

**DYNAMICS OF INVESTMENT, POPULATION, AND EMPLOYMENT AND
THEIR IMPACT ON ECONOMIC GROWTH IN SUMATRA ISLAND**

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Abstract

The research aims to find out whether investment, population and workforce have an effect on the economy, and how much influence investment, population and workforce have on the economy on the island of Sumatra. The data used is secondary data obtained from the official website of the Indonesian Central Statistics Agency (BPS). The data in this research was analyzed using qualitative descriptive analysis and quantitative descriptive analysis. The analysis tools used are multiple linear regression, hypothesis testing and the Coefficient of Determination (KD). On the day of the research, partial results showed that there was an influence between investment on the economy. This was proven by the results of $t\text{-count} > t\text{-table}$ ($-0.920 > -4.302$), there was no influence between population and the economy. This was proven by the results of $t\text{-count} < t\text{-table}$ ($0.353 < 4.302$), there is an influence between Labor and the Economy, this is proven by $t\text{-count} > t\text{-table}$ ($-1.723 > -4.302$). Partially, the magnitude of the influence of Investment on the Economy is 71.57, Population on the Economy is 26.77 and Labor on the Economy is -14.62. The magnitude of the simultaneous influence is 83.2%. The remaining $100\% - 83.2\% = 16.8\%$ is influenced by other variables not examined in this study.

Keywords: Investment, Population, workforce, and economy.

Abstrak

Penelitian ini bertujuan untuk menganalisis investasi, jumlah penduduk, dan tenaga kerja berpengaruh terhadap perekonomian, dan seberapa besar pengaruh investasi, jumlah penduduk, dan tenaga kerja terhadap perekonomian di Pulau Sumatera. Data yang digunakan merupakan data sekunder yang diperoleh dari website resmi Badan Pusat Statistik (BPS) Indonesia. Data dalam penelitian ini dianalisa dengan Analisa deskriptif kualitatif dan deskriptif kuantitatif. Alat Analisa yang digunakan adalah regresi linear berganda, uji hipotesis dan Koefisien Determinasi (KD). Hasil penelitian diperoleh hasil secara parsial terdapat pengaruh antara Investasi terhadap Perekonomian, Hal ini dibuktikan dengan hasil $t\text{-hitung} > t\text{-tabel}$ ($-0,920 > -4,302$), tidak terdapat pengaruh antara Jumlah Penduduk terhadap Perekonomian, hal ini dibuktikan dengan hasil $t\text{-hitung} < t\text{-tabel}$ ($0,353 < 4,302$), terdapat pengaruh antara Tenaga Kerja terhadap Perekonomian, hal ini dibuktikan dengan $t\text{-hitung} > t\text{-tabel}$ ($-1,723 > -4,302$). Secara parsial, besarnya pengaruh Investasi terhadap Perekonomian adalah 71,57, Jumlah Penduduk terhadap Perekonomian adalah 26,77 dan Tenaga Kerja terhadap Perekonomian adalah -14,62. Besarnya pengaruh secara simultan adalah 83,2 %. Sisanya $100\% - 83,2\% = 16,8\%$ dipengaruhi oleh variabel lain yang tidak diteliti dalam penelitian ini.



Kata Kunci: Investasi, Jumlah Penduduk, Tenaga Kerja, dan Perekonomia.

I. INTRODUCTION

Economic growth indicates the extent to which economic activity generates additional income for the community over a given period. Because economic activity is essentially a process of using production factors to generate output, this process will generate a flow of rewards to the factors of production owned by the community, which will also increase. Economic growth is absolutely necessary for community income to increase, thereby improving the level of public welfare.

Investment is a crucial indicator of economic growth. Investment positively impacts the production process in businesses, strengthening businesses, and subsequently increasing household consumption. Investment plays a role in economic recovery and has a positive correlation with the development of the country's infrastructure. Increasing national income, or GDP, will support the government's development efforts. Investment can also help foster a thriving business climate. The more investment, the more new businesses will emerge. This will impact job availability and labor absorption, supporting purchasing power growth, thereby helping boost Indonesia's economic growth and preventing a decline in the following quarter (Putri, 2022).

In countries with a growing industrial economy, investment is a crucial source of cushioning fluctuations in economic activity. Furthermore, investment activities encourage people in a country by increasing purchasing power, which in turn contributes to economic activity and increases employment opportunities. This is useful for increasing a country's national income and improving the level of community prosperity.

One factor influencing economic growth is the human resources available in a region. Population growth over time can be both a driver and a barrier to economic growth. A growing population will increase the workforce, and this increase will enable a region to increase production. However, on the other hand, the negative impact of population growth that is not matched by employment opportunities will cause economic growth to be inconsistent with improvements in welfare. (Ernita, 2023)

The workforce is also a factor influencing a region's output. A large workforce will be formed from a large population. However, there are concerns that population growth will negatively impact economic growth. According to Todaro (2003), rapid population growth

leads to problems of underdevelopment and makes development prospects increasingly distant.

II. THEORITICAL STUDIES

Development Economics/Economic Development

According to Todaro (2011), economic development is a multidimensional process involving various fundamental changes in social structures, societal attitudes, and national institutions, such as accelerating growth, reducing inequality, and alleviating poverty. Development economics is defined as a branch of economics that studies the economic aspects of the development process in developing countries. It focuses on economic development methods, economic growth, and social change. Development economics also expands opportunities for the population by supporting improvements in health, education, and the workplace through the public and private sectors. Development economics is also a branch of economics that specifically studies past, current, and future development issues in developing countries. This development encompasses industry, banking, finance, and business.

Investment

According to Sukirno (2015), investment is defined as the expenditure or purchase of capital investments and production equipment with the aim of increasing the capacity to produce goods and services available in the economy. Investment is the activity of saving or placing funds for a specific period with the expectation that this saving will generate profits or increase the investment's value. A person who invests is called an investor. Investment is the activity of investing money or capital (valuable assets) for the purpose of gaining profit. The party or person making the investment is called an investor.

Population

The Statistics Indonesia (BPS) defines the population as all individuals domiciled in the geographic area of the Republic of Indonesia for 6 months or more, and/or those domiciled for less than 6 months but intending to settle. According to Said (2012), population is the number of people residing in an area at a specific time and is the result of demographic processes, namely fertility, mortality, and migration.

Workforce

According to Law No. 13 of 2013, labor is defined as any person capable of performing work that produces goods and services that are useful to themselves or society in general. The workforce referred to here is defined as any person capable of performing work that produces goods and/or services useful to themselves or the community at large. This regulation also governs foreign workers working in Indonesia. There are many types of workers in Indonesia, including skilled, educated, unskilled, and unskilled workers.

Economics

According to the Big Indonesian Dictionary (KBBI), economics is a branch of science that focuses on the principles of production, distribution, and use of goods or wealth. This wealth includes money, trade, and all industrial activities. It also includes matters related to the use of money, energy, time, and so on. Furthermore, according to the KBBI, economics is also related to a country's economy. The term "economy" here refers to all rules or procedures for conducting economic activities (industry and trade). Economics is a large series of interrelated production and consumption activities that help determine how scarce resources are allocated. The Indonesian economy is: 1) A branch or section of economics that emphasizes familial, collective, and cooperative principles. Humans, by nature, are social creatures who are not accustomed to living alone but require the help of others.

The Impact of Investment, Population, and Labor Force on the Economy

Investment, population, and labor force are three fundamental pillars that interact to drive economic growth. Investment, both in physical and human capital, directly increases production capacity and gross domestic product (GDP), creates jobs, and encourages innovation through multiplier effects. A large population can be an asset in the form of a large domestic market and a potential labor pool (demographic dividend), but it can also become a liability if economic growth fails to absorb the labor force, thus giving rise to unemployment and inequality. A qualified and fully absorbed labor force serves as a direct factor of production that increases output and purchasing power; however, the quality (human capital) and the match of its skills to industry needs are the primary determinants of productivity. Positive synergies occur when productive investment absorbs skilled labor from the working-age population, creating a sustainable cycle of growth. Conversely, imbalances,

such as inefficient investment, a population explosion without jobs, or educated unemployment, can hinder or even burden a country's economy.

III. RESEARCH METHODS

This research is a quantitative descriptive study, providing a general overview of the topic under study in data or figures, which are then analyzed, clarified, and presented in descriptive form. The research location was on the island of Sumatra over a period of approximately one month. The data used in this study is secondary data. The scope of this research includes investment, population, workforce, and provincial GRDP in the Sumatra region.

The type of data used in this study is secondary data. Secondary data refers to data published or used by organizations other than those processing it. It can also be defined as data sources that do not directly provide data to data collectors. The data sources used in this study were the Indonesian Central Statistics Agency (BPS) and previous research journals related to the research topic. The data collection technique in this study was library research. Library research is a data collection method based on books related to this research.

The analytical tools used were multiple linear regression, hypothesis testing, and the coefficient of determination. The data was processed using SPSS.

IV. RESEARCH RESULTS

Sumatra Island, located in Indonesia, is the sixth largest island in the world, with an area of 443,065.8 km². The island's population is approximately 42,409,510. It is also known by other names, including Pulau Percha, ANDALAS, or Suwarnadwipa (Sanskrit, meaning "golden island"). The Padang Roco Inscription of 1286 inscribed the words "swarnnabhumi" and "bhumi malayu" to refer to this island. Furthermore, the 14th-century Negarakertagama manuscript also refers to the island as "Bumi Malayu" (Malay).

The majority of Sumatra's population is Muslim, with some Protestant and Catholic Christians, particularly in the Tapanuli and Toba-Samosir regions, as well as in other parts of North Sumatra. In urban areas such as Medan, Pekanbaru, Batam, Pangkal Pinang, Palembang, and Bandar Lampung, there are several Buddhist and Confucian communities, primarily Chinese.

The following are the 11 largest ethnic groups in Sumatra according to the 2010 BPS census (including the Riau Islands, Bangka Belitung, Nias, Mentawai, Simeulue and the surrounding islands). Sumatra Island has 10 provinces, namely: Aceh Province, North Sumatra Province, West Sumatra Province, Riau Province, Riau Islands Province, Jambi Province, Bengkulu Province, South Sumatra Province, Bangka Belitung Province, and Lampung Province.

Coefficients^a

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	549.599	1220.719		.450	.731
	Investasi	-3.914	4.256	-1.491	-.920	.527
	Jumlah Penduduk	-57.212	161.861	-.699	-.353	.784
	Tenaga Kerja	-6.855	3.979	-1.895	-1.723	.335

Coefficients^a

Model		Zero-order	Correlations Partial	Part
1	(Constant)			
	Investasi	-.480	-.677	-.377
	Jumlah Penduduk	-.383	-.333	-.145
	Tenaga Kerja	.079	-.865	-.707

a. Dependent Variable: Economy

The SPSS results yield the following regression equation:

$$Y = 549.599 - 3.914 X_1 - 57.212 X_2 - 6.855 X_3$$

With the following assumptions:

1. The constant value is 549.599, meaning that if Investment, Population, and Labor Force are constant, the Economic Value (GRDP ADHK) of Sumatra Island is Rp. 549,599.
2. The constant value of X_1 is -3.914, meaning that if Investment increases by Rp. 1, the Economic Value (GRDP ADHK) of Sumatra Island will decrease by Rp. 3,914.
3. The constant value of X_2 is -57.212, meaning that if the Population increases by one person, the Economic Value (GRDP ADHK) of Sumatra Island will decrease by Rp. 57,212.
4. The constant value of X_3 is -6.855, meaning that if the workforce increases by one person, the economic value (GRDP ADHK) of Sumatra Island will decrease by Rp. 6,855.

t-Test

To determine the partial influence of investment, population, and labor on the economy of Sumatra Island, the t-test value is used. The SPSS results obtained are:

- T-count $X_1 = -0.920$, t-table value = -4.302 , t-count > t-table ($-0.920 > -4.302$), meaning H_0 is rejected and H_a is accepted. There is a significant influence between investment and the economy of Sumatra Island.
- T-count $X_2 = 0.353$, t-table value = 4.302 , t-count < t-table ($0.353 < 4.302$), meaning H_0 is accepted and H_a is rejected. There is no significant influence between Population Number and the Economy of Sumatra Island.
- T-count $X_3 = -1.723$, t-table value = -4.302 , t-count > t-table ($-1.723 > -4.302$), meaning H_0 is rejected and H_a is accepted. There is a significant influence between the Labor Force and the Economy of Sumatra Island.

f-test

To determine the simultaneous influence of investment, population, and labor force on the economy of Sumatra Island, the following f-test results are presented:

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.669	3	.223	1.647	.507 ^b
	Residual	.135	1	.135		
	Total	.805	4			

a. Dependent Variable: Economy

b. Predictors: (Constant), Labor, Investment, Population

The SPSS results show a calculated f-value of 1.647 and an f-table value of 10.13. Therefore, the calculated f-value < f-table ($1.647 < 10.13$), meaning that H_0 is accepted. H_a is simultaneously rejected. There is no significant influence between investment, population, and labor on the economy in Sumatra.

Coefficient of Determination

To determine the magnitude of the influence of investment, population, and labor on the economy in Sumatra, the coefficient of determination (KD) results are as follows:

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.912 ^a	.832	.327	.36799

a. Predictors: (Constant), Labor, Investment, Population

The partial effect of investment, population, and labor on the economy on Sumatra Island is calculated using the following equation:

- The effect of investment on the economy on Sumatra Island is: $KD X_1 = \beta \times \text{Zero Order} \times 100\% = (-1.491) \times (-0.480) \times 100\% = 71.57\%$

- The effect of population on the economy on Sumatra Island is: $KD X2 = \beta \times \text{Zero Order} \times 100\% = (-0.699) \times (-0.383) \times 100\% = 26.77\%$
- The effect of labor on the economy on Sumatra Island is: $KD X3 = \beta \times \text{Zero Order} \times 100\% = (-1.85) \times (0.0079) \times 100\% = -14.62\%$

The simultaneous influence of investment, population, and labor on the economy of Sumatra Island was calculated using the following equation:

$$\begin{aligned} KD &= R^2 \times 100\% \\ &= (0.912)^2 \times 100\% \\ &= 0.832 \times 100\% \\ &= 83.2\% \end{aligned}$$

The calculation results show that the influence of investment, population, and labor on the economy of Sumatra Island is 83.2%. The remaining $100\% - 83.2\% = 16.8\%$ is influenced by other variables not examined in this study. The t-test results showed no significant influence between investment, population, and labor on the economy of Sumatra Island. The results of this study also support the findings of previous research conducted by Tevi Mahreza (2019) entitled *The Influence of Domestic Investment, Foreign Investment, Labor and Infrastructure on the Economy in West Sumatra Province*, which states that there is a significant influence between domestic investment (PMDN) on the economic growth of West Sumatra, there is a significant influence between foreign investment (PMA) on the economic growth of West Sumatra, there is a significant influence between labor and the economic growth of West Sumatra. This means that the higher the value of the realization of PMDN, PMA and Labor, the higher the economic growth will be. (Rahayu, 2022)

V. CONCLUSION

Berdasarkan hasil penelitian dapat disimpulkan secara parsial terdapat pengaruh antara Investasi terhadap Perekonomian, Hal ini dibuktikan dengan hasil t-hitung $> t\text{-tabel}$ ($-0,920 > -4,302$), tidak terdapat pengaruh antara Jumlah Penduduk terhadap Perekonomian, hal ini dibuktikan dengan hasil t-hitung $< t\text{-tabel}$ ($0,353 < 4,302$), terdapat pengaruh antara Tenaga Kerja terhadap Perekonomian, hal ini dibuktikan dengan t-hitung $> t\text{-tabel}$ ($-1,723 > -4,302$). Secara parsial, besarnya pengaruh Investasi terhadap Perekonomian adalah 71,57, Jumlah Penduduk terhadap Perekonomian adalah 26,77 dan Tenaga Kerja terhadap Perekonomian adalah -14,62, Pengaruh antara investasi, jumlah penduduk dan tenaga kerja terhadap

Perekonomian di Pulau Sumatera adalah sebesar 83,2% sisanya 16,8% dipengaruhi oleh variabel lain yang tidak diteliti dalam penelitian ini.

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