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| RESEARCH ARTICLE

An Analysis on the Economic Factors Affecting the Unemployment Rate in the Philippines from 1993-2018

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| ABSTRACT
The study aims to determine the factors affecting the unemployment rate from 1993-2018 using the OLS estimators. With 26 observations, the research utilized six independent variables, namely GDP growth rate, inflation rate, foreign direct investment, government spending, capital investment, and trade openness. The dataset was taken from The Global Economy and the Philippine Statistics Authority. Furthermore, as the dataset was processed, it was found that GDP growth rate, inflation rate, foreign direct investment, and trade openness have a significant relationship with the dependent variable. On the other hand, government spending and capital investment have no significant relationship with the unemployment rate.

| KEYWORDS
Unemployment rate, GDP growth rate, Inflation, Foreign direct investment, Capital investment, Trade openness, Government spending

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1. Introduction

1.1 Background of the Study

One of the major determinants of a country's economic well-being is its unemployment rate. The unemployment rate is defined as the number of unemployed people in terms of the percentage of the labor force. The labor force consists of the unemployed and those who are in a paid or self-employment position. Evidently, unemployment occurs when there are imbalances in the labor market, wherein the number of labor forces offered is beyond the number of labor forces demanded. It is common for a certain country - developed or still developing - to experience this, but a consistently high unemployment rate is a sign of an even bigger and deeper complication. A high rate of unemployment is more prevalent in developing countries like the Philippines, wherein it can exacerbate underlying social and economic issues such as poverty.

There are usually two criteria to consider for someone to be identified as unemployed in the Philippines: either they do not have a job, or they are currently looking for one - except for students, housewives, retired workers, and disabled persons who are deemed to be excluded from the labor force. In addition, when unemployment is high, some people start to feel discouraged, which then leads them to stop looking for work - because of this, they will now also be omitted from the labor force. This indicates that the unemployment rate may either fall or stop rising, even if there has been no underlying improvement within the labor market.

On the other hand, the government conventionally has the capability to achieve a lower unemployment rate by imposing either fiscal policy or monetary policy. Fiscal policy involves changes in the government's spending and tax rates, while Monetary policy involves changes in interest rates or money supply. To put it simply, the economic variables influenced by these policies would be the ones that can really affect the dynamics of the unemployment rate. In addition, an increasing GDP rate, wages, and production occur along with a decrease in the rate of unemployment.

In the past decade, the employment rate of the country seemed to continuously increase, and yet, a significant number of Filipinos were still unemployed. At the beginning of the twentieth century, the employment rate of the Philippines grew at about fifty percent (50%), where slots in the industrial, agricultural, and services sectors were filled. Despite the encouraging data, the population of the Philippines continues to rise quickly, which proves that the growth in employment is still evidently slower than the aforementioned continuous growth in population. With a growing population, this means that jobs offered in the market are not enough to accommodate all those who are looking for jobs. Because of such conditions, Filipinos are led to work overseas to be able to be given more job opportunities and higher-paying jobs. Billions of dollars in remittances are sent because one out of ten Filipinos works overseas. This would then boost the country's consumption-driven domestic economy while efforts to promote local employment remain insufficient. Given the lack of job opportunities in the country, the Philippines has been labor exporting for quite a while now, and about two thousand and five hundred Filipinos leave the country daily just to be able to seek more career opportunities and continuously provide for their families.

1.2 Statement of the Problem

Given that unemployment is one of the leading problems in the Philippines, it is pivotal to analyze and evaluate the different economic factors that can affect the unemployment rate in the country, specifically GDP growth rate, inflation rate, foreign direct investment, capital investment, trade openness, and government spending.

With this, the study aims to answer the following questions:

1. Which of the six economic factors have a significant effect on the unemployment rate of the Philippines from 1993 to 2018?
2. Do these economic factors increase or decrease the rate of unemployment in the Philippines?
3. How are these economic factors related to one another?
4. What recommendations could be given to be able to alleviate the unemployment problem in the country?

1.3 Hypothesis

Null Hypothesis (Ho_1): GDP growth rate does not significantly affect the unemployment rate in the Philippines from 1993-2018.

Null Hypothesis (Ho_2): Inflation rate does not significantly affect the unemployment rate in the Philippines from 1993-2018.

Null Hypothesis (Ho_3): Foreign direct investment does not significantly affect the unemployment rate in the Philippines from 1993-2018.

Null Hypothesis (Ho_4): Capital investment does not significantly affect the unemployment rate in the Philippines from 1993-2018.

Null Hypothesis (Ho_5): Trade openness does not significantly affect the unemployment rate in the Philippines from 1993-2018.

Null Hypothesis (Ho_6): Government spending does not significantly affect the unemployment rate in the Philippines from 1993-2018.

1.4 Scope and Limitations

This study will only focus on six economic factors that will be utilized to determine which of these significantly affects the unemployment rate in the Philippines. These factors are as follows: GDP growth rate, inflation rate, foreign direct investment, the openness of trade, capital investment, and government spending. In terms of these factors' effect, it will not only focus on those that decrease the rate of unemployment, but it will also include those that increase it. In addition, it will also only cover observations from the year 1993-2018. This means that the six variables will only be analyzed and evaluated under these 26 observations.

1.5 Significance of the Study

Studying how these economic factors affect the unemployment rate will allow the researchers of this study to be cognizant of the unimproving unemployment condition of the country through the years. With this, it will enable them to better grasp the study's aim, answer questions involving this topic, and suggest possible solutions to this seemingly insoluble problem of the country.

- *To society* - this study will inform them which economic factor affects the unemployment rate in the country the most and will make them understand how a rising unemployment rate adversely affects not only the economy but, most importantly, the people and their standard of living.

- *To the business sector* - this study will help them to consider opening more job opportunities as well as to offer better working conditions. Also, this study will show them how the economy can improve so much once these factors are managed in the best way possible.
- *To the government* - this study will help them adjust and propose better labor policies to alleviate the unemployment situation of the country. They can induce more investments to assist the business sector in order to hire more labor.
- *To future researchers* - this study can serve as a reference to those who plan to conduct further discussions and studies related to unemployment and the said economic factors.

2. Review of Related Literature

2.1 GDP Growth Rate

In the sense that all economies choose to implement economic policies, the concepts of economic growth and unemployment are two of the most important variables to look into since reducing the unemployment rate and, at the same time, achieving a high rate of economic growth are the top priorities of most countries especially developed and developing ones (Soylu, Çakmak, & Okur, 2018). According to Levine (2013), there are other variables that affect the rise of the unemployment rate, such as laying off workers because of expensive payrolls when product demand declines. Furthermore, the moment that the GDP growth rate surpasses the rate of labor productivity, employment would then eventually rise. The author also reiterated that when the GDP growth rate falls down, the rate of the labor force increases.

Moreover, the relationship between GDP growth rate and the unemployment rate was proved to be a negative one under Okun's law (Dayıoğlu & Aydın, 2020). This law explains that in every 1% growth rate in the United States, the unemployment rate will be reduced by 0.5%. However, the growth rate must exceed the trend or average growth rate of 2.25% for it to lead to a decrease in the unemployment rate (Apaydın & Taşdoğan, 2019). Since Okun's law is tested for different countries, the nature of this relationship varies substantially from one country to another (Gocer & Gerede, 2016).

In addition, a study conducted by Altunoz (2019) concluded that there is sufficient evidence that supports the relationship of actual output and unemployment in the long run in European Countries. Hence, it was supported by the panel cointegration. He also stated that the percentage increase in the unemployment rate would result in a decrease of 0.71% in the long run. This is why the result from the panel of the long-run as well as short-run estimations exemplified a negative relationship between the unemployment rate and actual output.

Although GDP growth rate and unemployment have an inverse relationship, the negative effect of GDP on the unemployment rate is rather weak. The researchers utilized cointegration and panel unit testing in order to identify the relationship between the variables. The results showed that as the economy grows, the employment rate does not improve along with it; in other words, it is a jobless growth in the western African states (Folawewo & Adeboje, 2017).

As stated by Chien (2020) in his study, the negative relationship between the GDP growth rate and the unemployment rate was also tested under the current health crisis several countries are facing since the COVID-19 pandemic gravely affected various economic activities. He stated that unemployment might slowly respond to the declining GDP since various firms are looking forward to a faster recovery, and laying off workers would not help these institutions.

2.2 Inflation Rate

Inflation pertains to a rise in the general price levels in the economy. This economic event affects almost all aspects of a country since it can introduce employment opportunities, and more investments can influence economic growth as well as social and political affairs (Mouseni & Jouzaryan, 2016). The inverse relationship between the inflation rate and unemployment rate can be clearly observed through the Phillips curve. Under this model, whenever the unemployment rate increases, the inflation rate then decreases and vice-versa. However, the Phillips curve in the short run is considerably different from the Phillips curve in the long run. Economists have observed that in the long run, unemployment and inflation do not have any significant connection. With this, it is presumed that the unemployment rate would stay at a fixed point regardless of the inflation rate (Sahnoun & Abdennadher, 2019). In other words, if the rate of unemployment is lower than its natural rate, then the rate of inflation will exceed the level of expectation. This situation would mean that the economy is growing at a rapid rate, which then puts upward pressure on wages and prices. This also led the policymakers to conclude that a country could possibly maintain a lower unemployment rate if it is willing to accept a higher inflation rate (Labonte, 2016).

Alternatively, if the unemployment rate is higher than what is the admissible limit, then the rate of inflation would be lower than the expected level (Ademola & Badiru, 2016). In response to this scenario, the Central Bank can then implement the expansionary

monetary policy to lower the rate of unemployment, prompt economic growth, and improve the overall condition of the labor market. (Sasongko & Huruta, 2018).

In some situations, it is somehow necessary to sustain the increase in the rate of inflation along with increasing total demand. This is because the economy does not stabilize after the inflation rate rises. In simpler terms, the Phillips curve shifts to the right, and unemployment returns to its natural rate again. With this, it is then possible to reduce unemployment below its natural rate with an ever-increasing inflation rate (Lucy, Tuama & Darko, 2017). Using this context, whenever the unemployment rate and inflation rate's relationship is stable, this will most likely be due to the differing expected inflation and realized inflation rates (Bağci & Börü, 2018).

Although the Phillips curve became a widely acclaimed economic model, many economists still opposed it, saying that the model was too simple in nature and the relationship it is implying could easily collapse once positive inflation consistently occurs. They claimed that the stable relationship between the unemployment rate and inflation rate could only be applicable to people who would not adjust their expectations with inflation, which is close to impossible since the fundamental economic principle states that individuals would still always act rationally. No matter how much effort would be exerted in order to maintain an unemployment rate below the natural rate, the moment people start to adjust their expectations with inflation, this would always still result in a constantly rising rate of inflation, instead of just having a one-time rate increase. This counter-argument to the Phillips curve model is now widely known as the natural rate model (Labonte, 2016).

Additionally, Islam et al. (2018) conducted a study that examined the Phillips curve and showed the relationship of the inflation rate to the unemployment rate of the Philippines from 1950-to 2017. OLS method was used, apropos of the Phillips curve with the reason of testing the long-run implications as well. According to the findings of the study, the Johansen long-run cointegration test produced a result of a relationship among variables. However, the Phillips curve theory of the inverse relationship between the unemployment rate and inflation was not applicable in the Philippines' economy during 1950-2017, since as the annual wage rate increases when the inflation rate rises, the unemployment rate would increase as well. Therefore, the Phillips curve cannot be utilized in a Philippine economy setting.

2.3 Foreign Direct Investment

Foreign direct investments (FDI) are known to be a key factor for a country's economic industrialization in the global world. It is a direct investment fulfilled by a certain individual or a company in another country for business and production purposes (Matthew & Ogunlusi, 2017). The main goal of the investor is to find another region/country that is suitable for cost-efficient production while the host country aims to achieve higher employment levels, income flows, and growth rates through these investments (Umit & Alkan, 2016). Both inward foreign direct investment (IFDI) and outward foreign direct investment (OFDI) are important for developing countries which explains why in most cases, developing countries are the main applicants of FDI (Irpan et al., 2016). These so-called developing countries are known to be impoverished ones for the reason that they are always being exploited due to the malpractices of some foreign investors, mismanagement of foreign firms to key economic sectors, the introduction of unnecessary technology, etc. These exploitations are prevalent since the main goal of most foreign investors in investing is to earn great returns, not really to financially aid any host country's economic ambitions (Johnny et al., 2018).

Some studies show that foreign direct investments play a significant role in reducing the rate of unemployment through a direct effect of increasing employment opportunities. But this advantageous effect still mostly depends on the way the investment is established - if it is foundational, then it will surely create new job opportunities; but in the case of mergers and acquisitions, this may rather lead to an increase in the unemployment rate because the company will certainly consider laying off some of its workers since technology-based production will be used or a replacement of local workers with foreigners will happen instead (Alalawneh & Nessa, 2020).

Moreover, according to Tegep et al. (2019), who utilized macroeconomic variables that can conciliate the relationship between Foreign Direct Investment and the unemployment rate in Indonesia, gross domestic product (GDP) and provincial minimum wage were found to have a significant effect on FDI, which will then now cause the rate of unemployment to decline. Contrarily, domestic investments and the number of the workforce have no significant influence on the relationship of FDI and the unemployment rate. Above all, these results prove that the relationship of FDI with unemployment is negative and rather indirect since FDI alone cannot bring about change in the rate of unemployment without using economic growth and minimum wages as mediating variables.

Furthermore, a study conducted by Folawewo and Adeboje (2017) also claimed that there is a weak negative relationship between foreign direct investment and the unemployment rate. The study was utilized through a panel unit and a cointegration test using data from the West African states. Its results showed a feeble and negative relationship between the unemployment rate and FDI.

With this being said, it can be concluded that FDI in the region goes along non-labor intensive professions only instead of both labor-intensive and non-labor intensive work.

Aside from the possible advantage of increased employment, host countries can also benefit through the spillovers of productivity gain that resulted from the influence of technology (Mkombe et al., 2020). Conversely, negative effects such as competition for skilled labor and crowding out of local firms due to the impact of technology and exploitations can also be experienced by the host countries (van Niekerk, 2020).

According to Haddad's study (2016), one way or another, FDI is still necessary for job creation and in reducing youth unemployment even if different methods of FDI bring about varying results because, in general, the relationship between FDI and unemployment tends to really differ from one country or region to another depending on its economic structure, type of FDI received by the host country, as well as from period span to another.

2.4 Capital Investment

When businesses decide to purchase capital goods, capital investment then increases. Such capital goods include machinery, tools, factories, etc. Given an increase in capital investment to expand businesses, business owners need to hire more workers to cater to such expansion. With the increase in employment, salaries or wages would also increase. In addition, given the increase in capital investment, labor productivity would also increase, and companies will become more efficient in producing their goods and services (Ross, 2019).

Alrabba (2017) claims that capital investment has a significant negative relationship with the unemployment rate. The researcher conducted the study using figures from Jordan and used a unit root and Granger causality test in processing the data, wherein it showed that an increase in capital investment would lead to a decrease in the unemployment rate. The researcher also stated that when there is an increase in capital investment, it prompts economic opportunities since there is an increase in assets, projects, and securities.

It is generally known that unemployment is the main result of the imbalances in the economy. This is why when investments increase, there are more funds for businesses to work with. These funds will now be used to finance the improvement of the efficiency of the businesses. Lastly, to be able to boost the development and sustain the operations of businesses, more manpower will be needed, thus increasing employment opportunities (Olunchukwa, Chinyere, & Francisca, 2013).

However, even if higher capital investments mediate more economic activities, its effect on employment remains to be a convoluted matter since its implications to the economy and the unemployment rate do not only depend on the investment's volume. There are other factors to also consider, such as the way this investment was established, the type of field it is involved with, its input modality, and the pre-existing state of the economy (Sahoo, J. & Sahoo, M., 2019).

2.5 Trade Openness

Trade openness refers to the sum of imports and exports on the basis of an economy's GDP (Alotaibi & Mishra, 2014). The trade-to-GDP ratio is used as a tool to represent the significance of international trade in a country's economy. Thus, investors are more at ease and have more confidence when the trade is flourishing in a country which encourages them to invest in foreign assets taking into account the risk. Trade allows proper and a more efficient way of allocating its resources through the use of economies of scale and also allows better competition. In general, trade openness may be beneficial and contribute to the economic growth of a country in the short run. The relationship of trade openness and economic growth in the long run, however, can be determined by a variety of factors, like the capacity of companies to adjust and compete with international markets and productivity levels to be able to improve the local's capabilities needed to improve the economies of scale and knowledge on the external factors related to trade (Silajdzic & Mehic, 2018). Moreover, trade openness is beneficial for a country given that it allows advancements in technology that are adapted from foreign countries, higher productivity for labor, and higher economic growth and development.

Given all these opportunities, trade openness has been beneficial because it allows employment to those who are unskilled and has also increased wages for them which then increases the income level of the poor. In other words, given the positive effect of trade openness on growth, there is an increase in employment opportunities due to the increase in the production of goods and services. According to Lukas Mohler and Rolf Weder (2018), trade economists and politicians have different beliefs as to the relationship between employment and trade openness. Trade economists believe that openness of trade has no impact on total employment in the medium and long-run. However, given an increase in exports, politicians believe that employment is increasing, which is a result of such international activity. On the other hand, in the perspective of the countries' citizens, trade openness may be threatening when it comes to employment due to a rise in imports. The trade economists believe that each country responds differently to trade openness and all have different effects when it comes to employment. It is argued that trade openness brings

many economic benefits, including increased technology transfer, transfer of skills, increased labor, total factor productivity, and economic growth and development.

In a study conducted in Bangladesh about the relationship between trade openness and the unemployment rate, the study concluded that trade openness and unemployment are positively related. With that being said, when there is an increase in trade openness, the unemployment rate would increase as well with trade openness. Furthermore, trade openness increased the brain drain and capital flight of developing countries, and that is an implication of the positive relationship between trade openness and the unemployment rate (Hossain et al., 2018).

Furthermore, according to Raifu (2017), both in the short and long run, trade openness makes the unemployment rate in Nigeria worse. A one percent increase in trade openness will lead to an increase by 0.700 in the short and long run. In the circumstances of the Nigerian economy, policies regarding trade leniency and trade openness for Nigeria are not beneficial in terms of their effect on the unemployment rate. The results can be associated with the labor institutional market condition that exists in the country.

2.6 Government Spending

According to a study conducted by Alrayes & Wadi (2018) which utilized the OLS regression model, the relationship between government spending and unemployment is a negative relationship. This means that an increase in government expenditure would result in a decrease in the unemployment rate. Furthermore, the researchers also stated that the feasibility of the government depends on how it handles and disburses its funds through its projects. When the government uses its funds for investing purposes, it is concurrent with private entities, thus creating opportunities for its citizens leading to an increase in the rate of employment.

With regards to the Nigerian economy in both the short and long run, government spending has a negative relationship with the unemployment rate, Implying that when the government increases its spending, it will result in a decrease in the unemployment rate. Furthermore, it can be said that the Nigerian government's intention of reducing unemployment depends on the need for labor, eventually spending government funds on wages and salaries (Onodugo et al., 2017).

On the other hand, O'Nwachukwu (2016) states that government spending has a positive relationship with the unemployment rate. According to the researcher's study, a percent increase in government spending will lead to an increase in the unemployment rate by 0.480563%. Given the p-value, it can be concluded that government spending is significant in the model. This proves that government spending can indeed have a positive relationship with the rate of unemployment, especially in Nigeria, since only small amounts of money are allocated to funds for job creation. The circumstances can also be worsened by the prevalence of corruption in the government.

In addition to this, a study by Gachari & Korir (2020) was also conducted to identify the effects of fiscal policies on the unemployment rate of Kenya. The study concluded that taxation revenue and government spending has a significant and positive relationship with the unemployment rate of Kenya. Moreover, fiscal policies promulgated by the Kenyan Government do not affect unemployment in Kenya significantly.

2.7 Theoretical Framework

2.7.1 Natural Rate Model

The natural rate model proposes that there is a definite level of unemployment that coincides with an unfluctuating inflation rate, also known as the natural rate of unemployment. The natural rate of unemployment is also alluded to as the non-accelerating inflation rate of unemployment (NAIRU). In the event that the unemployment rate decreases below the natural rate of unemployment or the negative unemployment gap, inflation is anticipated to speed up. Moreover, when the unemployment rate reaches a level beyond the natural rate of unemployment or the positive unemployment gap, inflation is expected to slow down. The natural rate of unemployment is not a constant phenomenon. It is dependent on the changes within the economy. With that being said, significant changes in economic growth and its determinants can affect the natural rate of unemployment at no constant rate and movement.

2.7.2 Okun's Law

Okun's law statistically investigates the relationship between the unemployment rate and the growth of the economy. It is now understood as the stochastic relationship between the gap of GDP and deviations of unemployment. Okun's law originally stated that when there is a 1 point percentage increase in unemployment, then there should be a 3 point percentage decrease in the GDP from the long-run. The implications of the assumption could be shown through a mathematical formula which is given by: $u_t - u_{t-1} = -\beta(g_{yt} - g_y)$. The g_y is the normal growth of output in the economy whilst the β is the measure of how growth in

excess of normal growth translates into decreases in the unemployment rate. However, the increase in percentage could also be affected by two factors which are the changes in the labor force and labor productivity. In an instance, the increase in the GDP would make the unemployment rate constant. The reason behind this is that firms adjust employment less than the one-for-one deviation of output growth from the normal growth rate. Overall, Okun's law is one of the precise ways to conveniently investigate the trend between the unemployment rate and GDP growth rate.

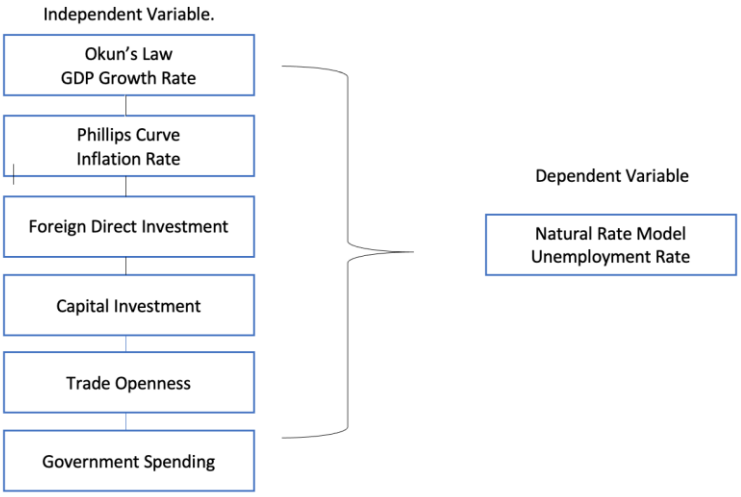
2.7.3 Phillips Curve

The Phillips curve is a popular economic concept discovered by A. W. Phillips. This seeks to show the inverse relationship between the unemployment rate and inflation in the short run. This is a straightforward attempt to exemplify the tradeoff between the unemployment rate and the inflation rate. The Phillips curve stated that the lower the unemployment rate, then there would be a narrow labor force, and thus, the firms would raise wages immediately to attract scarce labor. On the other hand, the higher the unemployment rate, then it would abate pressure. The following is a simple equation of the Philipps curve: $(\pi_t - \pi_{t-1}) = -\alpha(u_t - u_n)$

As the $U_t > U_n$, it would lead to a decrease in inflation. When $U_t < U_n$, it would increase the inflation rate. However, if they are equal to each other, then the inflation rate is constant. Overall, the unemployment rate and inflation rate are in a negative relationship.

2.8 Conceptual Framework

Figure 1



3. Design and Methodology

3.1 Research Design

The research aims to identify which of the economic factors has a significant influence on the dependent variable, which is the unemployment rate in the Philippines from 1993-to 2018. Moreover, the study also aims to identify the relationship between the independent variables, which are GDP growth rate, inflation rate, foreign direct investment, capital investment, trade openness, and government spending to the unemployment rate. With a total of 26 observations, the dependent and six independent variables would be tested through the use of OLS estimators.

Consequently, a correlational quantitative research design was used in the study in order to establish and identify the relationship between the dependent variables and the independent variables. With that being said, the study also identified the statistical significance and relationship of the variables, given a 5% level of significance. Given that the study employed a correlational research design, it provided a thorough analysis of the relationship and significance of the variables. The researchers also conducted the test of critical assumptions in order to ensure the validity of the data and the unbiasedness of the results. It also identified which economic determinants affected the unemployment rate. After obtaining the results, the researchers prepared recommendations to solve and help the unemployment difficulties in the Philippines.

3.1.1 Operational Framework

A. Variable List

Variable	Eviews Label	Definition	Unit	Source
Dependent Variable				
Unemployment Rate	Unemployment	The unemployment rate is the portion of people without a job that participates in the labor force, which is in percentage.	Percentage	PSA
Independent Variables				
GDP Growth rate	GDPr	The GDP growth rate measures how fast the economy is growing. It does this by comparing one-quarter of the country's gross domestic product to the previous quarter. GDP measures the economic output of a nation.	Percentage	The Global Economy
Inflation rate	InF	Inflation is a quantitative variable measuring the increase in the price of goods over time.	Percentage	The Global Economy
Foreign Direct Investment	FDI	Foreign Direct Investment is an investment that is made by a firm from another country in order to gain profit.	Percentage in terms of GDP	The Global Economy
Capital Investment	CI	Capital Investment is the money that is for the purpose of buying long-term assets which are related to production.	Percentage in terms of GDP	The Global Economy
Trade Openness	TRO	Trade Openness is the sum of imports and exports, which is normalized by GDP	Percentage	The Global Economy
Government Spending	GS	Government spending is the money being spent for the betterment of a certain country.	Percentage in terms of GDP	The Global Economy

B. A-priori-expectations

Regressor	Expected Relationship	Rationale
GDP growth rate (GDPr)	Negative (-)	An increase in the GDP growth rate would mean more opportunities for people to become employed. Hence, more jobs which is why there is a negative relationship between the GDP growth rate and unemployment rate.
Inflation Rate(InF)	Negative (-)	As unemployment increases, the inflation rate should decrease, as seen by the Philipps curve, because inflation comes from economic growth, which induces high prices.
Foreign Direct Investment (FDI)	Negative (-)	As foreign direct investment increases, there will be more job opportunities for Filipino citizens because external investors are capable of investing money to venture businesses in a country. Therefore, there is an inverse relationship between the unemployment rate and FDI.
Capital Investment (CI)	Negative (-)	As capital investment increases, the unemployment rate would decrease because of the increasing acquisition of equipment. Hence, firms would likely hire more people.
Trade Openness (TRO)	Positive (+)	Since the Philippines have higher imports than exports, then the trade openness would result in an increased unemployment rate because of lower labor participation.
Government Spending (GS)	Negative (-)	When there is government spending, then there is job creation happening because the government is injecting economic growth into the country.

3.2 Economic Model

The a-priori-expectation would be essential to the formulation of the econometric model that would be verified through regression analysis by software called Eviews. The econometric model is given by:

$$unemployment = \beta_1 - \beta_2 GDPr + \beta_3 InF + \beta_4 FDI + \beta_5 CI + \beta_6 TRO + \beta_7 GS + \mu_i$$ The residual term must be present because it would play an important aspect in the econometrics variable because it will show the other variables that would affect the unemployment rate that is not explained by the given independent variables in the econometric model.

3.3 Research Instruments

3.1.1 Overall Test of Significance

The overall test of significance would be an essential aspect to verify the possibility of at least one regressor that has a significant influence on the dependent or regressand. The utilization of null hypothesis and alternative hypothesis would be the primary basis of the said relationship. Moreover, the null hypothesis that the partial regression coefficients of $\beta_2, \beta_3, \beta_4, \beta_5, \beta_6, and\ \beta_7$should be equal to zero. On the other hand, the alternative hypothesis states that at least one regression coefficient is not equal to zero.

The study will also test the various critical assumptions. The R^2 would be utilized for the measure of the goodness of fit of the model. The following tests are as follows: multicollinearity, structural change through chow's test, heteroscedasticity.

3.1.2 Test of Multicollinearity

Collinearity is an important aspect to consider in the utilization of the regression model. According to Enders (2013), collinearity is the correlation between predictor variables which should portray the linear relationship in a regression model. Furthermore, if the

instances of a predictor model in the regression model are correlated, then it would mean that these variables would be unable to forecast the value of the dependent variable. Hence, it reduces the statistical significance if it violates the test of collinearity.

3.1.3 Goodness of Fit

The goodness of fit test is employed to determine how the sample data would fit in a given distribution from a population with a normal distribution. This would explain and show the significance of the regression analysis. This is considered the explanatory model because it is the proportional change in the percentage of the variation in Y that is explained by the regression model. This revolves around a value of 0 to 1. The closer the R-squared to 1 implies that the higher the explanatory power in the model.

3.1.4 Test of Heteroscedasticity

Heteroscedasticity is also considered a critical assumption in the classic linear regression, which ruins the coherence of the inference that would be created. Moreover, According to Frost (2017), it is the structured change in the spread of the residuals given the range of calculated values. Moreover, heteroscedasticity is a problem in the ordinary least squares regression (OLS) because it assumes that the residuals that are taken from the population have a constant variance. If heteroscedasticity occurs, there is an uneven spread of the variance of the residuals. Hence, the violation of the assumption would convey that the utilization of regression analysis is not possible.

The researcher would conduct various tests to ensure that heteroscedasticity would not affect the model:

I. White's test is one of the most common tests to detect any heteroscedasticity in a regression analysis. This test measures the nonlinear and interactive effect between the regressor and the error term variance. The study utilizes the 5% level of significance, and if the result of the p-value that is calculated by White's test is less than the level of significance would mean that the alternative hypothesis would be accepted. This states that heteroscedasticity is present in the model. Thus, certain corrective measures shall be implemented.

II. The last test that would be applied to ensure that heteroscedasticity does not influence the inference that would be made negatively is the Breusch-Pagan test. Just like the other tests executed, this also approximately follows a chi-square statistics. This test measures the errors of the explanatory variable(Y). The null hypothesis would mean that the error variances are all equal. On the other hand, the alternative hypothesis means that the error variances are not equal. The p-value would be the determinant of the result of heteroscedasticity.

3.1.5 Test of Autocorrelation

According to Statistics Solution, autocorrelation is the degree of correlation in the values of the same variables in the different observations. This is mostly present in observations in the context of time-series data. Autocorrelation could possibly occur when the model is specified incorrectly. If it is present in the model, then it could cause an underestimation of the variance of the estimated parameters, and it is an overestimation of the coefficient determination. This could be tested or detected through the Durbin-Watson and Breusch-Godfrey tests.

3.1.6 Test of Model Specification

The model of the specification would be the final test that would be employed to ensure the correctness of the model. This test would examine which independent variables should be in the model and what is to be excluded from the econometric model. The violation in the model specification happens when it is incorrectly specified, which leads to the breakdown of the inference, and reduces the credibility of the model.

This assumption would help us understand the impact of various economic factors such as GDP growth rate, inflation rate, etcetera to the dependent variable, which is the unemployment rate. Now, the model specification could be tested through the Ramsey Regression Equation Specification Error Test or also known as the RESET test. The results could be analyzed by the p-values produced by the test. If the p-values are less than the level of significance, then the null hypothesis is rejected. Thus, the model specification exists in the model. On the other hand, if the p-value is greater than the 5% level of significance, then there is no sufficient evidence against the null hypothesis. The null hypothesis would not be rejected, and model specification is not present in the regression model.

3.4 Data Gathering Procedure

The data was collected from The Global Economy and Philippine Statistics Authority, which contains the values for the unemployment rate, GDP growth rate, inflation rate, foreign direct investment, capital investment, trade openness, and government spending of the Philippines from 1993 to 2018, which equates to a total of 26 observations.

3.5 Statistical Analysis

The data was regressed through Eviews, and the data available is entitled unemployment.dataset.csv, which could be tested to verify the integrity and validity of the data. The relationship of the factors affecting the unemployment rate would be tested through the Ordinary Least Squares or also known as the OLS estimators. The econometric model would be formulated through the OLS, and it would establish the relationship between the aforementioned variables. Furthermore, the OLS would estimate the best parameter, which would be the best linear unbiased estimator (BLUE).

The study will also test the various critical assumptions. The R^2 would be utilized for the measure of the goodness of fit of the model. The following tests are as follows: multicollinearity, structural change through chow's test, heteroscedasticity.

The paper will utilize a 95% confidence interval which is basically a 5% level of significance. Any p-value that is less than 0.05 would mean that it is statistically significant, and it has strong evidence to reject the null hypothesis. On the other hand, if the p-value is more than the 5% level of significance, then it is not statistically significant, and the null hypothesis would not be rejected.

4. Results and Discussion

After the estimation through the OLS regression model, the following results are acquired:

Equation: UNTITLED Workfile: UNTITLED::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: UR
Method: Least Squares
Date: 11/16/21 Time: 10:16
Sample: 1993 2018
Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.928723	3.102537	1.910928	0.0712
GDPR	-0.090477	0.033030	-2.739242	0.0130
INF	0.255488	0.099875	2.558071	0.0192
FDI	-0.889152	0.398887	-2.229084	0.0381
CI	-0.170604	0.113702	-1.500445	0.1499
TRO	0.092616	0.018227	5.081398	0.0001
GS	-0.086515	0.272414	-0.317588	0.7543

R-squared	0.814193	Mean dependent var	7.842692
Adjusted R-squared	0.755517	S.D. dependent var	2.563485
S.E. of regression	1.267519	Akaike info criterion	3.536805
Sum squared resid	30.52551	Schwarz criterion	3.875523
Log likelihood	-38.97846	Hannan-Quinn criter.	3.634343
F-statistic	13.87613	Durbin-Watson stat	1.612993
Prob(F-statistic)	0.000005		

Through the result of the regression, the researcher could determine the coefficients that are needed to show the relationship between the dependent and independent variables empirically. Furthermore, the analysis of the significance of the variables would be determined. Now, the econometric model would be formulated as:

$$unemployment = 5.92872 - 0.0904769(GDPr) + 0.255488(InF)$$

$$- 0.889152(FDI) - - 0.170604(CI) + 0.0926164(TRO) - 0.0865152(GS)$$

Analyzing the regression results, the intercept has a p-value of 0.0712, which is bigger than the 5% level of significance but less than the 10% level of significance, which means that it could still reject the null hypothesis, but the evidence is weak. Looking at the coefficient, the average level of the unemployment rate is 5.92872 if no factors are influencing the variable. The coefficient of determination or also known as $R^{2,}$ would be the primary model to show the

The two independent variables in the regression results induced p-values that are higher than the 0.05 level of significance. Thus, capital investment and government spending are statistically insignificant, and it could not explain the dependent variable, which is the unemployment rate. The researcher could not conclude that a significant difference is present. Now, the table below will show the analysis of the six independent variables with regards to the a-priori-expectation aforementioned in the earlier part of the paper.

Regressor	Interpretation
GDPr	An increase in the unit percentage of GDP growth rate would result in a decrease in the unemployment rate by 0.0904769, which means that GDP has an inverse relationship with the dependent variable. Moreover, the GDP growth rate would mean the economy is growing, and many jobs are being created as the country prosper. Hence, it is consistent with the a-priori-expectations.
InF	An increase in the unit percentage of the inflation rate would mean that it would yield an increase in the unemployment rate, which is not consistent with the a-priori-expectations aforementioned. According to the Philipps curve, the unemployment rate and inflation rate have an inverse relationship, but it is limited to the short-run economy. Hence, the relationship as stated in the Philipps curve, which is inflation and unemployment rate, is irrelevant in the long run.
FDI	An increase in the FDI would mean a decrease in the unemployment rate, which is still consistent with the a-priori-expectations. Foreign direct investment also leads to job creation because of investment from another country to start businesses in a certain chosen country. This is one of the most effective ways of fueling the economy, and it greatly influences the reduction of the unemployment rate.
TRO	The unit increase in the percentage of TRO would result in an increase of 0.0926164 in the unemployment rate, which is consistent with the a-priori-expectations of the researcher. Given that the Philippines heavily relies on importation rather than exportation, the economy is not growing because it relies on its products from other countries, which would eventually result in lower labor participation in the country.

4.1 Overall Test of Significance

The ANOVA is also used to obtain the overall test of significance. Through the use of Excel, the results are presented below:

```
Analysis of Variance:

                    Sum of squares       df      Mean square

  Regression               133.761        6          22.2935
  Residual                 30.5255       19          1.60661
  Total                    164.286       25          6.57145

  R^2 = 133.761 / 164.286 = 0.814193
  F(6, 19) = 22.2935 / 1.60661 = 13.8761 [p-value 4.76e-06]
```

The results show that the R-squared is 0.814193, and the p-value is 4.76e-06, which is extremely near to zero. Given the 5% level of significance, the null hypothesis shall be rejected, and the model is significant.

The alternative hypothesis states that at least one regression coefficient is not equal to zero. Furthermore, looking at the F-statistics of 13.87613 and p-value of 4.76e-6, the f-statistics is greater than the p-value, which in conclusion is evidence against the null hypothesis. Thus, there is at least one partial regression coefficient that affects or influences the dependent variable.

4.2 Test of Multicollinearity

One of the methods to detect the violation of collinearity would be the variance inflation factors or also known as the VIF test. This would show the extent of a correlation among predictors. It is computed by: The result is interpreted by certain guidelines. The value of 1 would mean that the predictor is not correlated with other predictors, and the higher the result would mean it is at risk

of the violation of the test of multicollinearity. The value of 10 is considered as very high, and as much as possible, the researcher would want to avoid that.

Incorporating the VIF test, the results are as follows:

Equation: UNTITLED Workfile: UNTITLED::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Variance Inflation Factors
Date: 11/16/21 Time: 10:40
Sample: 1993 2018
Included observations: 26

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	9.625735	155.7751	NA
GDPR	0.001091	1.862616	1.237327
INF	0.009975	3.648251	1.227475
FDI	0.159111	9.744185	1.518696
CI	0.012928	99.07751	1.509399
TRO	0.000332	38.14239	1.330067
GS	0.074209	139.6536	1.643314

Analyzing the results, all values in the VIF test are all less than 10, which means it has strong evidence against the possible violation of multicollinearity. Hence, there are no corrective measures to implement in the model to remain the best linear unbiased estimator.

4.3 Goodness of Fit

In the results provided by Eviews, the R-squared is 0.814193. However, since the study contains many variables, the adjusted R-squared would be the most reliable and relevant R-squared. The adjusted R-squared is 0.755517, and it is near 1, which means that the model has a high explanatory model; thus, it exemplifies a good fit.

4.4 Test of Heteroskedasticity

I. White's test

Equation: UNTITLED Workfile: UNTITLED::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Heteroskedasticity Test: White
Null hypothesis: Homoskedasticity

F-statistic	0.337907	Prob. F(6,19)	0.9082
Obs*R-squared	2.506890	Prob. Chi-Square(6)	0.8677
Scaled explained SS	0.440884	Prob. Chi-Square(6)	0.9985

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/16/21 Time: 11:19
Sample: 1993 2018
Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.001578	1.444790	0.693234	0.4966
GDPR^2	0.001020	0.002457	0.415297	0.6826
INF^2	-0.015037	0.012201	-1.232380	0.2328
FDI^2	0.017395	0.094040	0.184974	0.8552
CI^2	0.000466	0.002440	0.191109	0.8505
TRO^2	7.66E-05	9.14E-05	0.837461	0.4127
GS^2	-0.003657	0.010352	-0.353296	0.7278

R-squared	0.096419	Mean dependent var	1.174058
Adjusted R-squared	-0.188923	S.D. dependent var	0.971708
S.E. of regression	1.060628	Akaike info criterion	3.178328

Given that the p-value is 0.9985, it is greater than the 5% level of significance, which means that the test fails to reject the null hypothesis, implying that the model is homoscedasticity.

II. Breusch-Pagan Test

Equation: UNTITLED Workfile: UNTITLED::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.672137	Prob. F(6,19)	0.6735
Obs*R-squared	4.552348	Prob. Chi-Square(6)	0.6024
Scaled explained SS	0.800617	Prob. Chi-Square(6)	0.9921

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/16/21 Time: 11:26
Sample: 1993 2018
Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.136999	2.477960	1.265960	0.2208
GDPR	-0.034529	0.026381	-1.308862	0.2062
INF	-0.095737	0.079769	-1.200177	0.2448
FDI	0.044942	0.318586	0.141067	0.8893
CI	-0.021101	0.090813	-0.232360	0.8187
TRO	0.008282	0.014557	0.568905	0.5761
GS	-0.158271	0.217574	-0.727435	0.4758

R-squared	0.175090	Mean dependent var	1.174058
Adjusted R-squared	-0.085407	S.D. dependent var	0.971708
S.E. of regression	1.012353	Akaike info criterion	3.087236
Sum squared resid	19.47232	Schwarz criterion	3.425954

Analyzing the results, the p-value of 0.9921, which is greater than the level of significance of 5%, implying that there is no sufficient evidence to reject the null hypothesis. Therefore, the violation of the assumption of heteroscedasticity is non-existent in the model.

III. Test of Autocorrelation

Equation: UNTITLED Workfile: UNTITLED::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	5.814995	Prob. F(2,17)	0.0119
Obs*R-squared	10.56164	Prob. Chi-Square(2)	0.0051

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/16/21 Time: 11:12
Sample: 1993 2018
Included observations: 26
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.990198	2.698062	-1.108276	0.2832
GDPR	0.025351	0.032799	0.772916	0.4502
INF	0.002091	0.081569	0.025633	0.9798
FDI	-0.617907	0.392590	-1.573924	0.1339
CI	-0.068575	0.096114	-0.713474	0.4852
TRO	-0.005589	0.015246	-0.366614	0.7184
GS	0.548742	0.274394	1.999834	0.0618
RESID(-1)	0.155841	0.241346	0.645716	0.5271
RESID(-2)	0.812594	0.249361	3.258710	0.0046

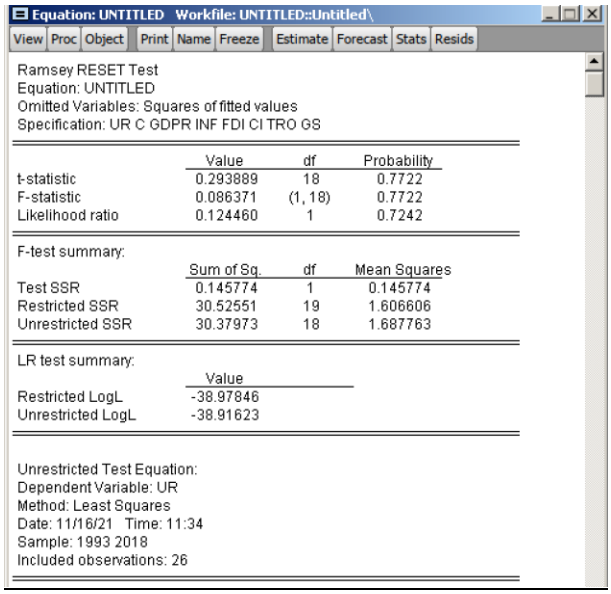
R-squared	0.406217	Mean dependent var	-3.25E-16
Adjusted R-squared	0.126790	S.D. dependent var	1.104998

Examining the results provided by the Breusch-Godfrey test, the p-values are all greater than the 5% level of significance, suggesting that autocorrelation is not present in the regression model. To ensure that autocorrelation is not violated, the Durbin-Watson test would be implemented, and the results are shown below.

Durbin-Watson statistic = 1.61299

Since the Durbin-Watson statistics is at 1.61299, which is close to the value 2, it implies that the regression analysis has less autocorrelation. Given that the two tests suggest that autocorrelation is unlikely in the regression model, the violation of the assumption is not committed.

IV. Test of Model Specification



Equation: UNTITLED Workfile: UNTITLED::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: UR C GDPR INF FDI CI TRO GS

	Value	df	Probability
t-statistic	0.293889	18	0.7722
F-statistic	0.086371	(1, 18)	0.7722
Likelihood ratio	0.124460	1	0.7242

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.145774	1	0.145774
Restricted SSR	30.52551	19	1.606606
Unrestricted SSR	30.37973	18	1.687763

LR test summary:

	Value
Restricted LogL	-38.97846
Unrestricted LogL	-38.91623

Unrestricted Test Equation:
Dependent Variable: UR
Method: Least Squares
Date: 11/16/21 Time: 11:34
Sample: 1993 2018
Included observations: 26

The results above show different p-values in different types of tests, such as the squares and cubes, squares only, and cubes only. As the p-values of the three RESET tests are greater than the 5% level of significance, the researcher could conclude that the violation of the assumption does not exist in the regression model.

5. Conclusion

The study was able to propose various strategies regarding the lowering of the unemployment rate in the country through the results of the regression analysis. The Philippines is a third-world country struggling with the issue of the unemployment rate, and many people are experiencing poverty because they do not have the financial income to live a comfortable life. Given the study, this would give an idea to the government on what policies to implement to reduce the number of people who are having difficulties in finding a job. According to the results of the study, the factors that are significantly affecting the unemployment rate are GDP growth rate, foreign direct investments, inflation rate, and trade openness. These factors yield a result of p-values that are less than the level of significance, which is 5%. All critical violation assumptions of the model were tested and had passed the tests of collinearity, autocorrelation, heteroscedasticity, and misspecification.

5.1 Recommendations

The best recommendation would be to increase the global competitiveness of the Philippines because the foreign direct investment would flow out to the country, which would then lead to various job creation in the future. This could be achieved by increasing the budget in research and development, improving skilled- laborers, innovating technology, and improving economic structures. These would also encourage foreign investors to start doing business in the country because they believe that the Philippines would be an opportunity to earn profit. Furthermore, since the Philippines is a developing country, this is deemed as a prospect to dominate the market since the intensiveness of competition is non-existent. Improving technology and economic structures would be a primary source of growth in the GDP and FDI, which would also lower the unemployment rate in the country. Hence, the government should focus on developing these factors because everything else would follow.

In addition, it has been observed that the inverse relationship of the inflation rate and unemployment rate seems to be not the case in the Philippines since, according to the results of the model, the inflation rate has a direct relationship with the dependent variable. So with this, it can be recommended that the government should control the rising prices because it also increases the number of people without occupation. The possible reason for this is that employers started to lay off workers to cope with the increasing prices of the commodities. This is a cost-cutting method for various institutions because, as much as possible, they would want to minimize their costs to gain higher profits.

The study did not employ every factor that could affect the unemployment rate in the Philippines. Furthermore, due to the lack of resources, the test has limited observations, and it could not fully test the trend in the unemployment rate from the previous decades. With this, it is advised to find and gather more information to obtain more observations. Lastly, the unemployment rate is a trend that could be unpredictable. Therefore, different types of tests shall be employed to recognize the trends in the unemployment rate.

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References

[1] Ademola, A. & Badiru, A. (2016). The impact of unemployment and inflation on economic growth in Nigeria (1981-2014), *International Journal of Business and Economic Sciences Applied Research (IJBESAR)*, ISSN 2408-0101, Eastern Macedonia and Thrace Institute of Technology, Kavala, *9* (1), 47-55
[2] Alalawneh, M. & Azizun Nessa, A. (2020). The Impact of Foreign Direct Investment on Unemployment: *Panel Data Approach. Emerging Science Journal. 4* (4), August 2020. DOI: http://dx.doi.org/10.28991/esj-2020-01226
[3] Akande Raifu, I. (2017). *ON THE DETERMINANTS OF UNEMPLOYMENT IN NIGERIA: WHAT ARE THE* ROLES OF TRADE OPENNESS AND CURRENT ACCOUNT BALANCE: *Review of Innovation and Competitiveness, 3*(4), 5–30. https://doi.org/10.32728/ric.2018.34/1
[4] Alotaibi, A. & Mishra, A. (2014). *Trade Openness*. From https://www.sciencedirect.com/topics/economics-econometrics-and-finance/trade-openness
[5] Alrabba, M. (2017). The Determinants of Unemployment Rate in Jordan: A Multivariate Approach. *International Journal of Economics and Finance, 9*(11). https://doi.org/10.5539/ijef.v9n11p109
[6] Alrayes, S. E., & Abu Wadi, R. M. (2018). Determinants of Unemployment in Bahrain. *International Journal of Business and Social Science, 9*(12). https://doi.org/10.30845/ijbss.v9n12p8
[7] Altunoz, U. (2019). *Relationship Between Output and Unemployment.* from https://www.researchgate.net/publication/332625967_The_Relationship_between_Real_Output_Real_GDP_and_Unemployment_Rate_An_Analysis_of_Okun's_Law_for_Eurozone/link/5cc0a06ba6fdcc1d49acc1c7/download
[8] Anowor, O., Uwakwe, Q., & Chikwendu, N. (2019). *How Investment does affect Unemployment.* from https://www.researchgate.net/publication/334588298_How_Investment_Does_Affect_Unemployment_in_a_Developing_Economy
[9] Apaydın, Ş. & Taşdoğan, C. (2019). *Yapısal ve Konjonktürel İşsizlik Çerçevesinde Okun Yasası Üzerine Bir Gözlem, Int. Journal of Management Economics and Business, 15* (1), 61-76
[10] Bağcı, E. & Börü, M. K. (2018). Ekonomik Büyüme ve Işsizlik Arasındaki İlişki: Türkiye'de Ekonometrik Bir Analiz*, International Journal of Academic Value Studies*, 4, (22), 890-897
[11] Chen, J. (2020). *Foreign Direct Investment.,* from https://www.investopedia.com/terms/f/fdi.asp
[12] Chen, J. (2020). *Inflation Definition.*, from https://www.investopedia.com/terms/i/inflation.asp
[13] Chien, Y. (2020). *How Bad Can it Be?.,* from https://research.stlouisfed.org/publications/economic-synopses/2020/04/16/how-bad-can-it-be-the-relationship-between-gdp-growth-and-the-unemployment-rate
[14] Dayıoğlu, T. & Aydın, Y. (2020). *Relationship between Economic Growth, Unemployment, Inflation and Current Account Balance: Theory and Case of Turkey*.DOI: http://dx.doi.org/10.5772/intechopen.93833
[15] Definition and Sources. From https://unctad.org/en/Docs/wir2007p4_en.pdf
[16] Enders, F. (n.d). *Collinearity.,* from https://www.britannica.com/topic/collinearity-statistics
[17] Folawewo, A. O., & Adeboje, O. M. (2017). Macroeconomic Determinants of Unemployment: *Empirical Evidence from the Economic Community of West African States*. African Development Review, 29(2), 197–210. doi:10.1111/1467-8268.12250
[18] Gachari, J. M., & Korir, J. K. (2020). Effect of Fiscal Policy on Unemployment in Kenya. *Journal of Economics and Finance, 11*(1). https://doi.org/10.9790/5933-1101051931.Türkiye: Yeni Nesil Bir Ekonometrik Analiz, Anadolu Üniversitesi Sosyal Bilimler Dergisi , 16,35-46
[19] Haddad, AM, (2016). Analysis of foreign direct investment and unemployment and their impact on economic growth in Jordan. *International Journal of Management and Financial Innovations 2*(1), 1–12.
[20] Hossain, M. I., Rahman, M., Hossain, S., & Tahrim, F. (2018). Relationship between trade openness and unemployment*: empirical evidence for Bangladesh. Indian Journal of Economics and Development, 6*(8).
[21] Irpan, K. (2016). Impact of Foreign Direct Investment on the Unemployment Rate in Malaysia. SciTech 2016. *IOP Publishing. Journal of Physics: Conference Series* 710 (2016) 012028. doi:10.1088/1742-6596/710/1/012028
[22] Islam, R. (n.d). *Phillips Curve.,* from https://www.abacademies.org/articles/testing-phillips-curve-to-examine-the-inflation-rate-regarding-unemployment-rate-annual-wage-rate-and-gdp-of-philippines-19502017-7585.html
[23] Johnny, N., Timipere, E. T., Krokeme, O., & Mark Jackson, D. (2018). Impact of Foreign Direct Investment on Unemployment rate in Nigeria *(1980-2015). International Journal of Academic Research in Business and Social Sciences*, *8*(3), 56–68.
[24] Kenton, W. (2019). *Goodness-of-Fit Definition.,* from https://www.investopedia.com/terms/g/goodness-of-fit.asp
[25] Koenker, R. (1981). *A note on Studentizing a Test for Heteroscedasticity.,* from https://www.sciencedirect.com/science/article/abs/pii/0304407681900622
[26] Labonte M. (2016). *Unemployment and Inflation: Implications for Policy-Making. Congressional Research Service*
[27] Levine, L. (2013). *Economic Growth and Unemployment.*, from https://fas.org/sgp/crs/misc/R42063.pdf
[28] Lucy, A., Tuama, A.S. & Darko, S.(2017). Inflation-Unemployment-and-Economic-Growth-Evidence-from the-VAR-Model-Approach-for-the-Economy-of-Iraq. *International Journal of Developing and Emerging Economies. 5*(1),26-39

[29] Lumen. (n.d). *The Relationship Between Inflation and Unemployment.,* from https://www.google.com/search?q=relationship+of+unemployment+and+inflation&rlz=1C5CHF

[30] Matthew, A. O., & Ogunlusi, T. (2017). *Foreign direct investment and employment generation in Nigeria. Proceedings of ADVED 2017- 3rd International Conference on Advances in Education and Social Sciences 9-11 October 2017*- Istanbul, Turkey, 1078-1088

[31] Mkombe, W. (2020).*The effects of foreign direct investment on youth unemployment in the Southern African Development Community, Development Southern Africa,* DOI: 10.1080/0376835X.2020.1796598

[32] Mohler, L., Weder, R. & Wyss, S. (2018). *International Trade and Unemployment.*, from https://sjes.springeropen.com/articles/10.1186/s41937-017-0006-7

[33] Mohsenia, M. & Jouzaryan, F. (2018). Examining the Effects of Inflation and Unemployment on Economic Growth in Iran *(1996-2012).* DOI: 10.1016/S2212-5671(16)30050-8 ScienceDirect 1st International Conference on Applied Economics and Business, ICAEB 2015

[34] Onodugo, V. A., Obi, K. O., Anowor, O. F., Nwonye, N. G., & Ofoegbu, G. N. (2017). *Does public spending affect unemployment in an emerging market? Risk Governance and Control: Financial Markets and Institutions,* 7(1), 32–40. https://doi.org/10.22495/rgcv7i1art4

[35] Onwachukwu, C. I. (2017, July 15). *Determinants of the Rate of Unemployment in Nigeria.* SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2999258.

[36] Ross, S. (2019). *Does Total Capital Investments Influence Economic Growth.,* from https://www.investopedia.com/ask/answers/032615/how-does-total-capital-investment-influence-economic-growth.asp

[37] Sahnoun, M. & Abdennadher, C. (2019). *Causality Between Inflation, Economic Growth, and Unemployment in North African Countries*. Economic Alternatives, 2019, (1), 77-9

[38] Sahoo, J., Sahoo, M. (2019). *The relationship between unemployment and some macroeconomic variables: Empirical evidence from India*. Theoretical and Applied Economics 26 (1), 115-128

[39] Sasongko, G. & Huruta, A. (2018). T*he Causality between Inflation and Unemployment: Indonesian Evidence.* VERSLAS: TEORIJA IR PRAKTIKA / BUSINESS: THEORY AND PRACTICE. ISSN 1648-0627 / eISSN 1822-4202.https://doi.org/10.3846/btp.2019.01

[40] Silajdzic, S. & Mehic, E. (2018). *Trade Openness and Economic Growth.* from https://www.researchgate.net/publication/328088576_Trade_Openness_and_Economic_Growth_Empirical_Evidence_from_Transition_Economies

[41] Stephanie. (2017). *Breusch-Pagan-Godfrey Test: Definition*. from https://www.statisticshowto.com/breusch-pagan-godfrey-test/

[42] Soylu, Ö. B., Çakmak, I., & Okur, F. (2018). Economic growth and unemployment issue: Panel data analysis in Eastern European Countries. *Journal of International Studies, 11*(1), 93-107. doi:10.14254/2071-8330.2018/11-1/7

[43] Tegep, W. (2019) The Failure of Foreign Direct Investment to Explain Unemployment Rate and the Mediating Role of Economic Growth and Minimum Wage. *International Journal of Economics The Global Economy*. (n.d). Philippines Capital Investment., from https://www.theglobaleconomy.com/Philippines/Capital_investment/

[44] The Global Economy. (n.d). *Philippines Trade Openness.,* from https://www.theglobaleconomy.com/Philippines/trade_openness/

[45] The Global Economy. (n.d). *Philippines Government Spending.,* from https://www.theglobaleconomy.com/Philippines/Government_size/ and Financial 9 (2), 154-161.

[46] Umit, A. & Alkan, H. (2016). *The effects of foreign direct investments and economic growth on employment and female employment: A time series analysis with structural breaks for Turkey, International Journal of Business and Economic Sciences Applied Research (IJBESAR)*, ISSN 2408-0101, Eastern Macedonia and Thrace Institute of Technology, Kavala, *9*(3),43-49

[47] United Nations. (n.d). *The Impact of Trade on Employment.,* from https://unctad.org/meetings/en/SessionalDocuments/cid29_en.pdf

[48] Urrutia, J. (2017). *An Analysis on the Unemployment Rate in the Philippines: A Time Series Data Approach.,* from https://www.researchgate.net/publication/315946889_An_Analysis_on_the_Unemployment_Rate_in_the_Philippines_A_Time_Series_Data_ApproachA_enPH876PH876&oq=relationship+of+unemploy&aqs=chrome.0.0j69i57j0l6.3105j0j7&sourceid=chrome&ie=UTF-8

[49] Van-Niekerk, AJ. (2020). *Towards inclusive growth in Africa.* Development Southern Africa 37(3),519–33. doi:10.1080/0376835X.2020.1736004.