits 561) can be classified as localized, and the largest number of localized industries are located at a distance of 40 km or less; (2) some of the processing industry (textiles) the most localized, and this finding is similar to the condition of the industry in the UK. This confirms that the input factors between countries determine the concentration of industrial activity; (3) the distribution of distances between companies that enter (exit) with existing companies in most industries, there were significant in a random distribution. These results suggest that many industries in Japan, both localized and non-localized, spread over time; research conducted by Putri (2013), found that the factors that positively affect the agglomeration of manufacturing industries in the region KBI, namely industry competitiveness index, the size of the company, added value and number of the company IBS. Factors that negatively affect the formation of agglomeration manufacturing industry is Foreign Direct Investment and long road. Variables Domestic Investment (DCI) and the Provincial Minimum Wage (UMP) proved to be a significant influence on the formation of industrial agglomeration manufacturing.

The results of the Arifin (2006) using the method of geographical information systems (GIS) in which researchers used indicator of the value of output produced companies large and medium industry (IBS). The results showed that the spatial concentration occurred in East Java, which can lead to unequal distribution of inter-island location of the manufacturing industry is large enough. On the other research Arifin (2006) also using GIS analysis tool to measure the spatial dynamics of the manufacturing industry. The indicator used is the number of workers that will show industrial and non-industrial areas.

Research conducted by Purwaningsih (2011) found that economic inequality in West Java was measured using Williamson index has a downward trend from year to year. This shows that inter-districts in West Java are still going on income inequality. The development of the geographic distribution inequality

manufacturing industry activity can be calculated and analyzed by Entropy Theil Index which indicates that there is an indication of very high during the period 2001-2008. However, the trend is evident spatial concentration tended to decline year on year. Furthermore, the factors that positively affect the agglomeration of manufacturing industries in West Java is the company's size, diversity of industry, foreign capital ownership, market size and road infrastructure. While the factors that negatively affect the agglomeration of manufacturing industries in West Java, wage levels and the increase in fuel oil. There are three variables that do not significantly affect the industrial agglomeration, i.e., industry competitiveness index, the export and import orientation and electrical infrastructure.

Tilaar (2010) in her study of the distribution of agglomeration locations in Indonesia found that the industrial sector increasingly important role in the economy of a region. In Indonesia, the industrial sector is the major sector in the economy of Indonesia. This sector as the largest contributor to the formation of Indonesia's gross domestic product over the last 10 years. Areas, where the concentration of the industry occurred, will benefit the so-called agglomeration economies. So with the economic agglomeration will give an effect which positively to economic development. In connection with this, it is important that industrial activity can be spread evenly throughout Indonesia so that the overall distribution of development. The other hand, Nuryadin et al. (2007) found that regional economic growth from 1993 to 2003 was influenced by labor, the rate of inflation and economic openness. While human resources and agglomeration variables precisely no effect on economic growth.

Arifin and Hidayat (2011) by using spatial analysis, geographic information systems, and multiple linear regression. Found that the distribution of small and medium enterprises in East Nusa Tenggara is uneven geographically when viewed from the employment and production quantities. In some counties and cities have employment and production quantities are high, while others actually experiencing employment and production quantities are low. It is also confirmed from the results of multiple regression analysis with panel data, with the result that all the explanatory variables X1 (business unit), X2 (investment), X3 (production) and X4 (raw materials) were able to explain to employment small and medium industry in East Nusa Tenggara.

In addition, research Yang and Liao (2009) found that agglomeration of manufacturing industries in Hong Kong and Taiwan in Dongguan has evolved into sectoral and spatial patterns of different ones over the past two decades, although there are similarities in the early stages. The study also identified that in terms of the size distribution of companies in the industrial agglomeration, agglomeration industry in Hong Kong is more likely to be driven by the establishment of one or two large-scale enterprises in Taiwan while more due to geographical location, which means that there is a substantial difference between the two countries. This is caused by differences in the pattern of linkages between industry and comparative advantage industries in each region.

Alkay and Hewings (2012) in his study showed that the urban economy has a strong effect on the level of geographic and

industry-specific. This implies that the population density, the potential market, and the labor market potential is an effective proxy to describe the economy in an urban agglomeration. Localization effects consistent with a model of Marshall for labor and inputs. Nevertheless, the results showed that there was no strong evidence showing changes in knowledge (knowledge spillover) will affect the agglomeration.

3.1. Flow of Thought

The manufacturing industry is currently the main source of the largest labor absorbing sectors besides others. Potential differences and facilities, as well as ease in each region, will make the manufacturing industry cluster and form an agglomeration (Figure 3).

Agglomeration or concentration that occurs, should bring benefits to the surrounding area and in particular in the region itself, which should help boost economic growth in the region or rather the concentration of economic activity in a region can lead to increased economic inequality between regions which should, in the long run, could be addressed.

4. MATERIALS AND METHODS

This study focused on the analysis of agglomeration, economic growth and regional inequality interregional in South Sumatra. The data used in this research is data time series (2004-2014). The data used in this research is secondary data obtained from the Central Statistics Agency (BPS) of South Sumatra, the present data as economic growth, and labor data of the manufacturing industry. Collecting data in this study using two methods: (1) Methods documentation, used to obtain data agglomeration, the development of manufacturing industry in South Sumatra. The data is secondary data that obtained data have been processed or other parties. Then taken to be the object or writing materials in the implementation of the final project; and (2) method of literature, used to launch activities in obtaining the data, employment data and the GDRP of South Sumatera.

4.1. Agglomeration Index

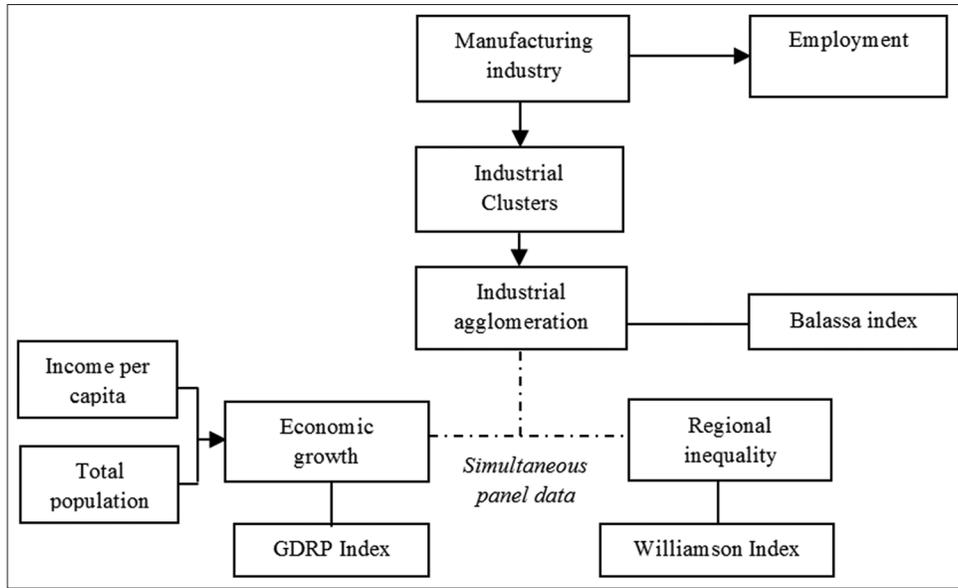
To determine the agglomeration of manufacturing industry used Balassa index, as follows (Kuncoro, 2002):

$$IB = \frac{\left(\frac{E_{ij}}{\sum E_{ij}} \right)}{\left(\frac{\sum_j E_{ij}}{\sum \sum_j E_{ij}} \right)} \quad (1)$$

Where, IB is spatial concentration (agglomeration); E_{ij} is labor sector i in region j ; $\sum E_{ij}$ is total labor sector i in region j ; $\sum_j E_{ij}$ is employment in region j , and $\sum \sum_j E_{ij}$ is total labor force in the region j .

Agglomeration is said to be strong if the Balassa index above 4, the average or moderate if the value is between 2 and 4, are weak when its value between 1 and 2, while a value of 0 until 1,

Figure 3: Schematic flow thought



Information: — : Calculated with calculators/analysis used
 → : Has a causal influence
 - - - : The corresponding relationships between variables related

mean does not occur agglomeration or the region does not have a comparative advantage for the agglomeration (Sbergami, 2002). Hereinafter, proxy economic growth with the GDRP growth index of constant price to get changes of value in the GDRP. The formula used to calculate the GDRP growth index as follows:

$$\text{INDEX GRDP} = \frac{(\text{GDRP}_{t1})}{(\text{GDRP}_{t0})} \times 100\% \tag{2}$$

Where, G is economic growth; GDRP_{t1} is GDRP following periods, and GDRP_{t0} is GDRP in the initial year. In the present study, GDRP is used as the basis for calculation is constant prices.

4.2. Regional Inequality Index

To get the equalization rate in South Sumatra region as a whole is used Williamson index. Testing Williamson index would give a value of 0 until 1. The higher the index value Williamson, the greater the inequality. As Williamson index formula is as follows:

$$IW = \frac{\sqrt{\sum (Y_i - Y)^2 f_i / n}}{Y} \tag{3}$$

Where, IW is Index Williamson, Y_i is per capita income in each district in South Sumatra; Y is income per capita in South Sumatra; f_i is the number of people in every district in South Sumatra; n is a number of people in South Sumatra. These criteria; low level of inequality when Williamson Index <0.35; inequality moderate when Williamson Index between 0.35 and 0.50 and a high level of inequality when Williamson Index >0.50.

4.3. Simultaneous Equation Model

To know how the relationship between the variables of agglomeration, economic growth and regional imbalances by

influencing factors using a simultaneous equations model, as follows:

$$IB_{it} = c_1 + c_2 G_{it} + c_3 IW_{it} + c_4 POP_{it} + c_5 Du + e_i \tag{4}$$

$$G_{it} = d_6 + d_7 IB_{it} + d_8 POP_{it} + d_9 YCap_{it} + d_{10} YCap_{it-1} + d_{11} Du + v_i \tag{5}$$

$$IW_{it} = g_{12} + g_{13} G_{it} + g_{14} G_{it-1} + g_{15} IB_{it} + g_{16} Du + u_i \tag{6}$$

Where, IB is Balassa index (agglomeration); G is economic growth; G_{t-1} is growth previous year; IW is Index Williamson (regional inequality); JP = Total population; YCap is income per capita; $YCap_{t-1}$ is income per capita previous year; Du is dummy area; c is parameter; and e, v and u is error term.

4.4. Identification Model and Estimation Method

This study uses econometric approach using panel data and the system used is a system of simultaneous equations. An econometric approach using a system of simultaneous equations requires that the number of equations must equal the number of endogenous variables (Baltagi, 2005). It is necessary for the complete identification of the model. Based on the results of the identification of the model states that the model overidentified or just identified, then the parameters in the estimation using TSLS.

5. RESULT AND DISCUSSION

5.1. Economic Growth

Economic development is essentially a continuous process in the efforts to bolster the economy’s ability to produce goods and services. The effects of the continuous process are often identified with economic growth because the magnitude of the effects of

such development is successful if its achievement is higher than the previous year.

Economic growth in South Sumatra province in percent calculated by calculating the change in the value of GDRP with oil and gas on the basis of constant prices. In detail, the economic growth of southern Sumatra during the period 2004-2014 can be seen in Figure 4. Economic growth in South Sumatra tends toward better although quite volatile with an average growth of 5.3%/year. Relatively good economic growth this should have to be felt by the entire region. This condition requires that development should not be concentrated in one area. Because development concentrated in particular regions will eventually lead to inequality is high.

5.2. Regional Inequality

As the parameters of regional imbalances, interregional of South Sumatra province used the index, Williamson. Based on the criteria of existing low level of inequality when Williamson Index <0.35, inequality moderate when Williamson index between 0.35 and 0.50 and a high level of inequality when Williamson Index >0.50 (Figure 5).

Figure 4 shows that the interregional in South Sumatra has regional disparity levels are very low. The relatively low inequality in South

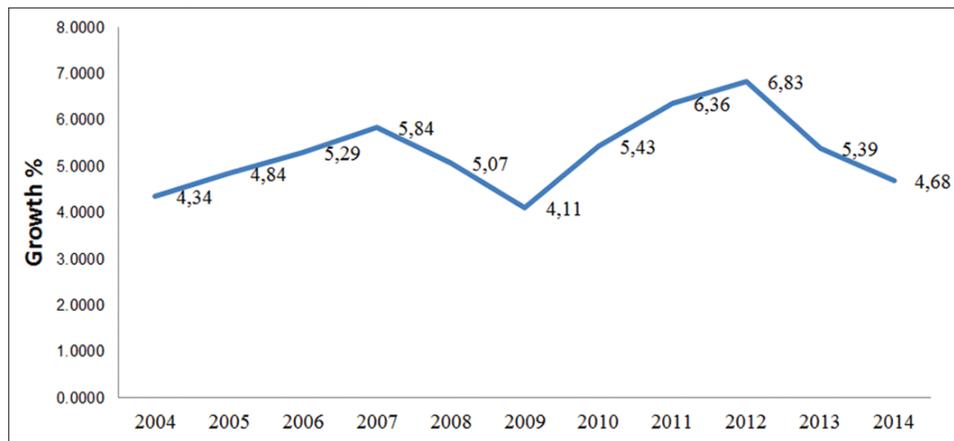
Sumatra caused by topography interregional in South Sumatra, which is also supported by the diversity of potential possessed by each region. This is supported by the opinion of Kuncoro (2004) which states that the income gap between regions can be reduced if the government in the regions concerned with implementing development policies based on the potential of each region.

5.3. Agglomeration of Manufacturing Industry

Agglomeration itself can actually be calculated using the Balassa index. The numerator of this index presents part of the territory of the total workforce in the manufacturing sector. The more concentrated an industry, the greater the Balassa index. Agglomeration is said to be strong if the value of Balassa index above 4, the average or moderate when its value between 2 and 4, are weak when its value between 1 and 2, while a value of 0 to the mean does not occur agglomeration or the region does not have a comparative advantage for the agglomeration (Sbergami, 2002).

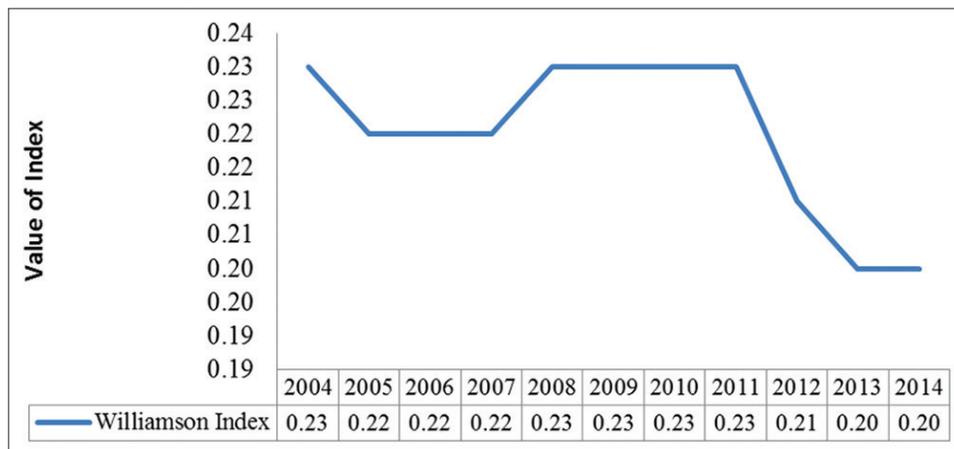
In Figure 6 show the results of calculations Balassa index of the manufacturing industry in South Sumatra with an average value of between 1 and 2. This indicates that agglomeration in South Sumatra is still relatively weak, meaning that the concentration of economic activity in South Sumatra relatively not clustered.

Figure 4: Economic growth in South Sumatra (Constant Price 2010)

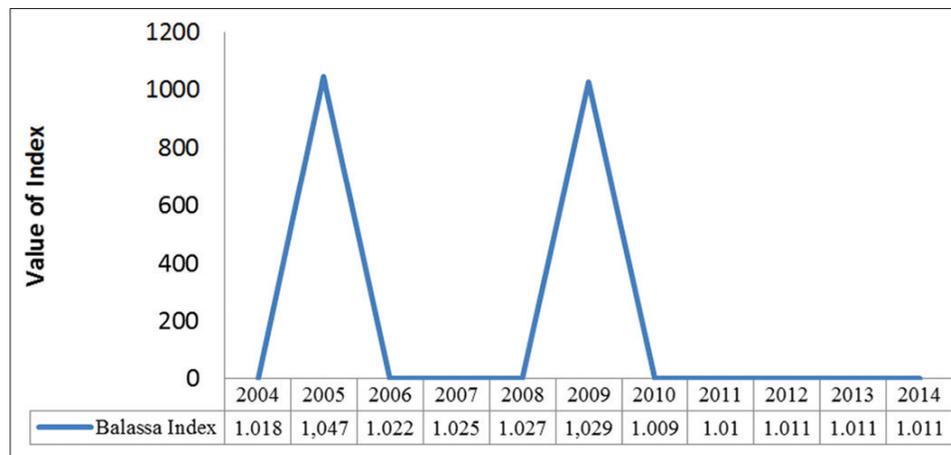


Source: South Sumatera in figures 2015 (BPS, 2015)

Figure 5: Williamson Index of South Sumatra Province, 2004-2014



Source: South Sumatera in Figures 2015 (BPS, 2015)

Figure 6: Balassa index value of South Sumatra, 2004-2014 (%)

Source: South Sumatera in Figures 2015 (BPS, 2015)

In other words, the activity of the manufacturing industry of new leads to the potential formation of agglomeration.

The model analyzed in this study are simultaneous with the three basic models, as a model agglomeration of manufacturing industry (IB), the economic growth model (G), and a model of income inequality (IW). Prior to estimation, the model must first be identified in order to obtain valid results to be analyzed. Based on the results obtained identification, the three models to be analyzed indicated over-identified, so that the equation can be estimated by using the approach of TSLS. Estimation results for the three models.

5.4. Result of Agglomeration Model

The estimation results of the manufacturing industry agglomeration function in South Sumatra briefly shown in Table 1. The variables that determine the agglomeration of manufacturing industries, among others, economic growth variable (G), the inequality area (IW), and population (POP). In addition to these variables, this study also analyzes the comparison interregional in the model agglomeration of manufacturing industry. Interest inclusion of interregional as a dummy variable in the function of the manufacturing industry agglomeration is to compare the average growth rate interregional in South Sumatra.

Table 1 shows that statistically, all independent variables in the model (economic growth, inequality, and population) exhibited significantly affect agglomeration of manufacturing industries in South Sumatra. Given the analysis model used is a model of simultaneous equations that cause is not possible to see absolutely influences together or partially, then in analyzing the results of these estimates more attention to signs each coefficient. Variable economic growth has a positive effect and exhibited significantly to the formation of industrial agglomeration of manufacturing in South Sumatra. These findings reinforce the notion that all the facilities and infrastructure, as well as access to information supporting economic growth, has been increasingly clustered, so the supports the potential formation of industrial agglomeration of manufacturing in South Sumatra.

Table 1: Estimation results of agglomeration model

| Variable | Coefficient | Standard error | t-statistic | P |
|-----------------|-------------|----------------|-------------|-----------|
| (Constant) | 3.551692 | 0.283606 | 12.52332 | 0.000*** |
| G_t | 0.093264 | 0.028846 | 3.233178 | 0.0015*** |
| IW_t | -3.103218 | 0.405651 | -7.649965 | 0.0000*** |
| POP_t | -1.08E-06 | 1.20E-07 | -8.991630 | 0.0000*** |
| R^2 | 0.819717 | | | |
| F-statistic | 39.31669 | | | |
| P (F-statistic) | 0.000000*** | | | |

Level of significant at the *10%, **5%, ***1%. Source: Data analysis result

Inequality region has a pattern of negative and significant correlation with the potential of the manufacturing industry agglomeration. This means that income inequality between regions that have heightened lower economic growth in South Sumatra. High among the areas in South Sumatra will be obstacles. This indicates that the government in South Sumatra has instituted a development policy by basing on the potential possessed by each district/city.

A variable population negatively related and significantly to agglomeration of manufacturing industries in South Sumatra. Large population to be a potential demand for a region. But must be supported with the high purchasing power of the population. Since the formation of this industrial agglomeration is comprehensive, meaning that not only coupled with high economic growth and low-income inequality areas but also must be accompanied by an increase in purchasing power. If this comprehensive process is not yet synchronized, it will become an obstacle to the formation of agglomeration itself.

In addition, variables of economic growth, income inequality inter-regional and population, this study also analyzes the comparison inter-regional by putting it in the model agglomeration of manufacturing industry. Then district/city is entered as a dummy variable in the model, so it will be known to an average ratio between the growth of the district/city in South Sumatra.

Judging from the regional dummy variables, all district/city, statistically significant difference with Palembang city, meaning

that there are differences in average economic growth in the city of Palembang by all district/city in South Sumatra. All district/city have high average economic growth below the average economic growth of Palembang city. This is possible because of Palembang city is the center of trade in goods and services. As the capital city, support facility and access to information that is relatively more complete and faster than another region in South Sumatra. In addition, Palembang city own economic base is in the manufacturing industries.

5.5. Result of Economic Growth Model

The results of the estimation function of economic growth in South Sumatra briefly shown in Table 2. The variables that determine economic growth include industrial agglomeration (IB), population (POP), income per capita (YCap) and per capita income of the previous year (Ycap_{t-1}). In this study also analyzed the comparison inter-regional in the model of economic growth to determine the ratio between the average growth of the district/city in South Sumatra.

Variable manufacturing industry agglomeration has a positive effect but not significant on economic growth. However, based on the policy-setting growth areas by the government that set South Sumatra as one of the Regional Zone Industrial Growth Centre (WPPI). It is quite possible that high economic growth is actually the effect of (potential) agglomeration manufacturing industry itself, though still relatively small.

A variable population but not exhibited a significantly positive effect on economic growth. This indicates a high economic growth not solely caused by a large population, but rather the concentration of economic activity in each area. Large population if they are not controlled through the balance of the quantity and quality of life, it will eliminate the results of economic development. In other words, the large population will result in inhibition of development gains. Every district/city in South Sumatra generally has superior commodities respectively. So that economic activities are concentrated on the further development of the commodity in an effort boost revenue and enhance the economic growth of the region.

The variable per capita income of the current period (YCap) has a positive relationship with economic growth. The higher the income per capita, the high more and more economic growth of the area. Economic growth is generally measured by the GDRP growth in a region. The higher the GDRP, the higher the level of the output of goods and services produced. This implies the interaction of producers and consumers. Goods and services produced by the concerned areas should be supported by the community. So there is no guarantee the sustainability of the production process of goods and services, which ultimately estuary to the economic growth of the region. Effect of per capita income is not significant, it is possible to high economic growth is still enjoyed by a minority of the population. Variable income per capita the previous year (YCap_{t-1}) has a negative and significant impact on economic growth. This reinforces the notion that income of per capita is not a long-term and does not require time to impact on economic growth of a region.

Judging from the dummy variable regions, the majority of the district/city in South Sumatra statistically significant difference with Palembang, meaning that there are differences in average economic growth of Palembang with most of the district/city in South Sumatra. This is understandable because of the every area that has its own economic base which makes its economic growth vary.

5.6. Result of Regional Inequality Model

The estimation results of the regional income inequality function (IW) in South Sumatra briefly shown in Table 3. The variables that determine income inequality areas in South Sumatra, among others, the current economic growth variables (G_t), economic growth in the previous year (G_{t-1}) and variable agglomeration (IB_t). In this study also analyzed the comparison inter-regional in the model of economic growth to determine the ratio between the average growth of the district/city in South Sumatra.

Variable economic growth has a direct relationship with income inequality but not statistically significant. The high economic growth it triggers income inequality is also high. It in is possible for their differences in the content of the natural resources, differences in demographic conditions, the concentration of economic activities, and the allocation of development funds among regions in South Sumatra. The results are consistent with research conducted by Kuncoro and Wahyuni (2009) which shows that the curve Kuznets of the inverted U effect in Banyumas means in the early days of growing inequality worsened and the later stage of inequality decreased, but at a certain time there will be an increase in inequality and eventually grow lowering back.

Further to the past of economic growth variables (G_{t-1}) have a positive and significant impact on economic growth. Based on these findings show that the economic growth the previous year

Table 2: Estimation results of economic growth model

| Variable | Coefficient | Standard error | t-statistic | P |
|---------------------|-------------|----------------|-------------|-----------|
| (Constant) | -1.767874 | 1.070244 | -1.651842 | 0.1010 |
| IB _t | 0.509364 | 0.303924 | 1.675959 | 0.0961* |
| POP _t | 1.76E-06 | 1.01E-06 | 1.745535 | 0.0832* |
| YCAP _t | 1.00E-07 | 1.37E-07 | 0.729286 | 0.4671 |
| YCAP _{t-1} | -3.45E-07 | 5.14E-08 | -6.702710 | 0.0000*** |
| R ² | 0.331037 | | | |
| F-statistic | 3.601414 | | | |
| P (F-statistic) | 0.000010*** | | | |

Level of significant at the *10%, **5%, ***1%. Source: Data analysis result

Table 3: Estimation results of regional inequality model

| Variable | Coefficient | Standard error | t-statistic | P |
|------------------|-------------|----------------|-------------|------------|
| (Constant) | 0.442656 | 0.030717 | 14.41080 | 0.0000*** |
| G _t | 0.045841 | 0.070386 | 0.651282 | 0.5160 |
| G _{t-1} | 0.017206 | 0.005461 | 3.150888 | 0.0020 *** |
| IB _t | -0.113513 | 0.032391 | -3.504497 | 0.0006 *** |
| R ² | 0.972395 | | | |
| F-statistic | 273.5179 | | | |
| P (F-statistic) | 0.000000*** | | | |

Level of significant at the *10%, **5%, ***1%. Source: Data analysis result

(G_{t-1}) determining relative levels of income disparity between regions. This reinforces the notion that high economic growth is due to the economic activity is still concentrated in any area in South Sumatra, so only a small percentage of people enjoy the fruits of economic growth.

Variable agglomeration has a negatively and significantly impact on income inequality. This indicates that although the concentration of economic activities of the industrial sector has led to industrial agglomeration has been able to reduce income inequality. This is possible because each area in South Sumatra has the potential of each commodity that can sustain the increase in income per capita of the population and their respective regions. So the effect of the increase in the portion of the production of goods and services were able to enjoy proportionally by population in each area.

Judging from the dummy variable regions, the majority of the district/city in South Sumatra statistically significantly different with the city of Palembang, entire district/city have high average economic growth below the average economic growth of Palembang. It is possible for their differences in the content of the natural resources, differences in demographic conditions, and the concentration of economic activities between regions in South Sumatra.

6. CONCLUSIONS

In this study showed that the variables of economic growth, income inequality (IW) and population (POP) exhibited significantly affect on agglomeration (IB). Partially; (a) the effect of economic growth on agglomeration of manufacturing industries in South Sumatra has a positive and significant; and (b) income inequality and the population has a negative and significant effect on agglomeration of manufacturing industries in South Sumatra.

Further variables (potential) manufacturing industry agglomeration, population, income per capita ($YCap_t$) and a per capita income of the previous year ($YCap_{t-1}$) a significant effect on economic growth in South Sumatra. Partially: (a) Variable agglomeration of manufacturing industry, population, and income per capita now ($YCap_t$) but not significantly the positive effect on economic growth in South Sumatra; and (b) the per capita income of the previous year ($YCap_{t-1}$) and a significant negative effect on economic growth in South Sumatra.

In addition, the current economic growth variables (G_t), economic growth in the previous year (G_{t-1}) and agglomeration has a significant effect on income inequality in South Sumatra. Partially: (a) The current economic growth (G_t) has a positively and not significantly on income inequality in South Sumatra; (b) the past of economic growth (G_{t-1}) and has a positive and significant effect on income inequality in South Sumatra, and (c) variable agglomeration has a negative and significantly effect on income inequality in South Sumatra.

Results of the study revealed the (potential) manufacturing industry agglomeration potentially reducing income inequality areas in South Sumatra. Therefore each area it is fitting to develop

the region's potential in the production process integration schemes. So the concentration of economic activities can give a good effect on the growth and minimize the inequality of income between regions.

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