



The Impact of Labor, Investment, and Human Development Index on Economic Growth: A Study of East Kalimantan Province

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ABSTRACT

This study aims to examine the factors affecting the economic growth of East Kalimantan province from 2017 – 2021. The analysis method used is regression panel data with dependent variables of economic growth and independent variables, namely labor, human development index, and investment with the best model is using Fixed effect mode (FEM). The results revealed that the human development and labor index obtained a significant positive value with a coefficient value which is also positive for economic growth which can be concluded to provide an increase in the amount of GDP, investment in economic growth has a significant effect and the value of the coefficient obtained is negative.

INTRODUCTION

Growth rate is the most important indicator of a country's economic health. In the contemporary epoch of globalisation, governmental policy and decision-making have increasingly revolved around the economy. The ability of a nation to enhance its productivity leads to the generation of additional employment opportunities and contributes to the enhancement of the standard of living for its populace, contingent upon the state of its economy. According to (Indayani & Hartono, 2020) The concept of "economic growth" pertains to the overall Gross Domestic Product (GDP) of a nation, representing its total output throughout a specific timeframe, which has experienced cumulative development or an increase in national production. The Gross Regional Domestic Product (GRDP) serves as a metric for quantifying the aggregate value of goods and services produced within a certain geographic region within a given time frame. The potential for economic growth is contingent upon the extent to which each economic sector contributes to the gross domestic product (GDP) of a given region (Rahmat Imanto, 2020)

Solow-Swan Model of Economic Growth is a correction to the Economic Growth Model previously introduced by Harrod-Domar. Solow's essential modification of the Harrod-Domar model allowed substitution between labor and capital (Todaro & Smith, 2011). Based on this theory, economic growth depends on increasing the availability of factors of production, such as

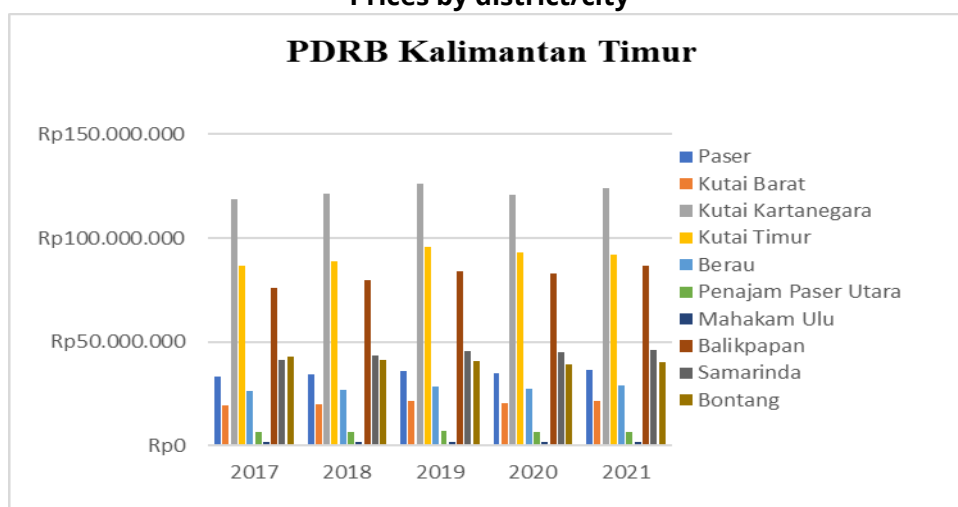
population, labor, capital accumulation, as well as the level of technological progress. Model Solow-Swan (Riyandi & Woyanti, 2022) The use of the connection between population expansion, capital accumulation, external technological improvements, and the scale of production is employed. Improved efficiency is a verified outcome of applying this technique, whether through training or engineering modifications. Within the Solow-Swan theoretical paradigm, technical challenges are regarded as a temporal-dependent function.

The function of the Solow-Swan theory can be explained as follows:

$$Y(t) = f [K(t), L(t), A(t)].....(1)$$

In this context, K refers to the accumulation of capital, L refers to labor, and A describes the rate of technological progress.

Figure 1 Data on the Development of Gross Regional Domestic Product (GRDP) at Constant Prices by district/city



Data source: BPS East Kalimantan

Based on chart 1, it can be seen that the GDP of East Kalimantan Province continues to experience an increase which only experienced moderate improvement. Each district in Indonesia faced an increase between 2017 and 2021. For example, Kutai Kartanegara Regency experienced an increase of approximately Rp126,272,372 in 2017 and a decrease of approximately Rp120,953,677 in the following year Due to the COVID-19 pandemic and its impact, the purchasing power of GRDP residents exposed to kartenegara kutai experienced shrinkage. The purpose of this study is to determine whether the GDP growth of East Kalimantan Province can affect investment, labor and human development index in accordance with neo-classical economic theory solow swan

LITERATURE REVIEW

Economic Growth

(Yunita & Ulfa Sentosa, 2021), (Istianto et al., 2021) dan (Prayitno & Yustie, 2020) It was mentioned The augmentation of labour will expedite the production output, consequently leading to an amplification in the overall output generated. This population could not only help raise the national income, but it could also solve the problem of unemployment. The aforementioned idea posits that economic growth is facilitated by technical advancements, which enhance the calibre of human resources in terms of their entrepreneurial and innovative capacities. According (Tasyim et al., 2021)and (Ali et al., 2020) Consequently, a greater amount of

value may be derived from a given set of inputs. Thus, it has been demonstrated that augmenting the Human Development Index (HDI) will yield a greater pool of skilled human capital capable of enhancing production and efficiency.

Investmen

(Al-Tsaman & Ain', 2021) , (Azizul et al., 2022) and (Agung et al., 2018) Investment, also referred to as capital investment, plays a crucial role in driving economic growth and development. Investing in production equipment or enhancing production capacities has the potential to stimulate economic growth and concurrently generate employment prospects for individuals. Investment may be defined as the allocation of financial resources towards the acquisition of capital goods and production equipment. This allocation is made with the purpose of replacing and enhancing existing capital goods and production equipment within an economy. The ultimate goal of investment is to facilitate the creation of goods and services in the future (Winarni et al., 2020) and (Wahyu Agustin & Cahyono, 2017)

Human Development Index

According to (Sandra Dwita Sari, 2022), (Asmoro et al., 2022) dan (Khoirunnisa & Prijanto, 2021) Indeks The Human Development Index (HDI) is a metric utilised to assess advancements in human development by considering various significant variables such as life expectancy, healthcare, education, and standard of living. As the economy undergoes growth, individuals' perceptions on the standards of living and well-being become more ambitious, thereby leading to a rise in the Human Development Index (HDI).

METHODS

This study used a quantitative approach that focused on the East Kalimantan region, consisting of 10 districts from 2017 to 2021, and used a panel model. The researcher establishes research variables that include whatever will be studied or researched to obtain information that can be used to make conclusions. Researchers obtained their data from BPS East Kalimantan. GRDP is a dependent variable that shows the total added value of business units of economic activity in a particular area. The value of GDP is GDP on the basis of constant prices for the period 2017–2021. Meanwhile, PMDN is an independent variable, which is the realization value of domestic investors' investment in the form of direct investment in East Kalimantan in the 2017–2021 period, and labor data is the number of workers. Analysis Method In this study, regression analysis was carried out using the Ordinary Least Square (OLS) method. The data in this study has different units, namely GDP, Investment, Labor unit, and HDI

The function model to be used in this study is as follows:

$$PDRB_{i,t} = \alpha_0 + \alpha_1 TK_{i,t} + \alpha_2 INV_{i,t} + \alpha_3 IPM_{i,t} + \epsilon_{i,t} \dots$$

Where

PDRB _{i,t}	= GRDP ADHK 2010 district/city I year t (Rp),
INV _{i,t}	= Aggregate National Investment district/city I year t (Rp).
TPAK _{i,t}	= TPAK district/city I year t (Rp).
IPM _{i,t}	= HDI for district/city i in year t (Rp).
α ₀	= Konstanta
Regression coefficient I	= 1, 2, 3, 4,....., 11 (trajectory data of 11 districts/cities).
T	= 1, 2,3,4,5 (time data series, 2017–2021) ε _{i,t} = error term

Chow Test

The criteria for making a decision are as follows: if the value of the statistical Chi-square is less than or equal to 0.05, then the use of FEM is preferable to CEM; if the Chi-square value is greater than or equal to 0.05, then the use of CEM is preferred over FEM.

Hausman Test

The decision criterion of the Hausman test is the ratio of the value of the Chi Square table (X^2) to the value of W at a predetermined level of significance. It is more accurate to use FEM than REM if the value of X^2 is greater than or equal to zero, and the reverse is true if X^2 is less than or equal to zero.

investigates relationships between variables in the model and tests research hypotheses. If t counts $>$ t table at a significance level of 5%, then the independent variable can exert a proportional influence on the fixed variable. But if the table is t -shaped (t calculate t table), then the null hypothesis holds, and the independent variable has no effect on the dependent one (Jamaludin, 2020). The F-test is employed to assess the statistical significance of the mutual influence between two variables. The alternative hypothesis posits that the collective influence of all independent factors on the dependent variable is statistically significant at a significance level of 0.05 (Yunianto Badan Pusat Statistik Penajam Paser Utara & Timur, 2021). A low coefficient of determination R^2 suggests that the independent variable exhibits limited explanatory power over the dependent variable. In contrast, a high R^2 value suggests that the independent variable is highly informative in predicting the outcome variable. dependent. ((Suharlina, 2020)

Labor Force with Economic Growth

Increasing the number of workers will speed up production, leading to more output. In addition to aiding in the expansion of the national economy, this workforce has the potential to solve the problem of unemployment.

H1: Labour can boost economic growth.

Investment with Economic Growth

Investment in production machinery and enhancements to manufacturing capacity both contribute to economic growth. By creating new places to work, raising wages, and advancing technology, investment can improve people's well-being.

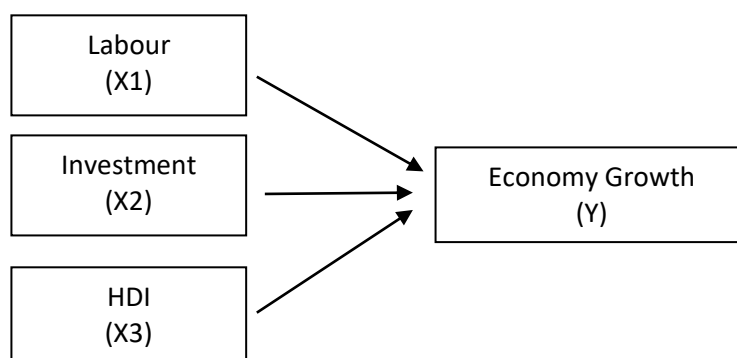
H2 : Economic expansion can be boosted by investments.

Human Growth and Economic Growth Index

Ketika ekonomi berkembang, harapan masyarakat tentang apa artinya hidup dengan baik dan sehat meningkat, mendorong peningkatan IPM.

H3 : Human population growth indicators can boost economic expansion.

Figure 2. Research Model



RESULTS

The purpose of this study was to examine the effect of Solow Swan's economic growth on cities in East Kalimantan province by analyzing investment, labor, and Human Development Index.

Chow Test

Table.1 Chow Test Results

Effect Test	Statistic	d.f	Prob
Cross-section F	51.279609	(10,41)	0.0000
Cross-Section Chi-square	143.177346	10	0.0000

Source: Process data 2023

According to the results of the Chow test, the probability of the F-test and Chi-Square is 0.0000, which means a significant value of 0.05 (5%). Therefore, it can be concluded that reject H0 and accept H1 are fixed effects for the selected model Model (FEM).

Hausman Test

Table 2. Hausman Test Result

Test Summay	Chi-Sq Statistic	Chi-Sq d.f	Prob
Cross-section random	8.792490	3	0.0322

Source: Process data 2023

Based on the results of the hausman test, it is obtained that the value of Prob. For Chi-square it is 0.0000 which means less than the significance value of 0.05 (5%). Thus, it can be concluded that H0 is rejected and H1 is accepted, hence the selected model is the Fixed Effect Model (FEM).

Regression estimation results

Table 3. Estimation Resregression Result

Variable	Coefficient	Std.error	t-statisti	Prob
TPAK	3292082	1616147	2.036994	0.0481
PMDN	-5350769	5853129	0.914172	0.3660
IPM	20510257	5540226	3.702062	0.0006
C	1.97E+09	3.86E+08	5.088964	0.0000
Effect Specification				
Cross-section fixed (dummy variable)				
R-Squared	0.930868			
Adjusted R-squared	0.908948			
F-statistic	42.46672			
Prob (F-Statistic)	0.000000			

Source: Process data 2023

Hypothesis testing

The regression model was evaluated using the t-test (partial), the R-test (coefficient of determination), and the F-test (simultaneous significance).

The findings derived from the regression analysis indicate that the variables TPAK, PMDN, and IPM together exert a cumulative impact of 0.93868% on the economic growth. This finding demonstrates that the model's independent variables collectively account for 93% of the observed variation.

According to the F-statistics, the labour force participation rate (TPAK), domestic investment (PMDN), and Human Development Index (HDI) exhibit a statistically significant influence on economic growth factors, with a significance level of 0.0000000%.

The variables of Technological Academic and Content Knowledge (TPAK) and Human Development Index (HDI) exhibit a noteworthy and favourable impact on the expansion of the economy. Conversely, the factors related to Programme Penyediaan Modal dan Dana Nasional (PMDN) do not demonstrate any discernible influence on economic growth within the scope of this study.

Analysis and Explanation of Findings

The fixed effect model equation can be derived from the regression findings presented in table 3. $PDR_{i,t} = 1.97E+09 -3292082 TPAK_{i,t} + -5350769 PMDN_{i,t} + 20510257 PMDN_{i,t} + \epsilon_{i,t} \dots$ [CX=R]

DISCUSSION

The Impact of Labour on Economic Growth The results of the test indicated a TPAK coefficient of 0.3292082, which exhibited statistical significance at a significance level of 0.05. This finding demonstrates a statistically significant positive relationship between a 1% increase in Technological, Pedagogical, and Content Knowledge (TPAK) and a corresponding 3.2% rise in Gross Domestic Product (GDP). This demonstrates that the theory has undergone comprehensive testing in the East Kalimantan province, revealing that labour force determinants exert a substantial influence on labour turnover within urban areas. Other studies undertaken by researchers support the conclusions of this study. (Asmoro et al., 2022) dan (Panelewen et al., 2020) The research findings indicate a positive relationship between enhanced employment possibilities and economic growth. Specifically, there is a correlation between economic expansion and rising employment rates, whereas economic recession is linked to declining employment levels.

The Effect of Investment on Economic Growth

The coefficient of -5350769 for the PMDN variable does not exhibit any discernible impact on the rate of economic growth. The data demonstrates a negative link between a 1% rise in PMDN and a 5% decline in GDP, as well as a 1% decrease in PMDN and a corresponding 5% increase in GDP. The conclusions of this study diverge from previous studies conducted by (Yunita & Ulfa Sentosa, 2021), (Suharlina, 2020) dan (Winarni et al., 2020) This study examines the relationship between PMDN (Penanaman Modal Dalam Negeri) and economic growth in Indonesia. The significance of domestic investment in relation to GDP growth can be deduced by considering the substantial magnitude of capital creation and the comparatively limited extent of government expenditure on consumption, in comparison to the scale of capital formation. According to research findings, capital and human resources are two distinct categories of investment. The research indicates that investment in the form of factory construction, which is intended to support economic activities, does not have a substantial influence on the economic growth of East Kalimantan. Nevertheless, as indicated in the table, the allocation of resources towards the enhancement of human capital infrastructure, such as education, is poised to exert a substantial influence on the advancement of the economy. This statement presents a contradiction to the Solow-Swan hypothesis, as it posits that economic growth can be propelled and maintained by capital (investment) and labour, while simultaneously keeping up with technical advancements.

The Effect of HDI on Economic Growth

The results of the test indicated a Human Development Index (HDI) value of 20,510,257, which demonstrated statistical significance at a significance level of 0.05. The data demonstrates a significant positive association, indicating that for each 1% increase in the Index of Poverty

Multidimensionality (IPM), there is a corresponding 20% increase in Gross Domestic Product (GDP). The findings of this investigation are supported by (Prayitno & Yustie, 2020) , (Fakhri et al., 2022) The study's findings suggest that there exists a positive and statistically significant relationship between the Human Development Index (HDI) and economic growth. This relationship is attributed to the crucial role played by the Index of Public Management (IPM) conditions in fostering economic progress across all districts and cities. Effective labour force management and integrated pest management (IPM) strategies have the potential to mitigate emissions, hence fostering enhanced economic development within urban areas.

CONCLUSION

The results of this study indicate that there exists a positive and statistically significant relationship between the level of worker participation in East Kalimantan and the region's economic growth. Specifically, a higher rate of participation in the labour force is associated with a more rapid advancement in the development of the nation's capital, as measured by the Urban Prosperity Index (IUP).

The Human Development Index (HDI) exhibits a constructive and statistically noteworthy impact on the economic growth of East Kalimantan. This relationship arises from the fact that a higher HDI reflects an escalating standard of living, facilitated by advancements in education and technology.

This observation aligns with the Solow-Swan theorem, a theoretical proposition asserting that augmenting capital and labour inputs should result in heightened technological advancement and subsequent economic growth.

Suggestion

The suggestion in the study is to increase economic diversification by creating sectors that may be non-mining, such as tourism, fisheries and renewable energy, to be able to support employment and improve the quality of education, health and training so that residents of East Kalimantan province can live prosperously

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