

RESEARCH ARTICLE



Is FDI Response Region-Specific or Does It Follow a Broader Economic Pattern? Empirical Evidence from Two Provinces in Indonesia

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ABSTRACT

This study examines whether foreign direct investment (FDI) responses are region-specific or follow broader economic patterns, with empirical studies in West Sumatra Province and the Special Region of Yogyakarta (DIY). Despite having different economic compositions, with West Sumatra being commodity-based and DIY being service-based, both show similar macroeconomic response patterns to FDI. Using a Vector Error Correction Model (VECM) approach and impulse response analysis on quarterly data from 2010 to 2023, the study's findings indicate that inflation has the most dominant influence on FDI, followed by economic growth, export value, and minimum wage, both in West Sumatra Province and DIY. These findings indicate that FDI inflows are more influenced by national macroeconomic fundamentals than by local economic characteristics. Therefore, macroeconomic stability, particularly inflation control, should be a priority for regional policies, complemented by region-specific strategies tailored to each area's economic structure. This study contributes to the literature by highlighting the convergence of FDI determinants across structurally distinct regions in Indonesia.

ABSTRAK

Penelitian ini mengkaji apakah respons penanaman modal asing (PMA) bersifat spesifik wilayah atau mengikuti pola ekonomi yang lebih luas, dengan studi empiris di Provinsi Sumatera Barat dan Daerah Istimewa Yogyakarta (DIY). Meskipun memiliki komposisi ekonomi yang berbeda, Sumatera Barat berbasis komoditas dan DIY berbasis sektor jasa, keduanya menunjukkan pola respons makroekonomi yang seragam terhadap PMA. Dengan menggunakan pendekatan Vector Error Correction Model (VECM) dan analisis impulse response terhadap data triwulanan periode 2010–2023, hasil penelitian menunjukkan bahwa, inflasi memiliki pengaruh paling dominan terhadap PMA, diikuti oleh pertumbuhan ekonomi, nilai ekspor, dan upah minimum, baik di Provinsi Sumatera Barat maupun di DIY. Temuan ini mengindikasikan bahwa arus masuk PMA lebih dipengaruhi oleh fundamental makroekonomi nasional dibanding karakteristik ekonomi lokal. Oleh karena itu, stabilitas makroekonomi, terutama pengendalian inflasi, perlu menjadi prioritas kebijakan daerah, yang dilengkapi dengan strategi spesifik wilayah sesuai struktur ekonomi masing-masing. Studi ini memberikan kontribusi terhadap literatur dengan menyoroti adanya konvergensi determinan PMA lintas wilayah yang berbeda secara struktural di Indonesia.

Introduction

One important indicator of national income is capital accumulation (Chindengwike, 2025; Gennaro et al., 2025; Li & Kang, 2025; Samsuddin & Amar, 2020). Capital formation occurs through investment activities, particularly expenditures to acquire production equipment (Chao, 2024; Grömling & Niebel, 2025; Khan et al., 2020; Masso & Tiwari, 2024; Nayak & Walton, 2024). Investment serves to replace and expand economic capital used in producing future goods and services (Boeing et al., 2022; Reich et al., 2024; Corrado et al., 2022).

In the era of globalization, foreign direct investment (FDI) plays a strategic role in regional economic growth. It not only brings capital inflows but also technology, knowledge, and employment opportunities (Awan et al., 2014; Danciu & Strat, 2014; Tam, 2023). This makes FDI a key driver of industrial development and social transformation at the regional level. (Gál & Lux, 2022; Harrison & Clare, 2010; Iammarino, 2018; Zhao et al., 2020). Two Indonesian provinces that attract attention for further research in this context are SRY and West Sumatra.

With its rich culture and abundant natural resources, SRY has become an attractive destination for foreign investors. In addition, SRY is also known for its developed infrastructure and local government policies that support investment (Haryanto, 2013). Meanwhile, the province of West Sumatra also attracts foreign investors due to its great potential in natural resources such as agriculture, mining, and tourism. The province has competitive advantages in several industrial sectors and has good access to regional and international markets (Arliman, 2018; Hesna et al., 2017; Nurhasnah & Rozalinda, 2018).

According to Statistics Indonesia (2024), in 2023, FDI in West Sumatra was concentrated in the paper industry (31.02%), food industry (18.19%), and utilities (15.87%). In contrast, SRY's FDI was led by construction (26.32%), transportation and communication (22.87%), and hospitality (18.17%). These figures reflect structural differences in the two regional economies.

Despite both provinces showing potential, the factors driving FDI inflows may differ significantly. Infrastructure, political stability, labor availability, and especially macroeconomic factors can influence investment decisions (Anyanwu, 2012; Bhatti & Khan, 2023; Okara, 2023; Sari et al., 2023). Therefore, tracking investment flows between SRY and West Sumatra is important to understand the dynamics of foreign investment in these two regions. A comparative analysis between these two provinces can provide valuable insights for policymakers, investors, and the general public to optimize local economic potential and accelerate regional development.

This study focuses on four macroeconomic variables, inflation, economic growth, minimum wage, and exports, to examine which of them most significantly influences FDI inflows in South Sumatra (SRY) and West Sumatra. These variables are selected because they represent core economic indicators that investors consider when choosing investment locations. Inflation affects purchasing power and price stability, which are crucial for long-term investment planning. Economic growth reflects the overall performance and potential of a region, influencing expectations of return on investment. Minimum wage serves as a proxy for labor cost, a vital component in production decisions (Abdi & Mohamed, 2025; Al-Khazaleh et al., 2025).

Meanwhile, export value indicates the competitiveness of a region's goods in international markets, showing its integration with global trade networks. Given the differing economic structures between SRY and West Sumatra, analyzing these variables comparatively allows for a deeper understanding of which factors are more dominant in attracting FDI to each province (Elian et al., 2025; Mensah et al., 2024).

While there has been considerable work done on regards to the factors motivating FDI at the country level (Babu, 2018; Faruku et al., 2011; Hong & Ali, 2020; Irandoust Manuchehr, 2001; N. Khan, 2020; Mason & Vracheva, 2017; Mostafa, 2020; Rathnayaka Mudiyansele et al., 2021; Thi Kim Lien, 2021), not most of them do not touch on the regional aspects of FDI investment, especially in the context of Indonesia. There is a greater need for research on FDI across provinces that are culturally and geographically distinct (Awaluddin et al., 2023; Komalasari & Mustafa, 2024; Ningrum & Dwiputri, 2024; Rolnmuch & Astuti, 2024; Suryanta & Patunru, 2023; Wicaksono & Yuanfen, 2023). Most of them tend to generalize their findings rather than taking into account the unique socioeconomic structures, governance models, and industrial compositions of different regions. However, cross-regional comparative studies are rare in the Indonesian context, where studies have focused either on the national level or on the level of a single province (Fazaalloh, 2024; Hartati, 2023; Rahma, 2021; Suwitra et al., 2024; Taqwa, 2023), without considering the same province across provinces with different characteristics.

Such a comparative approach is known to fill a significant gap in the literature and offers practical solutions for policymakers interested in fostering a more robust and balanced investment environment. With the help of these aspects, this study not only adds to the existing FDI literature, but also makes a case for tailoring economic policies to the specific characteristics of regions. In doing so, it points a way forward for other researchers to examine regional aspects of FDI more systematically in order to improve the existing knowledge on the relationship between the larger economic environment and regional growth patterns in Indonesia.

Research Methodology

Our variables are FDI, inflation, economic growth, minimum wage, and export value. This research proxied FDI as the value of FDI inflow, inflation as the value of Consumer Price Index, economic growth as the growth of Gross Regional

Domestic Product (GRDP) at constant 2010 prices, minimum wage as the value of provincial minimum wage, and export as the value of export total. The study hypothesis that inflation, economic growth, minimum wage, and export value has a significant effect on FDI.

Our sample includes quarterly data from the two most populous islands in Indonesia, Sumatra and Java. The two provinces representing these islands are West Sumatra and SRY, which have similar economic characteristics, representing each of these islands. In the GRDP in both provinces in 2024, West Sumatra and SRY have similar sector contribution patterns, according to Statistics of Indonesia (2025) the largest economic sector contributions in West Sumatra are Agriculture, Forestry and Fisheries at 21.4%; Wholesale and Retail Trade, Car and Motorcycle Repair 16.6%; Wholesale and Retail Trade, Car and Motorcycle Repair 11.1%; Construction 10.1%; Processing Industry 8.4%. While in SRY is Processing Industry 11.8%; Provision of Accommodation and Drinking Food 10.6%; Agriculture, Forestry and Fisheries 9.9%; Information and Communication 9.8%; and Construction 9.6%.

This paper uses time series data from 2010Q1-2023Q4. The period from 2010Q1-2023Q4 was chosen to capture the dynamics of FDI in a period characterized by significant global and domestic economic changes. This period includes fluctuations in global commodity prices, changes in Indonesian investment policies, and the implementation of major economic reforms, including regulatory adjustments to improve the investment climate. In addition, the timeline includes the economic impact of the COVID-19 pandemic, which profoundly affected investment patterns and macroeconomic stability. By covering these years, the study provides a comprehensive view of how external shocks and domestic policies interact to shape FDI trends.

Data were obtained from the Central Bureau of Statistics of West Sumatra and SRY database. The stationarity test was conducted using the Augmented Dickey-Fuller test, while the optimal lag selection was based on the Akaike Information Criterion (AIC), Hannan-Quinn (HQ), and Schwarz Criterion (SC).

Furthermore, we used impulse response analysis and variance decomposition to measure the relative impact of each variable shock on FDI in both provinces. Impulse response functions were used to observe the response of FDI to shocks in variables such as inflation and economic growth over several time periods. This method allows us to understand how FDI responds to changes in these economic variables. Variance decomposition, on the other hand, was used to evaluate the relative contribution of each variable in explaining the variability of FDI.

To see how much determinant variables of FDI influence the two provinces, this study applies VECM. Its chosen due to its ability to determine which variables have the most significant influence in deciding FDI. The first step is to determine the unit root test to see what level of stationarity, then choose the optimal lag, after that, we conduct a cointegration test to determine whether to use VAR or VECM, then the model stability to ensure that the model used is stable, last to see which variables are the most influential is to do the impulse response test and variance decomposition.

Vector Error Correction Model

Vector autoregressive (VAR) is a system of equations that shows each variable as a linear function of the constant and the lag value (past) of the variable itself, as well as the lag value of other variables in the explanatory variable system in VAR including the lag value of all dependent variables. The VAR system requires the identification of restrictions to achieve the equation through the interpretation of the equation. If cointegration has been detected between series, we know that a long-term equilibrium relationship exists between them, so we apply VECM to evaluate the short-run properties of the cointegrated series. In case of no cointegration, VECM is no longer required, and we directly proceed to the Granger causality test to establish links between variables (Asari et al., 2011). The regression equation form for VECM is as follows:

$$FDI_t = \sum_{i=0}^n \alpha_1 FDI_{t-i} + \sum_{i=0}^n \beta_1 INF_{t-i} + \sum_{i=0}^n \beta_2 EG_{t-i} + \sum_{i=0}^n \beta_3 MW_{t-i} + \sum_{i=0}^n \beta_4 EXP_{t-i} + e_t \dots \dots \dots (1)$$

$$INF_t = \sum_{i=0}^n \alpha_2 INF_{t-i} + \sum_{i=0}^n \beta_5 FDI_{t-i} + \sum_{i=0}^n \beta_2 EG_{t-i} + \sum_{i=0}^n \beta_3 MW_{t-i} + \sum_{i=0}^n \beta_4 EXP_{t-i} + e_t \dots \dots \dots (2)$$

$$EG_t = \sum_{i=0}^n \alpha_3 INF_{t-i} + \sum_{i=0}^n \beta_5 FDI_{t-i} + \sum_{i=0}^n \beta_1 INF_{t-i} + \sum_{i=0}^n \beta_3 MW_{t-i} + \sum_{i=0}^n \beta_4 EXP_{t-i} + e_t \dots \dots \dots (3)$$

$$MW_t = \sum_{i=0}^n \alpha_4 MW_{t-i} + \sum_{i=0}^n \beta_5 FDI_{t-i} + \sum_{i=0}^n \beta_1 INF_{t-i} + \sum_{i=0}^n \beta_2 EG_{t-i} + \sum_{i=0}^n \beta_4 EXP_{t-i} + e_t \dots \dots \dots (4)$$

$$EXP_t = \sum_{i=0}^n \alpha_5 EXP_{t-i} + \sum_{i=0}^n \beta_5 FDI_{t-i} + \sum_{i=0}^n \beta_1 INF_{t-i} + \sum_{i=0}^n \beta_2 MW_{t-i} + \sum_{i=0}^n \beta_3 MW_{t-i} + e_t \dots \dots \dots (5)$$

West Sumatra and SRY have the same equation as the VECM model. FDI represents foreign direct investment; INF is inflation; EG is economic growth (GRDP); MW is minimum wage; and EXP represents export value; $t-i$ represents lag vectors; α and β represent constant and coefficient.

Results and Discussion

Table 1. Description of Research Variables

Tahun	FDI		INF		EG		MW		EXP	
	WS	SRY	WS	SRY	WS	SRY	WS	SRY	WS	SRY
2011	22.90	2.40	5.37	3.88	6.34	5.21	1.06	0.81	3,031.82	144.32
2012	75.00	84.90	4.16	4.31	6.31	5.37	1.15	0.89	2,363.58	177.07
2013	91.40	29.60	10.87	7.32	6.08	5.47	1.35	0.95	2,209.01	211.76
2014	112.10	64.90	11.58	6.59	5.88	5.17	1.49	0.99	2,105.61	329.07
2015	57.10	89.10	1.08	3.09	5.53	4.95	1.62	0.99	1,748.01	333.86
2016	79.30	19.60	4.89	2.29	5.27	5.05	1.80	1.18	1,708.28	333.86
2017	194.40	36.50	2.02	4.20	5.30	5.26	1.95	1.34	2,046.27	390.71
2018	180.80	81.30	2.60	2.66	5.14	6.20	2.12	1.45	1,590.42	424.71
2019	157.10	14.60	1.66	2.77	5.01	6.60	2.29	1.57	1,339.15	403.70
2020	125.60	9.70	2.11	1.40	-1.61	-2.67	2.48	1.70	1,531.84	398.60
2021	67.00	21.80	1.40	2.29	3.92	5.58	2.48	1.77	3,072.57	557.00
2022	95.60	113.90	7.43	6.49	4.36	5.15	2.51	1.84	2,868.42	581.60
2023	120.70	46.00	2.47	3.17	4.62	5.07	2.74	1.98	2,366.66	472.30

Sources: Statistics of Indonesia, 2024

Notes:

WS: West Sumatra

SRY: Special region of Yogyakarta

FDI: Foreign direct investment (Million USD)

INF: Inflation (%)

EG: Economic growth (%)

MW: Minimum Wage (Million IDR)

EXP: Export (Million USD)

Based on data from Statistics Indonesia (2024), significant differences in macroeconomic trends can be observed between West Sumatra (WS) and Special region of Yogyakarta (SRY) over the period of 2011–2023. FDI inflows in WS fluctuated considerably, starting at USD 22.9 million in 2011, peaking at USD 194.4 million in 2017, before declining to USD 67 million in 2021 and recovering slightly to USD 120.7 million in 2023. In contrast, SRY demonstrated a more stable and gradually increasing FDI trend, rising from USD 2.4 million in 2011 to USD 113.9 million in 2022, with a slight decline to USD 46 million in 2023.

Inflation in SRY was relatively higher and more volatile than in WS. For instance, SRY experienced an inflation spike of 11.58% in 2014, while WS recorded only 6.59% in the same year. However, in recent years, inflation in both provinces stabilized below 5%. Regarding economic growth (EG), WS showed strong growth in the early years (e.g., 6.34% in 2011) but experienced a sharp contraction in 2020 at -1.61% due to the COVID-19 pandemic. SRY also contracted in 2020 (-2.67%) but demonstrated a quicker recovery in the following years.

In terms of minimum wage (MW), WS consistently set higher wage levels than SRY. By 2023, the minimum wage in WS reached IDR 2.74 million, while SRY recorded IDR 1.98 million, indicating a significant gap in labor cost structures. Export values in WS were also substantially higher than in SRY throughout the period. For example, in 2012, WS reported exports of USD 2.36 billion, compared to only USD 177 million in SRY. This underscores WS's comparative advantage in export-oriented sectors such as agriculture, mining, and agro-industry.

Unit Root Test

The first step taken to analyze the reaction of foreign direct investment due to shocks of inflation, economic growth, provincial minimum wages, and export value in West Sumatra is to test the stationary. The unit root test in Table 2. shows that at the second difference, all variables are stationary, with a probability of less than 1%. In contrast, not all variables are stationary at the level and first difference.

Table 2. Unit Root Test of West Sumatra

Variables	<i>Augmented Dickey Fuller test statistic</i>					
	Probability	Description	Probability	Description	Probability	Description
	Level		First Difference		Second Difference	
FDI	-2.535281 (0.3107)	Non-stationary	-3.612729** (0.0380)	Stationary	-9.345336*** (0.0000)	Stationary
INF	-3.083132 (0.1215)	Non-stationary	-5.187471*** (0.0005)	Stationary	-5.655803*** (0.0001)	Stationary
EG	-2.426892 (0.3615)	Non-stationary	-2.441118 (0.3546)	Non-stationary	-4.699114*** (0.0024)	Stationary
MW	-1.949569 (0.6149)	Non-stationary	-1.325598 (0.8708)	Non-stationary	-8.993109*** (0.0000)	Stationary
EXP	-2.772388 (0.2135)	Non-stationary	-3.694954** (0.0312)	Stationary	-4.640534*** (0.0026)	Stationary

Source: Secondary data (2024), processed.

Notes: ***, **, * indicate significant at 1%, 5% and 10% level respectively

Optimal Lag

Based on the result in Table 3. below, the fourth-order lag is selected as the optimal lag for West Sumatra, with its overall most asterisks in the fourth lag order.

Table 3. Selection of Optimal Lag Order of West Sumatra

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2313.964	NA	4.94e+36	98.67934	98.87616*	98.75341
1	-2304.402	16.68368	9.59e+36	99.33625	100.5172	99.78065
2	-2303.422	1.500846	2.77e+37	100.3584	102.5235	101.1731
3	-2297.305	8.069276	6.81e+37	101.1619	104.3111	102.3470
4	-2154.782	157.6856*	5.58e+35*	96.16092	100.2942	97.71631*
5	-2127.848	24.06848	7.36e+35	96.07863*	101.1961	98.00435
6	-2105.002	15.55471	1.51e+36	96.17029	102.2718	98.46634
7	-2082.004	10.76477	5.04e+36	96.25550	103.3412	98.92189

Source: Secondary data (2024), processed.

Notes: * indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Cointegration Test

The cointegration needs to be tested next. The purpose of this test is to determine whether long-term equilibrium will exist. In cases where the model is cointegrated, the VECM method is employed for analysis; in the absence of cointegration, VAR is utilized. The variables in this equation have a tiny probability value of 5%, as shown in Tables 4. This indicates that all variables are cointegrated, and the VECM method is employed in this model.

Table 4. Cointegration Test of West Sumatra

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.578127	118.5992	79.34145	0.0000
At most 1 *	0.482233	76.30972	55.24578	0.0003
At most 2 *	0.352102	44.05647	35.01090	0.0042
At most 3 *	0.265006	22.78939	18.39771	0.0114
At most 4 *	0.145464	7.702655	3.841466	0.0055

Source: Secondary data (2024), processed.

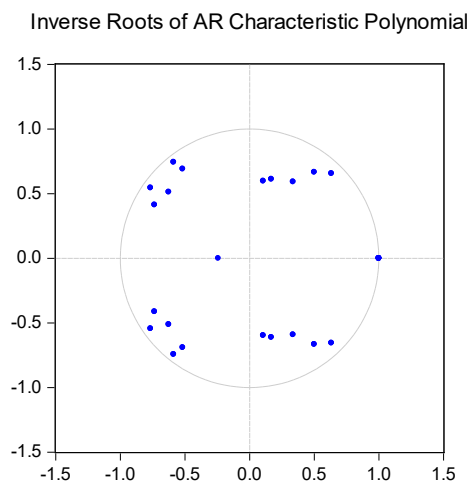
Notes: Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Model Stability

It is in our interest to determine the reaction of each endogenous variable to the shock of exogenous changes in other variables in the VECM system. It is appropriate to check the stability conditions of the VECM estimation results. Figure 1 illustrates the results of the VECM stability conditions. As illustrated in Figure 1., The modulus calculated from each eigenvalue of the estimated model is less than one (or located inside the outer circle). This implies that the model of West Sumatra is stable. Therefore, the authors continue to use IRF estimates and error-estimate.

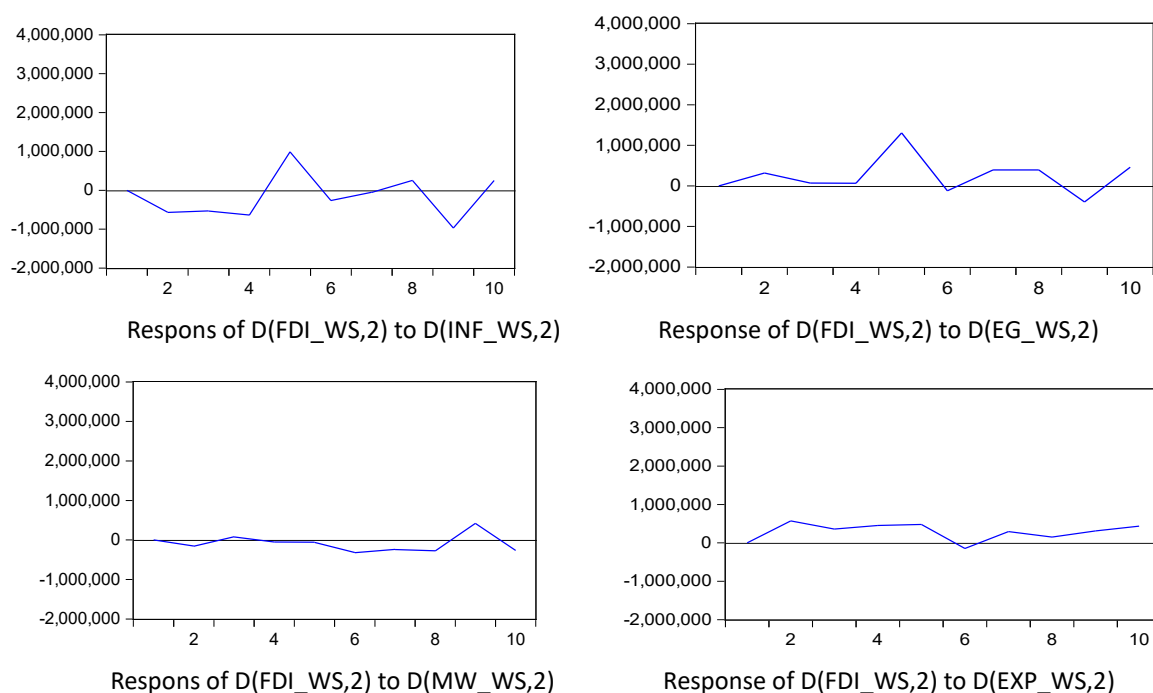


Source: Secondary data (2024), processed

Figure 1. Module Stability.

Impulse Response

Figure 2. shows the results of the impulse response test of West Sumatra, and ten phases were tested. The impulse response test is used to see if the effect of shocks on endogenous variables will affect the variables themselves and will spread to other endogenous variables. Response to FDI changes due to inflation shocks in West Sumatra can be seen in the first plot of the first row.



Source: Secondary data (2024), processed.

Figure 2. Foreign Direct Investment Response to Inflation, Economic Growth, Minimum Wage, and Export's Shocks in West Sumatra

The shock was initially below the equilibrium line until the fourth phase, then rose from the fourth phase above the equilibrium line and fell slightly in the sixth phase below the equilibrium line. Then, the eighth phase fluctuated until the tenth phase. Therefore, the shock from inflation to FDI fluctuates from the beginning to the end of the phase.

The response of FDI to economic growth shocks, as shown in the second plot of the first row, also exhibits a fluctuating pattern. The shocks initially experienced a slight increase, then a very significant increase, followed by a slight decrease. This dynamic relationship between economic growth and FDI, characterized by fluctuations, is an important finding of the study.

The response of FDI to minimum wage shocks can be seen in the first plot of the second row. The minimum wage shock is initially at the equilibrium line until the fifth phase, then decreases until the eighth phase, increases in the ninth phase, and decreases again in the tenth phase. Almost the same condition is experienced by the value of exports with the minimum wage; the response of FDI from the shocks to the value of exports can be seen in the plot of the second row. The export value shock is initially above the equilibrium line until the fifth phase, then falls slightly below the equilibrium line in the sixth phase, then rises again above the equilibrium line until the tenth phase.

Variance Decomposition

While impulsive responses can reveal information about how changes in one variable affect another, they cannot quantify the full impact of these changes. As a result, the authors performed variance decomposition techniques to determine this. Information regarding changes in percentages in the dependent series resulting from shocks induced by other variables in addition to their shocks is provided by variance decomposition.

Table 5. Variance Decomposition

Variance Decomposition of D (Y) Period	S.E	D(FDI_WS,2)	D(INF_WS,2)	D(EG_WS,2)	D(MW_WS,2)	D(EXP_WS,2)
1	3563383	100.000	0.000000	0.000000	0.000000	0.000000
2	3800994	94.68232	2.210464	0.687310	0.162653	2.257250
3	4076580	92.82226	3.622291	0.626918	0.178505	2.750022
4	4477880	90.96722	5.030947	0.540701	0.160653	3.300482
5	4907060	80.33776	8.274372	7.547161	0.146649	3.694055
6	5255495	82.10826	7.462670	6.631967	0.498458	3.298643
7	5498244	82.65433	6.826288	6.573042	0.645499	3.300842
8	5772456	83.30784	6.390925	6.423381	0.813961	3.063895
9	5974155	80.58414	8.587109	6.433455	1.261397	3.133902
10	6254014	80.92397	7.998997	6.405701	1.328758	3.342573

Source: Secondary data (2024), processed.

Table 5. displays the findings of the variance decomposition derived from the orthogonalized impulse response coefficient matrix in West Sumatra. The result shows that inflation, economic growth, minimum wage, and export explain in the short-term 0%, while the most affected in the short-term is by itself. In the long-term, inflation, economic growth, minimum wage, and export explain 7.99%, 6.40%, 1.32%, and 3.34%, while itself explains 80.92%. From the results, it can be concluded that the variables with the greatest to the least influence on FDI in West Sumatra are inflation, economic growth, exports, and minimum wages.

The Special Region of Yogyakarta Results

The following are the results of foreign direct investment reactions due to shocks from inflation, economic growth, provincial minimum wages, and export value in SRY.

Unit Root Test

The unit root test of SRY in Table 6. shows that at the second difference, all variables are stationary, with a probability of less than 1%. In contrast, not all variables are stationary at the level and first difference.

Table 6. Unit Root Test of Special Region of Yogyakarta

Variables	<i>Augmented Dickey Fuller test statistic</i>					
	Probability	Description	Probability	Description	Probability	Description
	Level		First Difference		Second Difference	
FDI	-4.415170*** (0.0052)	Stationary	-3.630574** (0.0378)	Stationary	-8.500729*** (0.0000)	Stationary
INF	-3.281558* (0.0819)	Non-stationary	-2.821518 (0.1972)	Non-stationary	-8.353077*** (0.0000)	Stationary
EG	-2.570843 (0.2949)	Non-stationary	-2.418490 (0.3649)	Non-stationary	-4.645403*** (0.0032)	Stationary
UMP	-2.872091 (0.1807)	Non-stationary	-3.203376* (0.0962)	Non-stationary	-8.617213*** (0.0000)	Stationary
EXP	-3.495582* (0.0517)	Non-stationary	-2.707031 (0.2386)	Non-stationary	-8.501787*** (0.0000)	Stationary

Source: Secondary data (2024), processed.

Notes: ***, **, * indicate significant at 1%, 5% and 10% level respectively

Optimal Lag

Based on the result in Table 7., the fourth-order lag is selected as the optimal lag for Special Region of Yogyakarta, with its overall most asterisks in the fourth lag order.

Table 7. Selection of Optimal Lag Order of Special Region of Yogyakarta

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1897.904	NA	1.42e+34	92.82461	93.03358	92.90070
1	-1892.007	10.06903	3.63e+34	93.75643	95.01027	94.21301
2	-1891.462	0.796764	1.27e+35	94.94939	97.24808	95.78644
3	-1885.780	6.929576	3.78e+35	95.89171	99.23527	97.10925
4	-1621.181	258.1459*	4.36e+30*	84.20393*	88.59235*	85.80195*
5	-1615.630	4.061164	2.06e+31	85.15270	90.58598	87.13120
6	-1594.097	10.50404	7.86e+31	85.32181	91.79994	87.68079

Source: Secondary data (2024), processed.

Notes: * indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Cointegration Test

The cointegration needs to be tested next. The purpose of this test is to determine whether long-term equilibrium will exist. In cases where the model is cointegrated, the VECM method is employed for analysis; in the absence of cointegration, VAR is utilized. The variables in this equation have a tiny probability value of 5%, as shown in Table 8. This indicates that all variables are cointegrated, and the VECM method is employed in this model.

Table 8. Cointegration Test of Special Region of Yogyakarta

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.968373	235.1407	79.34145	0.0000
At most 1 *	0.584545	90.08371	55.24578	0.0000
At most 2 *	0.529169	53.19173	35.01090	0.0002
At most 3 *	0.278855	21.55500	18.39771	0.0175
At most 4 *	0.169975	7.824558	3.841466	0.0052

Source: Secondary data (2024), processed.

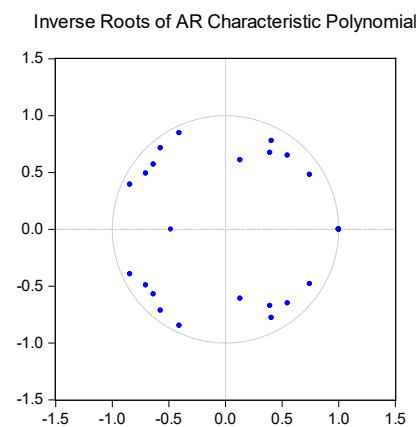
Notes: Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Model Stability

As illustrated in Figure 3, the modulus calculated from each eigenvalue of the estimated model is less than one (or located inside the outer circle). This implies that the model of SRY is stable. Therefore, the authors continue to use IRF estimates and error-estimate variance decomposition.

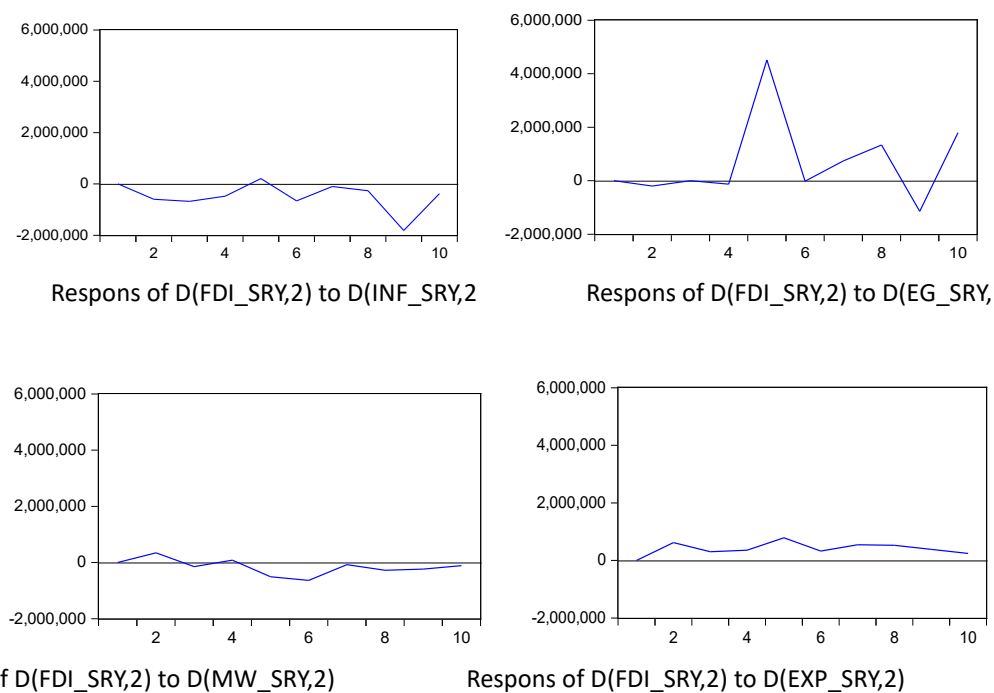


Source: Secondary data (2024), processed.

Figure 3. Module Stability

Impulse Response

Figure 4 shows the results of the impulse response test of SRY; ten phases were tested. Response of FDI changes due to inflation shocks can be seen in the first plot of the first row. The shock is initially below the equilibrium line until the fourth phase, then rises from the fourth phase above the equilibrium line and falls again in the sixth phase below the equilibrium line; then in the seventh phase, it goes up and down until the tenth phase, but still below the equilibrium line.



Source: Secondary data (2024), processed.

Figure 4. Foreign Direct Investment Response to Inflation, Economic Growth, Minimum Wage, and Export's Shocks in Special Region of Yogyakarta

The response of FDI to economic growth shocks, as shown in the second plot of the first row, is characterized by a fluctuating pattern. The shocks start at the equilibrium line, rise significantly, experience a slight increase, then a very

significant increase, before returning to the equilibrium line. This fluctuating pattern continues from the seventh to the tenth phases, indicating a dynamic relationship between economic growth and FDI in SRY.

The response of FDI from minimum wage shocks can be seen in the first plot of the second row. The minimum wage shock is initially at the equilibrium line until the fourth phase, then always decreases until the tenth phase below the equilibrium line. Almost the same condition is experienced by the value of exports with the minimum wage; the response of FDI from the shocks to the value of exports can be seen in the plot of the second row. Export value shocks from the first phase to the tenth phase are always above the equilibrium line but not too far on the line.

Variance Decomposition

Table 9. displays the findings of the variance decomposition derived from the orthogonalized impulse response coefficient matrix in the Special Region of Yogyakarta. The result shows that inflation, economic growth, minimum wage, and exports are explained in short-term 0%, while the most affected in the short term is by itself. In the long-term, inflation, economic growth, minimum wage, and export explains 54.90%, 10.13%, 1.92%, and 4.24%, while itself explains 28.79 %. From the results, it can be concluded that the variables with the greatest to the least influence on FDI in SRY are inflation, economic growth, exports, and minimum wages.

Table 9. Variance Decomposition

Variance Decomposition of D (Y) Period	S.E	D(FDI_SR Y,2)	D(INF_SRY,2)	D(EG_SRY,2)	D(MW_SRY,2)	D(EXP_SRY,2)
1	2059971	100.0000	0.000000	0.000000	0.000000	0.000000
2	2509049	85.72337	0.649552	5.667285	1.849635	6.110155
3	2811715	81.40435	0.517244	10.30756	1.748077	6.022766
4	3094690	80.65686	0.610931	10.92750	1.514108	6.290598
5	5671968	28.03065	63.53641	3.387432	1.253394	3.792118
6	5798361	28.32153	60.79747	4.533684	2.401936	3.945376
7	5993719	30.52335	58.42376	4.270662	2.263194	4.519024
8	6280942	31.14916	57.70311	4.066071	2.258734	4.822928
9	6666092	28.05750	54.18747	11.00942	2.130536	4.615073
10	7050898	28.79688	54.90118	10.13041	1.928947	4.242578

Source: Secondary data (2024), processed.

The Interaction Effects of FDI, Inflation, Economic Growth, Minimum Wage, and Export in West Sumatra

In West Sumatra, inflation has a significant impact on FDI. The impulse response test results show that inflation depresses FDI at the beginning of the phase but then starts to fluctuate. This indicates that unstable inflation creates uncertainty for foreign investors. However, after the economic adjustment took place, investment increased again. This fluctuation means that investors in West Sumatra still see the long-term potential even though the inflation rate was initially unstable, in line with research Agudze & Ibhagui (2021), which shows that inflation creates uncertainty for investors, which is also seen in this region.

West Sumatra's economic growth positively influences FDI, especially in the early phases. Economic growth's response to FDI increases significantly until the fifth phase but stabilizes thereafter. This strengthens the argument that good economic growth is a major factor in attracting foreign investment, especially when the province has a growing economy, according to research by Gupta & Singh (2016), which states that economic growth attracts more FDI.

The increase in minimum wage in West Sumatra tends to have a negative impact on FDI after the fourth phase. This decline suggests that higher labor costs make the province less competitive than other regions with lower labor costs. This factor needs to be considered by policymakers, especially in maintaining investment attractiveness, which is different from several studies that did not find a significant relationship between wages and FDI (Fuangfoo, 2018).

The value of exports in West Sumatra has a positive impact on FDI. Strong exports signal that the province has a good market at the international level, which can attract foreign investors. However, reliance on the export sector needs to be considered, especially if there is a decline in global demand. When global demand declines, export revenues decrease, potentially reducing the region's attractiveness to foreign investors seeking stable and growing markets. In addition, a high reliance on exports without a diversified economic base can lead to economic instability, as a decline in the export sector can result in job losses, reduced income, and lower overall economic growth, hindering further FDI inflows (Fan et al., 2023; Fong, 2017; Karahan, 2017; Meyn & Kennan, 2009; Nidhiprabha, 2017).

The Interaction Effects of FDI, Inflation, Economic Growth, Minimum Wage, and Export in The Special Region of Yogyakarta

In The Special Region of Yogyakarta, inflation also has a significant impact on FDI. As in West Sumatra, inflation initially depressed FDI in the early stages, but the fluctuation was more stable afterwards than in West Sumatra. This may be related to better inflation management in SRY, which makes investors more confident to keep investing despite inflation shocks. This is consistent with Ahmad et al. (2003) research which shows the importance of inflation stability in attracting FDI.

Economic growth in SRY follows a similar pattern to West Sumatra, where good economic growth increases FDI in the early phase. However, in SRY, the impact of economic growth on SRY is more consistent, with milder fluctuations in the later phase, in line with the study of Gupta & Singh (2016). This suggests that SRY has a more stable and sustained investment attractiveness, a testament to the region's better infrastructure and policy support. This should instill confidence in the economic management of the region.

The minimum wage increase in SRY also has a negative impact on FDI. However, the effect is milder than in West Sumatra. This may be due to other sectors, such as tourism and education, which provide a strong underpinning to SRY economy, so the wage increase does not significantly reduce the attractiveness of investment.

Exports in SRY also have a positive impact on FDI, although not as strong as in West Sumatra. The fact that SRY's exports tend to fluctuate but are always above the equilibrium line suggests greater stability. SRY's reliance on sectors such as tourism and handicrafts make it less vulnerable to fluctuations in export values than West Sumatra, which is more dependent on commodities. This resilience and the positive impact of exports on FDI in SRY should provide optimism about the potential for investment.

Comparison in Both Provinces

Both provinces show the significant impact of inflation on FDI. However, The Special Region of Yogyakarta's resilience in managing this impact, as evidenced by its more stable fluctuations compared to West Sumatra, provides a reassuring indication of its economic stability. This resilience can be attributed to SRY's skill in maintaining macroeconomic stability and implementing sound monetary policies.

Both West Sumatra and SRY show that good economic growth has a positive impact on FDI. However, in SRY, the effect is more consistent and the fluctuation is more controlled, suggesting that SRY may have more favorable economic conditions in sustaining FDI flows. This could be attributed to better infrastructure and more stable policies in SRY than West Sumatra.

The greater impact of the minimum wage on FDI in West Sumatra, where an increase in the minimum wage depresses FDI flows more than in SRY, underscores the latter's ability to cope with such increases. This optimism is due to the strong tourism and education sectors in SRY, which, unlike West Sumatra, provide sufficient economic diversification to absorb the impact.

Exports have a stronger impact on FDI in West Sumatra than in the SRY. This is reasonable because West Sumatra is more dependent on export sectors, such as agricultural and mining commodities. On the other hand, SRY is more dependent on various sectors, such as tourism and education, so the value of exports is less important in attracting FDI.

West Sumatra's commodity-dependent economy makes inflation and exports very important factors for FDI flows, so when there is a significant change in these variables, the impact is immediately felt on FDI. On the other hand, SRY has a more diversified economy, with strong tourism and education sectors, which makes the effects of inflation and wage increases more manageable. In addition, SRY is not as dependent on commodity exports as West Sumatra, so FDI in SRY.

Conclusions

This study provides empirical evidence that foreign direct investment (FDI) responses in both West Sumatra and the Special Region of Yogyakarta (SRY) follow a similar macroeconomic pattern, despite differences in regional economic structures.

The results show that inflation is the most influential factor, followed sequentially by economic growth, export value, and minimum wage in both provinces. This consistent ordering indicates that FDI dynamics in Indonesia are shaped more by broader national economic fundamentals than by region-specific characteristics. Thus, while local economic profiles may differ, investor sensitivity to macroeconomic variables remains structurally uniform. This finding answers

the central research question: FDI response tends to follow a broader economic pattern rather than being uniquely driven by localized economic contexts.

Given these insights, regional and national policymakers should prioritize macroeconomic stability as the foundation for sustained FDI attraction. First, inflation control must be consistently enforced through effective coordination between fiscal and monetary authorities to reduce investor uncertainty. Second, economic growth should be stimulated through targeted public investment. In West Sumatra, this includes expanding infrastructure to support agro-mineral exports and downstream industries. In SRY, policymakers should strengthen knowledge-based sectors, such as education, tourism, and creative industries, by improving digital connectivity and innovation support. Third, both regions need to enhance export competitiveness, West Sumatra by investing in logistics and market access for its commodity sectors, and SRY by promoting creative exports and cultural tourism. Finally, minimum wage policies should be implemented alongside productivity, enhancing programs such as vocational training and SME development, ensuring that labor cost increases do not undermine investment attractiveness. These regionally tailored, yet structurally aligned strategies will help optimize the impact of macroeconomic stability on regional investment performance and support long-term, inclusive economic development.

Author Contributions

MAS: Conceptualization, Writing, Methodology, Data Processing; AFA: Review, Manuscript Editing,

AI Writing Statement

During the preparation of this work authors used Grammarly in order to paraphrase and proofread the sentences. After using this service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Conflicts of interest

The authors declare that there are no conflicts of interest related to the publication of this article. There are no financial, personal, or other relationships that could influence the objectivity of this research.

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