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Industrial Park and Welfare Effect: A Preliminary Evidence from Indonesia

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Abstract

How can the presence of industrial parks affect the welfare of the people in the districts/city within which they operate? While studies about the socio-political and economic consequences of industrial parks abound in the academic world, industrial parks are still understudied in Indonesia. The paper is a preliminary observation on the relationship between the presence of industrial parks and the welfare conditions of the people in the districts. Using two measures of welfare, human development index and household spending, we find that the presence of industrial parks have some positive effects on these two measures. The two models of bivariate relationship show that the relationships are statistically significant. Nevertheless, the study still suffers from some weaknesses that future studies can improve.

Keywords: industrial parks, human development index, household spending, welfare

Introduction

Industrialization has been hailed by most scholars and policy makers as one of the most effective means to accelerate the growth and competitiveness of industry in a country. However, as some studies suggest, industrial parks can have mixed consequences on the regional development and the welfare of the citizens. Theoretically speaking, industrial parks should have positive effects on the regional development and social welfare because their presence can help improve the economic activities in the region, thus increasing incomes of the people around them. However, their presence might also create new problems such as crime, socioeconomic disparities and so on.

In Indonesia, the study of industrial parks and their socio-political-economic consequences are still understudied. Therefore, it is essential that we can explore all these consequences with an eye towards improving the policy regulating the development of industrial parks. This is the aim of the current study. However, rather than ambitiously designing our project to achieve those goals, we limit the study to a preliminary observation of the relationship between the presence of industrial parks and the welfare conditions of the citizens. As a preliminary study, we simply explore the relationship at the aggregate levels. We leave detailed analysis on the causal mechanism of the relationship between the two to further studies.

The paper is organized around four sections. Below, we will elaborate some literatures on the development of industrial parks, including the relationship between industrial parks and the welfare conditions. In the second part, we lay out our methods of analysis. This is continued by exposition of the results and some discussions on Indonesia's government policy regarding the industrial parks. We conclude the paper with some summary and suggestions for further studies.

Literature Review: Industrial Park and Economic Development

The role and contribution of industrial estates to economic development has been the focus of studies in several literatures related to industrial development strategies and policies. Some of the literature uses the term industrial estate, while some others refer to a concept of industrial parks. An industrial estate is basically an area developed into various fields based on a comprehensive planning including the construction of roads, transportation and public utilities for the needs of a cluster or industrial group. Business entities that are incorporated in these clusters and industrial estates share infrastructure and business services together in order to achieve cost efficiency and open up more opportunities for mutual cooperation (Qiu & Huang, 2013).

The relationship between industrial clustering and economic growth has academically been introduced, one of them, through Theory of Location of Industry which discusses how the impact of industrial clustering on economic growth and externalities of an industrial area. The establishment of industrial estates is expected to enhance the productivity and industrial competitiveness through clustering processes, especially for small and medium business groups. They could earn benefits of industrial clustering facilities through economies of scale and greater economic scope. In addition, industrial estates could also be employed to develop local industries by strengthening the knowledge base in each industrial cluster (Lee, Lin, & Hsi, 2017).

The industrial estate has become very popular in Indonesia and internationally. The existence of an industrial area that encourages the creation of infrastructure development and economic development is an alternative choice in increasing economic growth. However, in its implementation, industrial estate policies can sometimes have a significant impact on economic growth but not on economic development around the industrial area.

Saleman and Jordan (2014:7) see that the failure of an industrial estate can be seen from several aspects including: 1) industrial estates that have not been successfully built; 2) very little demand or companies investing in the industrial area; 3) the demand for the construction of industrial estates is quite a lot from companies but does not have a significant effect on economic development within the industrial estates themselves; and 4) the industrial estate is successfully built and running well but the existing investment does not have an effect on economic development in the area around the industrial area.

From the description above, it is obvious that the welfare effect of industrial parks is quite complicated. Therefore, it is important that we see the issue from various perspectives. In this case the success of the industrial area is not only seen from the increase in their presence in the area but also seen from the impact of the existence of the area for the development in the environment around the industrial area. Of course, in addition to the environment outside the industrial area, the activity of investment in the industrial area is expected to be a driving force for strengthening the industry both in the area and for industries outside the industrial area.

Industrial park can have a positive impact when they can enhance industrial development within the region and encourage industrial growth in the area around the region. Sutikno and Suliswanto (2017: 237, 240) conducted a study of industrial areas in Gresik, Indonesia. In their study, industry park were not an alternative policy to reduce poverty in Gresik. In fact, the reduction in poverty in Gresik can occur due to other factors outside the industrialization policy in the region. Increased investment as a result of the existence of the industrial area does not necessarily have an impact on employment, which in turn will have an impact on poverty reduction. Absorption of labor which theoretically will occur through the development of industrial zones does not occur in this region. Even at a macro level, economic growth seen in terms of reducing unemployment and poverty does not occur in the Gresik region.

Sutikno and Suliswanto (2017: 241) also see that the existence of large and medium industries in Gresik is not spread in the Gresik region, resulting in the deterioration of uneven macroeconomic conditions in the Gresik region. High poverty rates in Gresik are found in areas surrounding the industrial estates. Existing industrial partners are located in areas that have low poverty rates. In this

case, there is a gap in Gresik although there is an industrial area. Areas outside of industrial estates will not be affected by economic development. Thus, it appears that the existence of an industrial area will sometimes have the effect of an economic gap in one region. On the other hand, Tetsu (2001: 377) see that the policy of reducing import tariffs in the industrial area will attract investors in this region. Through a reduction in tariffs, it will have an impact on the development of areas in industrial estates. Thus, this study sees that the positive impact of the existence of industrial estates is supported by the government's policy to reduce import tariffs in industrial estates.

Study conducted by Zeng (n.d.: 4-5) also see that the success of the industrial area seen from how the region can attract multinational and domestic companies can contribute to increased investment in the business sector, job creation to economic development. Like the existence of the industrial area in China has an impact on increasing job creation, increasing investment and trade, Gross Domestic Products (GDP) and technological improvement. Increased export activities through the creation of industrial estates occur when the government is oriented towards outward looking or export-oriented policies. However, the existence of industrial estates also sometimes does not have a good enough impact on improving export performance. In the case of industrial zones in the Dominican Republic, industrial zones do not have an impact on increasing exports due to import substitution policies and trade barriers remaining. Thus, the impact of the presence of industrial estates is very diverse on one country's export performance.

The development of industrial zones is also one of the economic development policies in China. The development of industrial zones in China is aimed at increasing economic growth. Through the development of industrial zones will have a significant impact on increasing investment and increasing modern technology. In addition, the presence of the industrial zone will also increase foreign trade and export activities generated by activities in the industrial zone. The linkage effect is also one of the goals of the existence of an industrial zone. In this case the activities taking place in the industrial zone are expected to provide a multiplier effect for the existence of local supplier industries. The output from the industrial zone is expected to have an impact on regional economic sustainability. It is not an isolated region and does not have an impact on regional economic development. (Xueyi and Meyer, 2011: 5-6)

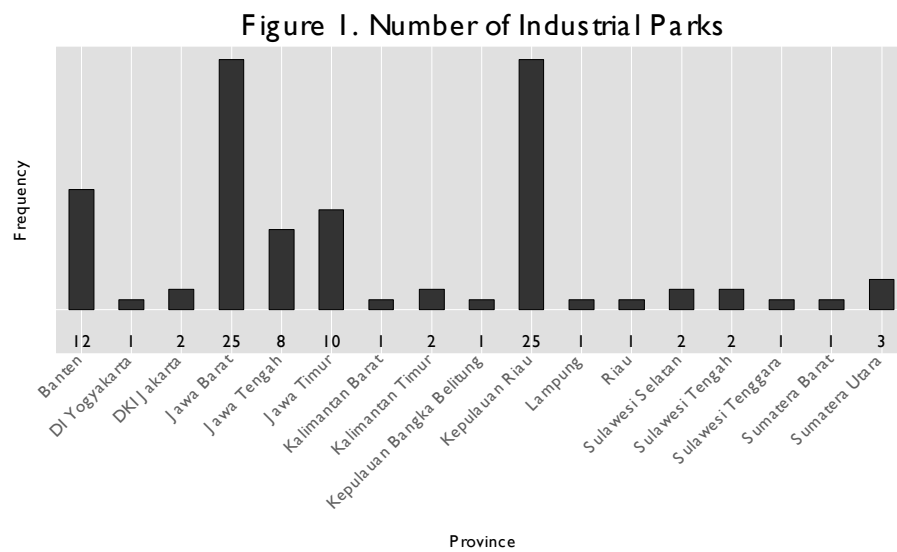
For China, the presence of industrial estates abroad has become an important aspect in supporting China to expand its economic role. The role of the state in industrial estate policy is of course important. In this case the government encourages an increase in the competitiveness of the existing industrial estate. Economic growth is the foundation for the implementation of local development in China (Tao.et.al., 2018: 1292). Research conducted by Kakambong (2016:4-5) also saw that good coordination between the government, the private sector and the community was a supporting factor for the success of an industrial area in contributing to the welfare of society. In this case the development of industrial zones is focused not only on industry players but also on the development of industrial sectors and production value. In connection with job creation, based on research conducted in the Ngoro industrial area, the creation of this industrial area has created jobs for the surrounding community as factory employees. The emergence of new traders around the industrial area is also a form of the multiplier effect arising from the presence of the industrial area.

From the description above it can be seen that the existence of an industrial area requires the role of the government to provide stimulus for the development of areas around the industrial area. Government policies and forms of coordination with all stakeholders related to industrial zones are important to encourage the multiplier effect of the existence of industrial zones. This will be the foundation for the sustainability of the industrial estate in one region considering that many aspects can contribute to the success of an industrial estate. Coordination between the government and the private sector in the operation of industrial estates is very important. Thus the research conducted is important to see the extent to which the existence of the industrial area can contribute to the welfare of society. In this case the welfare of the community is not only seen from job creation but also in economic development around the industrial area.

As most of the research cited above indicates, the presence of industrial parks is expected to have a positive impact on the economic development of the region. The increased positive effects of these industrial parks are also expected on the welfare of the citizens in the region in which they operate. Thus, in this research, we would like to investigate whether the presence of industrial parks in a district/city can increase the welfare of the citizens of the district/city.

Method

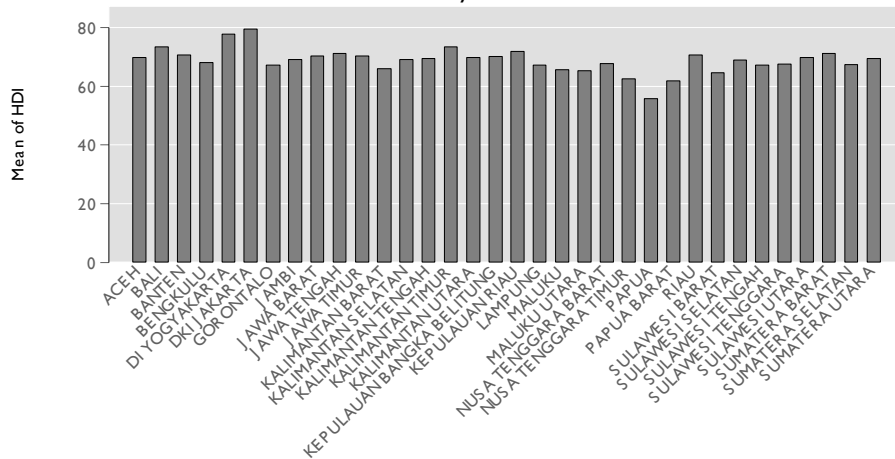
In this research, we define industrial park as an area zoned and planned for the purpose of industrial development. So far, there are 98 industrial parks distributed in seventeen provinces in Indonesia. As Figure 1 shows, most of these parks are located in Java island. Outside of Java, Batam is also the host to many parks. Its geographical proximity to Singapore apparently is one of the main attractions of the island.



Source: Ministry of Trade

To estimate the effect of industrial parks on the welfare of the region, we measure the welfare by the so-called human development index (HDI). Rather than simply using per capita GNI, we use HDI because this is a more comprehensive indicator to measure the concept of “welfare”. HDI consists of three measures: life expectancy index, education index and GNI index. These three measures capture three elements of the welfare: long and healthy life, access to knowledge and education and economic wealth of individuals (Lind 2014; UN 2018). In this research, the data on HDI are obtained from Indonesia’s Central Agency of Statistics (BPS). Figure 2 below shows the variation in HDI across 34 provinces in Indonesia.

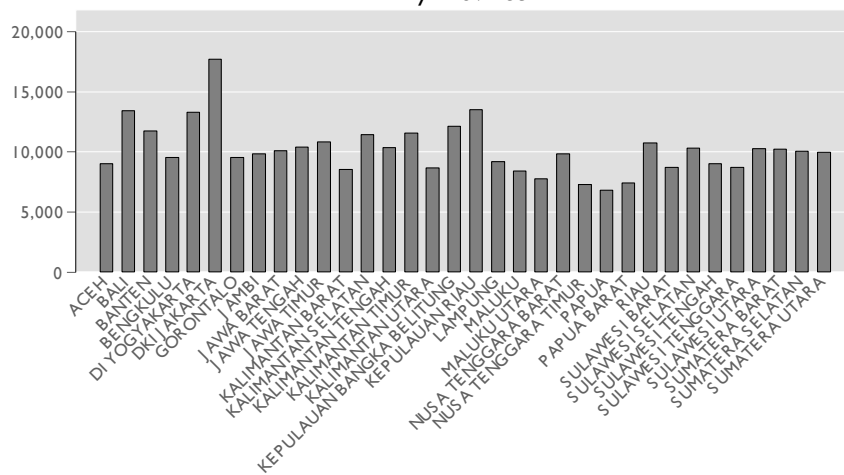
**Figure 2. Human Development Index
By Province**



Source: BPS Indonesia 2017

Another measure we use to compute “welfare” is household spending. We use this measure because it captures the amount of money spent by household for their daily lives such as food, clothing, housing, goods and so on (OECD 2019). The assumption of this measure is that richer households tend to spend more money to meet their basic daily needs. Thus, the money spent by household can represent their level of welfare, controlling for the inflation. Like the HDI indicator, the data for this variable is obtained from BPS Indonesia. Figure 3 below exhibits the level of household spending across 34 provinces in Indonesia.

**Figure 3. Household Spending
By Province**



Source: BPS Indonesia 2017

The key predictor in this research is the dummy variable of industrial parks. The dichotomous measure of this variable indicates the presence or absence of industrial parks in a district or city. We assign the value of 1 if the district or city has at least one industrial park and the value of 0 if the district or city does not have one. The data are obtained from the Directory of Industrial Parks/Zones of the Indonesian Ministry of Trade.

To estimate the effect of industrial parks on the welfare of the district’s citizens, we use a regression model. We use Ordinary Least Square regression because the measurement level of our dependent variables is ratio and our data are cross-sectional. We cluster the standard errors around the provinces

to account for correlated errors across districts within the province. In general, we estimate the following bivariate model:

$$HHSpending_i = \alpha_0 + \alpha_1 IndustrialPark_i + \epsilon_i$$

Result and Discussion

In general, as Table 1 demonstrates, there is a positive relationship between the presence of industrial parks in a district/city and the welfare indicators we use: Household Spending and the Human Development Index. On average, districts/cities with industrial parks have household spending Rp. 2745.4 higher than those districts/cities without industrial parks. Also, districts with industrial parks have HDI 5.705 points higher than those districts/cities without industrial parks. The results are statistically significant at alpha level = .05.

Table 1. Industrial Parks and Welfare

	Dependent Variables :	
	Household Spending	HDI
Industrial Parks	2745.4*** (515.7)	5.705*** (1.216)
Constant	9649.8*** (282.3)	67.83*** (0.909)
adj. R^2	0.072	0.047
AIC	9473.1	3380.8
N	512	512

Cluster-standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results confirm some of the research we cited above that the presence of industrial parks significantly contribute to the improvement of the welfare of the district’s citizens. However, as some other research suggests, the welfare effect that we estimate here is general in nature in the sense that we can only show the general relationship between the measures of welfare and the presence or absence of industrial parks at the aggregate level. We, unfortunately, cannot observe whether the presence of the industrial parks helps improve the welfare of the people living around the parks.

Figure 4. Household Spending (in Thousand Rupiah)

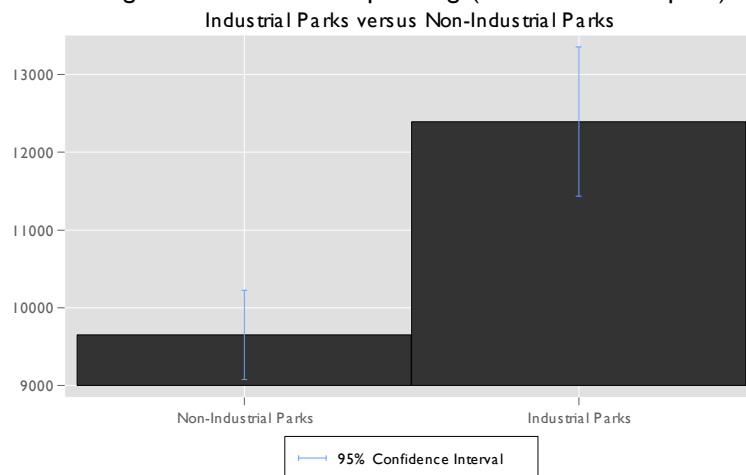
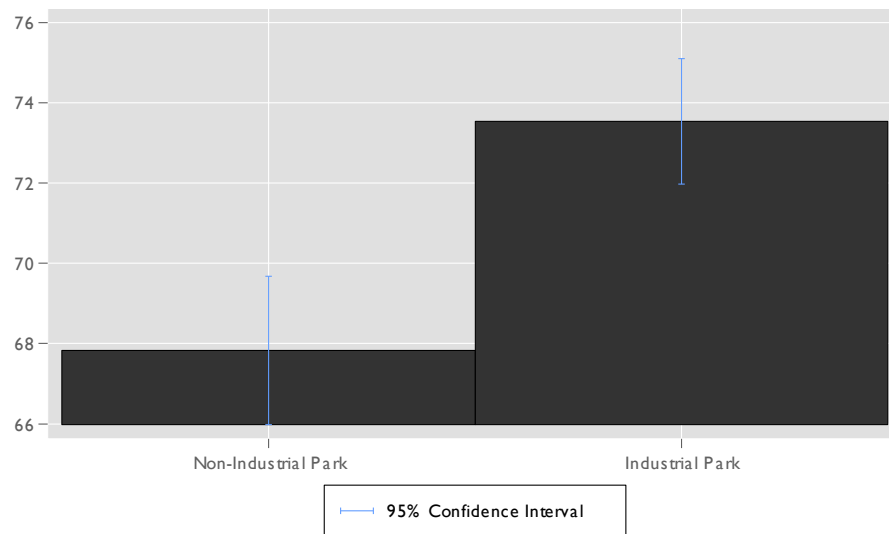


Figure 5. Human Development Index
Industrial Parks versus non-Industrial Parks



Indonesia Government Policy in Industrial Park

The development of industrial estates in Indonesia was initiated by State-Owned Enterprises (SOEs) in order to cope with the significant increase in number of industries. It subsequently requires the larger infrastructure facilities and better management of industrial estates. On the other hand, industrial localization is also expected to reduce environmental pollution that could affect public health and sustainability of environment when their settlements are close to industrial areas. Nevertheless the need for industrial estates is increasing, so the government needs to provide access to private investors to participate in its development through Presidential Decree No. 53 October 27, 1989.

Indonesian government through State-Owned Enterprises (SOEs) has started the development of industrial estate since 1973 with the construction of the first industrial area, Jakarta Industrial Estate Pulo Gadung (JIEP). After that, the government developed an industrial area in East Java, namely Surabaya Industrial Estate Rungkut (SIER) in 1974. In another location, the government also built Cilacap Industrial Estate in 1974, Medan Industrial Zone 1975, Makassar Industrial Zone 1978, Cirebon Industrial Estate in 1984 and Lampung Industrial Estate in 1986. (Kwanda, 2000).

Government Regulation No. 24/2009 regarding to Industrial Estates mentions several main objectives in the development of industrial estates in Indonesia. These objectives comprise (a) to control spatial use; (b) to increase industrial development efforts with environmental insight; (c) to accelerate industrial growth in the regions; (d) to increase industrial competitiveness; (e) to increase investment competitiveness; and (f) to provide location certainty in infrastructure planning and development, which is coordinated among the relevant sectors. Based on these regulations, the government principally encourages industrial estates to be a driving factor in increasing industrial competitiveness, increasing industry's contribution to the regional economy and providing legal certainty for businesses and the public (Syahrudin, 2010).

As explained above, Indonesia also sees industrial estates as an effective tool for increasing economic growth, creating jobs and increasing market competitiveness. The development of industrial estates in Indonesia has been regulated in Government Regulation No. 14 of 2015 concerning the National Industrial Development Master Plan for 2015-2035. The spread and distribution of industries throughout Indonesia is the goal of developing industrial areas. Some of the targets of developing industrial estates up to 2035 include: 1) Increasing the contribution of the non-oil and gas manufacturing sector outside Java compared to Java. This increase is from the percentage ratio between outside Java and Java from 27.22%: 72.78% in 2013 to 40%: 60% in 2035; 2) Increased

contribution of investment in the non-oil and gas manufacturing sector outside Java to investments in the national non-oil and gas manufacturing sector; 3) Increasing industrial areas outside Java until 2015; 4) There is one Small and Medium Industry center in each district or city (Ministry of Industry Republic of Indonesia, 2015: 49).

It appears that the Indonesian government sees the industrial estate as an important tool in the economic development of a region. With the existing target, it can be seen that the addition of industrial zones in Indonesia as a way to increase the distribution of economic growth in the territory of Indonesia. Not only equity, the target contribution to national income is the main goal of the government. The balance between the regions of Java and outside Java also forms the basis for the development of industrial areas.

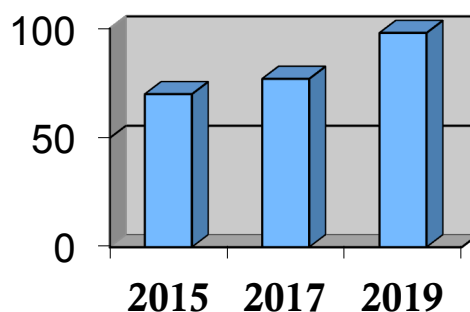
The presence of industrial estates will encourage increased efficiency and ease in the provision of other infrastructure such as roads and ports, and provide employment and attract investment. Increased company productivity is also a target of the existence of an industrial area. Through this increase in productivity, it is expected to create high added value. Through Presidential Regulation No. 58 of 2017 concerning Amendment to Perpres No. 3/2016 Regarding the Acceleration of the Implementation of National Strategic Projects, a number of industrial areas are designated as National Strategic Projects (merdeka.com., 2018)

To encourage the development of industrial zones, the government also issued a policy on Online Single Submission (OSS). OSS is an economic policy package on the ease and integration of electronic business licensing. It is hoped that this policy will improve the investment climate, which in turn will encourage the existence of industrial estates. Even now the government is pushing the industrial area to implement industry 4.0. Increased investment in the manufacturing industry is also an achievement of the industrial estate (kemenperin.go.id., 2018).

In addition to policies from the central government, studies are conducted by Syahrudin (2010: 38) explained that in the development of industrial zones, it was necessary to have good cooperation between the central government and regional governments. In this case, local government support for public services needs to be expanded to improve the investment climate. Synergy and coordination between the local government and the private sector are expected to create harmonious interests among all stakeholders.

In developing industrial areas, the Indonesian government also collaborates with other countries. One form of cooperation carried out is between Indonesia and China in the development of industrial estates in a number of regions in Indonesia. The collaboration is an investment cooperation in the development of industrial zones. For example, this collaboration has the potential to develop investment and industrial estates in the field of infrastructure as well as the development of industrial clusters in industrial estates. Infrastructure development such as an international port will help develop industrial zones in North Sumatra and North Sulawesi (kemenperin.go.id., 2018).

Number of Industrial Estates in Indonesia



Source: Indonesia Ministry of Industry

Based on data of Indonesia Ministry of Industry, number of industrial estates in Indonesia continues increasing in line with the country's stable and moderate economic growth. It attracts domestic and foreign investment to set up industrial park that is conceived to have greater profit possibility following the business-friendly investment rules and industrial policy. Number of industrial estates increased from 70 units in 2015, 77 units in 2017 and 98 units 2019. They are mostly concentrated in West Java and Batam in Sumatera.

Conclusion

Our research shows that the presence of industrial parks generally can help increase the welfare of the citizens of the districts/city in which they operate. They can help boost the welfare because industrial parks bring about multiplier effect on the economic development in the region, thus increase the average wealth of the citizens. However, this study cannot capture a more detailed observation regarding the causal mechanism that link between the presence of the industrial parks and the improvement of the citizen's welfare. It also cannot examine in detail whether the presence of the industrial help reduce the poverty in the surrounding areas.

However, the government of Indonesia generally is supportive of the development of industrial parks. A series of regulations have been devised and issued to nurture the industrial parks in an attempt to attract investment, increase competitiveness and ultimately drive the economic development. Despite some problems, the government's attempt to develop industrial parks needs to be appreciated given that to some a significant extent, the presence of the industrial parks can bring some benefits for the region in which they operate.

The current study nonetheless suffers from some weaknesses. The models devised in the paper lack of control variables that might affect the results. Some endogeneity problems might also persist in the model: does the presence of industrial parks lead to improvement of the welfare or the other way around? Is it possible that industrial parks are built in the area where the human capitals are abundant? If this is true, then it is the welfare conditions that lead to the development of industrial parks. These are some problems that future studies are expected to research.

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