

Analysing the Influence of Industrial Value - Added of Small and Micro-sized Firms on Regional FDI in Indonesia: A Panel Data Study of Provincial Level

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ABSTRACT

The role of Foreign Direct Investment (FDI) has only grown in tandem with globalization, as it plays a dual function by improving capital accumulation whilst simultaneously growing total factor yield, which puts it at an advantage over foreign aids and foreign portfolio investments. Using panel data from 34 Indonesian provinces over the 2015 - 2019 period, this research examined the determinants of provincial FDI and its impact on regional economic development in Indonesia. The random effect method with robust standard error was used to regress the model, and the variables found to be positively significant were the ratio of industrial value added for micro sized firms to regional GDP, as well as the growth rate of industrial value added for small sized firms. Our analysis revealed that micro-sized firms tend to have much higher industrial value added compared to small-sized firms, and that these firms tend to cluster in Western Indonesia. The role of the government should be to foster the growth and competitiveness of small and micro-sized firms, especially for regions where the industrial value added is still low. Further study is suggested on the determinants of industrial value added at the provincial level, as well as more comprehensive research on FDI determinants with a larger dataset.

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INTRODUCTION

Progressing in tandem with globalization, which has eased the movement of money across

continents, the role of Foreign Direct Investment (FDI) has only grown in decades past. Investors are said to be flocking to Asian countries due to

their vast investment opportunities, readily available labor, and geographical facilities (Fernandez et al., 2020). FDI contributes heavily to economic growth in developing countries through bridging the gap between savings and the required level of investment that is often evident in these countries (Sabir & Khan, 2018). Indonesia is not exempt from this condition and has had problems with limited funding for economic development and overall stagnating growth since the end of the commodity boom (Sasana & Fathoni, 2019).

Furthermore, FDI also tends to bring resources, skills and know-hows, and market access through the networks of multinational enterprises (MNEs) for the host country, giving it something of an advantage compared to foreign aid and foreign portfolio investments (Kumar & Pradhan, 2005). As a result, FDI plays a dual function by improving capital accumulation whilst simultaneously growing total factor yield. Development theories like of Rostow (1959) *The Stages of Economic Growth* support the notion that a country's development is greatly assisted by external capital investments. Many developing countries across Latin America and Asia have seen improvements in their savings and capital accumulation with the presence of FDI, which leads to higher incomes per capita and economic growth that in turn results in higher domestic savings and eventual self-sufficiency (García-Molina & Ruíz-Tavera, 2009; Sabir & Khan, 2018).

Since the 1990s, competition has enhanced among developing countries to attract FDI through a variety of means such as tax reductions, subsidies, structural adjustment programs, and economic partnership agreements, among others (Sabir & Khan, 2018). Indonesia is firmly part of this phenomenon as the Jokowi administration continues to emphasize the importance of improving the country's investment climate to accelerate economic growth. Nonetheless, Indonesia's achievements in attracting foreign investors is still subpar compared to neighboring ASEAN countries (Cahyono, 2013).

From the result of that, attracting FDI has been brought to the forefront as an important policy agenda under numerous reforms toward the decentralized system in Indonesia. The ongoing process of decentralization and the disparities in regional development across the country has led to studies such as Fitriandi et al., (2014) to consider discussions at the regional or province-level as more important for Indonesia's economic growth. Indeed, understanding how to attract FDI at the provincial level could assist policymakers in designing more effective policies to attract FDI into provinces that need it the most. The importance of this is particularly egregious given the recovery process that Indonesia must undergo following the devastating economic impacts of the COVID-19 pandemic. According to Sjöholm (2002), the two most crucial factors in sustainable and long-term recovery are the ability to attract FDI and achieve even spatial development.

This research aims to answer the following question: "What are the effects of the Industrial value-added of small and micro-sized firms as well with their control variables on enhancing regional FDI across the province in Indonesia?" This has been the focus independent variable since some previous studies in Indonesia have rarely explored the effect of these variables on regional FDI (Cahyono, 2013; Fitriandi et al., 2014; Sasana & Fathoni, 2019). To answer this question, we will fulfill two objectives of research through the analysis of panel data from Indonesia's 34 provinces from 2015 to 2019. Firstly, we will determine the inhibiting and supporting factors of attracting FDI at the provincial level in Indonesia and analyze its impact to regional economic development. Secondly, we will present an updated perspective on attracting FDI at the provincial level and how it can be utilized to accelerate regional economic development in Indonesia. This paper is organized as follows. Section 1 provides an introduction of this study as given above. Section 2 describes the theories and previous research which are the basis of our analysis regarding provincial FDI and its determinants. Section 3 explains the statistical model along with the dataset, variables of

interest, and methods of analysis. Section 4 contains the results of our regression analysis and discusses the implications of these results in regards to the conditions of FDI at the provincial level in order to answer our research question. The last section concludes and presents our suggestions for policymaking and further research in regards to attracting FDI at the provincial level in Indonesia.

LITERATURE REVIEW

The traditional neoclassical growth model claims that differences in per capita income of countries result from their capital accumulation, which is in turn determined by differences in their savings rates (Koopmans, 1963; Solow, 1956). Low levels of savings and investments create savings-investment gaps that have adverse effects on economic growth and development, particularly for developing countries that are liable to this due to their consumption-driven growth. An economy could raise new resources and capital by either amassing wealth domestically or through externally sourced capital influx.

In a country's development, Foreign Direct Investment (FDI) is the latter and functions to fill in the gaps between savings and the level of investment required for desired growth (Sabir & Khan, 2018). If sustained, the resulting economic growth and increase in per capita income would result in a rise in the degree of domestic savings and acceleration of domestic resources, thereby gradually closing the savings-investment gap (Adegboye et al., 2020). The concept and role of FDI for developing countries have only increased in importance in tandem with globalization; endogenous growth theories emphasize that FDI is essential as it facilitates knowledge and technology transfers (Chenaf-Nicet & Rougier, 2016).

Athukorala (2009) stated that issues related to the determinants of FDI are multidimensional because different motives are at work behind investment decisions in foreign countries by multinational corporations. As a result, the candidates for determinants of FDI and their

literature in the context of developing countries and ASEAN countries are many and varied. Although there is widespread consensus regarding certain variables—such as the size of GDP and its growth (Mottaleba & Kalirajan, 2010; Ramdan et al., 2020; Yasmin et al., 2003) - many other variables remain contestable. This necessitates further research and empirical studies with well-defined variables, new and updated datasets, and a clear focus to understand the determinants of FDI.

This research will be derived from the study of Mottaleba & Kalirajan (2010), which utilized panel data from 68 low-income and lower-middle income developing countries to identify the factors that determine FDI inflow. However, their model does not capture the disparities in economic and socio-economic indicators that can occur within and across a single country. UNECE (2008) has emphasized on the need to establish a shared vision and consistent direction for development based on efficient use of resources, good governance and public-private partnerships, and efficient decision-making in regards to investments (Hasudungan et al., 2021).

Furthermore, Susantono (2015) stated that pursuing holistic regional development involves boosting not only social economic growth, but also reducing regional disparity. Furthermore, Sjöholm (2002) argued that in the context of economic recovery, the two most crucial factors in sustainable long-term recovery are the ability to attract FDI and achieve even spatial development. This even spatial development is also required for political reasons, as uneven economic recovery is liable to result in social and regional tensions. This study will apply our derivation of model developed by Mottaleba & Kalirajan (2010) to the provincial level in Indonesia to present an updated and focused analysis on the determinants of regional FDI.

To capture the effect of the size and growth potential of the regional economy and labor quality, the model includes GDP and industrial value-added as a percentage of GDP, along with

their respective growth rates. Based on empirical findings of past studies in Indonesia, GDP has a positive and significant relationship to FDI, particularly in the long term (Cahyaningsih, 2016; Cahyono, 2013).

Likewise, FDI and value-added in Indonesia have a positive relationship, in which FDI contributes to a structural change of the economy towards higher value-added activities, which induces more investments, higher revenues for the government, and higher wages which have been empirically confirmed in Indonesia (Sjöholm, 2016). The factor of trade is also considered to capture the regional economy's openness and linkages with the bigger overall market. Using panel data from 2010 to 2017 in six Indonesian provinces, Saimul & Darmawan (2020) found that trade openness has an essential contribution to economic growth in the country's provinces. Zaman et al., (2018) also stated that trade openness is beneficial for larger and sustained FDI inflows as well as improving overall welfare in developing Asian countries.

Furthermore, infrastructure is utilized to illustrate the regional economy's resources as well as the disparities in development conditions across Indonesia's provinces. Fitriandi et al., (2014) empirically examined the relationship between infrastructure development and FDI inflows through panel data of 30 Indonesian provinces from 2000 to 2009, wherein he found that it indeed promotes FDI. His study also shown a light on another important variable not found in the model of Mottaleba & Kalirajan (2010)-namely, the size of the government as measured by government expenditure. Within the same study, it was proven that the size of the government has a significant and negative relationship with FDI inflows, possibly owing to the crowding out of private investment due to large-sized governments.

The role of foreign aid flows is also considered as a determinant of FDI inflow in model developed by Mottaleba & Kalirajan (2010), however, this research opts to exclude this variable as aid is

no longer particularly relevant to Indonesia's economic growth and development. As a result of improved income status, many developing country's development finance landscape has changed in the past decade and there have been widespread reductions in funding from bilateral donors as well as a shift from grants to loans (Park, 2019). The same could be said in the case of Indonesia and, in fact, the Indonesian government has launched the Indonesian Agency for International Development, which has already provided aid to five Pacific countries as of 2019 (Yasmin, 2019)

The following table depicts the variables used in our model, each variable proxy, and the expected relationship with provincial FDI in Indonesia's provinces based on existing literature and previous research.

RESEARCH METHOD

This research utilizes provincial level panel data, with 34 provinces within a 5-year period of 2015 - 2019. The data was retrieved from different statistics of Indonesian Bureau of Statistics (BPS) (BPS, 2020a, 2020b, 2020c, 2020d, 2020e). The dependent variable will be FDI, measured as the realization of foreign direct investment in each region. The independent variables will be consisted of constant regional gross domestic product (RGDP), the growth of constant regional GDP, ratio of trade to RGDP, ratio of government expenditure to RGDP, ratio of industrial value-added to RGDP from the micro-sized firm, ratio of industrial value-added to RGDP from small-sized firms, and the growth of value-added to RGDP from firms of both sizes. Thus, the model will be formulated as follows:

$$fdi_{it} = \alpha + \beta_1 \lnrgdp_{it} + \beta_2 grgdp_{it} + \beta_3 trade_{it} + \beta_4 govexp_{it} + \beta_5 mp_{it} + \beta_6 Internet_{it} + \beta_7 lvam_{it} + \beta_8 givam_{it} + \beta_9 lvas_{it} + \beta_{10} givas_{it} + \mu_{it} + v_{it}$$

Whereas fdi acts as the realization of foreign direct investment, lnrgdp is the log form of constant regional gross domestic product (RGDP), grgdp is the growth of constant regional GDP, trade is the ratio of trade to RGDP, govexp is the ratio of government expenditure to RGDP,

Table 1. The Model Variables, Proxy, and Expected Sign

Variable	Proxy	Expected Sign
Regional GDP (Constant)	Size of Regional Economy	+
Regional GDP (Constant) Growth Rate	Growth of Regional Economy	+
Percentage of Population Who Has Access to Internet	Infrastructure	+
Percentage of Population Who Uses Mobile Phones	Infrastructure	+
Ratio of Trade to Regional GDP	Economic Openness and Linkage	+
(Small and Micro) Industrial Value Added	Industrialization	+
(Small and Micro) Industrial Value-Added Growth Rate	Growth of Industrialization	+
Ratio of Government Expenditure of RGDP	Government Size in Terms of Expenditure	-

Source: Synthesized from Previous Studies

mp is the ratio of mobile phone user to the total population, ivam is the ratio of industrial value added to RGDP from micro-sized firm, ivas is the ratio of industrial value-added to RGDP from small sized firms, givam & givas act as the growth of value added to RGDP from firms of both size, respectively. The small i and t signify provincial and time characteristics, respectively.

Due to the nature of panel data, testing for Classic Linear Regression Model Assumptions (CLRM) would be imperative. Therefore, the research utilized the Breusch Pagan / Cook Weisberg test for heteroskedasticity & Variance Inflation Factor test for multicollinearity. Harris-tzavalis unit-root test was also done to determine the stationarity of the model, which assumes the number of panels to be infinity while the number of the period is fixed. Should heteroscedasticity be present, robust standard errors will be utilized to treat it.

When dealing with panel data, one can either utilize ordinary least squares (OLS), fixed effect, or random effect method. In deciding which method to use, the Breusch Pagan Lagrange Multiplier (BP LM) test is usually done to identify the presence of heterogeneity and deciding between random and OLS methods, followed by a Hausman test to decide between fixed and random methods. However, this paper recognizes that the Hausman test relies will be invalid in the face of heteroskedasticity issues. Therefore, there is a need to check for heteroskedasticity with Modified Wald test for groupwise heteroskedasticity in fixed effect regression

model. After, the test for overidentifying restrictions was done to complement the Hausman test.

RESULT AND DISCUSSION

Result

The following table explains the estimation functions explaining FDI to Indonesia's 34 provinces from 2015 - 2019. The result shows that the model does not have a high level of multicollinearity, as proven through the variance inflation factor (VIF) of below 5. In the econometrics' rule of thumb, if the result is below 5, it is still considered low multicollinearity.

Table 2. Multicollinearity Test

Variable	VIF value
lnrgdp	2.37
grgdp	1.08
trade	1.51
govexp	2.76
internet	3.47
mp	4.17
ivam	2.60
givam	1.46
ivas	1.87
givas	1.05

Source: Authors' Calculation (2021)

When estimating pooled panel regression, the Breusch-Pagan (BP) test did find understandable heteroscedasticity, thus the model will use the robust standard error to treat it. The following BP LM test noticed the presence of heterogeneity in the model, therefore invalidating the use of OLS (Prob P-value LM Test = 0.0000).

From that estimation, it was detected that the model shall consider heterogeneity. Hence, the Hausman test and the test for overidentifying restrictions show that a random effect method was more appropriate for the model; hence, the random effect method with the robust standard error was used to regress the model (Prob P-value = 0.1443).

In the Hausman test, if the P-value was not significant, the random test was selected. Random effect considers the heterogeneity, and panel data treated the panel pool regression into the generalized least square model (GLS) model or the bootstrapping model. After that, this study reported the result of the random effect as follow:

Table 3. FDI Determinants to Indonesian Provinces (Random Effect Model)

Variable	Coefficient	z-stat	P-value	Significant (at 5%)
Lngdp	-0.001	-0.16	0.870	Not significant
Grgdp	0.001	1.21	0.225	Not significant
Internet	-0.024	-0.46	0.648	Not significant
Mp	-0.114	-0.90	0.366	Not significant
Trade	0.088	1.63	0.103	Not significant
Ivam	0.492	2.84	0.005	Significant
givam	-0.003	-0.44	0.658	Not Significant
Ivas	-0.328	-0.59	0.552	Not Significant
Givas	0.001	3.97	0.000	Significant
govexp	0.168	0.77	0.439	Not significant
Overall R Square = 20.73%				

Source: Synthesized from Previous Studies

From the econometric regression, it is found some variables were significant and not. It was found that regional GDP growth rate (lngdp), regional GDP (Grgdp), share rate of the access to internet (internet), shared ratio of the access to mobile phones (MP), the share ratio of trade (trade), the growth rate of the industrial value-added to RGDP from a micro-sized firm (givam), the ratio of industrial value-added to RGDP from small-sized firms (ivas), ratio of government expenditure were not significantly affecting foreign direct investment (fdi).

On the other hand, two other variables significantly affect foreign direct investment.

Firstly, the ratio of industrial value-added to RGDP from micro-sized firm (ivam) is positive and has a significant effect on the foreign direct investment (fdi). Secondly, the growth rate of the industrial value-added to RGDP from small-sized firms (givas) has a positive and significant effect on the foreign direct investment (fdi).

Hence, that result explains the research question about the importance of regional province value-added of the micro-sized and small-sized firms to affect regional FDI. This share of the value-added of that GDP is an approximation to measure economic productivity in that spatial economic contexts (Blanchard, 2016).

Discussion

The statistical findings of this research differ from those of Mottaleba & Kalirajan (2010), wherein trade and GDP were found to be significant in both developing countries and lower-middle-income countries. The variable of interest that represented trade openness, which was positive and significant in the research of Mottaleba & Kalirajan (2010), was not found to be significant in our regression analysis.

Zaman et al., (2018) also stated that trade openness is beneficial for larger and sustained FDI inflows as well as improving overall welfare in developing Asian countries. Nonetheless, in our findings, possibly due to the decreasing trade to GDP ratio of numerous provinces, it was found that trade openness did not have an influence to boost regional foreign direct investment.

On the other hand, the growth of industrial value-added of small-sized firms is found to be highly significant in Table 2. This aligns with the findings of Mottaleba & Kalirajan (2010), as they found the growth of small size firm value added to be significant.

This study also shows the significant effect of the growth of micro-sized firms on FDI. Hence, the increase in the industrial value-added by micro-sized firms could be seen as a highly favorable thing for Indonesia, in that people are finding it

easier to start businesses and/or labor are becoming more productive.

Within this study, industrial value-added for micro-sized firms and its growth for small-sized firms represent not only labor quality and thus human capital, but also the business environment. Both these things are essential in attracting multinationals to Indonesia to set up their operations (Iwai & Thompson, 2012; Kinda, 2010).

Overall, our findings regarding the nature of the relationship between industrial value-added and FDI do correspond with existing literature and previous research done in both developing countries in general, as well as in Indonesia. Simply put, cheap labor is not the only factor attracting FDI to developing countries. The industrial value-added, representing industrial productivity, is far more important in boosting regional FDI. The development of human capital is also necessary to enhance that industrial value added (Mottaleba & Kalirajan, 2010).

CONCLUSION AND RECOMMENDATION

The determinants of FDI do indeed undergo changes in importance and significance over time. Through further exploration of the dataset, we observe that micro-sized firms tend to have much higher industrial value-added compared to small-sized firms, which indicates the relatively larger amount of micro-sized firms in Indonesia. It can also be seen that the industrial value-added of micro-sized firms is increasing, whereas the trend is decreasing for small-sized firms. This could be a cause of concern, as it indicates that firms are not scaling up from micro to small-sized as they theoretically should, meaning that they are not expanding nor growing. The positive but small effect of the growth of value added by small-sized firms could then indicate investor interest in the realization of the growth potential of small and micro-sized firms, which is being restrained by current conditions that inhibit the growth of firms and their productivity.

The policy recommendation derived from our

findings is to encourage regional FDI through responsive industrial policy supported by the government. The practical policy may give tax deduction as an incentive of incoming FDI that will partner with the micro-sized firms in Indonesia. This should be done to foster the growth of the micro-sized firms in both numbers and capacity, especially for regions where their industry value added is still low. Furthermore, for the human capital component of industrial productivity, measures can be taken to provide capital assistance, facilitate education and vocational training, and invest in infrastructure in select regions. Through education and vocational training, especially, Indonesia will be able to support the development of modern and higher value-added sectors with a qualified and rapidly growing labor force.

This research paper has focused solely on the determinants of provincial FDI in Indonesia and its relationship with regional economic development. Our study has several limitations in terms of data. Similar to many developing countries, we have some difficulty in obtaining province-level data, which prevents us from carrying out more comprehensive analysis over a longer time frame. Although we admit to this issue, we believe that this empirical study stands to provide important insights and policy implications of FDI determinants at the provincial-level, which could contribute to regional development in Indonesia.

Further studies can be done to complement the limitations of this research paper, such as conducting a more comprehensive analysis of FDI determinants with a larger dataset comprising of longer time periods and industrial value-added from medium and large-sized firms, among others, as well as analyzing the factors affecting industrial value-added in Indonesia and how to accelerate their growth. These other factors can be a cost of doing business in Indonesia, human capital variables, and political stability for the future studies.

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