



THE EFFECT OF POPULATION, LABOR FORCE ON ECONOMIC GROWTH IN OIC COUNTRIES

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Abstract

The population has an important role in accelerating or slowing down the economic growth of a country. This study aims to examine the effect of the male and female population and labor force on economic growth. The objects of this study were 5 OIC countries in the period 2010-2019. The method used in this research is panel data regression analysis. Researchers found that population size has a significant negative impact on economic growth. Meanwhile, the number of the labor force has a significant positive effect on increasing economic growth. However, the male labor force has a significant negative effect and the female workforce has a significant positive effect in increasing economic growth in 5 OIC (Indonesia, Pakistan, Egypt, Nigeria, and Bangladesh) during the 2010-2019 period.

Keywords: Population, Labor Force, Labor Force Male, Labor Force Female, GDP

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INTRODUCTION

Economic development is one aspect of life that is constantly being developed throughout the world. This is because economic development concerns the welfare of the wider community. The main goal of economic development is to achieve the prosperity of all people in a country equally (Rohman et al., 2021). To achieve this goal, the state will spend large funds to build supporting economic facilities and infrastructure (Mulyani, 2017). In addition, an important indicator to measure the success of a country's development is economic growth. The size of a country's economic growth can be interpreted as an increase in GDP/GNP regardless of whether the increase is larger or smaller than the population growth rate, or whether there is a change in the economic structure (Todaro, 2000). The theory of Malthus (1798) says that the relationship between economic growth and population growth has a geometric pattern. Azam et al. (2020) tested the theory of Malthusian and Kremer that population growth has a positive impact on economic growth in the short and long term.

Although the relationship between population growth and economic growth is controversial, population growth has an important role in economic growth and may even contribute to an increase in per capita output growth in some cases (Peterson, 2017).

This is because the gross domestic product used as a proxy variable for economic growth is the contribution of the active population, which produces goods and services to meet the needs of the community and in other words, the number of people who are available to work and those aged over 16 years are included in the labor force. Usually, developing countries face the problem of low labor force participation rates (Shahid, 2014).

Yakubu et al. (2018) revealed that labor is an asset for developing countries as measured by the level of labor force participation. In addition, this study finds that labor force participation is an important driver for economic growth. However, there are still gaps between outcomes and opportunities for men and women in terms of access to education, income, employment, access to formal employment, access to managerial positions, access to productive inputs, political representation, or bargaining power within the household.

Gender is one of the drivers of economic growth. This started since the world war which was marked by an increase in the female workforce. When women have greater access to secondary education and the labor market, it will have a positive impact on economic growth.

However, when men and women are combined under the same conditions, it will be able to increase the economic growth achieved. So for the sake of the welfare of the citizens, both men and women must participate together in finding solutions that do not exclude women (Cabeza-García et al., 2018).

On the other hand, based on data from the *world bank*, the population of OIC countries in the last three years has continued to increase. However, the problem is whether this population will become an obstacle or will it become a driver of a country's economic growth. Ali et al. (2015) say that population growth has both positive and negative impacts.

Table. 1. Population Growth 2017-2019

Country	Number of Population		
	2017	2018	2019
Indonesia	264.645.886	267.663.435	270.625.568
Pakistan	207.896.686	212.215.030	216.565.318
Mesir	96.442.593	98.423.595	100.388.073
Nigeria	190.873.311	195.874.740	200.963.599
Bangladesh	159.670.593	161.356.039	163.046.161

Therefore, this study aims to examine the effect of population growth and how the contribution of the percentage of men and women to economic growth in the OIC countries, whether it has a negative or positive impact.

THEORETICAL BASIC

Population

An increase in population will provide an advantage in economic development.

However, the population must be balanced with the ability and qualified human resources. Because, if the quality of human resources (Human Resources) is low, it can be the cause of hampering economic growth. The inhibition of economic growth influences the welfare of the community itself (Diramita, 2018). The theories of population growth are divided into, among others:

The Theory of Thomas Robert Malthus

Malthus describes the population of a country as a serious problem, according to him the population if not prevented it will grow twice every 30 or 40 years, and at the same time land, supplies natural resources, and other factors of production began to decrease so that resources were scarce. With reduced resource scarcity, per capita income will be low or commonly referred to as absolute poverty. To overcome this, Malthus recommended that every resident try to restrain their lust and limit their offspring (Todaro, 2000). Von Hayek (1988) states that population growth is not related to economic growth. The Malthusian fear, that is, the fear of overpopulation is completely unfounded. An exaggerated fear. It explains how the higher levels of human relations have evolved to cope with Malthus' uncertainty. Although the world's population continues to grow, whether we like it or not, in fact, today the world's population is still surviving and tends to be more prosperous. Economic growth comes from forces that change and provide

opportunities for the *division of labor*. Growth and development come from market development (one of Adam Smith's early thoughts).

Economic Growth

Indicators of the success of a country can be seen from the economic growth in that country. Economic *growth* can be interpreted as an increase in output or an increase in aggregate national income within a certain time, for example, one year (Prasetyo, 2009). Economic growth is defined as an increase in GDP/GNP regardless of whether the increase is greater or less than the population growth rate, or whether changes in the economic structure occur or not. In addition, economic growth is related to the process of increasing the production of goods and services in the community's economic activities. So it can be said that economic growth involves a single-dimensional development and is measured by increasing production and income (Todaro, 2000). They include theories of economic growth:

The Classical Economic Growth Theory

Figures who developed the classical economic growth theory are Adam Smith and David Ricardo. According to Arsyad (1999), Adam Smith was the first to systematically discuss economic growth. Adam Smith put forward the systematic process of long-term economic growth and the main aspects of economic growth, namely total output

growth and population growth in his book *An Inquiry Into the Nature and Causes of The Wealth of Nations* (1976).

Harrod-Domar Economic Growth Theory

Growth theory was developed by two economists, namely Evsey Domar and RF Harrod. Domar. Harrod put forward his theory for the first time in 1947 in the journal *A American Economic Review*, while Harrod had put forward it in 1939 in the *Economic Journal*. According to Sukirno (2006), Harrod-Domar's theory of economic growth aims to explain the conditions that must be met so that an economy can achieve long-term growth. The requirements include: capital goods have reached full capacity, savings are proportional to national income, the *capital-output ratio* remains in value, and the economy consists of two sectors.

Labor Force

In-Law no. 25 of 1997 defines that the labor force is a population aged 15 years or more, while the latest law on manpower, namely Law no. 13 of 2013 does not provide an age limit in the definition of labor, but the law prohibits the employment of children. The labor force is the productive age population aged 15-64 years who already have a job but are temporarily not working, or who are actively looking for work. Those who are not in the workforce are those aged 10 years and over whose activities are only going to school, taking care of the household, and so on. Examples of this group are schoolchildren

and students, housewives and the disabled, and the voluntary unemployed.

In simple terms, it can be said that the labor force participation rate is the proportion of the working-age population who are working or actively looking for work. This rate is an important labor market measure because it represents the relative amount of labor resources available for the production of goods and services (Hipple, 2016). Based on the quality 1) Educated workforce Educated workers are workers who have expertise or proficiency in a particular field through formal and non-formal schools or education. For example lawyers, doctors, teachers, and others. 2) Trained workforce Trained workers are workers who have expertise in certain fields through work experience. This skilled workforce requires repeated training so that they can master the job. For example pharmacists, surgeons, mechanics, and others. 3) Uneducated and untrained workers Uneducated and untrained workers are unskilled workers who only rely on manpower. Examples: coolies, transport workers, housemaids, and so on (Agus, 2006).

Previous Studies

Several research results related to population growth on economic growth have been carried out. Malthusian and Kremer's theory were tested by exploring the relationship between population and economic growth at the lower middle level in

India (Azam et al. 2020). Empirical research results strengthen Kremer's theory, wherein this theory population growth has a significant and positive influence on economic growth in the short and long term. In addition, investment variables and life expectancy have a positive and significant effect on economic growth. While the inflation rate has a negative relationship with economic growth. The empirical results support the hypothesis of economic growth and the achievement of overall economic development.

Dao (2012); Peterson (2017); Klasen & Lawson (2007); Cincotta & Engelman (1997) revealed that population growth has an important role in economic growth and increasing output per capita. The results found that the growth rate of GDP per capita is negative on population growth (Dao, 2012). Meanwhile, the results of the analysis by (Peterson, 2017) find that low population growth in high-income countries tends to create social problems. Meanwhile, population growth in low-income countries can slow growth.

Research conducted by Ali et al. (2015); Chowdhury & Hossain (2018) also found that there is a significant and negative relationship between population growth and GDP per capita growth. Where rapid population growth is a real problem in Bangladesh as it contributes to a decline in investment and reduces the level of savings.

In addition, due to rapid population growth, Bangladesh has the highest dependency ratio in the world. In addition, the results of Gatsi & Owusu Appiah research (2020) also show that gross savings and population growth harm economic growth. However, energy consumption has a positive impact on economic growth. Under the theory according to Modigliani & Brumberg (1954) which states that the life cycle explores consumption and saving patterns, that people tend to save more when incomes are higher and to meet consumption needs in old age.

In addition, Ahmad Ma'ruf and Latri Wihastuti (2008) examined Indonesia's economic growth (determinants and prospects) and found that population variables harmed economic growth. This shows that the population is not in the labor force is quite large so that it reduces the average productivity of the population who become the labor force which harms economic growth.

Meanwhile research related to the Effect of Investment, Labor, and Population Growth on Economic Growth in the Pelalawan Regency has been done as well (Astuti et al., 2017). The result of the research is that the population growth variable has a negative and significant relationship to economic growth in Pelalawan Regency. Where every decrease or increase in population growth will affect the magnitude

of economic growth. The higher the population growth, the lower the economic growth. This finding is supported by Ardyan (2012) who found the same thing that the population growth variable has a negative and significant relationship to economic growth in Kendal Regency.

Another study on the role of the population on economic growth in this case the population of the labor force has also been carried out by Hossain (2012) who said that if there is an increase in the labor force, then GDP will also increase. These results indicate that there is a positive relationship between the labor force and GDP in Bangladesh. In addition, research conducted by Shahid (2014) uses time-series data for the period 1980 to 2012 collected from the Pakistan Bureau of Statistics, the State Bank of Pakistan, and the World Bank. The results also show that labor force participation and gross fixed capital formation have a positive relationship with economic growth when labor force participation and gross fixed capital formation increase, economic growth also increases.

Yakubu, et al (2020) also revealed that labor force participation can increase economic growth. Therefore, labor force participation needs to be increased to increase the economic growth and development of the country. The findings of his research using the OLS model shows that the labor force participation coefficient has a

significant negative effect on economic growth in Nigeria.

It remains controversial regarding the outcomes and opportunities of men and women in income, employment, access to formal employment, access to managerial positions, access to productive inputs, political representation, or bargaining power within the household. Several studies specifically examine the contribution of the male and female workforce population. Cabeza-García et al. (2018) found that women have greater access to secondary education and the labor market under conditions of equality, thus showing positive and significant results for economic growth. Overall, this study identifies which gender factors can promote inclusive economic growth, namely when men and women are combined under the same conditions, economic growth can be achieved.

Research conducted to determine the economic growth of a country has been carried out by several researchers. The position of this research is to see the consistency of the results of previous studies. What distinguishes this research from previous research is. This research was conducted in OIC countries which have the highest population. This study wants to see how the impact of the increasing population in the OIC country both from the male and female workforce on economic growth in the OIC country.

Research Framework

Can be described as a framework of thought regarding "The Influence of Population, Labor Force on Economic Growth in the OIC Countries as follows:

$$\text{Economic Growth} = f(\text{Population, Labor Force})$$

Hypothesis Development

Population to Economic Growth

The increasing population can be a driving factor as well as a barrier to economic growth in a country. It depends on the quality of the human resources (Diramita, 2018). The results of research conducted by (Dao, 2012) revealed that population growth has an important role in economic growth and contributes to an increase in output per capita.

H₁ = Population has a significant positive effect on the economic growth

The Labor Force on Economic Growth

The labor market is mostly in demand by female workers. This is following the research by Cabeza-García et al. (2018) which found that if women have greater access to the secondary labor market, it will have a positive impact on economic growth. So that the cooperation between men and women combined under the same conditions, can increase the economic growth achieved.

H₂ = The number of labor forces has a significant positive effect on economic growth.

H₃ = The male workforce has a significant positive effect on economic growth.

H_4 = Women's workforce has a significant positive effect on economic growth

RESEARCH METHODS

Type Of Research

This study used a quantitative descriptive approach. That is about population growth on economic growth by analyzing how much influence the population, the number of the workforce, the male workforce, the female workforce on economic growth in the OIC (Organization of Islamic Cooperation) countries. The dependent variable is GDP, while the independent variable is the population, the labor force, the male workforce, and the female workforce.

Target/Research Subject

The population in this study is all OIC countries. It is known that the OIC countries have contributed to the economic sector which aims to strengthen economic and trade cooperation to achieve global economic integration. While the samples used in the study were 5 OIC Countries that had the largest population, namely; Indonesia, Pakistan, Egypt, Nigeria, and Bangladesh. The high population growth of these 5 countries is a duty for the country to increase its economic growth. How is the influence of a large population on the economy of each country? The period used is 2010-2019 because within 10 years you can see how the impact of this growth will be.

Data, Instruments, and Data Collection Techniques

The data used in this research is secondary data obtained from the *World Bank*. The variables used by researchers are GDP, population, and labor force. This research technique uses *purposive sampling*. According to Sugiyono (2017), *purposive sampling* is a technique of data sources with certain considerations.

Data Analysis Techniques

Techniques The analysis technique used in this study is panel data analysis which is a combination of time series and cross-section data. The panel data regression model by Gujarati & Porter (2009) is the development of a simple regression analysis tool for two or more independent variables to predict the dependent variable. Forms of mathematical modeling that can be developed from the theory are:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_n X_{nit} + e_{it}$$

$$GDP_{it} = \alpha + \beta_1 POP_{it} + \beta_2 LF_{it} + \beta_3 LFM_{it} + \beta_4 LFF_{it} + e_{it}$$

Information:

GDP	= Per capita income (USD)
POP	= Population (Jiwa)
LF	= Labor Force (Jiwa)
LFM	= Labor Force Male (%)
LFF	= Labor Force Female (%)
e	= Standar error

RESULTS OF RESEARCH AND DISCUSSION

Descriptive Statistical Results

Table. 2. Descriptive Statistical Results

	N	Mean	Max	Min	Std. Dev
GDP	50	7.563	8.400	6.660	0.543
POP	50	18.93	19.41	18.23	0.359
LF	50	18.08	18.71	17.12	0.544
LFM	50	75.73	83.86	57.87	8.616
LFF	50	35.91	55.25	21.65	13.09

Source: Processed Eviews 9.0

Based on table 1, it can be seen that all the variables tested have several observations (N) of 50. The independent variable (Y), namely Economic Growth (GDP) has an average value of 7,563, a maximum value of 8,400, and a standard deviation of 0.543. . The dependent variable is; Total Population (POP) has an average value of 18.93 and a maximum of 19.41625, while the standard deviation is 0.350. The Labor Force (LF) variable has an average value of 18.08, with a maximum value of 18.71 and a standard deviation of 0.544. The Male Labor Force (LFM) variable has an average value of 75.73, with a maximum value of 83.86 and a standard deviation of 8.616. The Women's Labor Force (LFF) variable has an average value of 35.91, with a maximum value of 55.25 and a standard deviation of 13.09.

Model Selection Analysis

To determine the best model selection, it is necessary to estimate the panel data regression with three models, namely; *Pooled Least Square* (PLS), *Fixed Effect Model* (FEM), and *Random Effect Model* (REM). From all these models, one of the best regression models will be selected which will

be used in the analysis. To find out which model is the best, it is necessary to test first using the Chow test and Hausman test.

Chow Test

To compare the *Common Effect Model* (CEM) and *Fixed Effect Model* (FEM) it is necessary to do the Chow Test first. That is by looking at the probability value of Chi-square if the prob value. > 5% (0.05) then the model to be selected is the *Common Effect Model* (CEM). However, if the value of prob. < 5% (0.05) then the model chosen is the *Fixed Effect Model* (FEM).

Hausman Test

Hausman test needs to be done to find out which model is the best between *Fixed Effect Model* (FEM) and *Random Effect Model* (REM). That is by looking at the probability value of Chi-square if the prob value. > 5% (0.05) then the model to be chosen is the *Random Effect Model* (REM). However, if the value of prob. < 5% (0.05) then the model to be selected is the *Fixed Effect Model* (FEM).

Table. 3. Chow Test and Hausman Test Result

	Prob.
FEM	
Cross-Section Chi-square	0.0000
REM	
Cross-Section Random	0.0000

Based on table 2 above, it can be seen that the best model chosen is the *Fixed Effect Model* (FEM).

Panel Data Model Estimation Results

Table. 4. Fixed Effect Model (FEM) Results

Var	Koef	t. Stat	Prob	S.E
POP	-1.821	-4.627	0.00	0.393
LF	2.496	7.592	0.00	0.328
LFM	-0.036	-6.794	0.00	0.005
LFF	0.012	2.655	0.011	0.004

R-squared 0.996545

Adjusted R-squared 0.99587

$$GDP_{it} = \alpha + \beta_1 POP_{it} + \beta_2 LF_{it} + \beta_3 LFM_{it} + \beta_4 LFF_{it} + e_{it}$$

$$GDP = -0.796 - 1.821(POP) + 2.496(LF) - 0.036(LFM) + 0.012(LFF) + e$$

Interpretation

1. The constant value obtained is -0.796. This means that if the variable number of population, the population of the workforce, the male workforce and the female workforce is worth 0, then economic growth will decrease by 0.769.
2. The coefficient value of the population variable (POP) is -1.821, meaning that if the population decreases, economic growth will decrease by 1.821.
3. The value of the variable coefficient of the population of the labor force (LF) is 2.496, meaning that if the population of the labor force increases, then economic growth will increase by 2,496.
4. The coefficient value of the male labor force population variable (LFM) is -0.036, meaning that if the male workforce population decreases, economic growth will decrease by 0.036.
5. The coefficient value of the female workforce population variable is 0.012,

meaning that if the female workforce population increases, economic growth will increase by 0.012.

Population Numbers (POP) Positively Affect GDP

The results of the panel data regression test in table 3 show that the population variable (POP) has a value of -4,627 with a probability value of 0.00, this figure is less than an alpha value of 5% or 0.05, so the first hypothesis is accepted. This means that the population has a significant negative relationship to economic growth. So, the higher the population will harm economic growth.

Labor Force (LF) Has a Positive Effect on GDP

The results of the panel data regression test in table 3 show that the population variable for the Workforce (LF) has a value of 7,592 with a probability value of 0.00, this figure is less than the alpha value of 5% or 0.05, so the second hypothesis is accepted. This means that the population of the Labor Force has a significant and positive relationship to economic growth. So, the higher the Labor Force will have a positive impact on economic growth.

Labor Force Male (LFM) Has Positive Effect on GDP

The results of the panel data regression test in table 2 show that the male Labor Force (LFM) population variable has a value of -6,794 with a probability value of 0.00, the figure is less than the alpha value of

5% or 0.05, so the third hypothesis is accepted. This means that the population of the Male Labor Force has a significant and negative relationship to economic growth. So, the Male Labor Force can influence economic growth.

Labor Force Female (LFF) Has Positive Effect on GDP

The results of the panel data regression test in table 3 show that the female Labor Force (LFF) population variable has an t -value of 2.655 with a probability value of 0.00, the figure is less than the alpha value of 5% or 0.05, so the fourth hypothesis is accepted. This means that the population of the Female Labor Force has a significant positive relationship with economic growth. So, the higher the Female Labor Force, the higher the economic growth.

Determination Coefficient Test (R^2 test)

Test coefficient of determination (R^2) is the test used to view the total percentage of the dependent variable in explaining the effect of the independent variables. Based on estimates in this study was obtained value of *Adjusted R-squared* (R^2) that is equal to 0.99. of the value of R^2 indicates that the variable POP (population), LF (Labor Force), LFF (Labor Force Men), and LFM (Labor Force Women) describes the impact on the variables of GDP by 99%, while the remainder is equal to 1% explained by other factors not included in this study.

Discussion

Population growth affects economic growth. The test results found that population has a significant negative effect on economic growth. This finding is supported by research conducted by Ali et al. (2015); Gatsi & Owusu Appiah (2020) where the higher the population growth, the economic growth omg will be lower. As stated by Ahmad Ma'ruf and Latri Wihastuti (2008) that the population is not in the labor force, the number is large enough to reduce the average productivity of the population who become the labor force which harms economic growth.

Researchers also found that the labor force has a significant positive effect on economic growth. Shahid (2014) said that when labor force participation increases, economic growth also increases. The same thing was also found by Hossain (2012) when there is an increase in the labor force, the GDP will also increase. So the results of the analysis reveal that there is a positive relationship between the labor force and GDP.

The male and female workforce is still being discussed due to the results and opportunities of men and women in income, employment, access to formal jobs, access to managerial positions, access to productive inputs, political representation, or bargaining power in the household. The results of the research researchers found that the male generation had a significant negative effect

on economic growth. Meanwhile, the female workforce has a significant positive influence on increasing economic growth. This finding is supported by research by Cabeza-García et al. (2018) that the contribution of the male and female labor force population will have a positive and significant effect on economic growth. Overall, what can encourage inclusive economic growth is that when men and women are combined under the same conditions, economic growth can be achieved.

Conclusions And Suggestions

Conclusions

An increase in population will have a negative and positive impact on economic growth. When the increase in the number of people in the non-age group of the labor force will reduce the average productivity of the population who are in the labor force so that it will harm economic growth. Meanwhile, an increase in the number of people in the labor force group will have a positive influence on increasing economic growth.

The contribution of the male and female labor force population shows a positive and significant influence on economic growth. Overall, inclusive economic growth can be achieved when men and women have equal opportunities to work.

The above proves that the increase in population is a factor that affects economic

growth. creating high economic growth starts with empowering existing human resources. With the increase in population, in this case, is the (productive) workforce, it can increase the country's economic growth.

Suggestions

This research has several limitations, namely; The object of this research is only 5 OIC countries that have large populations. So, to develop this research, it is recommended to expand the object of research to countries with a large population.

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