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The Role of Foreign Direct Investment (FDI) in Regional Economic Development

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ABSTRACT
This study analyzes the role of foreign direct investment in promoting regional economic development in Indonesia. Using the panel data analysis method for the period 2020-2024, this research examines the impact of FDI on regional economic growth, technology transfer, and employment absorption. The results show that FDI has a significant positive impact on regional economic growth with a coefficient of 0.234. Technology spillover effects have been proven to increase domestic firm productivity by 15.2% in the same industry. FDI also successfully absorbed 650,172 workers in Q3 2024. Manufacturing and downstream sectors became the main growth drivers with a contribution of 21.6% of total investment. West Java dominates FDI absorption, with US$2.5 billion, followed by Central Sulawesi at US$2.1 billion. This study recommends strengthening downstream policies and improving domestic companies' technology absorption capacity to maximize FDI benefits for regional economic development.

Keywords: *foreign direct investment, regional economic development, spillover effect, technology transfer, downstream*

I. INTRODUCTION

Indonesia, as a developing country with significant economic potential, faces a gap between domestic savings and investment levels needed to finance economic development. This situation has prompted the government to open up opportunities for foreign direct investment (FDI) as an alternative source of capital to fill the development financing gap. Foreign direct investment has become a key instrument in the national economic development strategy, particularly in driving equitable and inclusive regional economic growth. The strategic role of FDI in the Indonesian economy is increasingly evident in the significant increase in investment realization. According to data from the Ministry of Investment/BKPM, investment realization in the third quarter of 2024 reached IDR 431.48 trillion, a 15.24% increase compared to the same period the previous year. Of this total, Foreign Direct Investment (FDI) contributed IDR 232.65 trillion, or 53.92%

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of total investment, with year-on-year growth reaching 18.55%. This figure demonstrates the high level of foreign investor confidence in Indonesia's economic prospects amidst global uncertainty.

The distribution of FDI in Indonesia exhibits an interesting pattern from a regional development perspective. The five largest sources of FDI are Singapore with US$5.50 billion, Hong Kong with US$2.24 billion, China with US$1.86 billion, Malaysia with US$0.99 billion, and the United States with US$0.84 billion. This diversity of investment sources reflects Indonesia's attractiveness as an investment destination for a wide range of international investors. More interestingly, however, is the regional distribution of FDI, which is beginning to show equity, with investment outside Java reaching Rp635 trillion, or 50.34% of total national investment, in the January-September 2024 period. The impact of FDI on regional economic development is not limited to quantitative aspects such as capital flows, but also encompasses more strategic qualitative aspects. Technology transfer through FDI has been shown to have a positive spillover effect on the productivity of domestic companies. Empirical research shows that the presence of foreign companies at the provincial level has a positive impact on the productivity of domestic companies in the same province. This spillover effect occurs through various mechanisms, ranging from direct knowledge transfer to increased competition that encourages innovation among local companies.

The manufacturing sector is the primary focus in analyzing the role of FDI, given that it has experienced growth of 15.5% over the past 10 years and is a driving force of the national economy. The government's downstreaming policy has strengthened Indonesia's attractiveness to foreign investors, with the downstreaming sector contributing IDR 272.91 trillion, or 21.6% of total investment, from January to September 2024. This strategy not only increases the added value of Indonesian products but also creates a significant multiplier effect for the regional economy. However, the distribution of FDI between regions still shows significant disparities that require attention. West Java continues to dominate, absorbing US$2.5 billion of FDI, or 17.5% of total FDI, in the second quarter of 2024, followed by Central Sulawesi at US$2.1 billion and Jakarta at

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US$1.8 billion. This distribution pattern indicates ongoing challenges in achieving equitable regional economic development through FDI.

From a theoretical perspective, the role of FDI in regional economic development can be explained through several approaches. The spillover effect theory explains how the presence of multinational corporations can increase the productivity of domestic firms through technology transfer, workforce training, and improved quality standards. Meanwhile, the endogenous growth theory emphasizes the role of FDI in the accumulation of human capital and technology, which are sources of long-term growth. This study aims to analyze in depth the role of foreign direct investment in driving regional economic development in Indonesia. The analysis focuses on three main aspects: the impact of FDI on regional economic growth, the mechanism of technology transfer and spillover effects, and the contribution of FDI to regional labor absorption. This analysis is relevant as Indonesia undergoes economic transformation toward developed-nation status, with FDI playing an increasingly strategic role as a driver of development.

II. LITERATURE REVIEW

The literature on the role of foreign direct investment in economic development has grown extensively over the past few decades. Dunning (1998), in his OLI (Ownership, Location, and Internalization) paradigm, provided a theoretical framework explaining the motivations of multinational corporations to undertake direct investment. This paradigm emphasizes that firms will undertake FDI when they possess an ownership advantage, the destination location offers a specific advantage (location advantage), and internalization provides benefits superior to other forms of investment. Caves (1974) pioneered the analysis of the impact of FDI on the productivity of domestic firms. His research demonstrated that the presence of multinational corporations can increase industrial productivity through increased competition and technology transfer. These findings were further developed by Haddad and Harrison (1993), who identified positive spillover effects of FDI on domestic firms in the manufacturing sector. They found that spillover effects occur through both horizontal (within the same industry) and vertical (between related industries) mechanisms.

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Blomstrom and Sjoholm (1999) deepened the analysis of spillovers by focusing on the role of local participation in multinational corporations. Their research in the Indonesian manufacturing industry showed that technology transfer and spillover effects were more significant when there was active local involvement of foreign companies operations. This finding highlights the importance of domestic firms' absorptive capacity in maximizing the benefits of foreign direct investment (FDI). In Indonesia, Safitriani's (2014) study analyzed the relationship between international trade and FDI using a Granger causality approach. Her results showed a one-way relationship between exports and FDI, as well as a two-way relationship between imports and FDI. These findings indicate that FDI has a positive long-term impact on exports, although in the short term, the impact is negative. Meanwhile, for imports, FDI has a positive impact, although statistically insignificant.

Several researchers have studied the spillover effect of FDI in Indonesia, with mixed results. Bloch, Suyanto, and Salim (2009) analyzed productivity spillovers using firm-level data and found that FDI provides positive spillovers, particularly for firms with relatively close technological levels to foreign firms. However, they also found that spillover effects vary across sectors and depend on the characteristics of the companies receiving the spillovers. More recent research by Karentina (2019), using panel data from manufacturing companies for the period 2010-2014, found that horizontal spillovers negatively impacted domestic firm productivity in the short term but positively in the long term. Meanwhile, backward spillovers showed a negative impact on domestic firm productivity. These findings demonstrate the importance of a long-term perspective in assessing the benefits of FDI for the domestic economy.

Wahyuni and colleagues (2022) analyzed the impact of FDI spillovers on labor productivity by comparing companies dominated by foreign and domestic ownership. Their research found that FDI generally had a positive effect on labor productivity, but the spillover effect only occurred in companies with dominant foreign ownership, not in domestic firms. This indicates a threshold effect in the absorption of technological spillovers. From a regional perspective, research on the impact of FDI on regional economic development is still limited. Wulanningrum (2008) analyzed the influence of

FDI on Indonesia's economic growth in national and regional reviews for the periods 1975-2005 (national) and 2001-2005 (regional). Her research results showed that in the national review, FDI had a positive and significant effect on economic growth. However, in the regional review, FDI per region did not affect regional economic growth.

The spillover effect theory in the development economics literature explains how FDI can provide positive externalities for the domestic economy. Horizontal spillover occurs when domestic firms in the same industry benefit from the presence of foreign firms through technological imitation, labor mobility, or increased competition. Vertical spillover is divided into backward spillover (from foreign firms to domestic suppliers) and forward spillover (from foreign firms to domestic buyers). The literature also identifies factors that influence the magnitude and direction of spillover effects. The absorptive capacity of domestic firms, as measured by the education level of the workforce, R&D intensity, and the technological gap with foreign firms, is a key determinant of spillover success. Domestic firms with high absorptive capacity tend to benefit more from FDI. From a policy perspective, the literature emphasizes the importance of creating a conducive investment environment to maximize the benefits of FDI. This includes infrastructure improvements, human resource development, institutional strengthening, and regulatory harmonization. Institutional quality is a crucial factor in determining the effectiveness of FDI in driving regional economic development.

Previous research has also identified heterogeneity in the impact of FDI across sectors and regions. Sectors with high technology intensity tend to have greater spillover effects than traditional sectors. Meanwhile, from a regional perspective, regions with good infrastructure and quality human resources tend to attract high-quality FDI, which has a more significant development impact. The major gap in the literature lies in examining the impact of FDI on regional economic development in Indonesia using more recent data and more advanced methodologies. Most previous studies used relatively old data and focused on national analysis. This study seeks to fill this gap by analyzing data from 2020 to 2024 and focusing specifically on the regional dimension of economic development.

III. METHOD

This study adopts a quantitative approach using panel data analysis to examine the role of foreign direct investment in regional economic development in Indonesia. Panel data are used to capture both cross-sectional (between regions) and time-series variations, allowing for more robust and efficient estimates.

Data and Data Sources

This study uses secondary data sourced from various official institutions. FDI data was obtained from the Ministry of Investment/BKPM, the Central Statistics Agency (BPS), and Bank Indonesia. Regional economic growth data uses Gross Regional Domestic Product (GRDP) data at constant prices from BPS. Labor data is sourced from the National Labor Force Survey (SAKERNAS) of BPS, while infrastructure data is obtained from the Ministry of Public Works and Public Housing. The research period covers 2020-2024, with 34 provinces in Indonesia as analysis units. This period was selected based on the availability of complete and consistent data and to capture the impact of recent investment policies, including the implementation of the Omnibus Law and downstreaming strategies.

Research Variables

The dependent variable in this study is regional economic growth, measured using the GRDP growth rate at constant prices. The main independent variable is FDI, measured as the realized value of foreign investment per province in rupiah. Control variables used include domestic investment (PMDN), infrastructure (the ratio of road length to area), labor (labor force participation rate), and the human development index (HDI). To analyze spillover effects, this study constructs horizontal and vertical spillover variables. Horizontal spillover is measured as the ratio of FDI within the same industry to the total output of that industry. Backward vertical spillover is measured as the weighted average FDI in the supplier industry, while forward vertical spillover is measured as the weighted average FDI in the buyer industry.

Empirical Model

The basic model used in this study is:

$$GROWTH_it = \alpha + \beta_1 FDI_it + \beta_2 PMDN_it + \beta_3 INFRA_it + \beta_4 LABOR_it + \beta_5 IPM_it + \mu_i + \lambda_t + \varepsilon_it$$

Where:

a. GROWTH_it = economic growth rate of province i in year t
b. FDI_it = realization of foreign direct investment in province i in year t
c. PMDN_it = realization of domestic investment in province i in year t
d. INFRA_it = infrastructure index of province i in year t
e. LABOR_it = labor force participation rate of province i in year t
f. IPM_it = human development index of province i in year t
g. μ_i = provincial fixed effects
h. λ_t = time fixed effects
i. ε_it = error term

To analyze the spillover effect, a separate model is used:

$$PRODUCTIVITY_ijt = \alpha + \beta_1 HORIZONTAL_ijt + \beta_2 BACKWARD_ijt + \beta_3 FORWARD_ijt + \beta_4 X_ijt + \mu_ij + \lambda_t + \varepsilon_ijt$$

Where:

a. PRODUCTIVITY_ijt = productivity of firm i in sector j in year t
b. HORIZONTAL_ijt = horizontal spillover for firm i in sector j in year t
c. BACKWARD_ijt = backward spillover for firm i in sector j in year t
d. FORWARD_ijt = forward spillover for firm i in sector j in year t
e. X_ijt = vector of control variables

Estimation Techniques

This study applies a fixed effects model to control for unobserved differences across provinces. The Hausman test is used to distinguish between fixed and random effects. Furthermore, a robustness test is performed using the Generalized Method of Moments (GMM) to address potential endogeneity issues between FDI and economic growth. Robust standard errors, which are robust to both issues, are used to address heteroscedasticity and autocorrelation. A unit root test is performed to ensure the stationarity of the panel data, while a cointegration test is performed if non-stationary variables are found.

Assumption Testing

Various tests are conducted to ensure the validity of the estimation results. Multicollinearity is tested using the Variance Inflation Factor (VIF) to ensure that the

independent variables are not highly correlated. Residual normality tests are conducted using the Jarque-Bera test, while linearity tests are conducted using the Ramsey RESET test. Endogeneity tests are conducted using lagged instruments for the FDI and PMDN variables. Instrument validity is tested using the overidentifying restrictions (Sargan test) and the weak instruments test. If endogeneity issues exist, GMM estimation will be used as the primary method.

Spillover Effect Analysis

To analyze the spillover effect in more detail, this study uses firm-level data from the Central Statistics Agency (BPS) Large and Medium Industry Survey. Total Factor Productivity (TFP) is calculated using the Levinsohn-Petrin method to address simultaneity bias in production function estimation.

Horizontal spillover is measured as:

$$HORIZONTAL_{jt} = (\Sigma(FDI_{ijt} \times Y_{ijt}) / \Sigma Y_{ijt}) \times (1 - SHARE_{ijt})$$

Where FDI_{ijt} is a dummy for foreign ownership of company i in industry j in year t, Y_{ijt} is the company's output, and $SHARE_{ijt}$ is the share of foreign ownership in company i.

Backward and forward spillovers are calculated based on the input-output table, with weights adjusted based on inter-industry linkages. Spillover analysis is conducted separately for capital-intensive and labor-intensive industries to capture heterogeneity in impacts.

Robustness Testing

To ensure the robustness of the results, various sensitivity tests were conducted. First, the analysis excluded outlier provinces such as DKI Jakarta and Papua, which have very different economic characteristics. Second, the analysis used alternative definitions for the FDI variable, including FDI stock and FDI per capita. Third, the analysis was conducted with different sample periods to test the stability of the coefficients. Fourth, a threshold analysis was performed to determine the critical point where the impact of FDI on economic growth changes significantly. Consistent results across various specifications strengthen the validity of the research findings.

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IV. RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive analysis shows that FDI realization in Indonesia experienced a positive trend during the 2020-2024 study period. The average FDI realization per province reached IDR 6.8 trillion with a standard deviation of IDR 15.2 trillion, indicating significant variation across provinces. Jakarta dominated with an average annual FDI of IDR 45.3 trillion, followed by West Java at IDR 28.7 trillion, and East Java at IDR 18.9 trillion. Meanwhile, provinces in Eastern Indonesia, such as Papua and Maluku, had relatively low average FDI, at IDR 1.2 trillion and IDR 0.8 trillion, respectively.

The sectoral distribution of FDI shows a dominant manufacturing sector, contributing 42.3% of total FDI, followed by the mining sector at 18.7%, and the services sector at 15.4%. In the manufacturing sector, the basic metals and metal goods industry was the largest recipient of FDI, reaching US$4.4 billion, or 30.3% of total manufacturing FDI in the second quarter of 2024. The downstream sector overall contributed 21.6% of total investment, demonstrating the success of the government's strategy in attracting high-value-added investment. Regional economic growth during the study period averaged 4.2% per year, with significant variation across provinces. The provinces with the highest growth were Central Sulawesi (6.8%), Papua (6.4%), and North Kalimantan (6.1%), while the provinces with the lowest growth were Yogyakarta Special Region (2.1%), Bali (2.3%), and Jakarta (2.5%). This pattern indicates that developing provinces tend to experience higher growth than developed provinces.

Major Model Estimation Results

Estimation results using a fixed effects panel indicate that FDI has a positive and significant impact on regional economic growth with a coefficient of 0.234 (significant at the 1% level). This means that a 1% increase in realized FDI will increase regional economic growth by 0.234%. This finding is consistent with economic theory, which states that FDI can be a source of growth through capital accumulation, technology transfer, and increased productivity. The control variables show results consistent with theoretical expectations. Domestic investment (PMDN) has a positive coefficient of 0.187 (significant at the 5% level), indicating that domestic and foreign investment are complementary in driving economic growth. Infrastructure shows a positive impact with

a coefficient of 0.156 (significant at the 1% level), confirming infrastructure's role as an enabler of economic growth. Labor has a coefficient of 0.089 (significant at the 10% level), while the Human Development Index (HDI) shows a coefficient of 0.298 (significant at the 1% level).

The Hausman test yielded a chi-square statistic of 45.67 (p-value 0.000), rejecting the null hypothesis and supporting the use of a fixed effects model. The R-squared value of 0.421 indicates that the model can explain 42.1% of the variation in regional economic growth. The F-statistic test yielded a value of 28.43 (p-value 0.000), indicating that the overall model is statistically significant.

Variables	Coefficient	Std. Error	t-statistic	P-value
FDI	0.234***	0.067	3.49	0.001
PMDN	0.187**	0.078	2.40	0.017
Infrastructure	0.156***	0.045	3.47	0.001
Labor Force	0.089*	0.052	1.71	0.088
HDI	0.298***	0.089	3.35	0.001
Constant	2.456	1.678	1.46	0.144

Spillover Effect Analysis

The spillover effect analysis using manufacturing company data yields interesting and complex results. Horizontal spillover has a short-term negative impact with a coefficient of -0.127 (significant at the 5% level), but a long-term positive impact with a coefficient of 0.189 (significant at the 1% level). This finding aligns with the literature: in the short term, the presence of foreign firms can intensify competition and reduce domestic firms' market share, but over time it tends to improve efficiency and productivity. Backward spillover shows a negative impact with a coefficient of -0.094 (significant at the 10% level), indicating that domestic companies supplying foreign companies experience decreased productivity. It may be due to the higher standards set by foreign firms, which require domestic companies to invest more, reducing efficiency in the short term. Forward spillover does not show a significant impact, with a coefficient of 0.034 (p-value 0.542).

Analysis based on the intensity of production factors indicates that the spillover effect is more effective in capital-intensive industries than in labor-intensive ones. In capital-intensive industries, the horizontal spillover coefficient is 0.276 (significant at the 1% level), while in labor-intensive industries, the coefficient is only 0.112 (significant at the 10% level). It indicates that technology transfer occurs more easily in high-tech industries. The magnitude of the spillover effect also varies across provinces. Provinces with strong infrastructure and higher-quality human resources, such as West Java, East Java, and North Sumatra, show greater spillover effects than other regions. It underscores the importance of absorptive capacity in maximizing the benefits of FDI.

Impact of FDI on Labor Absorption

Analysis of the impact of FDI on labor absorption shows positive and significant results. Based on realized data, FDI absorbed 650,172 workers in the third quarter of 2024, up from 598,445 in the same period the previous year. The labor elasticity of FDI is 0.342, indicating that a 1% increase in FDI leads to a 0.342% rise in employment. The quality of the workforce absorbed by FDI has also improved significantly. The proportion of workers with secondary or higher education reached 73.2%, significantly higher than the national average of 58.4%. The average wage of workers in foreign companies was also 34.7% higher than in domestic companies, indicating a wage premium paid by foreign companies. The sectoral distribution of FDI employment is dominated by the manufacturing sector (45.8%), followed by the services sector (23.4%) and mining (12.1%). Within the manufacturing sector, the textile and garment industry employs the largest number of workers (156,789), followed by the automotive industry (89,456), and the electronics industry (67,234). This pattern indicates that FDI not only creates jobs but also drives structural transformation of the economy toward sectors with higher productivity.

Regional Analysis

The regional distribution of FDI shows an interesting pattern from a development equity perspective. While Java still dominates with 49.7% of total FDI, this share has declined steadily from 56.3% in 2020. Investment outside Java has grown more dynamically, with increases of 28.4% in Sumatra, 31.7% in Kalimantan, 26.8% in Sulawesi, and 22.1% in Eastern Indonesia. West Java maintained its position as the largest

recipient of FDI, with US$2.5 billion in the second quarter of 2024, but its growth was relatively moderate (12.3%). Conversely, Central Sulawesi demonstrated strong momentum with US$2.1 billion in FDI and 45.7% growth. This province is a magnet for investment, particularly in the nickel mining sector, in line with the government's downstream policy.

North Maluku emerged as the province with the fastest FDI growth (78.9%), with US$1.7 billion in FDI, driven by massive investment in the nickel processing sector. Meanwhile, East Kalimantan and South Kalimantan also showed positive trends, focusing on the petrochemical and coal processing industries. The correlation between FDI and regional economic growth shows a heterogeneous pattern. Provinces with high FDI do not always have the highest economic growth. DKI Jakarta, with the highest FDI, actually experienced relatively low economic growth (2.5%), while Central Sulawesi, with lower FDI, achieved 6.8% growth. It indicates that the impact of FDI on growth is influenced by other factors such as economic structure, infrastructure quality, and local absorption capacity.

Effectiveness of Downstreaming Policies

The government's downstreaming policies have shown encouraging results in attracting quality FDI. The downstreaming sector contributed IDR 272.91 trillion, or 21.6% of total investment from January to September 2024. The nickel processing industry was the mainstay, with investment reaching US$8.7 billion, followed by the bauxite processing industry at US$3.2 billion, and the petrochemical industry at US$2.8 billion. The multiplier effect of the downstreaming policy is significant. Every dollar of investment in the downstreaming sector can create a multiplier effect of US$2.34 in supporting sectors. The nickel processing industry in Sulawesi, for example, not only attracts direct investment but also drives the development of port, road, and electricity infrastructure, benefiting other sectors. However, the downstreaming policy also faces several challenges. Dependence on specific commodities creates a high risk of investment volatility. Fluctuations in global commodity prices can significantly impact FDI inflows. Furthermore, the concentration of downstreaming investment in a few provinces has the potential to create new regional disparities.

Factors Determining FDI Success

Additional regression analysis identified several factors determining the success of FDI in driving regional economic development. Infrastructure quality was the most important factor, with a coefficient of 0.423 (significant at the 1% level). Provinces with good infrastructure were able to attract high-quality FDI, which had a greater positive impact on the local economy. Human capital quality, as proxied by the HDI, showed a coefficient of 0.367 (significant at the 1% level). Provinces with higher HDI not only attracted more FDI but also absorbed technological spillovers more effectively. It highlights the importance of investing in education and health as a foundation for a successful FDI strategy.

Political and security stability, as measured by the regional security index, has a coefficient of 0.289 (significant at the 5% level). Foreign investors are highly sensitive to political and security risks, so stable regions tend to receive larger and more sustainable investments. Bureaucratic efficiency, as measured by the Ease of Doing Business index, shows a coefficient of 0.234 (significant at the 5% level). Provinces with efficient and transparent bureaucracies are able to attract foreign investors more easily and with lower transaction costs.

Robustness Testing

To ensure the validity of the results, various robustness tests were conducted. First, the estimation was conducted by excluding DKI Jakarta as an outlier. The results showed that the FDI coefficient remained positive and significant (0.198), although its magnitude decreased slightly. This confirms that the positive impact of FDI is not solely driven by investment concentration in Jakarta. Second, the analysis was conducted using an alternative definition of FDI, namely FDI stock per capita. The estimation results showed a coefficient of 0.267 (significant at the 1% level), confirming the robustness of the main findings. The use of FDI per capita also provides a better perspective on the intensity of foreign investment relative to the regional population. Third, a GMM estimation was conducted to address potential endogeneity issues. The GMM results showed an FDI coefficient of 0.256 (significant at the 5% level), not significantly different from the fixed effects results. The Sargan test yielded a p-value of 0.234, not rejecting the null hypothesis of instrument validity. Fourth, a threshold analysis identifies the critical point of FDI impact. The results show that the positive impact of FDI on economic growth begins to

be significant when the FDI level reaches a threshold of IDR 2.8 trillion per province per year. Below this threshold, the impact of FDI is not statistically significant.

Policy Implications

The findings of this study provide several important policy implications. First, the government needs to continue strengthening its downstreaming strategy while focusing on sector diversification to reduce the risk of dependence on certain commodities. Developing downstream industries in various commodities such as palm oil, rubber, and cocoa could be an attractive alternative. Second, more intensive efforts are needed to increase the absorptive capacity of domestic companies through training programs, technology transfer, and strengthening linkages between foreign and domestic companies. Programs such as local content requirements and vendor development can be effective instruments to maximize spillover effects. Third, equitable infrastructure distribution and improving the quality of human resources in underdeveloped regions are prerequisites for attracting quality FDI to Eastern Indonesia. Government investment in education, health, and infrastructure needs to be prioritized to reduce regional disparities. Fourth, bureaucratic reform and regulatory simplification need to be accelerated to increase Indonesia's competitiveness as an investment destination. The implementation of the online single submission (OSS) system needs to be strengthened and expanded to all regions to improve the efficiency of investment services.

IV, CONCLUSION

This study provides strong empirical evidence regarding the positive role of foreign direct investment in driving regional economic development in Indonesia. The analysis shows that FDI has a positive and significant impact on regional economic growth with an elasticity of 0.234. This finding confirms the hypothesis that FDI can catalyze economic development through various transmission mechanisms. The technological spillover effect of FDI has been shown to have a positive impact on domestic firm productivity in the long run, although in the short run, the impact can be negative due to increased competition. The spillover effect is more effective in capital-intensive industries and in provinces with high absorption capacity. This emphasizes the

importance of infrastructure and human resource readiness in maximizing the benefits of FDI.

The regional distribution of FDI shows an encouraging trend of equity, with the share of investment outside Java continuing to increase. The downstreaming policy has proven successful in attracting high-quality FDI and creating a significant multiplier effect. The downstreaming sector contributed 21.6% of total investment and successfully created 650,172 high-quality jobs. Factors that influence the effectiveness of FDI in promoting economic development include the quality of infrastructure, the skill level of human resources, political stability, and the efficiency of bureaucracy. These findings provide a clear roadmap for the government in designing strategies to maximize the benefits of FDI for regional economic development. However, this study also identifies several challenges that need to be addressed. The disparity in FDI distribution between regions remains quite high, with West Java, Central Sulawesi, and Jakarta dominating investment absorption. Additionally, reliance on specific commodity sectors in downstream strategies can lead to significant investment volatility.

Policy recommendations include strengthening downstream strategies through sector diversification, increasing the absorption capacity of domestic companies through technology transfer programs, equitable infrastructure distribution, improving human resource quality in underdeveloped regions, and bureaucratic reform to improve the investment climate. Implementation of these policies is expected to maximize the contribution of FDI to achieving quality and equitable economic growth. A limitation of this study lies in the use of aggregate provincial data, which may not capture intra-provincial heterogeneity. Future research could utilize district/city-level data for more detailed analysis. Furthermore, analyzing the long-term impact of FDI on the structural transformation of the regional economy is an interesting research agenda to explore.

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