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EFFECTS OF POPULATION GROWTH RATE AND REAL GDP GROWTH RATE ON MINIMUM WAGE POLICY IN TANZANIA

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ABSTRACT

The purpose of the study was to assess the effects of population growth rate and real GDP growth rate on minimum wage policy in Tanzania. Specifically, the study intended to determine the effect of population growth rate and real GDP growth rate on minimum wage policy in Tanzania. The study was longitudinal research design whereby the research employed quantitative research approach to gather data and answer the research hypothesis and summarize the results. A sample size of 31 observations was taken on population growth rate of Tanzania and Real GDP growth rate from 1990 to 2020. Pearson Correlation Coefficient for correlation and Linear Regression using Ordinary Least Square Estimator were used for data analysis. The study revealed that population growth rate and real GDP growth rate have positive effects on the minimum wage policy. The result from the t- test shows that the population growth rate and real GDP growth rate has a significant impact on the minimum wage policy. The coefficient of determination, the adjusted R^2 is to 0.764, which shows that the independent variables explain about 76.4% of the variations in the dependent variable. The result from the f- test shows that the overall model was significant. The study concludes increase in population growth positively affects wages. Due to that, increase in population has result to increase in wages as workers depend on the wages to attend the needs of his/her family so due to increase in population means the number of dependent increases so wages should rise so that people can meet the needs due to the number of people in his/her family. Moreover, an increase on real GDP growth rate, results to increase in wages as workers with earn more from their productions. The researcher recommends that more non- governmental organizations should be encouraged to come up with more blue prints that would help in sensitizing the population growth with the increase of real GDP growth rate. Moreover, NGO'S should continue to mount pressure on government agencies and communities come up with pleasant cultural practices that tend to increase population growth rate in relation with the increase in real GDP growth rate towards economic performance of the country. In addition, more economic activities and/ or institutions that increase GDP such as the food vendors, hair making, agriculture, restaurant business etc., should be improved to accommodate more economic performance.

INTRODUCTION

According to international standards, the minimum wage is the lowest monetary value which may be paid to workers in a region in a point of time, either through existing acts or through collective bargaining. In some countries the minimum wage is determined by law, while in others it is determined through dialogue or negotiation, or through collective agreements between workers and employers (ILO, 2019).

Worldwide, the minimum wage has the purpose of safeguarding the income and living conditions of workers who are the most vulnerable in the labour market. The minimum wage has long been a controversial issue since its passage in the Fair Labour Standard Act of 1938 of United State. Most economists in the USA argue that the minimum wage may price out low-skilled workers, discriminate against minorities, and cause unemployment to rise. However, its supporters typically argue that it can reduce poverty and increase incomes of the lowest-paid workers (Adie, 2013).

As vaguely defined as it is, minimum wage has been extensively studied and debated by economists over time, each with divergent views. For instance, in a survey of 210 members of the American Economic Association, Whaples (2016) found that about 47 percent of the economists surveyed believed that the federal minimum wage in the United States should be eliminated, while about

38 percent believed that the minimum wage should be increased.

Continentally, however, minimum wage increases may not be the most efficient way to achieve poverty reduction (Card and Krueger, 2015). This is because, while increases in minimum wages reduce poverty levels, they also lead to higher levels of unemployment. Specifically, the category of workers most likely to suffer from minimum wage increases is low-skilled workers. Such workers are easily substituted for high-skilled workers. Unemployment increases most amongst them. This is worsened by the fact that jobs that require low skills and those that pay low wages are the most likely to decline when minimum wages increase (Neumark, 2014).

Therefore, as far as efficiency is concerned, the ability of minimum wages to reduce poverty is not costless (Lustig and McLeod, 2016). Added to this, when minimum wage increases are highly enforced, their effects on the employment and income levels of the targeted workers (mostly low-skill-low-income workers) are negative (Clemens and Wither, 2014). Vuillemey (2018) indicates that, "by imposing a minimum wage, law makers close off access to employment for any workers if what they produce is worth less than the value of the minimum wage, payroll taxes including far from protecting the weakest, which is part of its initial purpose, the minimum wage excludes them from the labour market, relegating them to unemployment or to 'parallel' forms of employment".

Dube (2013) however posits that, a negative relationship between minimum wages and total employment growth may be because we fail to account for the differences between states with high minimum wages and those with low minimum wages. In addition, the timing of increases in minimum wages is also an important factor. Therefore, the negative relationship between minimum wage increases and employment is no proof of a causal relationship. Moreover, minimum wages lead to price increases. The inflationary effect of minimum wage increases turns to hurt the poor since they spend greater proportion of their incomes on consumables. Hence, the poor are more likely to suffer from the inflationary effects of minimum wage increases.

According to ILO (2014), the elements to be taken into consideration in determining the level of minimum wages include (a) the needs of workers and their families, taking into account the general level of wages in the country, the cost of living, social security benefits, and the relative living standards of other social groups; (b) economic factors, including the requirements of economic development, levels of productivity and the desirability of attaining and maintaining a high level of employment. The question is, how high the minimum wage should be treated as a country-specific issue? In many countries the ratio of the minimum wage to average wage is set in practice at around 40 per cent (ILO, 2019).

Minimum wage increases have been a popular policy tool used by governments to tackle poverty. The main idea of fixing minimum wages is to ensure low-wage-low-skill workers earn "decent" wages from their jobs (Askenazy, 2018). Moreover, it can "pull" households that are below the poverty line above the poverty line since it raises household income. In addition, it creates and sustains at least, a "subsistence standard of living" for poor and low-skilled workers.

Gallup et al (2015) assert that recent population growth is negatively correlated with a country's potential for economic growth in many African countries. Populations are growing most rapidly in countries that are not experiencing economic growth, resulting in massive inflows of people into urban areas (Gallup, et al 2015). However, the recent recognition that urbanization is relevant to socioeconomic development is significant as many African governments have strong anti-urban sentiments due to the large numbers of informal settlements (Turok & McGranahan 2018).

Governments around East-Africa set a minimum wage to raise wages of workers whose wages are relatively low. Minimum-wage laws dictate the lowest price for labour that any employer may pay (Mankiw, 2016). Hence, requiring that firms or organizations pay minimum wages are illustrations of government interventions designed to raise the income of specific groups; the purpose of which is to provide a 'wage floor' that will help less-skilled workers earn enough income to escape poverty (McConnell, et al, 2019).

The macroeconomic performance of Tanzania for the period of 1990 to 2010 has been well. The growth rate increased; Growth Domestic Product (GDP) has averaged 7 percent per annum which is high for the period of 2002 to 2009 years (Lewis, 2014). GDP growth peaked at 7.8 percent in 2004 but severe and prolonged drought negatively affected the economy in year 2005. GDP growth recovered to reach 7.4 percent in year 2008. However, due to the global economic and financial crisis, growth was projected to fall to 5 percent in year 2009 and then gradually increase to 7.5 percent in year 2012 (Lewis, 2014).

Tanzania's economic growth has shown different trends in different periods of time. The literature on economic growth of Tanzania is mixed depending on time and policies regarding strategies for economic growth. Babu (2014) studied on minimum wage and economic growth in the East African community, Tanzania and Kenya and suggests economic growth in Tanzania to be strong since early 2000s despite its trend to be uneven and it affects positively to minimum wage. Odhiambo (2018) studied on minimum wage and economic growth in Tanzania and argues that, the year 2000 Tanzania's GDP growth rate increased significantly to about 5.1 percent which was the highest GDP growth rate recorded for more than a decade, moreover, GDP growth rate affects positively to minimum wage. Christian, et al., (2017) observe Tanzania's economy in early nineties to be characterized by macroeconomic disequilibrium and poor economic growth, and this affects negatively to minimum wages. Thus, despite the policies (SAP, ERP and NESP) which were put in place to alter the level of economic growth, still the level remained a slow movement (Kasidi and Said, 2019).

In Tanzania, minimum wage policy, supported by a strong social policy, is an efficient mechanism against poverty and income erosion of the poorest households. Herr and Kazandziska (2016) assert that minimum wage is one of the instruments which can control wage dispersion and, in this way, reduce income inequality. It can also help to prevent a general decline in the level of nominal wages and deflationary developments.

The minimum wage measure is the percentage change in the ratio of the nation's minimum wage to the average wage over the same period. Muganda (2017) suggests that increases in the minimum wage were associated with a positive, but statistically insignificant, effect on aggregate national GDP growth. Thereby during a time of rising exports, minimum wage increases lead to economic

growth.

Population growth rate and real GDP growth rate for gross domestic investments are positively related to minimum wage on economic performance in developed countries; meanwhile, in recent years in Tanzania there is an increase in population growth with small increase proportional to Real GDP growth rate as according to National Bureau of Statistics (2020). However, the environment differs from country to country and economic policies cannot be uniformly applied. Therefore, this study focused on assessing effects of population growth rate and real GDP growth rate on minimum wage policy in Tanzania.

LITERATURE SURVEY

Neoclassical Theory

The standard neoclassical theory predicts that a firm will respond to a rise in the minimum wage in two ways; it will cut employment, and it will substitute high skilled labour for the labour of less-skilled workers whose wages have risen. However, recent models have suggested that minimum wages can lead firms to increase employment. These models incorporate a variety of market frictions, including search costs (e.g., Ahn, et al. 2018), informational asymmetries (Drazen, 2019), and efficiency wages (Rebitzer and Taylor, 2017). In general, these models suggest that employment effects may depend on the group of workers affected and on the specifics of labour markets.

Given the nature of the theoretical ambiguities, there is need for empirical studies that contain enough detail, both to analyse effects at the establishment level and to test for heterogeneous effects on different groups of workers. Prior studies have lacked such detail. On one hand, establishment-level studies typically have not had enough information on employees to estimate separate effects for different types of workers. Also, studies of specific groups of low-wage workers (mainly teenagers and sub-groups of teenagers) have relied on household survey data, and have been unable to examine changes in relative wages and employment within firms.

Effect of Population Growth Rate on Minimum Wage Policy

Masry (2020) did a study on "Relationship between Wage Policy and Increase in Population in USA". The study employed a case study design and 50 respondents were involved for observation. A descriptive analysis was used in data analysis. The study found that adverse employment effects have unintended consequence of leading to greater wage policy if low-skilled workers who lose their jobs take up job training or increase schooling, or if firms substitute toward higher-skilled workers. Additionally, if local labour markets have only one employer (monopsony), there is even scope for minimum wage increases to increase employment.

Drazen (2019) did a study on "Optimal Minimum Wage Legislation in Canadian Economy". A case study was employed. Data were collected from 45 respondents whereby correlation analysis was used in data analysis. The study found that a ten-percentage point increase in the ratio of the statutory minimum wage is associated with increases in production levels, but not productivity growth. Specifically, the author find that a ten percentage-point increase in the ratio of the statutory minimum wage to the median wage is associated with an approximately two percentage-point increase in long-term multi-factor (and labour) productivity.

Rebitzer and Taylor (2017) conducted a study on "The Consequences of Minimum Wage Laws in Kenya". The study involved 31 years of observation. A time series data was employed whereby descriptive analysis was used in data analysis. The study found that the effect of minimum wages on aggregate productivity is positively related. This literature has faced several challenges, including: (i) how to measure overall and industry-specific productivity; (ii) disentangling the effects of minimum wage increases from other concurrently implemented economic policies or economic trends; and (iii) accounting for spillover effects of the minimum wage on productivity in "control" regions.

Kasidi and Mwakalemela (2019) study on "Impact of Population on Economic Growth: A Case Study of Tanzania". A case study was employed. Time series data were collected from 50 respondents. The researcher used a linear regression model formed from variable used whereby $EG = \beta 0 + \beta 1\ POP + \beta 2\ BI + U$. Where EG is Economic Growth; POP is Population; BI is Business Investment and U is Disturbance term. Regression analysis using Ordinary Least Square Estimator technique was used in data analysis. The study found that the increase in population has a positive impact on economic growth in Tanzania. From their observations they construed that as the population goes up by 1 percent, economic growth (GDP) increases by 28.105 percent and the analysis showed that 64 percent of the factors affecting economic growth in Tanzania are explained by population and only 36 percent were captured by other factors.

Effect of Real GDP growth rate on Minimum Wage Policy

Askenazy (2018) did a study on "Relationship between Minimum Wage, Exports and Growth in Belgium". The study employed a case study survey and data were collected from 63 respondents whereby correlation analysis was used to determine the relationship between minimum wage, exports and growth in Belgium. The study found out that, increases in the minimum wage were associated with a positive, but statistically insignificant effect on aggregate national GDP growth. Thereby during a time of rising exports, minimum wage increases lead to economic growth.

Lemos (2020) did a study on "The effect of the minimum wage on employment, and prices in Developing Countries: A Case Study of Kenya and Ethiopia". A case study was conducted and data were collected from 80 respondents whereby descriptive analysis was used in data analysis. The study found that, minimum wage increases may increase worker effort, either in an efficiency wage framework (i.e., where workers are paid more to encourage higher output and raise morale), or because those who retain jobs increase their efforts to forestall competition from those who have been laid off. In summary, the net effect of higher minimum wages on GDP depends on how minimum wages affect: (i) the demand for low-skilled workers; (ii) wages of low-skilled workers; (iii) availability of substitutes for goods produced by minimum wage workers; (iv) workers' effort; and (v) job training and educational attainment.

Sabia (2019) did a study on "Impact of Minimum wages on Gross Domestic Product in Tanzania". The study employed a case study survey. Data were collected from 45 respondents whereby descriptive analysis was used in data analysis. The study found out that the macroeconomic effect of minimum wage increases on gross domestic product (GDP) is ambiguous. Minimum wage increases may increase labour costs and output prices, reduce firms' profits and job training, and cause adverse employment and hour's effects, each of which may reduce GDP. However, if minimum wage increases, it raises the earnings of low-skilled workers who keep their jobs, and these workers have a higher marginal propensity to consume an additional shilling of income than low-skilled workers who lose their jobs.

Bagachwa, and Naho (2019) conducted a study on "Estimating the Economy Development in Tanzania". The study employed a case study survey and data were collected from 63 respondents whereby correlation analysis was used to estimate the relationship between minimum wage and national GDP growth. The study found that as minimum wage increase, workers' productivity also increases; the results of this study suggest that increases in the minimum wage were associated with a positive, and insignificantly affects aggregate national GDP growth.

METHODOLOGY

The study was longitudinal research design whereby the research employed quantitative research approach to gather data and answer the research hypothesis and summarize the results. A sample size of 31 observations was taken on population growth rate of Tanzania and Real GDP growth rate from 1990 to 2020. Pearson Correlation Coefficient for correlation and Linear Regression using Ordinary Least Square Estimator were used for data analysis.

RESULTS & DISCUSSION

Correlation Coefficient Results

Table 1: Correlation Results

Correlation Results		Minimum Wage Policy	Real GDP growth rate	Population Growth Rate
Minimum Wage Policy	Pearson Correlation	1	.793**	.880**
	Sig. (2-tailed)		.025	.000
	N	31	31	31
Real GDP growth rate	Pearson Correlation	. 793**	1	.664**
	Sig. (2-tailed)	.025		.008
	N	31	31	31
Population Growth Rate	Pearson Correlation	.880**	. 664**	1
	Sig. (2-tailed)	.000	.008	
	N	31	31	31

**. Correlation is significant at the 0.01 level (2-tailed).

Interpretation

From the results, real GDP growth rate, and population growth rate have high positive correlation. This implies that the real GDP growth rate and population growth rate is positively related with minimum wage policy in Tanzania.

Multiple Regression Analysis

Multiple linear regression analysis was conducted to examine independent variables (population growth rate and real GDP growth rate) affect the dependent variable (minimum wage policy) whereby 31 observations were used. A multiple regression analysis is an analysis that involves one dependent variable and two or more independent variables.

Interpretation of Regression Results

The model used, as shown from the conceptual model, was linear;

That is

$MWP=\beta 0+\beta 1PGR+\beta 2rGDP+\mu$ .....Eqn(2)

Where; MWP = Minimum wage policy. PGR = Population Growth Rate, rGDP = Real GDP growth rate. β0, β1 and β2 are parameters and μ is an error term

And β1 and β2 > 0

The estimated linear model was MWP = 47.354 + 0.796PGR + 0.783rGDP

(6.424) (9.949) (3.791)

$\bar{R}2 = 0.764$, F = 49.536, and t values are in parentheses

Table 2: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	47.354	7.371		6.424	.000
	Population growth rate	.796	.392	.888	9.949	.000
	Real GDP growth rate	.783	.605	.571	3.791	.036

a. Dependent Variable: Minimum wage policy

The estimated regression model indicates that a one percentage change in population growth rate leads to a positive change of 0.796 in minimum wage policy. A one percentage change in real GDP growth rate leads to a positive change of 0.783 in minimum wage policy. All two parameter estimates are statistically significant at 5% level. Moreover, the algebraic signs of the parameter estimate for population growth rate and real GDP growth rate conform with the hypothesized signs.

F-Statistical Test

Table 3: Analysis of Variance – ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1111.132	2	555.566	49.536	.000[b]
	Residual	314.034	28	11.215		
	Total	1425.165	30			

a. Dependent Variable: Minimum wage policy

b. Predictors: (Constant), Population growth rate, Real GDP growth rate

Interpretation

The F-statistics was used to test the overall significance of the regression results.

The hypothesis test

HO: β1= β2 = 0 (model insignificant)

HA: β1≠ β2 = ≠ 0 (model is significant)

The level of significance is 5% = 0.05.

The calculated 'F' as shown in Table 3 is 49.536 and the critical 'F' is 3.15

Since the calculated 'F' is greater than critical 'F', the researcher rejects null hypothesis in favour of the alternative hypothesis; that is β1 and β2 are statistically different from zero implying that population growth rate and real GDP growth rate affects minimum wage policy in Tanzania.

Table 4: Model Explanatory Power

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.883[a]	.780	.764	3.34895	.780	49.536	2	28	.000	1.154

a. Predictors: (Constant), Population growth rate, Real GDP growth rate

b. Dependent Variable: Minimum wage policy

Interpretation

¯R2 was used to explain the total variations in the dependent variable i.e., minimum wage policy caused by variations in the independent variables i.e., population growth rate and real GDP growth rate. According to the regression output the adjusted R2 =0.764 implying that the model explains about 76.4% variations in the minimum wage policy hence the model does more than half in explaining variations in minimum wage policy.

Moreover, R coefficient is 0.883 meaning that there is a correlation of 88.3% between the independent variables (population growth rate and real GDP growth rate) and dependent variable (minimum wage policy). This shows that the independent variables (population growth rate and real GDP growth rate) are significant predictors of the dependent variable (minimum wage policy) at Tanzania.

DISCUSSION BASED ON THE SPECIFIC OBJECTIVES

Effect of Population Growth Rate on Minimum Wage Policy

From the study it was revealed that population growth rate has significance contribution and positively related to the minimum wage policy since the p-value is less than 0.05. If population growth rates increase, the minimum wage for labour also increased as there will be more production in the county. Therefore, population growth rate as macroeconomic performance of the country affects minimum wage policy in Tanzania.

The findings in this study are like the study done by Kasidi and Mwakalemela (2019) who revealed that the increase in population has a positive impact on economic growth in Tanzania. From their observations they construed that as the population goes up by 1 percent, economic growth (GDP) increases by 28.105 percent and the analysis showed that 64 percent of the factors affecting economic growth in Tanzania are explained by population and only 36 percent were captured by other factors.

Therefore, these findings show that there is a positive relationship between population growth rates and minimum wage policy and p-value is less than 0.05, therefore the null hypothesis, which states that there is no significant relationship between population growth rate and minimum wage policy in Tanzania is rejected and hence, H_A was fully supported.

Effect of Real GDP growth rate on Minimum Wage Policy

The study revealed that real GDP growth rate has significance contribution and positively related to the minimum wage policy since the p-value is less than 0.05. The increase in the minimum wage is associated with a positive and statistically significant effect on aggregate national GDP growth.

These findings differ from the findings of Askenazy (2018) who revealed that increases in the minimum wage were associated with a positive, but statistically insignificant effect on aggregate national GDP growth. Thereby during a time of rising exports, minimum wage increases lead to economic growth.

These findings show that there is a positive relationship between real GDP growth rate and minimum wage policy and the p-value is less than 0.05, therefore the null hypothesis (H0) which states that there is no significant relationship between real GDP growth rate and minimum wage policy in Tanzania is rejected and hence, H_A was fully supported.

CONCLUSION

Increase in population growth positively affects wages. Due to that, increase in population has result to increase in wages as workers depend on the wages to attend the needs of his/her family so due to increase in population means the number of dependent increases so wages should rise so that people can meet the needs due to the number of people in his/her family. Moreover, an increase on real GDP growth rate, results to increase in wages as workers with earn more from their productions.

RECOMMENDATIONS

Recommendations for Action

The government should allow increase in population growth rate and real GDP growth rate to affect wage policy.

More technology advancements and skilled labour should be used to influence the increase on minimum wage in relation with the increase in real GDP growth rate towards economic performance of the country.

More economic activities and/ or institutions that increase GDP such as the food vendors, hair making, agriculture, restaurant business, should be improved to accommodate more economic performance.

Financial institutions and microfinances should be encouraged to offer small loans at a lower interest rate to attract more borrower/investors.evasion.

Recommendations for Further Studies

The model was only able to explain 76.4% of the total variation of minimum wage policy. This means that the model might have missed out some important factors which affect minimum wage policy. To get more explanation on minimum wage policy, other variables of economic performances which affect minimum wage policy should be identified and included in future research.

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