

Analysis of the Demographic Bonus Phenomenon in the Province of North Kalimantan

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KEYWORDS	ABSTRACT
<p>Keywords: Gross Regional Domestic Product (GRDP); Labor Force Participation Rate (LFPR); Open Unemployment Rate (OUR).</p> <p>Conflict of Interest Statement: The author(s) declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.</p> <p>Copyright © 2025 AMAR. All rights reserved.</p>	<p>Purpose: This study investigates the role of the demographic bonus in shaping economic growth and labor market outcomes in North Kalimantan Province. Specifically, it examines its effects on GRDP, labor force participation rate (LFPR), and open unemployment rate (OUR), while contributing to the limited empirical evidence at the sub-provincial level and offering implications for evidence-based regional policy.</p> <p>Research Design and Methodology: This study employs a quantitative descriptive approach using secondary data from the Central Bureau of Statistics (CBS) for the period 2018-2023. The unit of analysis covers regencies and cities in North Kalimantan Province. The study examines one independent variable (demographic bonus) and three dependent variables: gross regional domestic product (GRDP), labor force participation rate (LFPR), and open unemployment rate (OUR). Data analysis techniques include descriptive analysis, sign test, and panel data regression using the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The best model is selected through Chow, Hausman, and Lagrange Multiplier tests. Classical assumption tests are also conducted to ensure the validity of the model.</p> <p>Findings and Discussion: The results show that the demographic bonus has a significant effect on gross regional domestic product (GRDP), the labor force participation rate (LFPR), and the open unemployment rate (OUR).</p> <p>Implications: This research indicates the need for government policy strategies in utilizing the demographic bonus to improve the quality of human resources and develop work programs that can absorb labour optimally.</p>

Introduction

Economic development is a process of change that is pursued by a Country continuously in order to develop economic activities and the standard of living of its people so that people's welfare is expected to increase.

Population is an important asset for a region in a development process. The better the quality of the population of a region, the better the development process of a region. However, if the quality of the population is low, it will have a negative impact on a Regency such as a decrease in economic growth, decreased labour absorption, increased unemployment, increased poverty and increased crime.

The demographic bonus is a condition of change in the age structure of the population as a result of the process of demographic change, namely the decline in the birth rate and the death rate. If the birth rate decreases, the number of people aged less than 15 years also decreases, and the population of productive age 15-64 years increases due to the large number of births in the past. Meanwhile, due to improvements in health status, life expectancy is getting longer. The following is the development of the productive age population in North Kalimantan province.

Several previous studies have examined the relationship between the demographic bonus and economic indicators at the national or provincial level in Indonesia. For instance, Hermawan (2019) analysed the effect of the demographic bonus on economic growth at the national level, while Saumana et al. (2020) investigated its impact in Southeast Minahasa Regency. Similarly, Arifin and Faridatussalam (2023) studied the factors influencing the demographic bonus in East Nusa Tenggara. However, these studies have predominantly focused on a single dependent variable or regions outside Kalimantan, leaving a gap in understanding how the demographic bonus simultaneously affects multiple labour market outcomes—namely gross regional domestic product (GRDP), labour force

participation rate (LFPR), and open unemployment rate (OUR)—in the unique socio-economic context of North Kalimantan Province.

Furthermore, North Kalimantan Province, as the youngest and one of the fastest-growing provinces in Indonesia, possesses a distinct demographic and economic structure characterised by a high dependency on the natural resource sector, a rapidly expanding productive-age population, and significant inter-regional disparities among its five regencies and cities. Despite the strategic importance of this region, empirical research specifically addressing the multidimensional impact of the demographic bonus at the sub-provincial level in North Kalimantan remains very limited. This study therefore aims to fill this research gap by simultaneously analysing the effect of the demographic bonus on GRDP, LFPR, and OUR across all regencies and cities in North Kalimantan Province for the period 2018-2023, using panel data regression analysis to produce more robust and policy-relevant findings.

Research Design and Methodology

The method used in collecting data and information related to this research is through library research methods sourced from books, journals, articles, websites and other written sources that are in accordance with the problems and data being investigated. In addition, this study uses annual secondary data in the span of 2018-2023 with one independent variable, namely demographic bonus, as well as three dependent variables, namely gross regional domestic product, labour force participation rate and open unemployment rate.

Data was obtained through documentation techniques, which is the collection of secondary data from official sources such as the Central Statistics Agency (CBS). The data includes economic statistics publications and annual reports that contain quantitative information related to the research variables.

There are three data analysis techniques used in this study, namely descriptive analysis by comparing the independent variable with the dependent variable, sign test by giving a positive sign for values above the median while a negative sign for values below the median and panel data regression analysis. Panel data regression analysis is a method used to analyse data that includes cross section data and time series data. According to Basuki (2021) to estimate regression model parameters with panel data, there are three standard estimation methods that can be used to determine the best model, namely the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). Of the three models, the best model selection will be carried out through several types of tests, namely the chow test, hausman test and lagrange multiplier test.

After determining the best model, this study also uses a classic assumption test consisting of normality test, autocorrelation test, multicollinearity test and heteroscedasticity test.

Descriptive Analysis

According to Ghozali (2018) descriptive statistical analysis is "Statistics that have the task of collecting, processing and analysing data and then presenting it in the form of a description or description". According to Sugiyono (2019) Descriptive analysis is "Statistics used to analyse data by describing or describing the data that has been collected as it is without intending to make general conclusions or generalisations".

The descriptive statistical analysis used is to compare the demographic bonus variable with the gross regional domestic product variable, the labour force participation rate and the open unemployment rate with a time interval of five years. This is done to see the relationship between the independent variable and the dependent variable.

Sign Test

Sign Test is an analytical method to test the comparative hypothesis of two correlated samples, where the data has an ordinal measurement scale. This method of analysis uses data expressed in the form of signs, namely positive and negative signs, of the difference between paired observations. In this case the Sign Test test does not show how much influence quantitatively, but only a statement has a positive or negative influence (Usaman Husaini 2008). In this sign test, the median method is used or summing up the average existing values for the basis of decision making. decision making as follows:

- a. If the sample value is $>$ from the median value then a sign is set 1
- b. If the sample value = median value then a sign is set 0
- c. If the sample value is $<$ than the median value, a sign of -1 is set.

Panel Data Regression

The panel data regression model is a model used in the analysis method of a study. In panel data there are advantages that will be obtained. First, the amount of data put together from time series and cross section data will result in a greater degree of freedom. Second, the information from the time series and cross section data put together can overcome the problems that arise when there is a variable omission problem (Widarjono, 2018). The panel data regression model in this study is as follows:

$$Y_{(1,2,3)it} = \alpha + \beta_1 X_{it} + \varepsilon_{it}$$

Description:

- Y_{1it} = Gross regional domestic product
- Y_{2it} = Labour force participation rate
- Y_{3it} = Open unemployment rate
- α = Constant
- X_{it} = Demographic Bonus
- β_1 = Independent variable regression coefficient
- ε = Error term
- i = Cross-section of Regency / City data
- t = Time Series annual data

In the panel data regression model, there are 3 (three) models with the approach used to get the best regression results in the study, namely:

1. Common Effect Model

This model is a type of regression that aims to generalise the data in the simplest and easiest way possible. The assumption in panel data regression using the common effects method is that the intercept and slope remain constant both over time and between individuals. The systematic common effects model combines time series data and cross section data into panel data (pool data), then the data is analysed using the OLS method (Sriyana, 2014).

2. Fixed Effect Model

Regression models that can identify differences in constants between objects, even if the regression coefficients are the same, are known as fixed effects regression models. This means that an observation object has a constant that is fixed for various time periods, and the regression coefficient remains constant over time (time invariant). In the fixed effects approach, estimation is done by adding dummy variables to show the difference between intercepts. Dummy variables are used to distinguish one object from another. This model can be estimated using the Least Squares Dummy Variables (LSDV) technique (Sriyana, 2014). The following mathematical model in the fixed effect regression model is:

3. Random Effect Model

The random effect model is an alternative that is used when the fixed effect model is not appropriate. In this model, it is assumed that differences in intercepts and constants are caused by residuals or errors that arise due to variations between units and time periods that occur randomly. Therefore, the random effect model is also known as the error component model (ECM) or the Generalised Least Square (GLS) technique.

Classical Assumption Test

This study conducted a classic assumption test to test the panel data regression model. The classic assumption test aims to make the panel data regression test in this study produce significant and representative values. The classic assumption tests used in this study are normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test.

1. Normality Test

The normality test aims to determine whether the confounding or residual variables in the regression model have a normal distribution. The t test and f test assume that the residuals follow a normal distribution. If this assumption is not met, the statistical test results will be invalid for small samples. Wahyudin (2015) states that parametric statistics must fulfil the assumption of normal distribution in the research data sample. This statistic uses a ratio or interval data scale and includes parametric statistical procedures, including the t-student test and regression analysis. A good regression model is one in which the data is normally distributed or close to normal.

- a. If the probability value < 0.05 then the residual data is not normally distributed.
- b. If the probability value is > 0.05 , it can be assumed that the residual data is normally distributed.

2. Multicollinearity Test

The multicollinearity test aims to evaluate whether there is a correlation between the independent variables in the regression model. A good model should not show a high correlation between independent variables (Ghozali and Ratmono, 2017). The existence of multicollinearity in a regression model can be identified through the output of the correlation matrix between independent variables.

- a. If the resulting value is < 0.90 , it can be said that there is no multicollinearity.
- b. If the resulting value is > 0.90 then it can be said that multicollinearity occurs.

In data testing, if the tester gets a correlation value > 0.90 , the tester is required to delete one of the variables that has a value above the predetermined threshold of 0.90 (Ghozali and Ratmono, 2017).

3. Heteroscedasticity Test

The heteroscedasticity test aims to determine whether the regression model in this study violates classical assumptions or not. A good regression model must be free from heteroscedasticity. If the probability value of each variable > 0.05 or 5%, then there is no heteroscedasticity problem. Conversely, if the probability value of each variable < 0.05 or 5%, there is a heteroscedasticity problem. The heteroscedasticity test can be performed using the Harvey Test.

4. Autocorrelation Test.

The autocorrelation test is used in the regression model to detect a correlation between residuals in one observation and another. Autocorrelation can be tested using the Breusch-Godfrey test. If the probability value (prob.) < 0.05 or 5%, the regression model has autocorrelation. Conversely, if the probability value (prob.) > 0.05 or 5%, the model does not experience autocorrelation.

Findings and Discussion

Findings

Descriptive Analysis

This analysis will compare the demographic bonus variable with the gross regional domestic product variable, the labour force participation rate and the open unemployment rate with a time interval of five years.

**Table 1 Comparison Data
 Demographic Bonus and Gross Regional Domestic Product (GRDP)
 demographic Bonus and GRDP**

Regency/City	Demographic Bonus		Growth	GRDP		Growth
	2018	2023		2018	2023	
Tarakan	0,88	0,98	1,11	20.647.433	25.647.260	1,24
Malinau	1,20	1,27	1,06	7.374.488	8.927.108	1,21
Bulungan	1,04	1,21	1,16	11.106.352	13.178.492	1,19
KTT	0,94	1,23	1,31	3.523.207	4.177.360	1,19
Nunukan	1,07	1,21	1,13	14.854.588	17.914.741	1,21

CBS Data Source, North Kalimantan, 2025

Based on table 1 of the comparison data above, it is known that the Regency / City in North Kalimantan Province is experiencing a demographic bonus and is offset by an increase in gross regional domestic product growth. Regions that have balanced growth are shown by Tarakan City and Malinau Regency, this is because a significant increase in the number of productive age population growth can encourage an increase in the amount of gross regional domestic product growth. It can be said that Tarakan City and Malinau Regency can make good use of the demographic bonus phenomenon that occurs in their respective regions through increased population productivity. Meanwhile, regions that do not have balanced growth are shown by Bulungan Regency, Nunukan Regency and Tana Tidung Regency due to very high growth in the productive age population but low growth in gross regional domestic product. It can be said that Bulungan Regency, Nunukan Regency and Tana Tidung Regency have not maximally utilised the demographic bonus to increase gross regional domestic product.

Table 2 Comparison Data

Demographic Bonus and Labor Force Participation Rate

demographic Bonus and Labor Force Participation Rate						
Regency/City	Demographic Bonus		Growth	Labor Force Participation Rate		Growth
	2018	2023		2018	2023	
Tarakan	0,88	0,98	1,11	60,30	66,14	1,10
Malinau	1,20	1,27	1,06	75,04	74,26	0,99
Bulungan	1,04	1,21	1,16	68,68	71,86	1,05
KTT	0,94	1,23	1,31	62,18	75,88	1,22
Nunukan	1,07	1,21	1,13	71,83	71,93	1,00

CBS Data Source, North Kalimantan, 2025

Based on table 2 comparison data above, it is known that the Regency / City in North Kalimantan Province is experiencing a demographic bonus and is balanced by an increase in the growth of the labour force participation rate. Regions that have balanced growth are shown by Tarakan City and Tana Tidung Regency. This is because the higher the number of productive age population, the higher the labour force participation rate. A high labour force participation rate indicates that the potential of the workforce is optimally utilised. Meanwhile, regions that do not have balanced growth are shown by Bulungan Regency and Nunukan Regency due to the very high growth of the productive age population but the labour force participation rate is still low. It can be said that Kabupaten Bulungan and Kabupaten Nunukan are still not maximally utilising the potential of the local workforce. Meanwhile, Malinau Regency is experiencing problems in managing the potential of the local workforce, indicated by the growth of labour force participation, which is minus. It can be said that Malinau Regency has not been able to manage the high number and potential of local labour.

Table 3 Comparison Data

Demographic Bonus and Labour Force Participation Rate

demographic Bonus and Open Unemployment Rate						
Regency/City	Demographic Bonus		Growth	Open Unemployment Rate		Growth
	2018	2023		2018	2023	
Tarakan	0,88	0,98	1,11	5,89	5,25	0,89
Malinau	1,20	1,27	1,06	4,24	3,19	0,75
Bulungan	1,04	1,21	1,16	4,86	4,54	0,93
KTT	0,94	1,23	1,31	5,18	3,24	0,63
Nunukan	1,07	1,21	1,13	4,77	2,69	0,56

Sumber Data; CBS Kalimantan Utara, 2025

Based on Table 3 comparison data above, it is known that the Regency / City in North Kalimantan Province is experiencing a demographic bonus and is balanced by a decrease in the growth of the open unemployment rate. Regions that have balanced growth are shown by Nunukan Regency and Tana Tidung Regency because the growth of the productive age population is balanced by the growth of the low unemployment rate. It can be said that Nunukan and Tana Tidung can overcome the problem of population growth in the labour force with the availability of jobs that are balanced with job seekers so that they can reduce the open unemployment rate. Meanwhile, regions that have not had balanced growth are shown by Malinau Regency because the growth of the productive-age population is not too high, which can be balanced by a not too significant decrease in the open unemployment rate. Then Bulungan Regency and Tarakan City experienced problems where the productive age population experienced a very significant increase but was not matched by a decrease in the open unemployment rate so that it could be said that Bulungan Regency and Tarakan City had not been able to overcome the problem of population increase in providing jobs to reduce the number of unemployed.

Sign test

In this sign test, the median method or summing up the average value of each variable is used as the basis for decision making. If the area that has a value above the median then it will get a positive sign of 1, if the area that has the same value as the median then it will get a value of 0 and if the area that has a value below the media then it will get a negative value of 1.

Table 4 Sign Test Results

Regency/City	Year 2018			
	Demographic Bonus	DRDP	Labor Force Participation Rate	Open Unemployment Rate
Tarakan	1	1	-1	-1
Malinau	-1	-1	1	1
Bulungan	-1	-1	-1	1
KTT	-1	-1	-1	-1
Nunukan	1	1	1	1

Regency/City	Year 2023			
	Demographic Bonus	DRDP	Labor Force Participation Rate	Open Unemployment Rate
Tarakan	1	1	-1	-1
Malinau	-1	-1	1	1
Bulungan	1	-1	-1	-1
KTT	-1	-1	1	1
Nunukan	1	1	-1	1

Source: Excel, processed, 2025

Based on table 4 of the results of the sign test data analysis above, it can be seen that the regencies / cities in North Kalimantan Province have their respective advantages as follows:

1. Tarakan City: In 2018 Tarakan City has a positive sign in the field of demographic bonus and gross regional domestic product, but has a negative sign in the field of labour force participation rate and open unemployment rate. Then in 2023 there is no shift or change in Tarakan City.
2. Malinau Regency: In 2018, Malinau Regency has a positive sign in the areas of labour force participation rate and open unemployment rate, but has a negative sign in the areas of demographic bonus and gross regional domestic product. Then in 2023 there is no shift or change in Malinau Regency.
3. Bulungan Regency: In 2018 Bulungan district has a positive sign in the field of open unemployment rate and has a negative sign in the field of demographic bonus, gross regional domestic product and labour force participation rate. Then in 2023 Bulungan Regency experienced a change, namely in the demographic bonus field which in 2018 had a negative sign to a positive sign and in the open unemployment rate field which in 2018 had a positive sign to a negative sign.
4. Tana Tidung Regency: In 2018 Tana Tidung Regency has no positive sign and has a negative sign in the field of demographic bonus, gross regional domestic product and labour force participation rate and open unemployment rate. Then in 2023 Tana Tidung Regency experienced changes, namely in the field of labour force participation rate which in 2018 had a negative sign to a positive sign and in the field of open unemployment rate which in 2018 had a negative sign to a positive sign.
5. Nunukan Regency: In 2018, Kabupaten Nunukan has a positive sign in the areas of demographic bonus, gross regional domestic product, labour force participation rate and open unemployment rate and has no negative sign. Then in 2023, Nunukan Regency experienced a change, namely in the field of labour force participation rate, which in 2018 had a positive sign to a negative sign.

Data Panel Regression

Based on the data collected from the research, analysis is needed to determine the significant effect of the independent variable, namely demographic bonus, on gross regional domestic product, labour force participation rate and open unemployment rate as the dependent variable.

Table 5 Panel Data Regression Results

Variable	Coefficient	Std.Error	t-Statistic	Prob.
Y ₁	13,98782	0,515858	27,11564	0,0000
Y ₂	0,895339	0,082364	10,87056	0,0000
Y ₃	27,40249	6,189484	4,427266	0,0002
	0,543348	0,0127709	4,254571	0,0003

X	0,396079 -16,69573	0,059901 4,501482	6,612184 3,708940	0,0000 0,0011
R-Squared	0,994371 0,778728 0,684824			
Ajusted R-Squared	0,993198 0,732629 0,619162			
F-Statistic	847,9217 16,89272 10,42959			
Prob. (F-Statistic)	0,000000 0,000000 0,000021			

Source: E-views 12, processed, 2025

Based on the Fixed Effect Model (FEM) regression results, the regression model equation results are as follows:

$$Y_{1it} = 13.98782 + 0.543348X + \varepsilon$$

$$Y_{2it} = 0.895339 + 0.396079X + \varepsilon$$

$$Y_{3it} = 27.40249 - 16.69573X + \varepsilon$$

Based on the panel data regression equation above, it can be explained as follows:

1. The constant value of Y_1 of 13.98782 indicates that, if the value of the independent variable is considered constant, the gross regional domestic product is 13.98782.
2. The constant value of Y_2 of 0.895339 indicates that, if the value of the independent variable is considered constant, the labour force participation rate is 0.895339.
3. The constant value of Y_3 of 27.40249 indicates that, if the value of the independent variable is considered constant, the open unemployment rate is 27.40249.
4. The value of the demographic bonus variable on gross regional domestic product has a coefficient of 0.543348. this indicates that, if the demographic bonus increases by 1 unit, the gross regional domestic product will increase by 0.543348. The t test results on the demographic bonus variable (X) obtained a t value of 4.254571 > t table which is 1.703 and a sig value of 0.0003 < 0.05, then H_0 is rejected and H_a is accepted. This finding confirms that the demographic bonus variable has a significant effect on gross regional domestic product in the Regency / City of North Kalimantan Province.
5. The value of the demographic bonus variable on the labour force participation rate has a coefficient of 0.396079. This shows that, if the demographic bonus increases by 1 unit, the labour force participation rate will increase by 0.396079. with the results of the t test on the demographic bonus variable (X) obtained the t value of 6.612184 > t table which is 1.703 and a sig value of 0.0000 < 0.05, then H_0 is rejected and H_a is accepted. This finding confirms that the demographic bonus variable has a significant effect on the labour force participation rate in the Regency / City of North Kalimantan Province.
6. The value of the demographic bonus variable on the open unemployment rate has a coefficient of -16.69573. this indicates that, if the demographic bonus increases by 1 unit, the open unemployment rate will decrease by 16.69573. The result of t test on demographic bonus variable (X) obtained t value of 3.708940 > t table which is 1.703 and sig value of 0.0011 < 0.05, then H_0 is rejected and H_a is accepted. This finding confirms that the demographic bonus variable has a significant effect on the open unemployment rate in the Regency / City of North Kalimantan Province.

Classical Assumption Test

1. Normality Test

The normality test aims to determine whether the confounding or residual variables in the regression model have a normal distribution. The t test and f test assume that the residuals follow a normal distribution, so the study uses the Jarque Berra (JB) test.

Table 6 Normality Test

Jarque-Bera	Probabilitas
1.006198	0.604654
3.886442	0.143242
0.657898	0.71968

Source: E-views 12, processed, 2025

Based on the three figures above, it can be concluded as follows:

1. The Jarque Berra value for the gross regional domestic product variable is $1.006198 > 0.05$ and the probability value is $0.71968 > 0.05$. So it can be concluded that the data is normally distributed.
 2. The Jarque Berra value for the labour force participation rate variable is $3.886442 > 0.05$ and the probability value is $0.143242 > 0.05$. So it can be concluded that the data is normally distributed.
 3. The Jarque Berra value for the open unemployment rate variable is $0.657898 > 0.05$ and the probability value is $0.71968 > 0.05$. So it can be concluded that the data is normally distributed.
2. Heteroscedasticity Test
 Heteroscedasticity test aims to see whether or not there is an inequality of variance from the residuals of one observation to another. The heteroscedasticity test in this study uses the Glejser method. If the sig value > 0.05 then there are no symptoms of heteroscedasticity.

Table 7 Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y ₁	0,040232	0,050457	0,797353	0,4320
Y ₂	0,103997	0,030666	3,391234	0,0622
Y ₃	0,585675	0,613592	0,954503	0,3480
X	0,010237	0,012272	0,834132	0,4113
	-0,014295	0,007459	-1,916492	0,0656
	0,081708	0,441032	0,185264	0,8544

Source: E-views 12, processed, 2025

Based on the results of the heteroscedasticity test above, it shows that the probability value is greater than the sig value. (> 0.05). The probability of gross regional domestic product variable is $0.4320 > 0.05$. The probability of the labour force participation rate variable is $0.0622 > 0.05$, the probability of the open unemployment rate variable is $0.3480 > 0.05$, so it can be concluded that there are no symptoms of heteroscedasticity in this study.

Discussion

The Effect of Demographic Bonus on Gross Regional Domestic Product

Based on the research results, it shows that the demographic bonus has a positive and significant effect on gross regional domestic product. This indicates that the demographic bonus movement plays an important role in influencing gross regional domestic product. Thus this study rejects the H₀ hypothesis and accepts the H_a hypothesis, which states that the demographic bonus has a significant impact on gross regional domestic product.

Empirical evidence of research based on the results of panel data regression analysis that has been carried out in this study obtained that the demographic bonus variable has a significant effect with the results of the t test on the demographic bonus variable (X) obtained a t value of $4.254571 > t$ table which is 1.703 and a sig value of $0.0003 < 0.05$, then H₀ is rejected and H_a is accepted. In addition, the coefficient of demographic bonus on gross regional domestic product of 0.543348 indicates that every increase in demographic bonus by 1 unit will potentially increase gross regional domestic product by 0.543348. This finding confirms that the demographic bonus variable has a significant effect on gross regional domestic product in the Regency / City of North Kalimantan Province.

Effect of Demographic Bonus on Labour Force Participation Rate

Based on the research results, it shows that the demographic bonus has a positive and significant influence on the labour force participation rate. This indicates that the demographic bonus movement plays an important role in influencing the labour force participation rate. Thus, this study rejects the H₀ hypothesis and accepts the H_a hypothesis, which states that the demographic bonus has a significant impact on the labour force participation rate.

Empirical evidence of this research is based on the results of panel data regression analysis that has been carried out, in this study it is obtained that the demographic bonus variable has a significant effect with the results of the t test on the demographic bonus variable (X) obtained a t value of 6.612184 > t table which is 1.703 and a sig value of 0.0000 < 0.05, then H₀ is rejected and H_a is accepted. In addition, the coefficient of demographic bonus on labour force participation rate is 0.396079, indicating that every increase in demographic bonus by 1 unit will potentially increase the labour force participation rate by 0.396079. This finding confirms that the demographic bonus variable has a significant effect on the labour force participation rate in the regencies/cities of North Kalimantan Province.

Effect of Demographic Bonus on Open Unemployment Rate

Based on the research results, it shows that the demographic bonus has a positive and significant influence on the labour force participation rate. This indicates that the demographic bonus movement plays an important role in influencing the labour force participation rate. Thus this study rejects the H₀ hypothesis and accepts the H_a hypothesis, which states that the demographic bonus has a significant impact on the labour force participation rate.

Empirical evidence of this research is based on the results of panel data regression analysis that has been carried out, in this study it is obtained that the demographic bonus variable has a significant effect with the results of the t test on the demographic bonus variable (X) obtained a t value of 6.612184 > t table which is 1.703 and a sig value of 0.0000 < 0.05, then H₀ is rejected and H_a is accepted. In addition, the coefficient of demographic bonus on labour force participation rate is 0.396079, indicating that every increase in demographic bonus by 1 unit will potentially increase the labour force participation rate by 0.396079. This finding confirms that the demographic bonus variable has a significant effect on the labour force participation rate in the districts/cities of North Kalimantan Province.

Conclusion

Based on the results of research that has been carried out through several stages, it can be concluded as follows:

1. From the results of descriptive analysis of comparisons, it shows that regions that have a balanced level between population growth and gross regional domestic product are shown by Tarakan City and Nunukan Regency, then regions that have a balanced level between population growth and labour force participation rate are shown by Tana Tidung Regency and Tarakan City, finally regions that have a balanced level between population growth and open unemployment rate are shown by Tana Tidung Regency and Nunukan Regency.
2. From the results of the descriptive analysis of the sign test, it shows that in the demographic bonus sign test there are three regions that experience the highest growth in productive age population, namely Tarakan City, Nunukan Regency and Bulungan Regency, then that in the gross regional domestic product sign test there are two regions that experience the highest increase in gross regional domestic product, namely Kota Tarakan and Nunukan Regency, then 0-that in the labour force participation rate sign test there are two regions that have the highest percentage of LFPR, namely Tana Tidung Regency and Malinau Regency, and finally that in the open unemployment rate sign test there are three regions that have succeeded in reducing the lowest open unemployment rate, namely Malinau Regency, Nunukan Regency and Tana Tidung Regency.
3. From the panel data regression test results to see the partial effect, it shows that the demographic bonus has a significant effect on gross regional domestic product with a t value of 4.254571 > t table of 1.703 and a sig value of 0.0003 < 0.05, then the demographic bonus has a significant effect on the labour force participation rate with a t value of 6.612184 > t table which is 1.703 and sig value 0.0000 < 0.05, and finally the demographic bonus has a significant effect on the open unemployment rate with the obtained t value of 3.708940 > t table which is 1.703 and sig value 0.0011 < 0.05.

References :

- Achmad Nur Sutikno. (2020). The Demographic Dividend in Indonesia. VISIONER: Journal of Local Government in Indonesia, 12(2), 421-439.
- Arifin, F., & Faridatussalam, S. R. (2023). Analysis of Factors Influencing the Demographic Dividend in East Nusa Tenggara from 2017 to 2021. JEMSI (Journal of Economics, Management, and Accounting), 9(3), 958-966.

- Edwin Maulana Rozmar and Adi Bhakti, "The Impact of Population Growth, Labor Force Participation Rate, and Dependency Ratio on Economic Growth in Jambi Province," 6, no. 5 (2017): 1-10.
- Ghozali, Imam (2018). *Multivariate Analysis Applications Using IBM SPSS 25*. Semarang: Diponegoro University Publishing House.
- Ghozali, I., & Ratmono, D. (2017). *Multivariate Analysis and Econometrics Using Eviews 10*. Diponegoro University Publishing House.
- Hermawan, I. (2019). Analysis of the Impact of the Demographic Dividend on Economic Growth. *Jurnal Aktiva: Accounting and Finance Research*, 1(2).
- Saumana, N., Rotinsulu, D. C., & Rotinsulu, T. O. (2020). The Impact of the Demographic Dividend on Economic Growth in Southeast Minahasa Regency. *Journal of Regional Economic and Financial Development*, 21(4), 95-109.
- Sriyana, Jaka. 2014. *Panel Data Regression Methods*. Ekosiana, Yogyakarta.
- Sugiyono. (2019). *Quantitative and Qualitative Research Methodology and R&D*. Bandung: ALFABETA.
- Wahyudin. (2015). *Research in Mathematics Education*. Refika Aditama.
- Widarjono, Agus. 2018. *Introduction to Econometrics and Its Applications with an Eviews Guide*. Yogyakarta, UPP STIM YKPN Yogyakarta.