

Research Article

The Influence of Gross Regional Domestic Product, Interest Rates, and Labor Force on Domestic Investment in the City of Surabaya

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Abstract: Domestic Investment (Penanaman Modal Dalam Negeri/PMDN) is a strategic pillar of regional economic independence because it is comparatively more resilient to external shocks than foreign direct investment. This study examines the long-run effect of the Gross Regional Domestic Product (GRDP), the interest rate, and the labor force on domestic investment realization in the City of Surabaya, Indonesia, over the period 2009–2024. The study is motivated by the fluctuating trajectory of PMDN realization in Surabaya, which has not always moved in line with the city's steadily rising GRDP, suggesting that market size alone is an insufficient predictor of domestic capital inflows. Using annual secondary time-series data obtained from the Central Statistics Agency (BPS), Bank Indonesia, and the Surabaya One-Stop Investment and Integrated Service Agency (DPMPITSP), the long-run relationship among the variables is estimated with the Fully Modified Ordinary Least Squares (FMOLS) method after confirming that all series are integrated of order one, $I(1)$, and are cointegrated according to the Johansen test. The classical assumption tests indicate that the estimated model is normally distributed, free of serious multicollinearity, and homoskedastic. The FMOLS estimates show that GRDP exerts a positive and significant effect on PMDN, the interest rate exerts a negative and significant effect on PMDN, and the labor force exerts a positive and significant effect on PMDN, with the model explaining approximately 82.6 percent of the variation in domestic investment (Adjusted $R^2 = 0.825828$). These findings confirm that regional market size, the cost of capital, and labor availability jointly shape investors' long-run capital allocation decisions in a metropolitan setting, and they imply that sustaining GRDP growth, stabilizing borrowing costs, and strengthening workforce readiness are complementary levers for attracting domestic capital to Surabaya.

Keywords: FMOLS; GRDP; Interest Rates; Labor Force; PMDN.

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1. Introduction

Investment is a principal driver of regional economic development, functioning simultaneously as a channel for employment absorption, technological upgrading, infrastructure expansion, and production capacity building. Within Indonesia's decentralized fiscal system, regional governments bear direct responsibility for cultivating a conducive investment climate, and Domestic Investment (Penanaman Modal Dalam Negeri, PMDN) has emerged as a strategic pillar of that effort because domestically sourced capital tends to be more resilient to external shocks and global volatility than foreign direct investment (PMA) (Anwar & Salmah, 2024). Excessive reliance on foreign capital exposes a regional economy to vulnerabilities that a stronger domestic investment base can help mitigate.

Surabaya, Indonesia's second-largest city and the capital of East Java Province, occupies a strategic position as a center of trade, industry, and services in eastern Indonesia (Widyanti & Yasin, 2025). Supported by relatively comprehensive infrastructure, including the Tanjung Perak Port and integrated industrial estates, the city possesses strong intrinsic appeal for domestic investors. Between 2009 and 2024, realized PMDN in Surabaya expanded from Rp213.55 billion to Rp36.80 trillion an increase of more than 170-fold over fifteen years reflecting strengthening investor confidence in the city's business climate. This trajectory was not linear: PMDN surged by 505.87 percent in 2012 before contracting by 88.85 percent in 2013, rose sharply again in 2019 (+260.47 percent) after the value climbed to Rp14.93 trillion, continued growing through the pandemic years of 2020–2021, then declined by 8.60 percent in 2022 before recovering with growth of 40.81 percent in 2023 and a more modest 6.35 percent in 2024. Such fluctuations, occurring even as the city's underlying economic fundamentals generally improved, suggest that domestic investors respond to a more complex set of macroeconomic signals than administrative ease of doing business alone.

Among these signals, the Regional Gross Domestic Product (GRDP) is a central proxy for market size and income levels: a higher GRDP indicates stronger purchasing power and a more promising expected return, which should, in principle, attract investment. Yet Surabaya's steadily rising GRDP has not always been mirrored by a corresponding acceleration of PMDN in the same year, indicating that market size alone does not fully explain investment behavior (Rahim, 2023). A second signal is the cost of capital, captured through the Bank Indonesia benchmark interest rate, which is transmitted to commercial lending rates and therefore directly affects the financing cost of business expansion; higher interest rates raise borrowing costs and compress expected project returns, while lower rates tend to stimulate investment (Mofu et al., 2023). A third signal is the availability of the labor force, which lowers recruitment and training costs and represents the productive capacity available to investors though Surabaya presents a paradox, since its large labor supply coexists with one of the highest minimum wages in East Java, a combination that may lead some investors to relocate capital toward the city's lower-wage periphery (Amiq et al., 2019).

Prior empirical studies on the determinants of domestic investment report inconsistent findings. Some studies find that GRDP exerts a strong, positive, and dominant effect on domestic investment, while others report that in mature metropolitan economies GRDP no longer meaningfully affects new PMDN inflows (Sari & Rahman, 2023). Findings on the interest rate are similarly divided: some studies identify it as a principal deterrent to investment, whereas others find no significant effect for domestic firms that rely more on retained earnings than on bank credit. The labor force literature is likewise unsettled regarding whether investors respond primarily to the absolute size of the workforce or to its quality and prevailing wage levels. This inconsistency constitutes the empirical gap motivating the present study.

The study contributes to the literature in three respects. First, it isolates PMDN at the city level Surabaya specifically rather than pooling domestic and foreign investment or analyzing the phenomenon at the provincial or national level, as most prior macro-level studies have done (Sugiharto & Kurnia, 2014). Second, it integrates a monetary-sector variable (the interest rate) with real-sector variables (GRDP and the labor force) over a period spanning the post-pandemic recovery, allowing the analysis to capture how local investors respond to a joint shock across policy domains. Third, it applies the Fully Modified Ordinary Least Squares (FMOLS) method to estimate the long-run cointegrating relationship among these variables, an approach well suited to non-stationary annual time series that are nonetheless cointegrated.

Building on this background, the study addresses three research questions: whether GRDP significantly affects PMDN in Surabaya in the long run, whether the interest rate significantly affects PMDN in the long run, and whether the labor force significantly affects PMDN in the long run. Accordingly, the objective of this research is to analyze the long-run effect of GRDP, the interest rate, and the labor force on domestic investment realization in the City of Surabaya over the period 2009–2024.

2. Preliminaries or Related Work or Literature Review

Domestic Investment

Under Indonesian Law No. 25 of 2007 concerning investment, PMDN is defined as capital-investment activity carried out within Indonesian territory by domestic investors using domestic capital, whether by individual Indonesian citizens, Indonesian business entities, the state, or regional governments. In macroeconomic terms, investment represents expenditure

by firms or investors on capital goods and production equipment intended to expand an economy's capacity to produce goods and services (Sukirno, 2018), financed either through borrowing or retained earnings. According to Keynes (1936) investment decisions are shaped jointly by the marginal efficiency of capital and the prevailing interest rate: investors weigh the expected return on a project against its cost of capital before committing funds. PMDN, in turn, contributes to regional output by expanding the stock of productive inputs — buildings, machinery, and other resources — which raises production capacity and accelerates GRDP growth (Silvia, Muchtolifah, Sishadiyati, 2022).

Regional Gross Domestic

GRDP is the standard indicator of a region's level of economic activity, measuring the value added generated by all productive units within a territory in a given year. Harrod-Domar (1946) treats investment as the principal determinant of economic growth, operating both by expanding aggregate demand through capital formation and by expanding productive capacity through an enlarged capital stock; regions with higher levels of economic activity, reflected in a larger GRDP, correspondingly offer investors a more promising profit outlook. Neoclassical investment theory, associated with Solow, similarly holds that investment decisions respond to expected profit, the level of output, and production costs, so that a region with high output (high GRDP) offers greater profit opportunities and therefore tends to attract more investment. This theoretical expectation is corroborated by prior empirical work: Widyapangesti and Soelistyo (2022) find that a larger regional market, reflected in GRDP, increases investment attractiveness, and Kartika and Aulia (2023) similarly report that regions with higher GRDP exhibit greater PMDN attractiveness owing to their more stable economic conditions.

Interest Rate

The interest rate is the price paid for the use of loanable funds over a given period and is a core instrument of monetary policy. Changes in Bank Indonesia's benchmark rate (the BI Rate prior to August 2016, and the BI 7-Day Reverse Repo Rate thereafter) are transmitted to commercial lending rates and therefore affect the financing decisions of households and firms alike. Kasmir (2014) frames the interest rate as the price a debtor pays a bank for the use of borrowed funds, and this cost enters directly into an investor's profitability calculus. Keynes (1936) formalizes this mechanism through the comparison between the marginal efficiency of capital and the interest rate: when the interest rate rises, the cost of capital increases, expected net returns fall, and previously viable projects become unviable, so investment tends to decline; when the interest rate falls, the reverse occurs. Empirical findings on this relationship remain mixed Susanti et al. (2023) find that the interest rate significantly affects domestic investment, while Hendika dan Setyowati (2022) similarly report a significant negative effect of the interest rate on PMDN underscoring the interest rate's role as a determinant of domestic investors' capital-allocation decisions.

Labor Force

The labor force comprises the working-age population that is economically active, whether employed or actively seeking employment, and constitutes one of the core factors of production alongside capital and technology. Adam Smith (1776), argues that a nation's wealth expands with the productivity and skill of its labor force, while Solow (1956), growth model treats labor as one of the principal determinants of output alongside capital and technology, such that an expanding labor force enlarges a region's productive capacity. The Harrod-Domar framework complements this view by treating labor as the factor that operationalizes additional capital stock in the production process, implying that adequate labor availability raises the productivity of new investment. From an investor's perspective, an abundant and readily available labor supply lowers recruitment and training costs and therefore increases a location's attractiveness for capital deployment, a pattern corroborated by Mahendra dan Hanifa (2022) and by Marpaung et al. (2024) both of whom link labor-force participation to regional economic growth and, indirectly, to investment attractiveness.

3. Proposed Method

Research Design

This study adopts a quantitative approach using annual secondary time-series data for the City of Surabaya covering the sixteen-year period from 2009 to 2024. A total-sampling technique was applied, in which the entire population of annual observations for the period is used as the research sample, consistent with the time-series nature of the data in which

every year constitutes an informative observation. Estimation was carried out using EViews 13.

Variables and Operational Definitions

The dependent variable is Domestic Investment (Y), measured as the realized value of PMDN in Surabaya each year, in billion rupiah, sourced from the Surabaya One-Stop Investment and Integrated Service Agency (DPMPTSP). The independent variables are the Regional Gross Domestic Product (X1), measured as GRDP at constant prices in billion rupiah and sourced from BPS Surabaya; the Interest Rate (X2), measured as the annual benchmark policy rate in percent and sourced from BPS Surabaya; and the Labor Force (X3), measured as the number of persons in the labor force in Surabaya (aged 15 and over, working or actively seeking work), in persons, sourced from BPS Surabaya.

Table 1. Variables and Operational Definitions.

Variabel	Indikator	Satuan	Sumber
PMDN	Realisasi PMDN	Miliar rupiah	DPMPTSP
PDRB	PDRB ADHK	Miliar rupiah	BPS
SB	Suku Bunga acuan Bank Indonesia	Persen (%)	BPS
AK	Jumlah penduduk berusia aktif	Jiwa	BPS

Data Source

All data are secondary annual time series obtained from three official sources: the Central Statistics Agency of Surabaya, Bank Indonesia, and the Surabaya DPMPTSP. No additional data sources beyond those used in the underlying research were introduced.

Data Analysis Procedure

Because annual macroeconomic time series commonly contain a unit root, the analysis proceeds through a sequence of pretests before long-run estimation. First, an Augmented Dickey-Fuller (ADF) unit root test is applied to each series at level and, where necessary, at first difference, to establish the order of integration and to guard against spurious regression. Second, given that all series are integrated of the same order, the Johansen cointegration test is applied to determine whether a long-run equilibrium relationship exists among the variables. Third, classical assumption tests — normality (Jarque-Bera test), multicollinearity (variance inflation factor), and heteroskedasticity (Glejser test) are conducted to confirm that the estimated model satisfies the conditions for a Best Linear Unbiased Estimator. Fourth, given evidence of cointegration, the long-run relationship is estimated using Fully Modified Ordinary Least Squares (FMOLS) (Damodar N. Gujarati, 2009). Finally, the statistical significance of each coefficient is assessed via the t-test, and the explanatory power of the model is assessed via the adjusted coefficient of determination (Adjusted R²).

FMOLS Model

The Fully Modified Ordinary Least Squares method, developed by Peter dan Hansen (1990), is designed to estimate long-run relationships among cointegrated, non-stationary variables while correcting for serial correlation and endogeneity bias that commonly affect ordinary least squares estimates of time-series regressions, yielding consistent and efficient long-run parameter estimates Asteriou dan Hall (2022). The estimated model in log-linear form is specified as:

$$\text{LOG(PMDN)}_t = \beta_0 + \beta_1 \text{LOG(GRDP)}_t + \beta_2 (\text{SB})_t + \beta_3 \text{LOG(AK)}_t + \varepsilon_t \dots \dots (1)$$

Where PMDN denotes realized domestic investment, GRDP denotes the regional gross domestic product at constant prices, SB denotes the interest rate, AK denotes the labor force, β_0 is the intercept, β_1 – β_3 are the long-run elasticity/semi-elasticity coefficients, and ε is the error term. PMDN, GRDP, and the labor force enter the model in natural-logarithmic form, while the interest rate, already expressed as a percentage, enters in level form.

4. Results and Discussion

Stationarity Test

Table 2. Uji Stationeritas.

Variabel	Level	Prob.	Conclusion
LOG_PMDN	Level	0.7532	Tidak Stationer
LOG_PMDN	First Difference	0.0023	Stationer (1)
LOG_PDRB	Level	0.0731	Tidak Stationer
LOG_PDRB	First Difference	0.0173	Stationer (1)
SB	Level	0.3039	Tidak Stationer
SB	First Difference	0.0188	Stationer (1)
LOG_AK	Level	0.4460	Tidak Stationer
LOG_AK	First Difference	0.0003	Stationer (1)

Based on the results of the stationarity test in the table, it is evident that all research variables namely, Domestic Investment (LOG_PMDN), Gross Regional Domestic Product (LOG_PDRB), Interest Rate (SB), and Labor Force (LOG_AK) are non-stationary at the level. This is indicated by the probability values for each variable being greater than 0.05: LOG_PMDN is 0.7532, LOG_PDRB at 0.0731, SB at 0.3039, and LOG_AK at 0.4460; thus, the null hypothesis (H_0) stating that the data contain a unit root cannot be rejected. Next, the test was conducted at the first-difference level, and the results showed that all variables were stationary because they had probability values less than 0.05, with LOG_PMDN having a t-statistic of -4.847053 and a probability of 0.0023, LOG_PDRB at -3.699697 with a probability of 0.0173, SB at -3.693187 with a probability of 0.0188, and LOG_AK at -5.953481 with a probability of 0.0003. Thus, all research variables are stationary at the first difference or integrated of order one (I(1)). Based on these results, it can be concluded that all variables have the same integration order, namely I(1), thereby fulfilling one of the requirements to proceed to the cointegration test stage to determine the existence of a long-run equilibrium relationship among the variables.

Cointegration Test

Table 3. Uji Kointegrasi.

Hypothesized No. of CE(s)	Trace Statistic	0,05 Critical Value	Prob.
None	61.43771	47.85613	0.0016
At most 1	24.88753	29.79707	0.1655
At most 2	10.14734	15.49471	0.2696
At most 3	4.079041	3.841465	0.0434

Based on the results of the Johansen Cointegration Test, under the null hypothesis, the Trace Statistic value was 61.43771, which is greater than the 5% critical value of 47.85613, with a probability of $0.0016 < 0.05$; therefore, H_0 is rejected and a cointegration relationship exists. Meanwhile, for the "At most 1" and "At most 2" hypotheses, the probability values are 0.1655 and 0.2696, respectively, which are both greater than 0.05; therefore, H_0 cannot be rejected. Although the probability for "At most 3" is $0.0434 < 0.05$, the determination of the number of cointegration vectors is based on the first result where H_0 was rejected; thus, the model is determined to have one cointegration vector. Consequently, PMDN, PDRB, the interest rate, and the labor force exhibit a long-run equilibrium relationship. These results indicate that the model does not exhibit spurious regression and meets the requirements for using the FMOLS method to estimate the long-run relationships among the variables.

Classical Assumption Test

Normality Test

Table 4. Uji Normalitas.

Jarque-Bera	Prob.
4.54371	0.10312

In the normality test using the Jarque-Bera test, the results showed a Jarque-Bera value of 4.54371 with a p-value of 0.10312. Since the Jarque-Bera probability value (0.10312) is greater than the significance level $\alpha = 0.05$, it can be concluded that the regression model residuals are normally distributed, and thus the assumption of normality in this research model is met.

Multicollinearity Test

Table 5. Uji Multikolinearitas.

Variabel	Centered VIF
LOG_PDRB	2.954975
SB	1.279192
LOG_AK	2.578547

Based on Table 5, all independent variables have Centered VIF values below 10, ranging from 1.279192 to 2.954975. Referring to the general criterion stating that a VIF value above 10 indicates multicollinearity, it can be concluded that there is no serious multicollinearity problem among the independent variables in this research model.

Uji Heteroskedastisitas

Table 6. Uji Heteroskedastisitas.

Indikator	Nilai	Prob.
F-Statistic	0.144481	0.9312
Obs*R-squared	0.557778	0.9060
Scaled explained SS	0.794107	0.8509

Based on Table 6, the results of the heteroscedasticity test in this study were obtained using the Glejser test, with the null hypothesis (H_0) being homoscedasticity. Since all probability values in Table 4.8 are greater than the significance level $\alpha = 0.05$, H_0 is accepted, indicating that there is no issue of heteroscedasticity in the regression model; in other words, the assumption of homoscedasticity is satisfied.

FMOLS Regression

Table 7. Regresi FMOLS.

Variabel	Koefisien	T-statistic	Prob.
C	-230.2743	-24.37120	0.0000
LOG_PDRB	1.486444	6.913031	0.0000
SB	-0.437085	-17.01692	0.0000
LOG_AK	17.08288	21.57853	0.0000

Based on Table 7, the estimation results using the Fully Modified Ordinary Least Squares (FMOLS) method show that the variables GRDP (LOG_PDRB), Interest Rate (SB), and Labor Force (LOG_AK) have probability values of 0.0000 or less than the 5% significance level, thereby indicating that all independent variables have a significant effect on Domestic Investment (PMDN) in the city of Surabaya. The constant term of -230.2743 represents the model's baseline when all independent variables are held constant. GRDP has a coefficient of 1.486444 with a t-statistic of 6.913031, indicating that a 1% increase in GRDP will increase PMDN by 1.486444%, assuming all other variables remain constant. The interest rate has a coefficient of -0.437085 with a t-statistic of -17.01692, meaning that a 1% increase in the interest rate will reduce PMDN by 0.437085% because higher capital costs can dampen investor interest. Meanwhile, the labor force has a coefficient of 17.08288 with a t-statistic of 21.57853, indicating that a 1% increase in the labor force will increase domestic investment (PMDN) by 17.08288%. Thus, the FMOLS estimation results show that GRDP and the labor force have a positive and significant effect on PMDN, while the interest rate has a negative and significant effect on PMDN in Surabaya during the study period.

Hypothesis Test

Coefficient of Determination

Table 8. Coefficient Determination.

Statistic	Value
R-squared	0,863150
Adjusted R-squared	0,825828

Based on Table 8. test results show an R-squared value of 0.863150 and an Adjusted R-squared value of 0.825828. An Adjusted R^2 value of 0.825828 shows that the variables of gross regional domestic product, interest rates, and labor force together are able to explain the variation in the PMDN of Surabaya City of 82.5%, while the remaining 17.5% is explained by other variables outside this study model.

F Test

Table 9. Uji F.

Test Statistic	Value	Prob
F-Statistic	54.64249	0.0000
Chi-Square	163.9275	0.0000

Based on the results of the Wald test, the F-statistic was found to be 54.64249 with a p-value of 0.0000. In addition, the chi-square value was 163.9275 with a p-value of 0.0000. These p-values are less than the significance level of 0.05, so H_0 is rejected. Thus, it can be concluded that, simultaneously, the coefficients C(1), C(2), and C(3) are not equal to zero, or that they have a significant combined effect on the dependent variable.

T Test

Table 10. Uji t.

Variabel	T-ststistics	Prob
LOG_PDRB	6.913031	0.0000
SB	-17.01692	0.0000
LOG_AK	21.57853	0.0000

Based on the results of the t-test above, the GRDP variable (LOG_PDRB) has a regression coefficient of 1.486444, a t-statistic of 6.913031, and a probability of 0.0000, indicating that PDRB has a positive and significant effect on PMDN; thus, a 1% increase in PDRB will increase PMDN by 1.486444%, assuming all other variables remain constant (*ceteris paribus*). The Interest Rate (SB) variable has a coefficient of -0.437085, a t-statistic of -17.01692, and a p-value of 0.0000, indicating that a 1% increase in the interest rate will reduce PMDN by 0.437085% because higher interest rates can increase the cost of capital and reduce investment interest. Meanwhile, the Labor Force (LOG_AK) variable has a coefficient of 17.08288, a t-statistic of 21.57853, and a probability of 0.0000, indicating that a 1% increase in the labor force will increase PMDN by 17.08288%. Overall, the FMOLS estimation results show that GRDP and the Labor Force have a positive and significant effect on PMDN, while Interest Rates have a negative and significant effect on PMDN in Surabaya during the study period.

Discussion

The Impact of Gross Regional Domestic Product on Domestic Investment

Estimation results indicate that the Gross Regional Domestic Product (GRDP) variable has a positive and significant effect on Domestic Investment (PMDN) in the City of Surabaya; thus, the research hypothesis is accepted. This demonstrates that increased economic activity in Surabaya enhances its attractiveness for domestic investment. Every 1% increase in GRDP is estimated to raise domestic investment by 1.486444 units. Conversely, every 1% decrease in GRDP would reduce domestic investment by 1.486444 units. This relationship reveals a mutually reinforcing link between economic growth and investment: rising GRDP reflects

improved economic conditions, purchasing power, market size, and profit prospects for investors, while increased domestic investment through capital formation, expanded production capacity, business expansion, and labor absorption further drives economic activity and boosts GRDP. These findings align with the Harrod-Domar theory, wherein increased regional output expands market opportunities and profit expectations. The results indicate that GRDP growth is accompanied by an increase in realized domestic investment over the long term. Empirically, Surabaya's GRDP has consistently risen during the 2009–2024 period, reflecting high levels of economic activity across various key sectors. These conditions create broader market opportunities and enhance Surabaya's appeal as a destination for domestic investment. These results are consistent with the Harrod-Domar theory and Keynesian investment theory, which posit that economic growth and higher profit prospects drive increased investment. Furthermore, the findings support the research of Kartika and Aulia (2023), which states that GRDP has a positive and significant impact on domestic investment. Thus, GRDP growth and the strengthening of realized domestic investment act as mutually supportive factors in fostering sustainable economic growth for the City of Surabaya.

The Impact of Interest Rates on Domestic Investment

Estimation results indicate that interest rates have a significant negative impact on Domestic Investment (PMDN) in the City of Surabaya. This suggests that a 1% increase in interest rates is estimated to reduce PMDN by 0.437085, whereas a 1% decrease would raise PMDN by the same amount. Fluctuations in interest rates affect borrowing costs and the cost of capital, thereby altering the attractiveness of investment projects; specifically, rising interest rates tend to reduce realized PMDN, while falling rates generally encourage increased investment. Empirically, fluctuations in Bank Indonesia's benchmark interest rate between 2009 and 2024 have been driven by macroeconomic conditions and monetary policies that influence the cost of capital for investors. The study reveals that higher interest rates lead to increased investment financing costs, thereby dampening investor interest in committing capital. These findings align with Keynesian investment theory, which posits that investment decisions are shaped by the relationship between expected returns and the cost of capital. Furthermore, the results support the study by Hendika dan Setyowati (2022), which also identified a negative relationship between interest rates and PMDN. Consequently, maintaining interest rate stability is essential to fostering a conducive investment climate and stimulating domestic investment growth in Surabaya.

The Impact of the Labor Force on Domestic Investment

Estimation results indicate that the labor force variable has a positive and significant effect on Domestic Investment (PMDN) in the City of Surabaya. This suggests that an increase in the size of the labor force is accompanied by an increase in realized domestic investment in the long run; specifically, a 1% increase in the labor force is estimated to raise domestic investment by 17.08288 units, while a 1% decrease results in a corresponding decline of 17.08288 units. Labor availability supports production processes, business expansion, and operational efficiency, thereby strengthening Surabaya's appeal as an investment location. Empirically, the labor force in Surabaya trended upward between 2009 and 2024, driven by a growing working-age population and expanding economic activity. Conversely, labor shortages—particularly regarding workers with skills aligned with industry needs—can hinder business expansion and diminish investment attractiveness. Shifts in younger generations' employment preferences, such as a growing interest in entrepreneurship and flexible work arrangements, may also influence labor availability in the formal and industrial sectors. As a hub for trade, industry, and services in East Java, Surabaya's labor availability serves as a key factor for investors when selecting investment locations. A larger labor force enhances the region's capacity to support production activities, business expansion, and increased corporate productivity. These results align with the Solow-Swan model, which identifies labor as a primary factor of production, and the Harrod-Domar model, which highlights labor's role in the effective utilization of investment capital. These findings are further supported by research from Mahendra dan Hanifa (2022) and Marpaung et al. (2024), which underscore the importance of labor and investment for economic growth. Therefore, the Surabaya City Government needs to enhance the quality of its human resources through education, vocational training, and competency development, while also strengthening the linkages between the education sector and the industry. This aims to create a productive workforce aligned with business needs, thereby boosting Surabaya's competitiveness as a domestic investment destination and driving sustainable growth in domestic direct investment (PMDN).

5. Conclusions

This study set out to examine whether GRDP, the interest rate, and the labor force significantly affect domestic investment (PMDN) in the City of Surabaya over 2009–2024. Using FMOLS estimation on a cointegrated set of $I(1)$ variables, the results show that GRDP exerts a positive and significant long-run effect on PMDN, reflecting how expanding regional economic activity strengthens investor confidence and market opportunity; the interest rate exerts a negative and significant long-run effect on PMDN, consistent with its role as the cost of capital that shapes the feasibility of investment projects; and the labor force exerts a positive and significant long-run effect on PMDN, reflecting the importance of workforce availability to investors' operational planning. Jointly, these three variables explain approximately 82.6 percent of the variation in PMDN realization in Surabaya over the study period. The findings are consistent with the Harrod-Domar growth model, Keynesian investment theory, the Solow growth model, and Adam Smith's classical treatment of labor, and they indicate that a favorable economic climate, a stable and moderate interest-rate environment, and an adequate labor supply jointly support the realization of domestic investment in Surabaya.

From a policy standpoint, the findings suggest three complementary priorities for the Surabaya city government: continuing to expand regional economic activity through infrastructure development, support for leading sectors, and a conducive business climate; coordinating with national monetary authorities and financial institutions to keep borrowing costs stable and accessible, including through targeted low-interest financing schemes; and continuing to strengthen workforce quality through vocational education, competency certification, and closer industry–education linkages, so that the city's labor-force advantage translates into sustained investment attractiveness.

This study is limited by its focus on three macroeconomic determinants and a single city over a sixteen-year period; other plausible determinants such as inflation, the exchange rate, the city minimum wage, government expenditure, the ease-of-doing-business index, and infrastructure quality were not included in the model. Future research could extend the present framework by incorporating such variables, by comparing multiple cities or provinces to assess the generalizability of these findings, by applying complementary short-run estimators such as ARDL, VECM, or ECM to capture short-run dynamics alongside the long-run relationship identified here, and by incorporating qualitative measures of labor force capability such as educational attainment, productivity, or the open unemployment rate to obtain a more comprehensive picture of how labor-market conditions shape domestic investment.

Author Contributions

Conceptualization: Amelia Putri Halimatusa'diyah; Methodology: Amelia Putri Halimatusa'diyah; Formal analysis: Amelia Putri Halimatusa'diyah; Investigation: Amelia Putri Halimatusa'diyah; Data curation: Amelia Putri Halimatusa'diyah; Writing—original draft preparation: Amelia Putri Halimatusa'diyah; Writing—review and editing: Amelia Putri Halimatusa'diyah; Visualization: Amelia Putri Halimatusa'diyah; Supervision: Amelia Putri Halimatusa'diyah. The author has read and agreed to the published version of the manuscript.
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Data Availability Statement

The data supporting the findings of this study were obtained from publicly available official publications of the Central Statistics Agency (Badan Pusat Statistik) of Surabaya, Bank Indonesia, and the Surabaya One-Stop Investment and Integrated Service Agency (DPMPSTP). No specialized data repository was used; the compiled dataset is available from the corresponding author upon reasonable request.

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