

The Impact of Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI) on Gross Regional Domestic Product (GRDP) in Sumatra Island

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ABSTRACT

This study is motivated by persistent disparities in economic growth among the provinces of Sumatra, which are presumably linked to the unequal distribution of Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI). Previous studies have yielded inconsistent results; some combined FDI and DDI into a single variable over a limited period, thereby preventing an analysis of the individual contribution and significance of each investment type. This study addresses this gap by examining the effects of FDI and DDI, both individually and simultaneously, on the regional Gross Domestic Product (GDP) of Sumatra between 2016 and 2025, testing Harrod-Domar and Keynesian investment theories in a regional context. This quantitative associative study utilises secondary panel data covering all 10 provinces of Sumatra from 2016 to 2025 (100 observations), obtained from the Indonesian Investment Coordinating Board (IAC) and the Central Statistics Agency (BPS). The data were analysed using panel data regression via the Random Effects Model (REM), selected based on Chow, Hausman, and Lagrange Multiplier tests. The results indicate that FDI does not have a significant effect on GDP (coefficient = 0.0011; probability = 0.9649), whereas DDI shows a positive and significant effect (coefficient = 0.1774; probability = 0.0000). When considered simultaneously, FDI and DDI have a positive and significant impact on regional GDP, with an F-statistic of 53.579 and an adjusted R-squared of 0.515; this suggests that, together, both variables explain 52.4% of the variation in regional GDP across Sumatra. By treating FDI and DDI as distinct variables over an extended period and across provinces, this study clarifies the respective roles of each and highlights the need for policies that enhance FDI effectiveness while sustaining domestic investment growth.

INTRODUCTION

Sustained growth in output is widely treated as a core benchmark of a country's development trajectory, since it underlies a government's capacity to expand employment, raise household income, and broaden access to education, healthcare, and infrastructure. Macroeconomists commonly track this progress through Gross Domestic Product (GDP) at the national level and its regional counterpart, Gross Regional Domestic Product (GRDP), both of which capture the aggregate value of goods and services generated by economic units within a defined area and timeframe.

One of the key determinants of GRDP growth is investment. Solow's neoclassical growth model conceptualises regional output as a function of the capital stock, labour, and the efficiency with which they are



combined, implying that any inflow of investment that raises the effective capital stock should raise output (Solow, 2010). For developing economies, Jhingan (2010) notes that the Harrod-Domar theory adds a further layer to this mechanism: investment simultaneously builds productive capacity and generates income, making a region's investment-to-output ratio central to how quickly output grows in the long run. Building on this foundation, Dunning & Lundan. (2008) OLI (Ownership, Location, Internalisation) framework points to what separates FDI from ordinary capital inflows alongside money; it is presumed to carry technology, managerial know-how, and links to international markets, giving it a productivity edge over capital accumulation on its own. Domestic investment is expected to operate through a related but distinct channel.

Following Keynes's (1936) theory of investment, domestic investors expand their capital stock when the Marginal Efficiency of Capital (MEC) they perceive exceeds the prevailing interest rate (Todaro & Smith, 2020); because this capital, together with the employment and profits it generates, tends to remain within the local economy, domestic investment through Domestic Capital Investment (DDI) is expected to generate a comparatively stronger and more evenly distributed regional multiplier effect than FDI (Sukirno, 2016; Domar, 1946). This asymmetry is consistent with broader empirical findings that FDI's growth impact is often conditional on absorptive capacity and channel of entry, rather than automatic (Borensztein et al., 1998). Taken together, these theories predict that FDI and DDI both raise GRDP through capital accumulation, but via different channels and with potentially different magnitudes — a differentiated prediction that motivates treating them as separate variables in this study

Despite occupying a strategic position as the second-largest contributor to the national economy after Java, accounting for roughly 22 percent of Indonesia's total GRDP, Sumatera Island exhibits a wide and persistent disparity in regional growth. Although per capita GRDP grew in every province between 2016 and 2025, the absolute gap between the highest-performing province (Riau) and the lowest-performing province (Aceh) widened from Rp79.7 million to Rp130.6 million over the period, reflecting differences in natural resource endowments, infrastructure, investment distribution, and human resource quality across provinces. Realised investment shows a similarly uneven pattern in 2025; the Riau Islands and North Sumatera together accounted for roughly two-thirds of Sumatera's total FDI, while Bengkulu received well under one percent. Domestic investment (DDI) grew positively in every province over the period but remained similarly concentrated, with Riau Province alone accounting for over a quarter of Sumatera's total DDI. This pattern of positive yet uneven GRDP growth, alongside investment that remains concentrated in a small number of provinces, raises the empirical question of whether the growth-enhancing role of FDI and DDI predicted by theory is, in practice, being realized evenly across Sumatra's provinces, a question that is directly relevant to the government's ongoing agenda for industrial downstreaming and equitable investment distribution under the National Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*, RPJMN)

Sumatera is the focus of this study for two reasons that together justify a province-level rather than a national-level lens. First, prior work has already mapped the investment growth link in considerable detail for Java (Fevriera et al., 2022), Sumatera's dynamics remain relatively understudied, even though the island is the second largest contributor to national output and exhibits highly uneven distributions of investment and growth, as shown above therefore, a provincial level analysis limited to Sumatera can isolate patterns that would be averaged out by a national level aggregate analysis covering all islands. Second, because the ten provinces in Sumatera have generally comparable resource-based economic structures and are all targeted by the agenda for the outermost islands and downstream sector development in the RPJMN, findings from a single island panel are easier to compare directly across provinces and easier to translate into province-specific policy recommendations than a heterogeneous national sample that includes islands with vastly different economic structures.

Existing empirical studies provide an important but incomplete picture of this relationship. It is already established that investment, in aggregate, is positively associated with regional output. Soegoto et al. (2025) found that FDI and DDI together made a positive and significant contribution to GRDP growth across Sumatra's provinces, and Fevriera et al. (2022) similarly found that capital had a significant positive effect on GRDP in Java.

What remains unresolved is threefold. First, the direction of the relationship is disputed: Bonokeling and Sholeh (2022) found that investment had a negative effect on Indonesia's long-term economic growth, indicating that the sign and significance of the investment-growth relationship remain unsettled in the literature. Second, several of these studies, including Fevrieria et al. (2022), combine FDI and DDI into a single aggregate investment variable, making it impossible to determine whether the two sources of investment contribute equally or whether one channel drives the aggregate result while the other does not. This gap matters because, as the theoretical discussion above shows, FDI and DDI are predicted to operate through differentiated channels: capital and technology transfer for FDI, versus locally retained capital and multiplier effects for DDI. Treating them as a single variable, therefore, obscures which type of investment is actually responsible for driving, or failing to drive, regional growth, and consequently which policy instrument is likely to be effective. This study addresses these three gaps by treating FDI and DDI as two theoretically and empirically distinct independent variables, using a ten-year panel (2016-2025) that covers all ten provinces on Sumatra Island, and explicitly linking the empirical results back to the differentiated mechanisms predicted by the Harrod-Domar, OLI, and Keynesian investment frameworks introduced above.

Based on the above discussion, this study aims to analyse the extent to which Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI), individually and simultaneously, influence Regional Gross Domestic Product (GRDP) on the island of Sumatra during the 2016-2025 period. The contribution of this study is both conceptual and methodological. Conceptually, by empirically distinguishing the effects of FDI and DDI, the study tests whether the differentiated theoretical channels outlined above technology and capital transfer under the OLI paradigm for FDI, and locally retained capital accumulation under Keynesian investment theory for DDI translate into differentiated empirical effects on regional output, thereby extending the application of Harrod-Domar and Keynesian investment theory from the national to the sub-national, cross-provincial context and offering new insight into whether the two forms of investment act as complements or substitutes in driving regional growth. Methodologically, the study treats FDI and DDI as two distinct independent variables, utilises a longer data span (10 years) than most prior Sumatera-focused studies, and covers all 10 provinces on the island, thereby providing a more complete empirical basis for the conceptual claims above. Together, these contributions are intended to clarify whether policy efforts should prioritise attracting FDI, strengthening domestic investment, or pursuing complementary strategies to generate more targeted recommendations for central and local governments to promote more equitable and sustainable economic growth on the island of Sumatera.

METHODS

This study employs an associative quantitative approach to identify the influence of one or more variables on another variable. This study analyzes the impact of Foreign Direct Investment (FDI) and Domestic Investment (DDI) on the Regional Gross Domestic Product (RGDP) on the island of Sumatra from 2016 to 2025 through panel data regression analysis. The data used consists of secondary panel data a combination of time-series and cross sectional data from 10 provinces on the island of Sumatera Aceh, North Sumatra, West Sumatra, Riau, Riau Islands, Jambi, South Sumatra, Bangka Belitung Islands, Bengkulu, and Lampung for the years 2016-2025, sourced from the Investment Coordinating Board (BKPM) and the Central Statistics Agency (BPS). Rather than drawing a subset, the study takes a census of the entire population, all 10 Sumatera provinces, yielding 10 provinces $\times$ 10 years = 100 total observations

This study uses one dependent variable and two independent variables. The dependent variable is GRDP (Y), which is the total value of goods and services produced by all economic units in a region. FDI (X1), the first independent variable, captures business activity in Indonesia financed by foreign investors, either wholly foreign-owned or structured jointly with domestic partners, as defined in Article 1 of Investment Law No. 25/2007. DDI (X2), the second independent variable, covers capital committed by domestic actors, individuals, firms, or other legal entities toward projects located on the island of Sumatera, whether contributed as cash, goods, or services. The three variables differ substantially in unit and magnitude GRDP and domestic investment (DDI) are measured in billions of rupiah, while FDI is measured in millions of US dollars and, as is typical of macroeconomic and

investment data, each variable is also right-skewed, with a small number of provinces recording disproportionately large values relative to the rest (as reflected in the wide gap between the highest- and lowest realizing provinces described earlier). Following standard econometric practice for panel data with this type of scale disparity and skewness (Gujarati & Porter, 2009), all three variables were transformed into natural logarithms (Ln). This log-linear specification serves three purposes: it compresses the differences in scale across variables so that no single variable dominates the estimation, it reduces heteroscedasticity arising from the skewed distribution of investment values, and it allows the estimated coefficients to be interpreted directly as elasticities, which is analytically convenient given that this study's central concern is the proportional responsiveness of GRDP to proportional changes in FDI and DDI. The panel data regression model used is formulated as follows:

$$\ln(\text{GRDP})_{it} = \beta_0 + \beta_1 \ln(\text{FDI})_{it} + \beta_2 \ln(\text{DDI})_{it} + e_{it}$$

Where *i* represents the province, *t* represents the year (2016-2025), β_0 is the constant, β_1 and β_2 are the regression coefficients, and *e_{it}* is the error term. Data analysis was conducted using EViews 14 software. Model selection followed a three-stage decision sequence. The Chow test was run first to determine whether pooling all observations (CEM) or allowing province-specific intercepts (FEM) fit the data better. Because FEM was preferred, a second test, the Hausman test, was then needed to check whether those intercepts should be treated as fixed or randomly drawn (REM). Since the outcome pointed to REM, a final Lagrange Multiplier test confirmed REM's superiority over the simpler pooled specification (Sriyana, 2014). Next, classical assumption tests were conducted, such as tests for multicollinearity, heteroscedasticity, and autocorrelation. Afterwards, hypothesis testing was performed using a partial test (t-test) to examine the effect of each independent variable, a simultaneous test (F-test) to examine the combined effect of all independent variables, and the coefficient of determination (R^2) to determine the extent to which the independent variables explain the variation in the dependent variable.

RESULTS AND DISCUSSION

Result

Overview and Descriptive Statistics

This study focuses on 10 provinces on the island of Sumatera, using panel data that combines cross-sectional data (10 provinces) and time-series data (10 years, covering the period 2016-2025), resulting in a total of 100 observations. The data were obtained from the Central Statistics Agency (BPS) and the Ministry of Investment/BKPM, then transformed into natural logarithms (Ln) to standardize the units across variables and reduce heteroscedasticity. The results of the descriptive statistical analysis of the three research variables are presented in Table 1.

Table 1. Results of the Descriptive Statistical Analysis

Variable	N	Mean	Std. Dev	Minimum	Maximum
Ln FDI (X1)	100	5.5539	1.4057	2.8094	7.9351
Ln DDI (X2)	100	8.8762	1.0133	5.6920	11.0202
Ln GRDP (Y)	100	11.0047	0.4722	10.1981	12.0804

Source: Data processed using Eviews 14 (2026)

The FDI variable (X1) has a mean of 5.5539 with a standard deviation of 1.4057, while the domestic investment variable (X2) has a mean of 8.8762 with a standard deviation of 1.0133. The GRDP (Y) variable has a mean of 11.0047 with a standard deviation of 0.4722. The fact that the standard deviation is smaller than the mean for all variables indicates that variability in the data across provinces and years is low to moderate.

Panel Data Regression Model Selection

The selection of the most appropriate panel data regression model is based on three tests: the Chow test, the Hausman test, and the Lagrange Multiplier (LM) test, to ensure that the model yields the Best Linear Unbiased Estimator (BLUE). A summary of the results of these three tests is presented in Table 2.

Table 2. Summary of Results from the Chow Test, Hausman Test, and Lagrange Multiplier Test

Test	Test Statistic	Probability	Selected Model
Chow Test	Cross-section F = 82.2487	0.0000	Fixed Effects Model
Hausman Test	Chi-Square = 3.3479	0.1875	Random Effects Model
Lagrange Multiplier Test	Breusch-Pagan (Both) = 307.2007	0.0000	Random Effects Model

Source: Data processed using Eviews 14 (2026)

The Chow test returned a cross-sectional F probability of 0.0000, below the 0.05 threshold, favoring FEM over the pooled specification and warranting the follow-up Hausman test. That test returned a cross-sectional random probability of 0.1875, above 0.05, which favors REM over FEM and moves the analysis to a final Lagrange Multiplier check of REM against CEM. The LM test's Breusch-Pagan statistic came out at 0.0000, again below 0.05, confirming REM's superiority over CEM. With REM emerging as the preferred specification at both decision points, it is adopted as the model for this study.

Panel Data Regression Estimation Results

The results of the panel data regression estimates using the Random Effects Model are presented in Table 3.

Table 3. Results of the Panel Data Regression Estimation (Random Effects Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.424071	0.219669	42.90129	0.0000
X1	0.001099	0.024912	0.044131	0.9649
X2	0.177390	0.017506	10.13331	0.0000

Source: Data processed using Eviews 14 (2026)

Based on the results of the regression analysis, the following equation was obtained: $\ln(\text{GRDP}) = 9.4241 + 0.0011 \ln(\text{FDI}) + 0.1774 \ln(\text{DDI})$. The constant value of 9.4241 indicates that if both FDI and DDI are zero, then $\ln(\text{GRDP})$ on the island of Sumatra is estimated to be 9.4241. If FDI increases by 1 percent, GRDP is estimated to increase by 0.001 percent, assuming DDI remains constant (*ceteris paribus*) conversely, if DDI increases by 1 percent, GRDP is estimated to increase by 0.177 percent, assuming FDI remains constant.

Hypothesis Testing

Table 4. Results of the Simultaneous Test and Coefficient of Determination

Statistic	Value
R-squared	0.524879
Adjusted R-squared	0.515082
S.E. of regression	0.127355
F-statistic	53.57922
Prob(F-statistic)	0.000000

Source: Data processed using Eviews 14 (2026)

For the partial (t-test) results, FDI (X1) returns a t-statistic of 0.0444 and a probability of 0.9649, which exceeds the 0.05 threshold; the null hypothesis therefore cannot be rejected, and FDI's effect on GRDP in Sumatra is statistically indistinguishable from zero. Domestic investment (X2), by contrast, returns a t-statistic of 10.1333 and a probability of 0.0000, well below 0.05; the null hypothesis is rejected here, confirming that domestic investment exerts a significant effect on Sumatra's GRDP. The simultaneous test (F-test) yielded an F-statistic of 53.579 with a probability of 0.0000 (< 0.05), leading to the conclusion that FDI and domestic investment together have a significant effect on GRDP on the island of Sumatra. Meanwhile, the adjusted R-

squared value of 0.515 indicates that FDI and domestic investment together account for approximately 51.5 percent of the variation in GRDP across provinces on the island of Sumatera, while the remaining 48.5 percent is explained by other factors outside the model, such as labor force participation rates, local government spending, the human development index, and infrastructure availability.

Discussion

The Impact of Foreign Direct Investment on GRDP

The results indicate that FDI does not have a statistically significant effect on GRDP in Sumatera over 2016-2025 (coefficient = 0.0011; probability = 0.9649), despite the positive coefficient. Beyond its statistical insignificance, the coefficient is also economically negligible; it is roughly 160 times smaller than the DDI elasticity reported below (0.1774), so that even a substantial percentage increase in FDI would be associated with a negligible change in GRDP, reinforcing that the null result is not merely a matter of insufficient statistical power. This finding is only partially consistent with the existing empirical literature on Indonesia. It aligns closely with Jufrida et al. (2016), who, using national-level time series data, likewise found that FDI had a positive but statistically insignificant effect on Indonesia's economic growth while domestic investment was significant, the same asymmetric pattern documented in this study at the sub-national level. It is also broadly consistent with Bonokeling and Sholeh (2022), who found that investment did not have a positive effect on Indonesia's long-term economic growth.

By contrast, the finding diverges from Soegoto et al. (2025), who reported that FDI and DDI together made a significant contribution to GRDP growth across Sumatera's provinces when the two variables were combined, and from Fevriera et al. (2022), who found that capital had a significant positive effect on GRDP in Java a divergence that is plausibly explained by this study's decision to separate FDI from DDI, which allows the comparatively weak and geographically concentrated FDI channel to be distinguished from the stronger and more broadly distributed DDI channel that appears to drive the aggregate result in these earlier, combined variable studies. This finding is partially inconsistent with the predictions of Keynes's Investment Theory (1936) and the Harrod-Domar Theory, which emphasize the role of capital accumulation as a driver of output growth, and suggests that in Sumatra's case, the channel through which FDI is theorized to operate technology and managerial transfer under the OLI paradigm, is not being realized in practice.

Although the data analyzed in this study do not directly measure capital flows, profit repatriation, or technology transfer, and the explanations that follow should therefore be read as interpretations informed by the wider literature rather than mechanisms tested directly here, several patterns in the data are consistent with, and help contextualize, this result. First, FDI realization in Sumatra is heavily concentrated in the Riau Islands and North Sumatra provinces whose FDI is dominated by resource-extractive and commodity-processing sectors such as palm oil, rubber, and chemical processing while provinces such as Bengkulu receive a negligible share a partial, province-level effect that is diluted at the aggregate, ten province level is consistent with the uneven geographic footprint of FDI documented earlier in this study.

Second, the literature on profit repatriation offers one plausible explanation for why concentrated FDI does not translate into a broad-based GRDP effect Parnreiter (2024) documents that multinational corporations globally repatriated an average of approximately one trillion U.S. dollars per year between 2005 and 2020, with repatriated profits substantially exceeding profits reinvested in host economies, and Mihalache-O'Keef and Li (2011) similarly argue that developing countries often experience limited or even adverse GRDP effects from FDI due to profit repatriation and crowding out of domestic investment a pattern that, if present in Sumatera's resource extractive FDI, would limit the local multiplier effect regardless of the nominal investment inflow. Third, in a similar vein, the OLI paradigm (Dunning & Lundan, 2008) predicts that FDI raises regional productivity primarily through technology and knowledge transfer because Sumatera's FDI is concentrated in palm oil, rubber, and raw commodity mining that is largely exported without extensive downstream processing, the scope for this technology transfer channel to operate is narrower than in more technologically intensive host sectors, a pattern broadly consistent with Wang and Wang's (2015) finding that technology transfer from FDI does not always proceed optimally in developing-country contexts.

Fourth, a time lag between FDI realization and its measurable effect on regional output, compounded by external shocks such as the COVID-19 pandemic and commodity-price volatility during the observation period, may also have weakened the estimated relationship, consistent with Bonokeling and Sholeh's (2022) observation that investment does not always exert a positive effect on economic growth in the short run. Taken together, these are plausible, literature-supported explanations for the null result rather than mechanisms this study's panel data can verify directly, and testing them explicitly, for example, using firm-level or sector-level FDI data, is a natural direction for future research.

The Impact of Domestic Investment on GRDP

The results show that domestic investment (DDI) has a positive and statistically significant effect on GRDP in Sumatra over 2016–2025 (coefficient = 0.1774; probability = 0.0000). To illustrate the economic magnitude of this effect because both DDI and GRDP are measured in the same currency (rupiah), the elasticity implies that, evaluated at the sample's geometric means, an increase in DDI is associated with an increase in GRDP that is roughly 1.5 times as large in monetary terms a locally-approximated relationship, not a precise marginal capital-output ratio, but one that suggests domestic investment carries a meaningful multiplier effect on regional output rather than a merely statistically detectable one. This finding is consistent with the Harrod-Domar Theory, which states that investment drives long-term output growth through capital accumulation, and with Soegoto et al.'s (2025) finding that domestic investment makes a positive and significant contribution to GRDP growth on the island of Sumatra, as well as with Jufrida et al. (2016) national-level finding that domestic investment, unlike FDI, has a significant positive effect on Indonesia's economic growth. It also stands in contrast to older sub-national evidence Sodik and Nuryadin (2005), studying 26 Indonesian provinces before and after regional autonomy, found that domestic investment (DDI) did not have a statistically significant effect on regional economic growth. Read together, this contrast suggests that domestic investment's growth-enhancing role may have strengthened, or become more consistently realized, in the two decades since regional autonomy reforms and the more recent, resource sector-driven growth of Sumatera's provincial economies, a hypothesis this study's data cannot test directly but that is a reasonable avenue for future longitudinal research.

Several factors, consistent with the wider literature though not directly tested by this study's aggregate panel data, help explain domestic investment's comparatively stronger and more broadly distributed effect. First, unlike FDI, domestic investment recorded positive growth in every one of Sumatera's ten provinces over 2016–2025 without exception, including in low FDI provinces such as Bengkulu and Aceh, so its effect on GRDP is plausibly more consistent across the panel than FDI's effect, which is concentrated in only two or three provinces. Second, domestic investors are more likely than foreign investors to employ local labor, source local inputs, and reinvest profits within the region, all of which are commonly argued to generate a stronger local multiplier effect than foreign capital whose profits are, at least in part, repatriated abroad (Sukirno, 2016). Third, in line with Keynes's (1936) theory of investment, the sustained growth of DDI across Sumatra is consistent with domestic investors perceiving a Marginal Efficiency of Capital that persistently exceeds the prevailing interest rate in Sumatra's resource and trade-based provincial economies, encouraging continued capital accumulation even in provinces with comparatively little foreign investment.

The Simultaneous Impact of Foreign Direct Investment (FDI) and Domestic Investment (DDI) on Regional Gross Domestic Product (RGDP)

Because FDI and DDI jointly explain 51.5 per cent of GRDP variation in the simultaneous test, this significant joint result does not conflict with FDI's null result in the partial test. The F-test, as Gujarati and Porter (2009) note, assesses the combined explanatory power of all regressors together, a different question from whether any single regressor is significant on its own. Read this way, the pattern points to complementarity between the two investment types rather than a genuine contradiction. Borensztein et al. (1998) similarly argue that FDI's growth effect strengthens when it interacts with complementary domestic conditions. A robust DDI base of FDI in Sumatera concentrates in capital-intensive, export-facing industries, while DDI is more common in trade, services, and mid-sized firms serving the domestic market, together forming a more rounded investment base. Riau and the Riau Islands illustrate this pairing, combining sizeable export-oriented FDI in palm oil and

petrochemicals with a solid domestic investment presence in trade and services, whereas Bengkulu and Aceh, where FDI is minimal, depend almost entirely on domestic capital to drive growth.

The remaining 48.5 percent of GRDP variation not explained by this model is consistent with the findings of Tanjung et al. (2025), who demonstrated that human capital and monetary policy also determine regional economic growth in Indonesia, as well as those of Sofilda et al. (2023), who demonstrated that fiscal decentralisation and human development are significant determinants of regional economic growth. Todaro and Smith (2015) emphasise that economic development is a multidimensional process that cannot be fully explained by the accumulation of physical capital alone; therefore, variables such as the Human Development Index (HDI), government spending, exports, and infrastructure need to be included in future research to obtain a more comprehensive picture of the determinants of GRDP on the island of Sumatera.

CONCLUSION

This study examines how Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI) affect Gross Domestic Product (GDP) in each province in Sumatra. The results show that DDI has no significant impact on GDP but does increase regional output. Together, the two variables explain most of the variation in GDP across the region. By analyzing FDI and GDP separately rather than as a combined measure, this study demonstrates that Harrod-Domar and Keynesian growth theories are more consistent for FDI and that FDI attenuation is typically caused by the extractive and export-centric orientation of the sector with a transfer-concentrated orientation.

Based on these findings, three recommendations are proposed. Regional investment institutions, particularly in Bengkulu, Aceh, and Jambi, should focus on improving access to funding for local SMEs rather than dealing with foreign investors. Link the Ministry of Investment/BCPM's FDI tax incentives for palm oil, rubber, and minerals with local content and processing requirements to increase product flows. Because FDI and foreign investment are complementary rather than substitutes, they need to be aligned with investment strategies at all levels of government, such as targeting FDI-related infrastructure in areas where domestic investment is strong. The study also acknowledges several limitations, including unclear temporal distinctions between investment use and returns, the model's low explanatory power, and the assumption of homogeneous effects across provinces, and recommends that future research incorporate additional variables, such as government involvement and non-sectarian activities (e.g., religious growth, trade).

AUTHOR CONTRIBUTION

Fitri Omita: Conceptualization, Methodology, Data Curation, Formal Analysis, Writing and Drafting. Jean Elikal Marna: Supervision, Validation, Review & Editing.

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DATA AVAILABILITY

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COMPETING INTEREST

The authors have no conflicts of interest related to the publication of this article.

ETHICAL CLEARANCE

As this research relies exclusively on publicly available secondary data and involves no human or animal subjects, nor any collection of sensitive or personal information, formal ethical review was not required.

AI STATEMENT

AI based tools were consulted only for language polishing grammar and phrasing with every suggestion reviewed and verified by the author before inclusion. No AI involvement occurred in collecting data, running the analysis, interpreting results, or forming the study's conclusions the author retains full responsibility for the work's integrity, originality, and accuracy.

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