Effect of Unemployment and Inflation on the Economic Growth – A Case of Developing Countries

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ABSTRACTS

Aim: This research article aims to assess the effect of unemployment and inflation on the economic growth while drawing the evidence from the developing countries.

Methodology: To conduct the research, the quantitative secondary data was taken, and the data was collected from the ten developing countries from 2001 to 2020. The STATA software was used, which provides the results of the OLS regression along with the testing of autocorrelation and heteroskedasticity issues. Apart from the OLS regression, the article also presents the results of the descriptive analysis and the correlation analysis.

Results: The correlation results indicate an insignificant and weak relationship between inflation rate and unemployment in the economic growth of the developing countries. Whereas concerning the results of the GLS regression mode, there is a significant and positive relationship between the GDP growth rate and inflation rate. There is also a substantial and positive interconnection between unemployment and the GDP growth rate.

Limitations: The limitations of the research are that the study evaluates the effect of unemployment and inflation on the economic growth only of developing countries while taking the ten years. While the future researchers can determine the impact of unemployment and inflation on the economic growth of developing countries while taking the increasing period along with that, future researchers can compare the results of the developing and under-developing countries.

INTRODUCTION

The critical indicators that show the country's economic performance are unemployment, inflation and economic growth. Identifying the relationship between these elements is necessary when making and applying economic policies. Inflation and unemployment have become significant issues in developing countries (Baharumshah, Slesman & Wohar, 2016). It is found from the research of Cantore, Calì & te Velde (2016) that poor working conditions and low wages in private sectors and large public sectors result in a high inflation rate. Inflation and unemployment are intricately linked with the economic development of countries. Inflation and unemployment are the major issues that negatively impact each state's economic and social conditions. These factors are the central cause of poverty in developing countries. In past decades different factors of economic growth were identified. However, scholars considered two factors: inflation and unemployment and their adverse impact, as these issues are highly found in various developing countries (Dastidar, 2017).

Many researchers assume that controlling unemployment and inflation significantly impacts the economic development of countries. The relationship between unemployment and inflation has always been debated. In the theoretical literature, it is found that inflation and unemployment have a negative relationship. However, this relation is not found in empirical studies (Baharumshah, Slesman & Wohar, 2016). According to the study by Singh (2018), it is observed that inflation positively impacts the economic condition of countries. Most countries overcome their economic loss by increasing the prices of products, but this strategy is beneficial for a short time. When inflation remains in countries for the long term, it damages the economy. It is necessary to figure out all the advantages and risks features of this element to highlight the importance of economic growth. In the development of the economy, various factors such as labour, capital and technological advancement have a significant highlight (Trang, Tho & Hong, 2017).
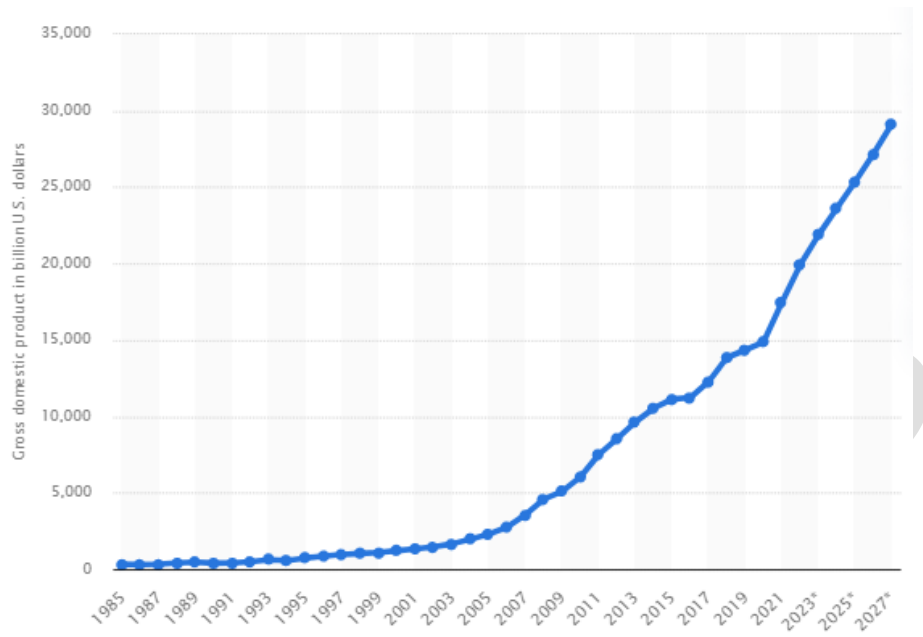
Figure 1: Forecasting of GDP growth in china due to inflation (Source: Statista 2022)
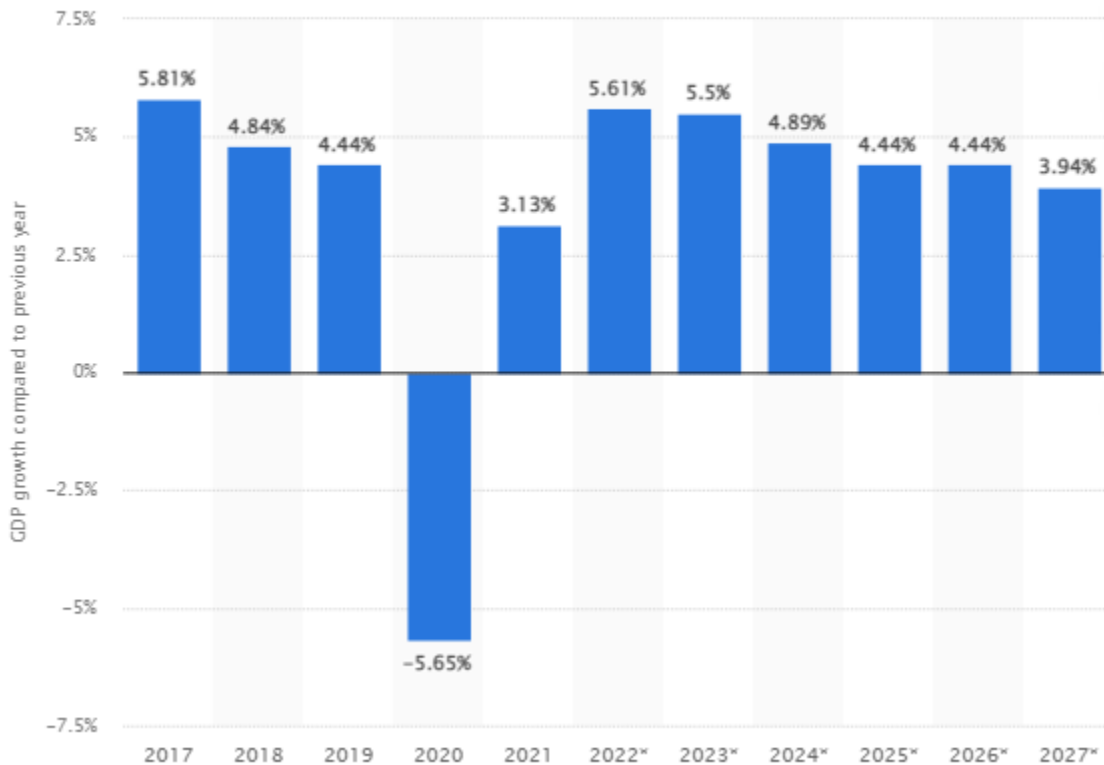
Figure 2: Forecasting of GDP growth in Malaysia due to inflation (Source: Statista 2022)

This issue of inflation and unemployment and its impact on economic growth is highly controversial. Thus, this study has been conducted to evaluate the effects of this relationship. This study focused on developing countries such as China, Indonesia, Malaysia, India, Vietnam, Philippines, Srilanka Nepal and Bangladesh and contains extensive data ranging from 2001 to 2020. The findings of this research are significant for countries willing to enhance their economy by reducing inflation and increasing employment rates.

LITERATURE REVIEW

The rate of unemployment and inflation have a significant impact on the economic development of countries. Inflation is defined as an increase in the rate of products and services along with the

period (Trang, Tho & Hong, 2017). According to the study by Wirawan & Sentosa (2021), inflation is majorly caused when the price of goods is higher than the income. Moreover, according to Li, Su & Tao (2021), inflation results in a constant rise in the overall price level. Another factor highlighted in this study that affects economic growth is unemployment. Unemployment is defined as joblessness due to a lack of resources and opportunities in the country. Furthermore, inflation is also defined as a lack of employment for people who are skilled and willing to work according to their domains (Cantore, Calì & te Velde 2016).

The other highlighted variable of this study is economic growth, defined as an increase in the capital amount of a country, along with the time determined through goods and services offered by governments. When the country produces more goods and services in a specific period, its economy grows. Thus, this development improves the lifestyle of people and decreases income inequality among them (Sumartini & Riswanto 2017).

Therefore, this study is based on the factors that affect the economic growth of developing countries. To analyse these factors, the first hypothesis of this study has been generated:

H$_1$: Unemployment impact the economic development of developing countries.

Unemployment has become a significant problem in various countries, especially after COVID-19. Moreover, in the developing countries unemployment rate is increasing as mostly young individuals have those educational degrees that do not match market demands. In addition, many foreign employees work in developing countries at low wages compared to national employees. Hence, foreign employees get hired quickly and are of the opinion that getting a job in developed states is more accessible than in less developed countries (Mamun & Ullah, 2020). Another critical reason for unemployment in developed countries is the weak public sector and lack of resources in government companies (Wulandari et al., 2019).

The relationship between economy and unemployment seemed highly correlational and shows that the economy develops when the employment rate increases as jobless people cannot pay taxes reducing the country's capital. Moreover, this relationship is stated in Okun's Law, which shows that unemployment significantly impacts countries' GDP. This law found that when unemployment falls to 1%, it causes a 3% rise in GNP (Gross national product). Furthermore, it

was proposed in this law that an increase in the rate of unemployment causes a 2% decrement in the GDP of countries (Ibragimov & Ibragimov, 2017).

Likewise, Betcherman (2015) stated that economic development causes rapid growth in labour forces, ultimately decreasing countries' unemployment rates. On the other hand, according to Mamun & Ullah (2020), less productivity in any country results in economic failure that gives rise to unemployment. Hence, this is the responsibility of the government to provide employment opportunities to enhance the country's profitability.

Moreover, the second hypothesis of the study is stated below:

H₂: Inflation impact the economic development of developing countries.

According to Dastidar (2017), policymakers usually assume that inflation can cause more societal issues than unemployment. It is the central task of economists in the country to make strategies for inflation control to attain economic development and growth. It is present in the study of Sumartini & Riswanto (2017) that inflation results in economic development as a considerable amount of income of the public moves to higher authorities of countries in the form of taxes. Moreover, it is also stated by Cantore, Calì & te Velde (2016) that inflation can develop the economy by raising the rate of profit, hence increasing the private investment as well. However, it is stated by Wirawan & Sentosa (2021) that high inflation causes a reduction in investment that negatively impacts the country's economy.

Furthermore, Wulandari et al. (2019) also show that economic growth and inflation have a negative relationship, as the economic growth rate is dependent on the rate of return. However, the rate of return decreases through inflation. Inflation has been found to have a destructive impact on economic growth (Baharumshah, Slesman & Wohar, 2016).

It is stated by Sumartini & Riswanto (2017) that inflation and economic development are highly associated factors. It is found that inflation causes a negative impact on economic development due to reducing in return rate, lack of investment and reduction in production. Trang, Tho & Hong (2017) argues that inflation impacts the price mechanism that negatively influences the efficiency of resources division and results in a reduction in economic development. According to the Endogenous growth theory, economic development is based on the factors present in the

production process. This theory states that growth rate is determined through the rate of return on capital investment, whether physical or human capital investment and when inflation occurs. Taxes arises it reduces the capital return. Furthermore, it is also stated by Trang, Tho & Hong (2017) that inflation lowers the return rate of all capital and reduces the growth rate.

Hence, through various researches, it becomes evident that two factors, unemployment and inflation, affect the GDP of developing countries. This research section is based on the relationship between unemployment, inflation and economic development. It is stated that the economic development of nations depends on the opportunities offered by the country. Those countries with better employment opportunities are the main focus of many foreign young individuals (Wulandari et al., 2019). People coming from other countries for employment increases countries' growth rate. When unemployment rises in the country, it reduces the rate of taxes as unemployed people cannot pay taxes to the government, which causes an impact on economic growth. Thus, countries must provide job opportunities to local and foreign individuals to increase the economical rate (Gelos & Ustyugova, 2017).

Conceptual framework

Based on the literature present in this study, the researchers have made a conceptual framework. The conceptual framework also supports the hypothesis developed earlier in the literature review section. The independent variables of this study are inflation, unemployment, interest and exchange rate, whereas the dependent variable is the GDP of developing countries.

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Unemployment
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Inflation
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Economic growth
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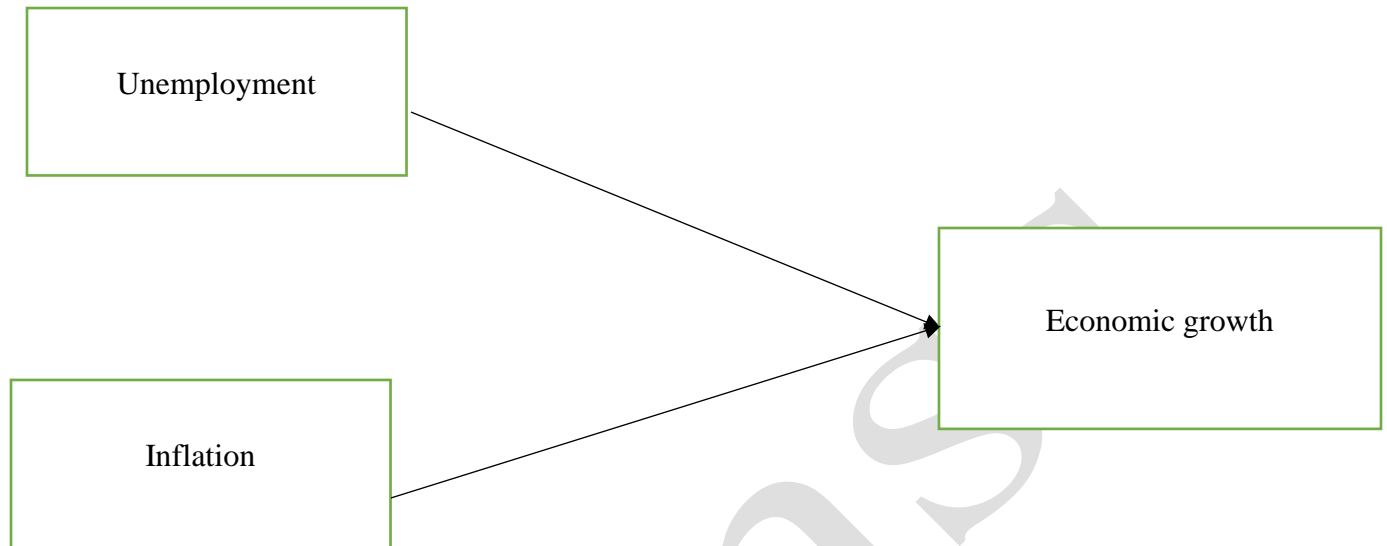
METHODS

This study is based on a quantitative research design to evaluate the impact of inflation and unemployment on the economic growth of developing countries. The independent variables considered in this research are inflation and unemployment, along with the interest rate and exchange rate controlled variables. Reflecting the approach of study, the deductive method is chosen by researchers to test the hypothesis in the context of developing countries. In this research, data is collected through secondary sources. The data regarding inflation, unemployment and economic growth has been derived from various databases such as google scholar and Science direct. The exchange and interest rate impact on economic development data is collected through reliable databases. It is better to first align the years before starting data collection. The data is collected online from 2001 to 2020 for ten different countries. The purpose of choosing these years is to avoid lacking the collected information.

The statistical data of countries is obtained from the website of the World Bank. The obtained data is analysed through various statistical techniques: regression, correlation and descriptive statistics. This analysis is done through the STATA software (Heß, 2017). Researchers use this software to

analyse and manage data by producing graphical demonstrations of data. Moreover, this software is feasible in the economic domain. The regression anslsysi9 shows the relationship between independent and dependent variables. The regression equation is given below:

$$GDP_t = \alpha + \beta_1 \Delta UER_t + \beta_2 \Delta IFR_t + \beta_3 \Delta EXR_t + \beta_3 \Delta INR_t \ \varepsilon_t$$

The above equation shows the study's dependent and independent variables in which GDP reflects the gross domestic product. GDP is used to evaluate the size and growth of the economy as it shows all the goods and products developed in the country within a specific time. Another symbol α shows the constant, whereas Δ shows the change in the unemployment rate, inflation, exchange rate and interest rate. Furthermore, ε_t shows the error term in the above equation.

RESULTS

Descriptive statistics

The table presented below represents the descriptive statistics. These statistics aim to recapitulate the raw information into an interpretive and meaningful form for giving the relevant input (Mishra et al., 2019). The mean value of the GDP growth rate is computed as 5.32; the standard deviation is 3.02, which states that the GDP growth rate dispersion is 3.02%. The second component is the inflation rate, and the variable's mean value is computed as 5.05, which shows the average inflation level in developing countries. In contrast, the standard deviation is calculated as 3.77. Moreover, the mean value of the exchange rate is 3029.6, which represents the current average value among the developing countries. In contrast, the standard deviation is computed as 6342.33, depicting the rise in the exchange rate.

Further assessing the table below, the unemployment means the value is computed as 3.74, which shows that the average unemployment level throughout the developing countries is 3.74%. In contrast, the standard deviation is calculated as 1.79, which imitates the rise of a drop in the unemployment level. The fifth and last component of this research is the interest rate which is the control variable of the paper. The mean value of the interest rate is 8.92, which represents that the average level of the interest rate throughout the selected developing countries is 8.92%, while the standards deviation is computed as 3.44%

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP growth rate	200	5.322	3.024	-9.573	14.231
inflation rate	200	5.054	3.773	-1.139	23.115
exchange rate	200	3029.664	6342.330	3.060	23208.370
unemployment	200	3.745	1.794	0.250	8.760
interest rate	200	8.921	3.442	3.293	18.945

Correlation analysis

The research studies of the Senthilnathan (2019); Cleophas & Zwinderman (2018) state that the correlation analysis is referred to as the statistical method that is utilised for examining and accessing the connection among the variables like the movement in the one variable would cause the variation in a different variable. Moreover, the correlation analysis evaluates the three aspects: strength, level and significance. The value having the * sign indicates the significant associations, whereas the value that does not carry the * sign indicates that the association among the variable is insignificant. It can be seen in the table below that the relationship between the inflation rate and GDP growth rate is found to be insignificant and weak, while the value of beta is 0.0670. Furthermore, the coefficient value of the exchange rate is 0.0564, which indicates that the interconnection of an exchange rate with the GDP growth rate is insignificant. The relationship between the exchange rate and GDP growth is also weak. The interconnection between the unemployment and GDP growth rate was also weak and insignificant, with a coefficient value of 0.0947. Moreover, the interest rate has an insignificant and weak relationship with the GDP growth rate with a coefficient value of 0.0377.

	GDP growth rate	inflation rate	exchange rate	unemployment	interest rate
GDP growth rate	1				
inflation rate	0.067	1.000			
exchange rate	0.056	0.1617*	1.000		
unemployment	0.095	0.2858*	-0.1709*	1.000	
interest rate	0.038	0.6893*	0.3064*	0.482*	1.000

Diagnostics test

There are two tests in the Diagnostics test: autocorrelation and heteroskedasticity. These are the initial tests for the analysis of the regression technique. Heteroskedasticity denotes the state where the variance of the residuals is not equal over a measure's value range (Baum & Lewbel, 2019). The heteroskedasticity is generally evaluated using the modified Wald test, where the null hypothesis indicates no heteroskedasticity issue. In contrast, the alternative hypothesis states that heteroskedasticity is an issue (Siddiqui & Qadri, 2019). The null hypothesis will be accepted if the test value is above 0.05, denoting the results presented in the table below. The modified Wald test value for GDP growth rate is computed as 0.0000 below the threshold value to accept the null hypothesis. Moreover, the results indicate rejection of the null hypothesis, and on the model, there is the issue of heteroskedasticity.

Another Diagnostics test is autocorrelation. This analysis refers to the measure that analyses the associations of the observation among the dissimilar points in time and seeks the trends or patterns over time (Wei et al., 2020). Other than that, to evaluate the autocorrelation Woolridge test is applied. The null hypothesis of the test states that there is no autocorrelation issue. On the other hand, the alternative hypothesis of the test is that there is an autocorrelation issue (Gren, Campos & Gustafsson, 2016). The threshold for accepting the null hypothesis is that the value of the Wooldridge test must be above 10%. The results presented below indicate that the null hypothesis will be rejected as the value of the Wooldridge test is 0.0584 which is below 10%; therefore alternative hypothesis will be accepted and it also indicates an issue with the autocorrelation on the model. The GLS (generalised least square) regression technique is applied in this study as heteroskedasticity and autocorrelations are involved. The GLS model hence fixes these issues in the regression analysis.

	GDP growth rate
Modified Wald test	0.0000
Wooldridge test	0.0584

Regression Analysis

GLS (generalised least squares) refers to the technique for evaluating the unidentified parameter or aspects in the linear regression model when there is a definite point of correlation amid the residuals in the regression model (Pekár & Brabec, 2016). The table presented below shows the GLS regression model for the GDP growth rate. It can be observed that the inflation rate has a significant influence on the GDP growth rate as the P-value below is 0.000, which is below 0.05. Moreover, the value of the coefficient is 0.073 shows that the inflation rate has a positive effect on the GDP growth rate in selected developing countries. Concerning the exchange rate (C= 0.0000484 and P =0.000), it can be said that there is a significant and positive influence on GDP growth. Other than unemployment, it is found to have a significant impact on GDP growth as the p-value computed as 0.000 and the coefficient value computed as 0.219 indicates that unemployment positively affects the GDP growth rate. Lastly, the influence of the interest rate on the GDP growth rate is significant and negative as the p-value is 0.00, whereas the coefficient value is -0.109. It indicates that an increase in the interest rate would cause a decline in the GDP growth rate by -0.109 units.

GDP growth rate	Coef.	Std. Err.	z	P>|z|
inflation rate	0.073***	0.017	4.38	0
Exchange rate	0.000***	0.000	7.34	0
unemployment	0.220***	0.041	5.34	0
interest rate	-0.109***	0.028	-3.96	0
_cons	4.960***	0.346	14.35	0

***Significance at 1%; ** Significance at 5%; * Significance at 10%

Discussion

The objective of this research article was to assess the effect of inflation and unemployment on the economic growth of developing countries. The STATA software was used to conduct the research, providing OLS regression outcomes and testing autocorrelation and heteroskedasticity issues. Apart from the OLS regression, the article also presents the results of the descriptive analysis and the correlation analysis. Concerning the findings, the correlation results indicate an insignificant and weak relationship between the inflation rate and unemployment in the economic growth of the

developing countries. Whereas concerning the results of the GLS regression mode, there is a significant and positive relationship between the GDP growth rate and inflation rate. Other than that, there is also a significant positive interconnection between unemployment and the GDP growth rate.

The research findings are consistent with the previous research. Ademola & Badiru (2016) evaluated the impact of inflation and unemployment on economic growth in Nigeria. The study results found a positive association between inflation and unemployment and economic growth. In contrast, the research of Karikari-Apau, & Abeti, (2019) access the influence of unemployment on the economy's growth, mainly in China. The study shows contradictory results in comparison with this research, as the researchers mentioned above state a negative association between economic growth and unemployment in the short and long run. The inconsistency of the results is because the researcher used the Autoregressive Distributed Lagged test and collected data from the 1991 to 2018 period. Whereas this research article evaluates the results through the diagnostics test and OLS regression model, the data collected for this study was for ten years, from 2001 to 2020.

CONCLUSION AND RECOMMENDATION

It has been concluded that the GDP growth rate and inflation rate have a significant and positive association, according to the results of the GLS regression mode. The relationship between the unemployment rate and the pace of GDP growth is also considerable and favourable. The unemployment rate and inflation rate significantly influence the economic development of nations. The relationship between the economy and unemployment appeared to be highly correlated, demonstrating how the economy grows as the employment rate rises because those without jobs cannot pay taxes, which lowers the nation's capital stock. Other than that, a nation's opportunities determine its economic development. Many young foreigners are primarily interested in moving to nations with greater employment chances. Because it displays all goods and products produced in a nation over a specific period, GDP is used to gauge the size and growth of the economy.

Concerning the recommendation, A significant policy implication of this finding is that policymakers must make a concentrated effort to boost productivity to raise output in Nigeria's

other economic sectors, which will help lower unemployment and inflationary pressures and promote inclusive economic growth. To increase output growth, it is also advised that the non-oil industry be developed. Another policy suggestion of this research is that government should invest in labour-intensive production methods rather than capital-intensive ones. To support domestic industries, the government must implement policies that extremely lessen the number of trade in goods and promote local manufacturing and consumption. These measures will lower inflation and unemployment in developing countries and increase output, leading to economic development and growth.

Limitation and future implication

Normally, each research has certain limitations. Similarly, this study also has limitations. In this study, data is collected through the secondary quantitative method. It would be better if the data is gathered through interviews also. The researchers could gather the data from economists and economic professionals of all the selected companies. The interviews could be conducted through google meet or zoom. Moreover, survey questionnaires could also help them in collecting relevant data. Researchers could generate survey forms and send them to professionals through email. This approach would make to gather more authentic data.

In addition, if this research does not specify the developing countries, more data could be collected in less time. Hence, in the future, this study objective would be broadened and based on the research of all possible countries. Furthermore, this study will be done on a primary quantitative method so that researchers will gather the information from economists of countries that will enhance the study's effectiveness. Moreover, future researchers can also compare the results of the developing and under-developing countries.

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