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The Impact on Industrial Estate Development Policy to Employment Absorption of West Java Province

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Abstract

Development of industrial estates in the region have a role as a driver of the regional economy and will attract industrial companies to be located in the industrial estates so it will give most multiplier effect in the region's economic growth. The purpose of this research is to analyze the impact on industrial estate development to employment absorption in West Java Province. In this research, the Social Accounting Matrix (SAM) model had been used by desegrating it to industrial manufacturing sector inside industrial estate. The result of analyst indicates that the industrial estate development policy through investment has an impact to the rise of creating broad employement opportunity or to create greater employment opportunities in both the industry itself and in other production sectors.

Keywords: Industrial Estate, Manufacturing Industry, Employment Absorption, Social Accounting Matrix.
JEL Classification: J23, L52, O18

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1. Introduction

The industrial sector is one of the sectors that can accelerate regional economic growth. This is because the industrial sector is able to provide a large multiplier impact on the regional economy (Mulyadi, 2012). The number of industries located in an area will theoretically be able to give the impact of the creation of large added value so as to reduce the unemployment rate with the opening of jobs, and able to increase people's income. But empirically the impact is not necessarily achieved because it can be influenced by various factors such as location factors, availability of infrastructure, potential resources, competency of local human resources, and other factors (Susantono, 2012).

Industrial location factor is an important factor considering that the gathering of these industries in a certain location indirectly will provide benefits for each industry. This means that there is a spatial concentration of industrial sector activity in a location, which is often referred to as agglomeration. According to Ellison and Glaeser (1997) that agglomeration does not always occur in the same industry, agglomeration can occur in several different industries and not interrelated.

Bradley and Gans (1998) suggest that agglomeration provides benefits related to the externality of geographical proximity from economic activities which is a positive externality of production so that it has an impact on the growth of urban areas. Same thing was conveyed by Martin and Ottaviano (2001) that geographical agglomeration of economic activities and economic growth have a relationship with each other. Regions are more spatially agglomerated will have higher growth rates. Meanwhile, Otsuka, *et.al*. (2010) that economic agglomeration and

market access have a positive influence on the level of efficiency of industrial production in Japan.

Mitra and Sato (2007) suggest that agglomeration has an effect on higher economic growth and reduces unemployment. Cainelli (2008) reinforces the findings of Mitra and Sato that companies located in industrial areas and companies that carry out product innovations have an impact on the growth of company productivity and economic performance of a region. Capello (2009) also suggests that the productivity factor of companies in urban areas is more influenced by urbanization savings, not by localization savings. Lall *et.al*. (2004) divide the sources of agglomeration savings based on economies of scale, namely the company level from increasing market access, industry level from saving localization, and regional level from inter-industrial urbanization savings.

The spatial concentration of similar industries or agglomeration is an industrial cluster. While the spatial concentration of industries that are not similar and have no relevance are categorized as spatial clusters. The impact obtained by the industrial sector if it is located in industrial clusters and in spatial clusters is not the same. According to Hoover (Fujita and Thiesse, 1996) that agglomeration consists of localization economies and urbanization economies. Localization economies occur because the spatial concentration in the same industry which includes the transfer savings that occur to all companies in the industry are interrelated. This causes a decrease in the company's production costs in an industry when the total production of the industry increases (economies of scale). Whereas urbanization economies occur when industries in a region are concentrated and accumulate in various levels of overall economic activity.

Schmitz and Nadvi (1999) state that with industrial clusters, companies can easily create mutually beneficial relationships. Morosini (2004) said that companies in clusters have a higher level of integration in aspects of knowledge, innovation, global competence, adaptability to changes in the external environment, growth and sustainable development. In addition, the industrial cluster is a forum that accommodates the labor market, capital, and research and competency development (Lee, 2006). This gives companies access to increased skills, knowledge and research and development that is the result of other companies in the cluster. This in turn is facilitated by the presence of a qualified workforce and strong relationships that ensure the diffusion of knowledge about markets and technology (Davide and Vittorio, 2006). In addition, the geographical proximity of consumers, suppliers and companies in the cluster creates relationships in creating ideas and innovations that lead to the effective diffusion of knowledge (Torre, 2008). Meanwhile, Ruan and Zhang (2009) suggest that companies in clusters are able to specialize in production activities, save both working capital and fixed capital costs, and more flexible procurement of raw materials.

Based on the opinion of Hoover, industries located in industrial clusters will get two advantages at the same time, namely the benefits of localization economies and urbanization economies. Meanwhile, if the industry is located in a spatial cluster, the benefits will only be in the form of urbanization economies. Furthermore, when the form of industrial clusters and spatial clusters is formalized by the government in an area, the cluster is termed an industrial estate. Because, industrial estates are the location of various industries located on one stretch of land equipped with various facilities and infrastructure in the form of basic infrastructure and supporting infrastructure managed by a company that has authority. Industrial Location Research Institute (2011) defines industrial estates as a plot of land developed and managed for use by industry in accordance with comprehensive planning and has been designated as an industrial location.

Industrial estates were built in order to provide supporting service facilities to encourage the growth of the manufacturing industry. These facilities are related to transportation, energy, warehousing, logistics, education, research, business centers, data processing, housing, tourism, sports, and medical facilities (ILRI, 2011). This is in line with Mulyadi (2012) who

argues that industrial estates can increase higher economic growth, improve efficiency and ease the provision of infrastructure, and provide extensive employment. Industrial estates with complete and adequate infrastructure can be an advantage for industries that are in it because they can reduce the costs that must be incurred by industrial companies. In contrast to industrial companies that location in the outside industrial estates that have to build their own access roads, Waste Water Treatment Plant (WWTP) facilities, electricity and other infrastructure. In addition, the distance between the interrelated industries will facilitate the distribution of goods so as to create production efficiency. These advantages, it is expected that industrial companies within industrial estates can increase productivity so that they can provide added value to the industry. The development of industrial estates will increase the supply of jobs, namely through factories that can absorb thousands of workers/ labor. Increasing employment opportunities, the community's income will also increase and also have an impact on increasing regional economic income. In addition, the absorption of labor in the industrial sector can indirectly improve human resource capabilities (Mulyadi, 2012).

Most industrial estate in West Java Province can be categorized as spatial clusters where each industrial area consists of several types of industries that do not have strong links, for example in one industrial estate consisting of the automotive, electronics, textiles and even the food industry. The characteristic industrial estate in West Java will have a multiplier effect that is not as large as if the industrial estates are developed in integrated manner in a single industrial cluster unit.

Based on this description, it is necessary to an integrated and integrated industrial estate development policy by taking into account four main factors in industrial development in a region, namely: (1) Location of industrial companies (inside industrial estates or outside industrial estates), (2) Types of industry (labor intensive, capital intensive, natural resource based), (3) Special karasteristics of an area, and (4) Achievement of indicators of the availability of extensive employment. Thus, the policy of developing the industrial estate will have a large multiplier effect on increasing employment in West Java Province.

Some research methods related to the impact of industrial estate development such as, Zheng *et.al*. (2016) which examined the impact of government investment in the construction of 110 new industrial estates in 8 major cities in China for the supply of processing industry employment. One of the findings in the study was that the construction of industrial estates is capable of contributing greatly to the increase in employment. Similarly, the results of Vidova's research (2010) which examined the development of industrial estates and their effects on job creation in Slovakia. Industrial estates in Slovakia open opportunities for the entry of foreign investment and reduce the unemployment rate by means of creating new jobs. The construction of industrial estates in Slovakia contributes to the creation of new jobs, where most of the new employment is available in areas that have industrial estates. Similarly, according to Papanek *et al.* (2014) that when processing industry investment increases, it will increase labor demand.

Another study was conducted by Shaw and Yeoh (2000) which examined the role of Singapore's industrial estates abroad (Batamindo-Indonesia Industrial Zone, Bintan-Indonesia Industrial Estate, Suzhou-China Industrial Estate and Wuxi-China Industrial Estate), where these industrial areas were able to make a major contribution to employment. The results of the study by Deaton *et.al* (2014) which examined the impact of improving the manufacturing sector workforce on the decline in rates in Canada using regression analysis. economy in each region.

2. Research Method

The type of research used in this research is research descriptive-quantitative, namely research based on secondary data and literature

related to research problems and analyzed with input output model analysis. The object of this study is West Java Province with the consideration that West Java Province is a province where there are many industrial estates, which is about 33 percent of 74 industrial estates in Indonesia in West Java Province. The secondary data are sourced from the BPS Pusat, BPS Provinsi Jawa Barat, Pusdalitbang Provinsi Jawa Barat, Bappeda Provinsi Jawa Barat and Ministry of Industry. The secondary datainclude the West Java Province Input-Output Table 2010, the National Socio-Economic Survey 2013, the Regional Labor Force Survey, Large and Medium Industry Statistics 2013, West Java in Figures, and Directory of Industrial Estates 2015.

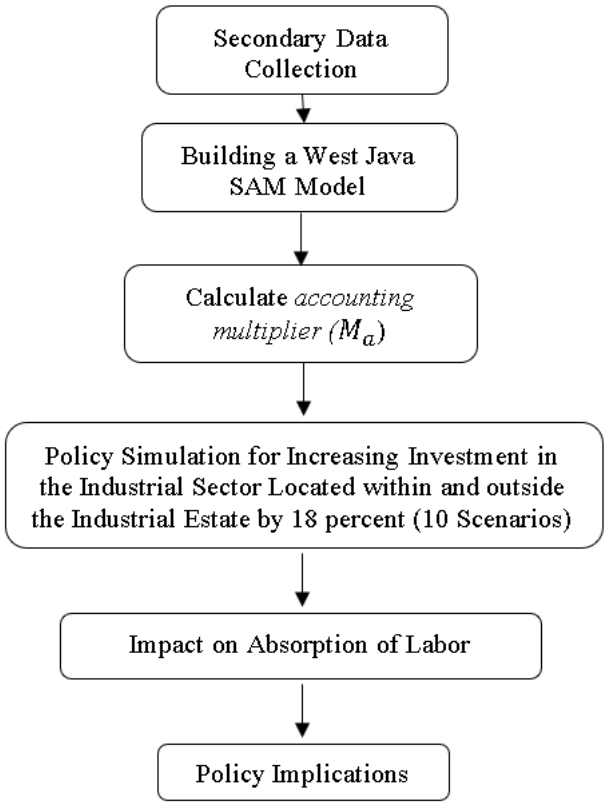


Figure 1. Stages of Analysis

The analytical model used is the Social Accounting Matrix model **(**SAM). SAM Model is a data system that contains social and economic data in an economy (Thorbecke, 1988). The data framework at SAM is a general balance that can describe the economy as a whole and can connect various social and economic aspects. By using SAM, social and economic performance of a region, such as the problems of income distribution and employment can be explored (Alarcon *et al*. 2011 for the Sutomo, 2015). There are 3 advantages to using the SAM model according to Warner (1999) in Daryanto and Hafizrianda (2010), namely:

1. SAM can describe the structure of the economy, the relationship between production activities, income distribution, consumption of goods and services, savings and investment, and foreign trade.
2. SAM can provide a framework that can unify and present all regional economic data.
3. SAM can be calculated as the economic multiplier of a region that is useful for measuring the impact of an activity on production, income distribution and demand that describes the structure of the economy.

In order to analyze the impact of investment in the manufacturing industry located in industrial estates on the absorption of labor, a simulation of industrial estate development policy was carried out. The simulation method that will be carried out is by multiplying the multiplier matrix (Ma) with the exogenous vector. The exogenous vector is an account that contains the capital account and foreign transactions or rest of world (Daryanto and Hafizrianda, 2010).

The policy scenario for industrial estate development through increased investment in manufacturing industries both located in industrial estates and outside industrial estates is shown in Table 1. The consideration of determining this simulation scenario in the form of industrial estate development policy through increasing investment by 18 percent is based on Provincial Government policies West Java (RPJMD Provinsi Jawa Barat 2013-2018), the average investment growth target per year is set from 2012 to 2018 by 18 percent per year. The average investment growth of 18 percent is an increase in investment target which is used as an input for the amount of increase in investment in industrial estate development policy simulations in this study.

Table 1. Scenario of Industrial Estate Development Policy

No	Skenario	Kode
1	Increased investment in the capital-intensive industrial sector in industrial estates by 18 percent	S1a
2	Increased investment in capital-intensive industrial sectors located outside industrial estates by 18 percent	S1b
3	Increased investment in labor-intensive industrial sectors located in industrial estates by 18 percent	S2a
4	Increased investment in labor-intensive industrial sectors located outside the industrial estate by 18 percent	S2b
5	Increased investment in the natural resource-based industrial sector located in industrial estates by 18 percent	S3a
6	Increased investment in the natural resource-based industrial sector located outside the industrial estate by 18 percent	S3b
7	Increased investment in capital intensive and labor-intensive industrial sectors in industrial estates by 18 percent	S4a
8	Increased investment in capital-intensive and labor-intensive industrial sectors located outside the industrial estate by 18 percent	S4b
9	Increased investment in capital intensive, labor intensive and natural resource-based industrial sectors in industrial estates by 18 percent	S5a
10	Increased investment in capital-intensive, labor-intensive and natural resource-based industrial sectors located outside the industrial estate by 18 percent	S5b

3. Results and Discussion

The manufacturing sector in West Java Province until 2013 was able to absorb employment of 1,456,379 people. The labor-intensive industry sector (textile, apparel, leather and footwear) is an industrial sector with the largest number of labors with 40.78 percent or around 593,899 people. While the capital-intensive industrial sector (transportation, machinery, equipment, and electronics industries) is only able to absorb 327,155 people (22.46 percent). The manufacturing industry laborers mostly work in industries located outside industrial estates with a percentage of 73.76 percent and workers who work in industries located in industrial estates only amount to 26.24 percent.

Based on the existing conditions of employment absorption in the manufacturing industry sector both located within and outside the industrial estate, a simulation of the impact of industrial estate development policies is carried out through an increase of 18 percent in industrial sector investment and the results can be seen in Figure 2 which to show that increased investment in the manufacturing industry sector in West Java Province is capable increasing employment of West Java Province between 0.0089 percent and 0.4285 percent during the period of 2013 to 2014 The capital intensive industry sector is a sector that has a greater impact on employment compared to labor-intensive industrial sectors and natural resource-based industries. Overall, if investment is increased to all types of processing industries, the impact of creating new jobs is 0.42 percent or as many as 80,269 jobs in all production sectors and specifically in the manufacturing sector with 19,341 jobs.

Increased investment in the capital-intensive industrial sector in industrial estates encouraged an increase in employment in West Java Province by 51,500 or an increase of 0.27 percent. Of the total labor absorption, around 21.17 percent is employment in the trade sector, 20.81 percent in the social services sector and other services, and 15.88 in the food crop sector. Whereas in the industrial sector, base metals and finished goods from metals in industrial estates absorb employment of 13.65 percent or as many as 7,027 workers. This condition can be seen in Figure 3.

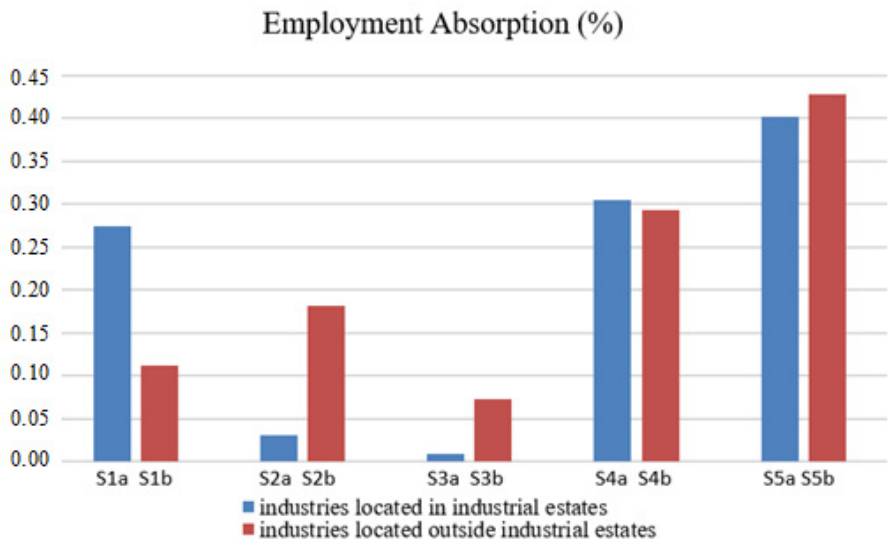


Figure 2. Impact of Developent of Industrial Estates on Employment Absorption
Source: Data Processed

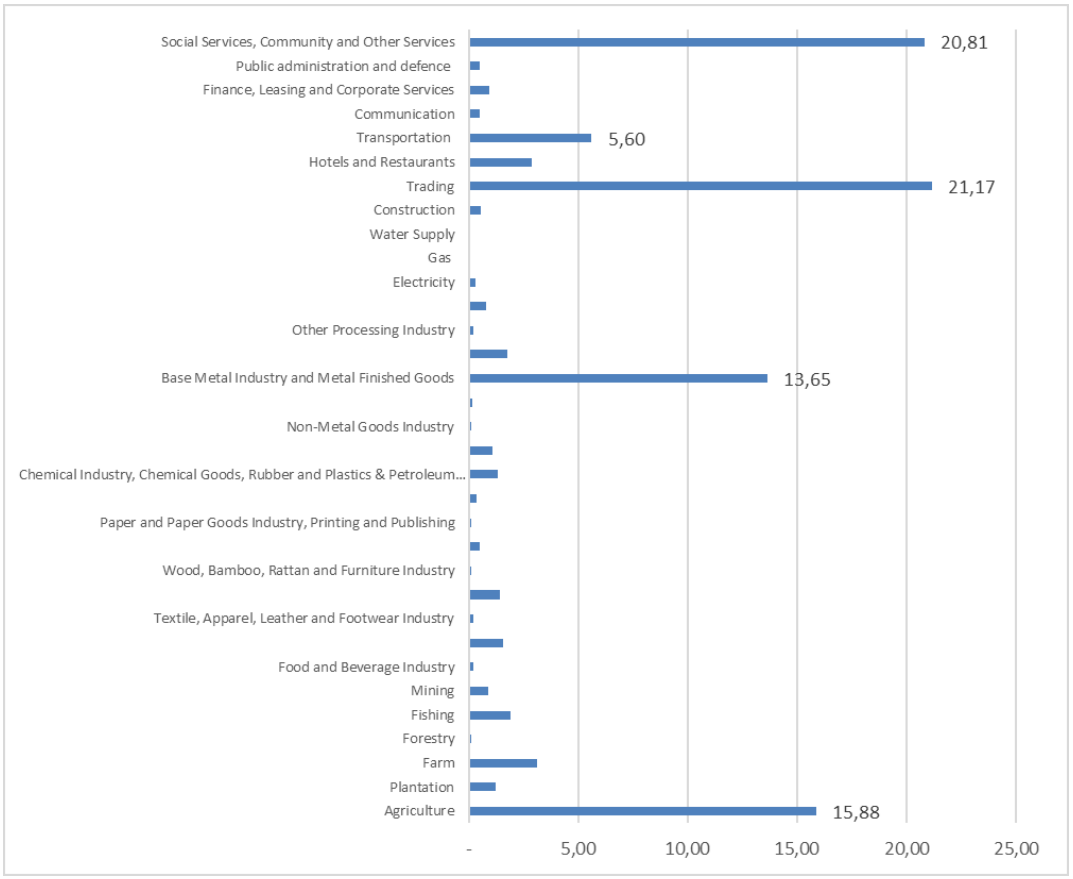


Figure 3. Impact of Capital-intensive Industrial Investment Enhancement on Employment Absorption in Production Sector
Source: Data Processed

Based on Figure 3, it shows that an increase in investment in capital-intensive industries which includes the basic metal and finished goods industries of metals will open up broad employment opportunities in the trade sector, service sector, agricultural sector, and labor-intensive industrial sectors, especially in the sector. Whereas the impact on employment in the capital-intensive industrial sector but located outside the industrial estate is relatively small, which is only 1.75 percent. This indicates that the relationship between capital-intensive industries in and outside industrial estates is weak.

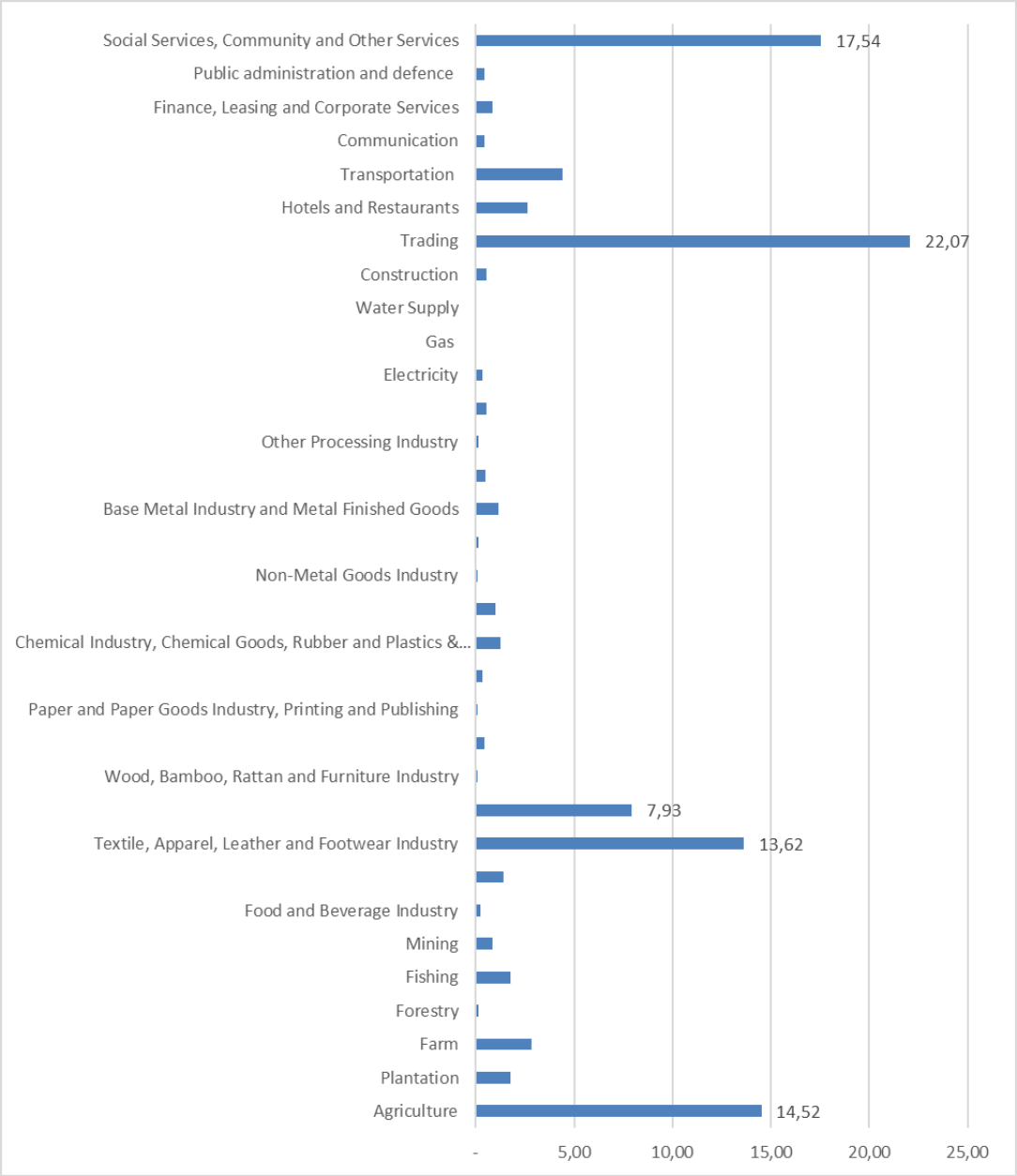


Figure 4. Impact of Increased Labor-intensive Industrial Investment on Absorption of Employment in the Production Sector

Source: Data Processed

Meanwhile, as displayed in Figure 4, an increase in investment in labor-intensive industrial sectors covering the textile, apparel, leather and footwear industries in industrial estates was able to encourage an increase in employment of West Java Province by 5,691 workers or only increased by 0.03 percent. Of the total employment absorption, the sector that absorbs the most employment is the trade sector which is equal to 22.07 percent, then the social services sector and other services is 17.54 percent, and the food crop sector is 14.52 percent. Whereas in the textile, apparel, leather and footwear sectors absorb employment of 13.62 percent or as many as 775 workers.

As displayed in Figure 5, as for the impact of employment absorption if an increase in investment is made in the natural resource-based industrial sector which includes the food & beverage industry and the chemical industry, goods from chemicals, rubber and plastics & petroleum refining industries in industrial estates are able to encourage an increase in employment of West Java Province by 1,671 workers or only increase by 0.009 percent. Of the total labor absorption, the sector that absorbs the most labor is the food crop sector by 41.59 percent, then the trade sector which is 13.84 percent, then the social services sector and other services by 13.7 percent. Whereas in the food and beverage industry sector absorbs employment by 5.09 percent.

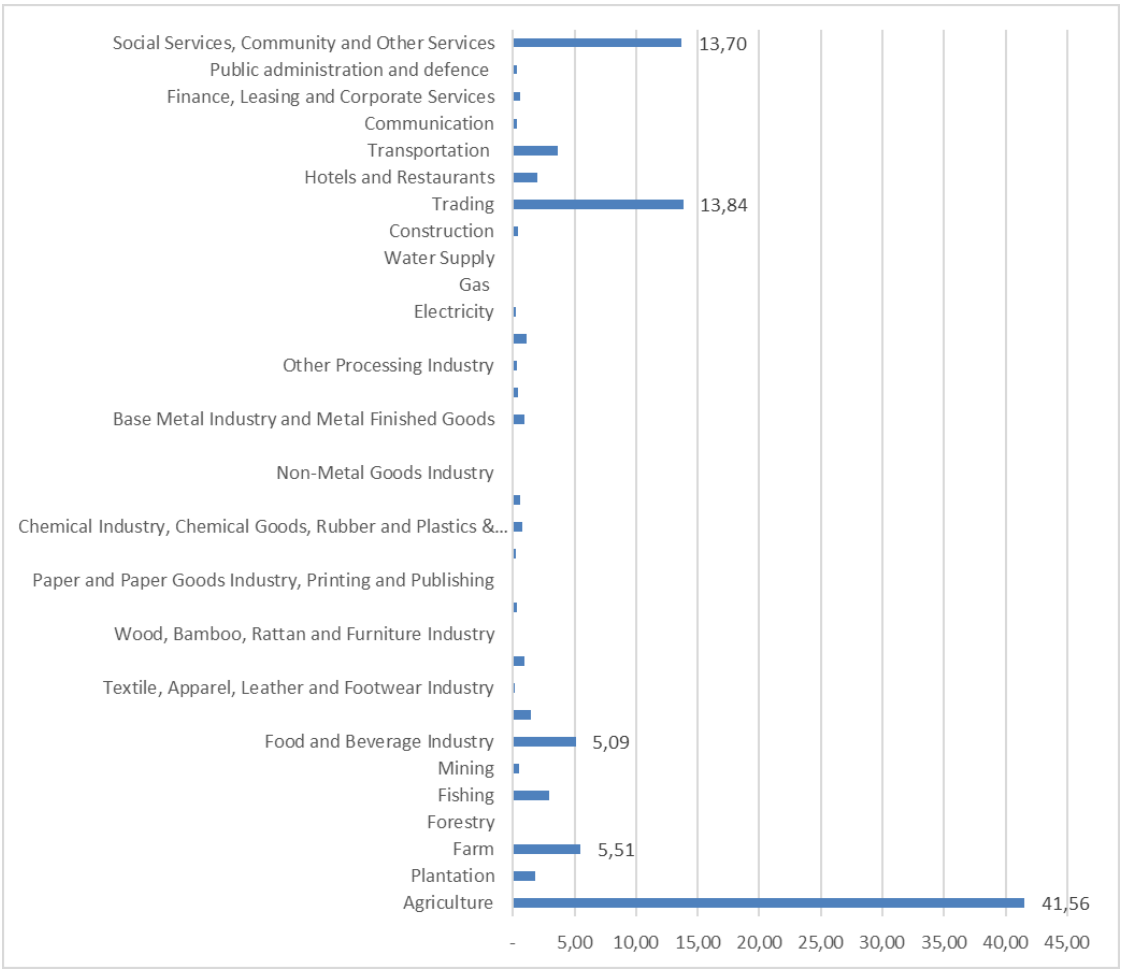
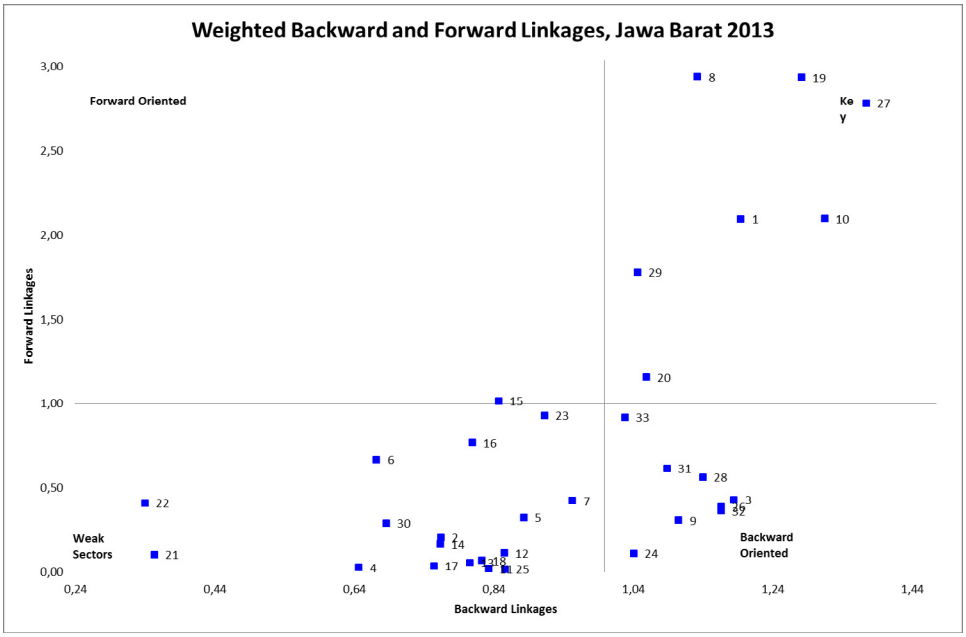


Figure 5. Impact of Increased Resource-Based Industrial Investment on Absorption of Employment in the Production Sector

Source: Data Processed

In Figure 5, it indicates that increased investment in resource-based industries will open wide employment opportunities in the agricultural sector, especially the food crops sector. The food crop sector consisting of rice, corn, cassava, sweet potatoes, peanuts, soybeans, fruits, vegetables and other foodstuffs in West Java Province has great potential in supporting the development of the agro-based industry. In the context of developing the agro-based industry, it is necessary to develop an integrated agro-industrial estate so that the impact of investment in the industrial sector based on natural resources is more optimal for employment.



1	Agriculture	18	Non-Metal Goods Industry (IFI)
2	Plantation	19	Metal Base & Finished Metal Industries (KI)
3	Farm	20	Industry of Basic Metals & Finished Metal (IFIs)
4	Forestry	21	Other Processing Industry (KI)
5	Fishery	22	Other Processing Industries (OIE)
6	Mining	23	Electricity
7	Food and Beverage Industry (IIE)	24	Gas
8	Food and Beverage Industry (OIE)	25	Water Supply
9	Textile, Apparel, Leather & Footwear Industry (IIE)	26	Construction
10	Textile Industry, Clothing, Leather & Footwear (OIE)	27	Trading
11	Wood, Bamboo, Rattan and Furniture Industry (IIE)	28	Hotels and Restaurants
12	Wood, Bamboo, Rattan and Furniture Industry (OIE)	29	Transportation
13	Manufacture of Paper and Paper Products, Printing (IIE)	30	Communication
14	Manufacture of Paper and Paper Products, Printing (OIE)	31	Finance, Leasing and Company Services
15	Chemical Industry, Chemicals, Rubber Plastics (IIE)	32	Public Administration and Defense
16	Chemical Industry, Chemicals, Plastic Rubber (OIE)	33	Social and Community Services and Other Services
17	Non-Metal Goods Industry (IIE)		

Figure 6. Forward and Backward Linkages of the West Java Production Sector 2013

Source: Data Processed

Based on the existing conditions of labor absorption in the manufacturing sector both those located inside and outside the industrial estate indicate that the labor-intensive industrial sector (textile, apparel, leather and footwear) is an industrial sector with the largest number of workers, namely 40.78 percent then the capital-intensive industrial sector labor (transportation, machinery, equipment and electronics industries) amounted to 22.46 percent. However, after simulating an increase in investment in industrial estates, the capital-intensive industrial sector is a sector that has a greater impact on employment compared to labor-intensive industrial sectors and natural resource-based industries.

Increased investment in capital-intensive industries will open employment opportunities in the trade sector, service sector, agricultural sector, and labor-intensive industrial sectors themselves, especially in the basic metal and finished goods industries from metals. Meanwhile, increased investment in labor-intensive industrial sectors in industrial estates was able to encourage increased employment in the trade sector, the social services sector and other services and the food crops sector as well as the textile, apparel, leather and footwear sectors. Whereas investment in resource-based industries will open wide employment opportunities in the agricultural sector, especially the food crops sector. The food crop sector consisting of rice, corn, cassava, sweet potatoes, peanuts, soybeans, fruits, vegetables and other food ingredients in West Java Province has great potential in supporting the development of agro-based industrial estates.

Increased investment in the capital-intensive industry, labor-intensive industries, and natural resource-based industries has a large impact on employment in the agricultural sector, especially the food crops sector. This is caused by the food crop sector is one sector that has strong linkages (key sectors) with another fine production sector linkages backward and forward linkages. Based on this linkage analysis, the food crop sector is in quadrant I as shown in Figure 6.

4. Conclusions

Based on the analysis of the impact of increased industrial investment in industrial estates on employment absorption it can be concluded that the policy of increasing investment can increase employment or in other words able to create jobs both in the industrial sector itself and in other production sectors. The production sector that receives the largest impact of absorption is the trade and service sector because this sector is a sector that involves many levels of activity starting from the production of raw materials, intermediate goods to the sale of products or can be grouped into large trade, retail, transportation support services and warehousing. In addition, the agricultural sector is also one of the sectors that will experience an increase in employment due to increased investment in the industrial sector. Therefore, the industrial sector in West Java Province has a large role in providing employment so that the manufacturing industry sector in West Java can be categorized as the leading sector and as a driving force for the economy.

In order to encourage increased employment in West Java Province industrial development needs to be accelerated in an integrated manner with other economic sectors. These efforts can be carried out through 2 main strategies. First, creating a regional growth center in the industrial estates as prime mover. Apart from being an industrial estate, it is also necessary to develop small and medium-sized industrial centers (Sentra IKM) in each district/city. Then the second is to improve the ability of the community around the industrial estates and the IKM Center so that it will have a positive impact on industrial development that is more efficient and effective and has a large multiplier effect. Thus, it is expected that the multiplier effects and development impacts of industrial estates can be felt by all groups of households evenly and will eventually absorb a lot of labor.

Further research that can complement this research is research that uses data consisting of several years so that the model that can be used

is the Dynamic SAM Model (DySAM) as research conducted by Alarcón *et.al.* (2011). In addition, further research can also be carried out related to the spillover impact of industrial estates on increasing productivity, income and employment.

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