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INSTITUTIONAL QUALITY. HUMAN CAPITAL AND INDUSTRIAL SECTOR GROWTH IN ECOWAS

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Abstract: The industrial sector has been identified as a tool for effective economic diversification among developing countries but major challenges of the sector have been the institutional and human capital in these economies. Consequently, the need to re-assess the relationship among the three is pertinent**.** The study investigates empirically, the impacts of institutional quality and human capital on the industrial sector growth of the ECOWAS. The methodology adopted is quantitative with the use of panel data analysis. Findings from the analysis show that both human capital and institutional quality in the ECOWAS have not supported industrial growth significantly. However, the result shows that macroeconomic variables such as inflation rate and exchange rate have the largest effect on the growth of the industrial sector of ECOWAS. The study used ECOWAS that has not been used by any of the previous authors and the economic bloc is in dire need of economic diversification. It is recommended that ECOWAS countries should improve on their institutional quality and human capital development for them to be effective in promoting the growth of their industrial sector.

JEL classification: J24, J38, L60;
Keywords: Industrial Sector Growth, Institutional Quality, Human Capital

1. Introduction

The role of industrial development in sustainable economic growth cannot be over emphasized. It leads to inclusive growth by facilitating job creation and raising productivity in agriculture, where most of the population in low income regions like Economic Community of West African States ECOWAS is employed. A vibrant industrial sector is necessary to engage the outputs of the agricultural sector and utilize them for the overall economic development of the region. However, this

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process can be pursued by improving the business climate, providing better technical training, and exploiting new technologies (Ranis, 1973). Solow (1956) maintained that long-term economic growth is dependent on technical progress, which he assumed to be exogenous. The developed countries have long embraced high technological innovation as evidenced in their high capital-labour ratio.

However, ECOWAS with the huge population and vast human capital, the industrial sector of the region remains largely underdeveloped when compared to other similar regions across the globe. According to (Abubakar, Kassim, & Yusoff, 2015) the growing population of ECOWAS which is supposed to be a blessing by breeding a virile human capital that can promote the industrial sector growth appears to be the greatest undoing of the industrial sector development in Nigeria. In 2016, the population growth rate in the ECOWAS was 34% with Nigeria taking the leading role in this astronomical rise. On the contrary, at this same period, the growth rate of the industrial sector in the big countries like Nigeria, Senegal and Ghana fell by 2.5%, 2.1% and 1.2% respectively (Ajide, 2014), (Keho, 2018)

One of the major factors identified by the International Labour Organization ILO (2015) and World Bank (2016) as very germane to facilitating the synergy between industrial growth and human capital is the government policy and this is where the role of institutions comes in. It is believed that with good institution, human capital can easily translate to positive industrial growth. The quality of institutions across Sub Sahara Africa countries and Africa at large has been a major source of concern to stakeholders in the industrial sectors. The latest corruption index shows that many African countries have been recording upward movements especially the leading countries in the ECOWAS region. The corruption index which is one of the widely used indicators of government quality in the literatures shows that on the average corruption index rose in the ECOWAS from 24% in 2015 to about 27% in 2018 (Nurudeen, Karim, Zaini, & Aziz, 2015), (Lavallée & Roubaud, 2019). These data show that the control of corruption in the ECOWAS leaves much to desired and it also speaks volume of the weak institutional quality of the region. But could this, with the poor human capital, have been responsible for the gloomy performance of the industrial sector as opined by ILO and World Bank? The answer to this question is the focus of this study.

Some gaps have been identified in the literature regarding this study. A host of the past studies have focused on either the impact of human capital on industrial sector or impact of institutional quality on industrial sector, thus, making it difficult to study the joint effects of both on industrial sector in a singular study (Dawson, 1998; Nguyen, 2020; Desmet, Greif, & Parente, 2020; Haltiwanger, Lane, & Spletzer, 2019). In addition, many of the past studies used corruption alone to proxy institutional quality. However, with the emergence of more indicators like government effectiveness narrowing the definition of institution quality to only corruption control might be myopic. Consequently, this study will apart from using control of corruption as an indicator of institutional quality, will also add government effectiveness in order to have a broader perspective of institutional quality unlike previous studies.

The aim of this study is to investigate the impacts of human capital and institutional quality on the industrial growth of the ECOWAS. 12 out of the 16 members are focused on in this study due to non-availability of data on Cape Verde, Guinea and Guinea Bissau. However, the 12 members covered in this study include Nigeria, which is the largest economy, Ivory Coast, Ghana and Senegal among others.

These 12 countries control about 95% of the GDP of ECOWAS thus making it justifiable to use them to represent ECOWAS.

2. Methodology

Research Design

This aspect of the research discusses the research method in general. It includes the theoretical framework, the model specification, sources of data, estimating techniques among others

Theoretical framework: Endogenous growth theory

The theory used for this study is extracted from the endogenous growth theory precisely the Lucas version of the growth theory which is explained in the Lucas model of 1988. According to Lucas (1988), it is the investment in human capital and not physical capital that has spillover effects that increase the level of technology. For firm i, the output based on Lucas position take the form

$$\mathbf{Y_i = A\,(k_i).(H_i).e\quad H} \qquad \ldots\ldots (1)$$

Where A = technical Coefficient
K_i = physical input
H_i = human capital input
H = the organization/economy's average level of Human capital
e = degree of external effects from human capital to each firm's productivity.

In this Lucas model, constant return to scale is assumed for the model to thrive and technology is endogenously provided as a side effect of investment decision by firms. From the point of view of the user, technology is regarded as a public good thus making it possible to treat the firms as price takers. The Lucas model predicts easy arrival of equilibrium as the price-taking firms are on the same page with many other firms under perfect competitive market situation.

According to Lucas (1988), human capital is sometimes suggested as a potential engine of growth and education and training is an important factor in this regard. In addition, Ojapinwa (2016) among others opined that the organizational/ economy average of human capital is strongly influenced by institutional quality. Therefore, a modification of Lucas model can be presented as follows:

$$Y_i = f(K_i, H_i, e_i, I_i\ ) \ldots\ldots (2)$$

Where, Y_i is the output, K_i is physical input, H_i is human capital, e_i is the degree of external effects from human capital to each firm's productivity , I_i is the institutional quality which has influence on the behavior of human capital and e represents other external or control variables in the model.

Model Specification

For the objective of the study, a model that follows equation 2 is formulated. In addition, the model is modified to include some of the important indicators of institutional quality such as political instability, corruption control, rule of law index and government effectiveness. Again, since industrial development is of more importance to this study than industrial output growth, Y_i is therefore, expressed in real term hence it becomes real growth rate of the industrial sector in SSA and the model for this study is specified thus:

$$y_{i,t} = f(k_{i,t}.h_{i,t}.I_{i,t}.e_{i,t}) \qquad (3)$$

The linear form of equation 2 is presented in equation 3

$$logy_{i,t} = log\delta + \theta logk_{i,t} + \varphi logh_{i,t} + \beta logI_{i,t} + \sigma loge_{i,t} + \varepsilon \qquad (4)$$

In equation 3, $y_{i,t}$ I s the real growth rate of the industrial sector of country i at period t. $k_{i,t}$ is the physical capital (gross capital formation) of country i at period t. $h_{i,t}$ is the human capital index of country i at period t. $I_{i,t}$ is the institution quality (that is control of corruption and government effectiveness) of country i at period t. Lastly, $e_{i,t}$ are other control variables that are very germane to the development of the Sub-Saharan African countries. In this study, the variables to be included are inflation rate and exchange rate.

Sources of Data

Data on industrial sector growth are collected from the Global Economics Database 2018, while the corruption index which is proxy for institution quality is extracted from the World Bank Tables, 2018. Human capital Index is extracted from PENN WORLD TABLES, 2019. The remaining control variables are also sourced from the World Bank.

Estimation Techniques

The study adopts panel data regression analysis to analyze the relationship between human capital, institutional quality and economic development in Sub-Saharan Africa. The panel data procedure starts from the panel unit root test as it is important that all the variables included in the panel model are stationary.

Panel Unit Root Test

The conventional unit root test is no longer popular as a result of the advantages inherent in the panel unit root test. Levin, Lin and Chu (1995), (Choi, 2001), (Breitung & Das, 2005) demonstrated a considerable improvement in the power of Unit Root tests when using panel data other than the univariate testing procedures. The panel unit root test explores the data characteristics of the panel before proceeding to the panel co-integration test. The idea is to test for stationarity of each variable used in the study. According to Engel and Granger (1997), a variable may not be stationary but a linear combination of the non-stationary variables may be stationary hence the need for co-integration.

Another method of panel unit test to be adopted for this study is Im, Pesaran and Shin (IPS) test. The test has been proven to be suitable in verifying stationarity of variables in panel data (Im, Pesaran and Shin, 2003), (Maddala and Wu, 1999). The basic IPS specification is given as:

$$\Delta Y_{i,t} = \alpha Y_{i,t-1} + \sum_{j=1Yij}^{Pi} \Delta Y_{i,t-j} + \beta_0 + \beta_{1t} + \beta_1 x_{i,t} + \varepsilon_{i,t} \dots\dots\dots\dots\dots\dots\dots (5)$$

Where βo is the constant, $x_{i,t}$ represents the explanatory variables, $\Delta Y_{i,t}$ is the explained variable, β_{1t} is a time trend and *P* is the required lag length. The null hypothesis to be tested for the IPS is $H_0 : \alpha_1 = 0$ for all "i"s while the alternative hypothesis is $H_1 : \alpha_i < 0$, for at least one i. The lag lengths are selected using the Akaike Information Criterion (Hoechle, 2007; Ng & Perron, 2001).

The Panel Data Models

There are four possibilities and options when it comes to panel data regressions which are reviewed here under (Hsiao, 2007), (Frees, 2004). However, it should be noted that the series in this research is T 21 years while the cross-sectional unit N is 12.

The Fixed Effect Model

The term "fixed effect" is due to the fact that although the intercept may differ among countries, each country does not vary overtime, that is time-variant. This is the major assumption under this model i.e. while the intercept are cross-sectional variant, they are time variant.

Within-Group Fixed Effects

In this version, the mean values of the variables in the observations on a given firm are calculated and subtracted from the data for the individual, that is;

$$Y_{it} - \hat{Y}_i = \sum_{1=2}^{k} \beta_i \left(X_{ijt} - X_{ij}\right) + \partial(t - \bar{t}) + E_{it} - \bar{E}_i \dots\dots\dots\dots\dots\dots (6)$$

And the unobserved effect disappears. This is known as the within-groups regression model.

First Difference Fixed Effect

In the first difference fixed effect approach, the first difference regression model, the unobserved effect is eliminated by subtracting the observation for the previous time period from the observation for the current time period, for all time periods. For individual *i* in time period *t* the model may be written as:

$$Y_{it} = \beta_i + \sum_{1=2}^{k} \beta_j X_{ijt} + \partial t + \infty_i + E_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

For the previous time period, the relationship is

$$Y_{it} = \beta_i + \sum_{1=2}^{k} \beta_j X_{ijt} - 1 + \partial(t-1) + \infty_i + E_{it-1} \dots\dots\dots\dots\dots\dots\dots\dots (8)$$

Subtracting (7) from (8) one obtains

$$\Delta Y_{it} = \beta_i + \sum_{1=2}^{k} \beta_j \Delta X_{ijt} + \partial t + E_{it} - E_{it-1} \dots\dots\dots\dots\dots\dots\dots\dots (9)$$

and again unobserved heterogeneity has disappeared.

Random Effect Model

Another alternative approach known as the random effects regression model subject to two conditions provides a solution to a problem in which a fixed effect regression is not an effective tool when the variables of interest are constant for each firm and such variables cannot be included.

The first condition is that it is possible to treat each of the first unobserved Z_p variables as being drawn randomly from a given distribution. This may well be the case if the individual observations constitute a random sample from a given population.

$$\text{If } Y_{it} = \beta_j + \sum_{1=2}^{k} \beta_j X_{ijt} + \partial t + \infty_i + E_{it} = \beta_i + \sum_{1=2}^{k} \beta_j X_{ijt} + \partial t + \mu_{it} \text{..(10)}$$

w*here:* $\mu_{it} = \infty_i + E_{it}$.

The unobserved effect has been dealt with by subsuming it into the disturbance term. The second condition is that the Z_p variables are distributed independently of all the X_j variables. If this is not the case, ∞, and here μ, will not be uncorrelated with X_j variables and the random effects estimation will be biased and inconsistent.

3. Results and Discussion

This aspect of the paper presents the results of the data analysis and the interpretation of the results are also done. It begins with the descriptive analysis.

Descriptive analysis

The trend analysis of industrial sector growth, institutional quality and human capital are presented under this section. It begins with the summary of statistics.

Table 1: Summary of statistics

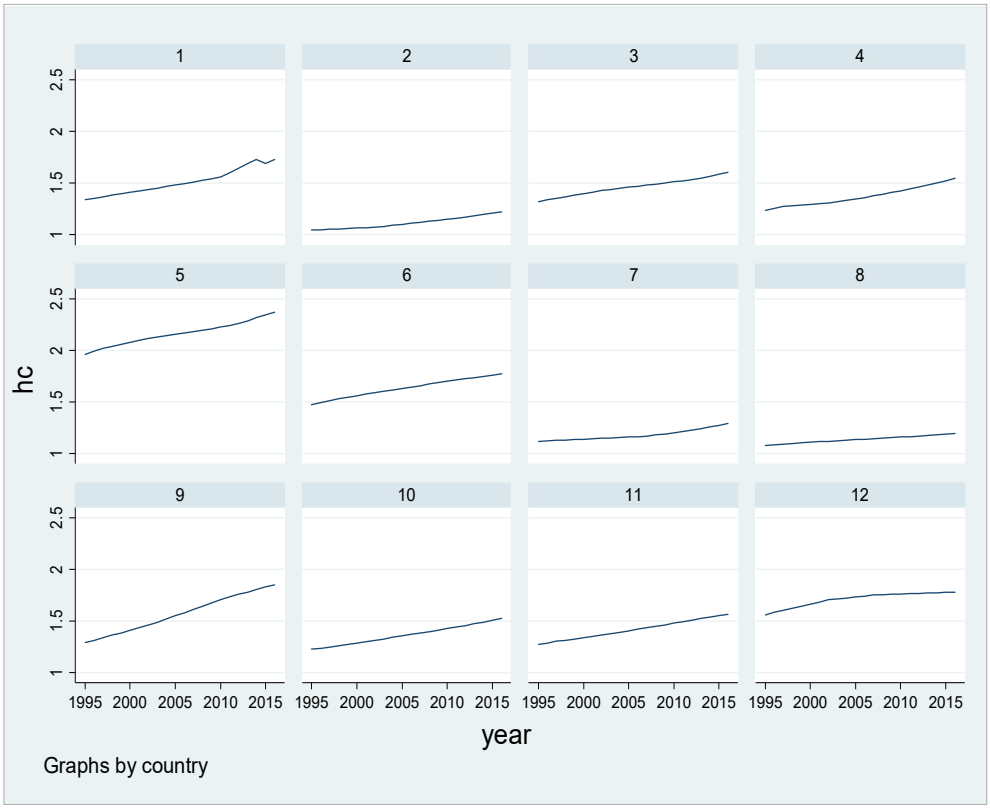
	CORR	EXR	GOVEF	HC	INDGR	INF	K
Mean	-0.568030	570.7195	-0.692727	1.467867	19.16711	5.235606	18.85844
Median	-0.625000	494.4150	-0.670000	1.433002	19.83549	3.200000	19.45454
Maximum	0.180000	4524.158	0.160000	2.374476	37.44548	46.60000	42.03716
Minimum	-1.700000	0.064871	-1.880000	1.041401	3.243096	-3.100000	-2.424358
Std. Dev.	0.404207	810.9915	0.478670	0.294493	6.563693	6.392137	8.017716
Observations	264	264	264	264	264	264	264

Source: Author's Computation

The means of the two indicators of institutional quality in the ECOWAS are negative. Precisely control of corruption and government effectiveness are -0.568030 and -0.692727 respectively. This is an indication that there is poor quality of institutions in the ECOWAS. Human capital mean is 1.467867. Despite the fact that the value is positive, it is closer to the minimum than maximum. The industrial sector growth is also positive during the period under review. To be able to explore

the position of individual countries of ECOWAS in this distribution, trend analysis of the countries are done for each of the variables. The result is presented in the following figures. These are done for individual country for each variable.

Figure 1: Trends of Human Capital Index



Key: Country 1-Benin, Country 2- Burkina Faso, Country 3-Ivory Coast, Country 4-Gambia, Country 5-Ghana, Country 6-Liberia, Country 7-Mali, Country 8-Niger, Country 9-Nigeria, Country 10-Senegal, Country 11-Serra Lone, Country 12-Togo

Source: Author's Computation

Figure 1 shows the trend of human capital index in the ECOWAS countries. Twelve out of the 15 member organization are covered in the study due to data availability but the countries represent about 98.5% of the entire GDP of the ECOWAS region. This is an indication that they can be used to assess the situation of human development index in the region. The trend shows that all the countries follow upward trend in terms of their human capital index. However, the scale of human capital is from 1 to 5 with point 1 the weakest level of human capital index and point 5 the strongest (World Bank, 2017). From all the countries in the ECOWAS, all their trends are below

2 point, which signifies a weak human capital index for the region. Niger Republic and Mali have the weakest human capital index with value less 1.5. Ghana is the only country in the ECOWAS with the point that is greater than 2 hence, it is the nation with the highest level of human capital index in the ECOWAS sub-region.

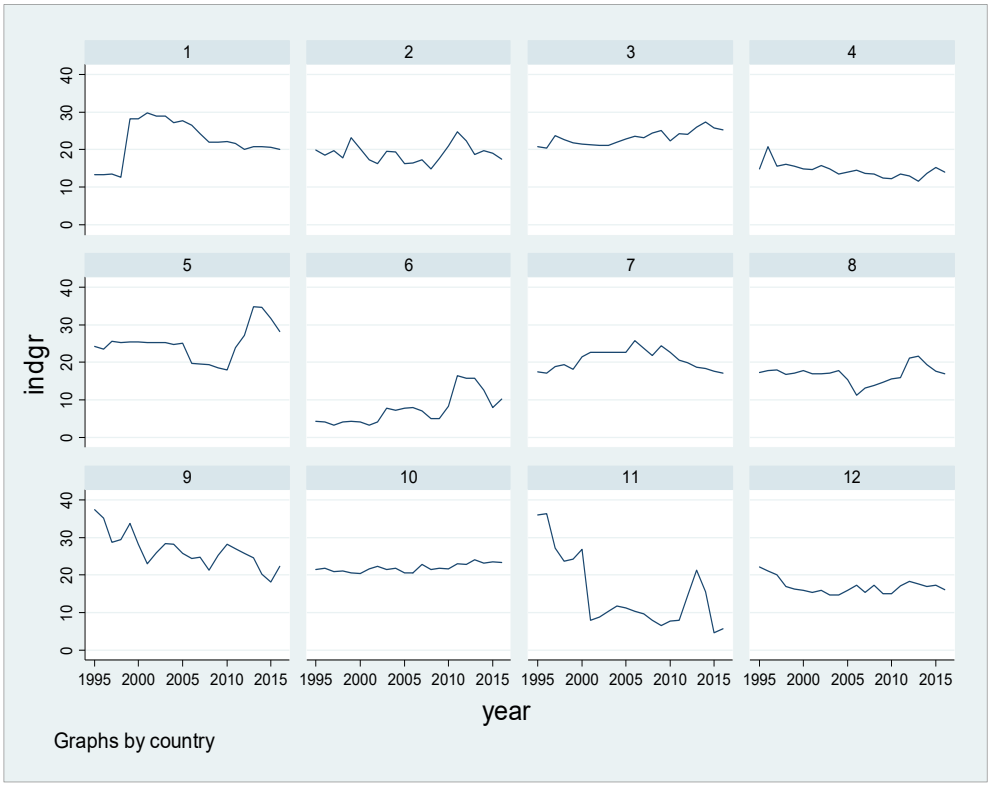
Figure 2: Trends of institutional quality index

Key: Country 1-Benin, Country 2- Burkina Faso, Country 3-Ivory Coast, Country 4-Gambia, Country 5-Ghana, Country 6-Liberia, Country 7-Mali, Country 8-Niger, Country 9-Nigeria, Country 10-Senegal, Country 11-Serra Lone, Country 12-Togo

Source: Author's Computation

Control of corruption and government effectiveness indices are used to proxy institutional quality in this study. The index for both range from -2.5 to 2.5 with -2.5 showing weakest control of corruption and the most ineffective government. All the countries have negative and falling trends of both Control of corruption and government effectiveness. However, Ghana and Senegal do not have a pronounced falling trend like others. They both recorded positive trends along the period unlike others where negative and falling trend remain pronounced all through the period investigated.

Figure 3: Trends of industrial growth



Key: Country 1-Benin, Country 2- Burkina Faso, Country 3-Ivory Coast, Country 4-Gambia, Country 5-Ghana, Country 6-Liberia, Country 7-Mali, Country 8-Niger, Country 9-Nigeria, Country 10-Senegal, Country 11-Serra Lone, Country 12-Togo

Source: Author's Computation

Figure 3 is a clear indication that the industrial growth in the ECOWAS has been unstable and in most of the countries it follows a downward trend movement. The downward trends are more pronounced in countries like Nigeria, Sierra Leone and Togo. Notwithstanding, some countries also witnessed upward trends during the period under review these countries are Ghana and Ivory Coast but what is common to all the countries is that recently all of them has been witnessing a downward trend in their industrial sector growths.

Panel data estimation

The panel data analysis investigates the impacts of institutional quality and human capital of the industrial growth in ECOWAS. The result from the panel regression using fixed effect method is presented in table 2.

Table 2: Panel data estimation (Fixed effects results)

Variables	ECOWAS
Log of Human Capital index	.364065 (.3858542)
Control of corruption	-.0033205 (.1112019)
Government effectiveness	.13185 (.1208996)
Log of Economic growth	.0494585 (.0269875)
Log of Exchange rate	-.0144387** (.0013016)
Log of Inflation rate	-.0259483*** (.1210192)
Log of capital	.0236834 (.0563802)
HAUSMAN test	0.000
R square	0.1469
Cross-sectional dependence test probability	Pr = 0.9955

Source: Author's computation

Firstly, the results of the panel data show that the fixed effect results are suitable for all the analysis because the HAUSMAN test chi square statistics is significant at 5% therefore, the results presented on table 2 are the fixed effects version.

Secondly, the results show that human capital index in ECOWAS has not made any significant contribution to the industrial growth of the region. The coefficient of human capital index is .364065. Although, it is positive, the coefficient is not statistically significant. This implies that levels of human capital development witnessed in the ECOWAS region during the period under review fail to contribute significantly to the growth of the industrial sector. The result supports the findings of (Unger, Rauch, Frese, & Rosenbusch, 2011) where it was concluded that most developing countries in Africa are suffering from human capital deficiency and that this is the major reason their real sectors are backward.

The institutional quality is proxy with two variables namely; government effectiveness and control of corruption. The result from the panel data has also shown that their coefficients are -.0033205 and 0.13185 for control of corruption and government effectiveness respectively. Again, none of the two coefficients is statistically significant. Thus, it implies that institutional qualities in the ECOWAS have not promoted industrial growth during the period under review. The result follows the findings under the descriptive statistics where it was shown that for most of the countries in ECOWAS their institutional qualities indices are negative. This might account for the reason why they have not been able to exert significant impact on the growth of the industrial sector in the region. The findings are similar to that of Mehlum, Moene, & Torvik, (2006) where it was established that government

institutions in most of the countries in the Sub-Sahara Africa countries are witnessing economic development problem because they are weak.

However, other macroeconomic variables used as control factors in the model such as exchange rate and inflation rate have significant impacts on industrial growth in ECOWAS. The result shows that the parameter estimates of exchange rate in the panel model are -.0144387 and this is significant at 5%. The meaning is that currency depreciation in ECOWAS is not helpful to the industrial sector growth. The reason for this might not be unconnected with the fact that the industrial sector of the ECOWAS largely depends on import for most of their raw materials and capital goods. Therefore, currency depreciation will only increase their cost of production. Comparing this result to previous studies' findings, it was discovered that this position is also shared by (Bleaney & Greenaway, 2001), (Rodrik, 2008),(Jongbo, 2014). Although their study is on Sub-Sahara Africa SSA, yet they concluded that most of the real sectors of countries in the SSA are less capital intensive domestically and hence depends on importation for most of their capital goods and as a result of this exchange rate policy that will make import cheaper will encourage the growth of their real sectors.

Inflation rate on the other hand was shown to be an important determinant of industrial sector growth in the panel result. The coefficient is -.0259483 and significant at 5%. This confirms that a rising inflation will affect the growth of the industrial sector adversely. It further justifies the position earlier that rising cost of production is inimical to the growth of the industrial sector of ECOWAS.

Moreover, other variables used in the model such as economic growth and capital formation failed to have significant impact on the growth of the industrial sector of the ECOWAS. It should be noted that the capital is proxy with gross fixed capital formation for the individual economy since there is no data on capital for industrial sector only. The implication of this is that the investment in the ECOWAS is less industrial sector driven.

4. Conclusions

Findings from the analysis have led to some conclusions that are very important for the relationship among human capital, institutional quality and industrial growth of the ECOWAS. Firstly, various literatures have shown that for the entire SSA to improve their levels of economic development and catch up with the developed economies, they will need to diversify their economies since most of them currently depend on primary export. ECOWAS as part of the SSA has been struggling with the problem of diversification and the reason has been the stunted growth of the industrial sector. This study concludes that the issue of human capital which was described as a major catalyst that can boost the industrial sector growth is not impacting significantly on the industrial sector in ECOWAS. The study has contributed to the existing literatures and theories on relevance of human capital in economic growth. Lucas model of endogenous growth model identified human capital as an important factor that drives growth. It is obvious from the conclusion of this study that the weak human capital in ECOWAS has contributed to the stunted industrial growth witnessed over the years in the region.

Another conclusion from the study is that institutions in ECOWAS are not supporting the growth of the industrial sector. It is evident from the findings that both government effectiveness and control of corruption has failed to have impact on the industrial growth of the ECOWAS. The implication of this conclusion is that, for ECOWAS to record significant development in their industrial sector, their institutions must be improved. In addition, conclusion from this study has re-emphasized the need for strong institutions to support industrial sector growth. This has again contributed to the existing literatures on the relationship between institutions and growth as emphasized by the Rostow theory of economic development.

It has also been confirmed from the study that the industrial sector of ECOWAS is more affected by macroeconomic variables such as exchange rate and inflation rate. The study also concludes that currency devaluation might not promote or aid the growth of the industrial sector of the ECOWAS. In addition, as a region, rising inflation rate is another important factor that has been shown from the study as a factor that affects the growth of the industrial sector adversely. The relevance of macroeconomic variables in growth which was emphasized by the endogenous and the neoclassical growth models has been supported by the conclusion from this study

Finally, both economic growth and investment in the ECOWAS generally are not industrial sector-supportive. The investment in the ECOWAS is not influencing industrial growth significantly. This shows that the level of investment or physical capital generally in the ECOWAS is not adequate to promote the growth of industries. Again, as seen from the study, that economic growth of the ECOWAS is also not driven by the industrial sector.

It is recommended, therefore, that ECOWAS countries should work on promoting their human capital development aggressively in order to make it have significant influence on the growth of their industrial sector. Again, as shown in the study that the quality of institutions currently in the ECOWAS is not supportive of the industrial sector growth consequently, efforts should be made by the authorities in the ECOWAS to improve their institutional quality

References

Abubakar, A., Kassim, S. H., & Yusoff, M. B. (2015). Financial development, human capital accumulation and economic growth: empirical evidence from the Economic Community of West African States (ECOWAS). *Procedia-Social and Behavioral Sciences, 172*, 96-103.

Ajide, K. B. (2014). Determinants of foreign direct investment in ECOWAS countries: The roles of governance and human capital. *The Empirical Econometrics and Quantitative Economics Letters, 3*(2), 61-74.

Bleaney, M., & Greenaway, D. (2001). The impact of terms of trade and real exchange rate volatility on investment and growth in sub-Saharan Africa. *Journal of development Economics, 65*(2), 491-500.

Breitung, J., & Das, S. (2005). Panel unit root tests under cross-sectional dependence. *Statistica Neerlandica, 59*(4), 414-433.

Choi, I. (2001). Unit root tests for panel data. *Journal of international money and Finance, 20*(2), 249-272.

Desmet, K., Greif, A., & Parente, S. L. (2020). Spatial competition, innovation and institutions: the Industrial Revolution and the Great Divergence. *Journal of Economic Growth, 25*(1), 1-35.
Dawson, J. W. (1998). Institutions, investment, and growth: New cross-country and panel data evidence. *Economic inquiry, 36*(4), 603-619.
Frees, E. W. (2004). *Longitudinal and panel data: analysis and applications in the social sciences*: Cambridge University Press.
Haltiwanger, J. C., Lane, J. I., & Spletzer, J. (1999). Productivity differences across employers: The roles of employer size, age, and human capital. *American Economic Review, 89*(2), 94-98.
Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *The stata journal, 7*(3), 281-312.
Hsiao, C. (2007). Panel data analysis—advantages and challenges. *Test, 16*(1), 1-22.
Jongbo, O. C. (2014). The impact of real exchange rate fluctuation on industrial output in Nigeria. *Journal of Policy and Development Studies, 289*(1849), 1-11.
Keho, Y. (2018). Manufacturing and Economic Growth in ECOWAS Countries: A Test of Kaldor's First Law. *Modern Economy, 9*(5), 897-906.
Lavallée, E., & Roubaud, F. (2019). Corruption in the informal sector: evidence from West Africa. *The Journal of Development Studies, 55*(6), 1067-1080.
Mehlum, H., Moene, K., & Torvik, R. (2006). Institutions and the resource curse. *The economic journal, 116*(508), 1-20.
Ng, S., & Perron, P. (2001). Lag length selection and the construction of unit root tests with good size and power. *Econometrica, 69*(6), 1519-1554.
Nguyen, V. (2020). Human capital, capital structure choice and firm profitability in developing countries: An empirical study in Vietnam. *Accounting, 6*(2), 127-136.
Nurudeen, A., Karim, A., Zaini, M., & Aziz, M. I. (2015). Corruption, political instability and economic development in the Economic Community of West African States (ECOWAS): is there a causal relationship? *Contemporary economics, 9*(1), 45-60.
Ranis, G. (1973). Industrial sector labor absorption. *Economic Development and Cultural Change, 21*(3), 387-408.
Rodrik, D. (2008). The real exchange rate and economic growth. *Brookings papers on economic activity, 2008*(2), 365-412.
Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of business venturing, 26*(3), 341-358.

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Abstract. It is an important problem to derive negative relation between the unemployment rate and the inflation rate, that is, the Phillips curve without market imperfection. We derive the Phillips curve using an overlapping generations model under monopolistic competition. We consider the effects of exogenous changes in labor productivity. An increase (decrease) in the labor productivity in a period induces a decrease (increase) in the employment, an increase (decrease) in the unemployment rate and a falling (rising) in the price of the goods in the same period. Then, given the price in the previous period the inflation rate falls (rises). This conclusion is based on the premise of utility maximization of consumers and profit maximization of firms. Therefore, we have presented a microeconomic foundation of the Phillips curve.

JEL classifications: E12, E24, E31
Keywords: Phillips Curve, Microeconomic foundation, Overlapping generations model, Monopolistic competition.

1. Introduction

Otaki and Tamai (2012) presented a microeconomic foundation of the negative relation between the unemployment rate and the inflation rate, that is, the Phillips Curve (Phillips (1958)) using an overlapping generations model (OLG model) under monopolistic competition. They have shown that, the lower the unemployment rate in a period (for example period $t-1$), the higher the inflation rate from period t to period $t+1$. Their logic is as follows. They assume that the low (or high) unemployment rate in period $t-1$ raises (or lowers) the labor productivity in period t by learning effect. If the unemployment rate in period $t-1$ increases, the labor productivity in period t falls. Then, by the behavior of firms in monopolistic competition the price of the goods in period t rises given nominal wage rate, and the

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inflation rate from period t to period $t+1$ falls given the (expected) price of the goods in period $t+1$. Alternatively, a decrease in the unemployment rate in period $t-1$ raises the labor productivity in period t. Then, the price of the goods falls, and the inflation rate from period t to period $t+1$ rises given the (expected) price of the goods in period $t+1$. However, we do not find their conclusion that the low unemployment rate in period $t-1$ explains the high inflation rate from period t to period $t+1$ to be satisfactory. A fall in the price in period t means that the inflation rate from period $t-1$ to period t falls, that is, the low unemployment rate in period $t-1$ explains the low (not high) inflation rate from period $t-1$ to period t.

Instead, in this paper we consider the effects of exogenous changes in labor productivity. It may be due to a change in the unemployment rate in the previous period as assumed by Otaki and Tamai (2012). We will show the negative relationship between the unemployment rate and the inflation rate in the same period. Our logic is as follows. If the labor productivity in a period, for example, period t increases, the employment decreases, and the unemployment rate in period t increases. Then, by the behavior of firms in monopolistic competition the price of the goods falls given nominal wage rate, and the inflation rate from period $t-1$ to period t decreases. Alternatively, if the labor productivity in period t decreases, the employment increases, and the unemployment rate in period t decreases. Then, the price of the goods rises given nominal wage rate, and the inflation rate from period $t-1$ to period t increases.

There are various studies on the theoretical basis of the Phillips curve from the neoclassical and new Keynesian standpoint. The representative of neoclassical studies is Lucas (1972). The neoclassical Phillips curve based on the rational expectations hypothesis is vertical at the natural unemployment rate, but in the short run, incomplete information leads to a downward sloping Phillips curve as firms increase production and employment without realizing that changes in the prices of their goods reflect changes in the general price level. In the new Keynesian analysis, the sticky nature of prices brought about by multi-year wage contracts (Taylor (1979, 1980)) and the sticky pricing behavior of firms (Calvo (1983), Mankiw and Reis (2002)) brings about a downward Phillips curve. Erceg, Henderson and Levin (1998, 2000) develop a similar analysis with a model that incorporates not only price but also wage stickiness, and Woodford (2003) developed an analysis using a model that incorporates an indexation rule such that pricing is linked to the historical inflation rate.

These works on the Phillips curve presumes some market imperfection, and it implies that if there does not exist some price stickiness assumption or imperfect information, the negative correlation between inflation and unemployment will disappear. This paper will show that it is not.

In Section 2 we analyze behaviors of consumers and firms. In Section 3 we consider the equilibrium of the economy with involuntary unemployment. In Section 4 we show the main results about the negative relation between the unemployment rate and the inflation rate.

2. Behaviors of consumers and firms

We consider a two-periods (young and old) OLG model under monopolistic competition according to Otaki (2007, 2009, 2011, 2015 and 2016). There is one factor of production, labor, and there is a continuum of goods indexed by $z \in [0,1]$.

Each good is monopolistically produced by Firm z. Consumers are born at continuous density $[0,1] \times [0,1]$ in each period. They can supply only one unit of labor when they are young (period 1).

2.1 Consumers

We use the following notations.
$c^i(z)$: consumption of good z in period $i,\ i = 1,2$.
$p^i(z)$: price of good z in period $i,\ i = 1,2$.
X^i: consumption basket in period $i,\ i = 1,2$.

$$X^i = \left\{ \int_0^1 c^i(z)^{1-\frac{1}{\eta}} dz \right\}^{\frac{1}{1-\frac{1}{\eta}}}, \qquad i = 1,2, \qquad \eta > 1.$$

β: disutility of labor, $\beta > 0$.
W: nominal wage rate.
Π: profits of firms which are equally distributed to each consumer.
L: employment of each firm and the total employment.
L_f: population of labor or employment in the full-employment state.
$y(L)$: labor productivity. $y(L) \geq 1$.

δ is the definition function. If a consumer is employed, $\delta = 1$; if he is not employed, $\delta = 0$. The labor productivity is $y(L)$. We assume increasing or constant returns to scale technology. Thus, $y(L)$is increasing or constant with respect to the employment of a firm L. We define the employment elasticity of the labor productivity as follows.

$$\zeta = \frac{y'}{\frac{y(L)}{L}}.$$

We assume $0 \leq \zeta < 1$. Increasing returns to scale means $\zeta > 0$. η is (the inverse of) the degree of differentiation of the goods. In the limit when $\eta \to +\infty$, the goods are homogeneous. We assume

$$\left(1 - \frac{1}{\eta}\right)(1 + \zeta) < 1$$

so that the profits of firms are positive.

The utility of consumers of one generation over two periods is

$$U(X^1, X^2, \delta, \beta) = u(X^1, X^2) - \delta\beta.$$

We assume that $u(X^1, X^2)$ is homogeneous of degree one (linearly homogeneous). The budget constraint is

$$\int_0^1 p^1(z)c^1(z)dz + \int_0^1 p^2(z)c^2(z)dz = \delta W + \Pi.$$

$p^2(z)$ is the expectation of the price of good z in period 2. The Lagrange function is

$$\mathcal{L} = u(X^1, X^2) - \delta\beta - \lambda\left(\int_0^1 p^1(z)c^1(z)dz + \int_0^1 p^2(z)c^2(z)dz - \delta W - \Pi\right).$$

λ is the Lagrange multiplier. The first order conditions are

$$\frac{\partial u}{\partial X^1}\left(\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz\right)^{\frac{\frac{1}{\eta}}{1-\frac{1}{\eta}}} c^1(z)^{-\frac{1}{\eta}} = \lambda p^1(z), \tag{1}$$

and

$$\frac{\partial u}{\partial X^2}\left(\int_0^1 c^2(z)^{1-\frac{1}{\eta}}dz\right)^{\frac{\frac{1}{\eta}}{1-\frac{1}{\eta}}} c^2(z)^{-\frac{1}{\eta}} = \lambda p^2(z). \tag{2}$$

They are rewritten as

$$\frac{\partial u}{\partial X^1}X^1\left(\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz\right)^{-1} c^1(z)^{1-\frac{1}{\eta}} = \lambda p^1(z)c^1(z), \tag{3}$$

$$\frac{\partial u}{\partial X^2}X^2\left(\int_0^1 c^2(z)^{1-\frac{1}{\eta}}dz\right)^{-1} c^2(z)^{1-\frac{1}{\eta}} = \lambda p^2(z)c^2(z). \tag{4}$$

Let

$$P^1 = \left(\int_0^1 p^1(z)^{1-\eta}dz\right)^{\frac{1}{1-\eta}}, P^2 = \left(\int_0^1 p^2(z)^{1-\eta}dz\right)^{\frac{1}{1-\eta}}.$$

They are prices of the consumption baskets in period 1 and period 2. By some calculations we obtain (please see Appendix)

$$u(X^1, X^2) = \lambda\left[\int_0^1 p^1(z)c^1(z)dz + \int_0^1 p^2(z)c^2(z)dz\right] = \lambda(\delta W + \Pi), \tag{5}$$

$$\frac{P^2}{P^1} = \frac{\frac{\partial u}{\partial X^2}}{\frac{\partial u}{\partial X^1}}, \tag{6}$$

$$P^1X^1 + P^2X^2 = \delta W + \Pi. \tag{7}$$

The indirect utility of consumers is written as follows

$$V = \frac{1}{\varphi(P^1, P^2)}(\delta W + \Pi) - \delta\beta. \tag{8}$$

$\varphi(P^1, P^2)$ is a function which is homogeneous of degree one. The reservation nominal wage rate W^R is a solution of the following equation.

$$\frac{1}{\varphi(P^1, P^2)}(W^R + \Pi) - \beta = \frac{1}{\varphi(P^1, P^2)}\Pi.$$

From this

$$W^R = \varphi(P^1, P^2)\beta.$$

The labor supply is indivisible. If $W > W^R$, the total labor supply is L_f. If $W < W^R$, it is zero. If $W = W^R$, employment and unemployment are indifferent for consumers, and there exists no involuntary unemployment even if $L < L_f$.

Indivisibility of labor supply may be due to the fact that there exists minimum standard of living even in the advanced economy (please see Otaki (2015)).

Let $\rho = \frac{P^2}{P^1}$. This is the expected inflation rate (plus one). Since $\varphi(P^1, P^2)$ is homogeneous of degree one, the reservation real wage rate is

$$\omega^R = \frac{W^R}{P^1} = \varphi(1, \rho)\beta.$$

If the value of ρ is given, ω^R is constant.

Otaki (2007) assumes that the wage rate is equal to the reservation wage rate in the equilibrium. However, there exists no mechanism to equalize them. We assume that β and ω^R are not so large.

2.2 Firms

Let

$$\alpha = \frac{P^1X^1}{P^1X^1 + P^2X^2} = \frac{X^1}{X^1 + \rho X^2}, 0 < \alpha < 1.$$

From (3) ~ (7),

$$\alpha(\delta W + \Pi)\left(\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz\right)^{-1} c^1(z)^{-\frac{1}{\eta}} = p^1(z).$$

Since

$$X^1 = \frac{\alpha(\delta W + \Pi)}{P^1},$$

we have

$$(X^1)^{\frac{1}{\eta}-1} = \left(\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz\right)^{-1} = \left(\frac{\alpha(\delta W + \Pi)}{P^1}\right)^{\frac{1}{\eta}-1}.$$

Therefore,

$$\alpha(\delta W + \Pi)\left(\frac{\alpha(\delta W + \Pi)}{P^1}\right)^{\frac{1}{\eta}-1} c^1(z)^{-\frac{1}{\eta}} = \left(\frac{\alpha(\delta W + \Pi)}{P^1}\right)^{\frac{1}{\eta}} P^1 c^1(z)^{-\frac{1}{\eta}} = p^1(z).$$

Thus,

$$c^1(z)^{\frac{1}{\eta}} = \left(\frac{\alpha(\delta W + \Pi)}{P^1}\right)^{\frac{1}{\eta}} P^1(p^1(z))^{-1}.$$

Hence,

$$c^1(z) = \frac{\alpha(\delta W + \Pi)}{P^1}\left(\frac{p^1(z)}{P^1}\right)^{-\eta}.$$

This is demand for good z of an individual of younger generation. Similarly, his demand for good z in period 2 is

$$c^2(z) = \frac{(1-\alpha)(\delta W + \Pi)}{P^2}\left(\frac{p^2(z)}{P^2}\right)^{-\eta}.$$

Let M be the total savings of consumers of the older generation carried over from their period 1. It is written as

$$M = (1-\alpha)(\overline{W}\overline{L} + L_f\overline{\Pi}).$$

$\overline{W}$, $\overline{L}$ and $\overline{\Pi}$ are the nominal wage rate, the employment, and the profit in the previous period. Then, their demand for good z is

$$\frac{M}{P^1}\left(\frac{p^1(z)}{P^1}\right)^{-\eta}.$$

The government expenditure constitutes the national income as well as consumptions of younger and older generations. The total demand for good z is written as

$$c(z) = \frac{Y}{P^1}\left(\frac{p^1(z)}{P^1}\right)^{-\eta}.$$

Y is the effective demand defined by

$$Y = \alpha(WL + L_f\Pi) + G + M.$$

G is the government expenditure (about this demand function please see Otaki (2007), (2009)). The total employment, the total profits and the total government expenditure are

$$\int_0^1 Ldz = L, \int_0^1 \Pi dz = \Pi, \int_0^1 Gdz = G.$$

We have

$$\frac{\partial c(z)}{\partial p^1(z)} = -\eta\frac{Y}{P^1}\frac{p^1(z)^{-1-\eta}}{(P^1)^{-\eta}} = -\eta\frac{c(z)}{p^1(z)}.$$

From $c(z) = Ly(L)$,

$$\frac{\partial L}{\partial p^1(z)} = \frac{1}{y(L) + Ly'}\frac{\partial c(z)}{\partial p^1(z)}.$$

The profit of Firm z is

$$\pi(z) = p^1(z)c(z) - \frac{W}{y(L)}c(z).$$

P^1 is given for Firm z. Note that the employment elasticity of the labor productivity is

$$\zeta = \frac{y'}{\frac{y(L)}{L}}.$$

The condition for profit maximization with respect to $p^1(z)$ is

$$c(z) + \left[p^1(z) - \frac{y(L) - c(z)y' \frac{1}{y(L)+Ly'}}{y(L)^2} W\right] \frac{\partial c(z)}{\partial p^1(z)}$$
$$= c(z) + \left[p^1(z) - \frac{1 - Ly' \frac{1}{y(L)+Ly'}}{y(L)} W\right] \frac{\partial c(z)}{\partial p^1(z)}$$
$$= c(z) + \left[p^1(z) - \frac{W}{y(L) + Ly'}\right] \frac{\partial c(z)}{\partial p^1(z)} = 0.$$

From this

$$p^1(z) = \frac{W}{y(L) + Ly'} - \frac{c(z)}{\frac{\partial c(z)}{\partial p^1(z)}} = \frac{W}{(1+\zeta)y(L)} + \frac{1}{\eta} p^1(z).$$

Therefore, we obtain

$$p^1(z) = \frac{W}{\left(1 - \frac{1}{\eta}\right)(1+\zeta)y(L)}.$$

With increasing returns to scale, since $\zeta > 0$, $p^1(z)$ is lower than that in a case without increasing returns to scale given the value of W.

3. The equilibrium with involuntary unemployment

Since the model is symmetric, the prices of all goods are equal. Then,

$P^1 = p^1(z)$.

Hence

$$P^1 = \frac{W}{\left(1 - \frac{1}{\eta}\right)(1+\zeta)y(L)}. \tag{9}$$

The real wage rate is

$$\omega = \frac{W}{P^1} = \left(1 - \frac{1}{\eta}\right)(1+\zeta)y(L).$$

If ζ is constant, this is increasing with respect to L.
The aggregate supply of the goods is equal to

$WL + L_f\Pi = P^1 L y(L)$.

The aggregate demand is

$\alpha(WL + L_f\Pi) + G + M = \alpha P^1 L y(L) + G + M$.

Since they are equal,

$$P^1 L y(L) = \alpha P^1 L y(L) + G + M, \tag{10}$$

or

$$P^1 Ly(L) = \frac{G+M}{1-\alpha}. \tag{11}$$

In real terms

$$Ly(L) = \frac{1}{1-\alpha}(g+m), \tag{12}$$

or

$$L = \frac{1}{(1-\alpha)y(L)}(g+m). \tag{13}$$

where

$$g = \frac{G}{P^1},\ m = \frac{M}{P^1}.$$

$\frac{1}{1-\alpha}$ is a multiplier. (12) and (13) mean that the employment L is determined by $g+m$. It can not be larger than L_f. However, it may be strictly smaller than L_f ($L < L_f$). Then, there exists involuntary umemployment. Since the real wage rate $\omega = \left(1-\frac{1}{\eta}\right)(1+\zeta)y(L)$ is increasing with respect to L, and the reservation real wage rate ω^R is constant, if $\omega > \omega^R$ there exists no mechanism to reduce the difference between them.

4. Phillips Curve

4. 1 Exogenous change in labor productivity

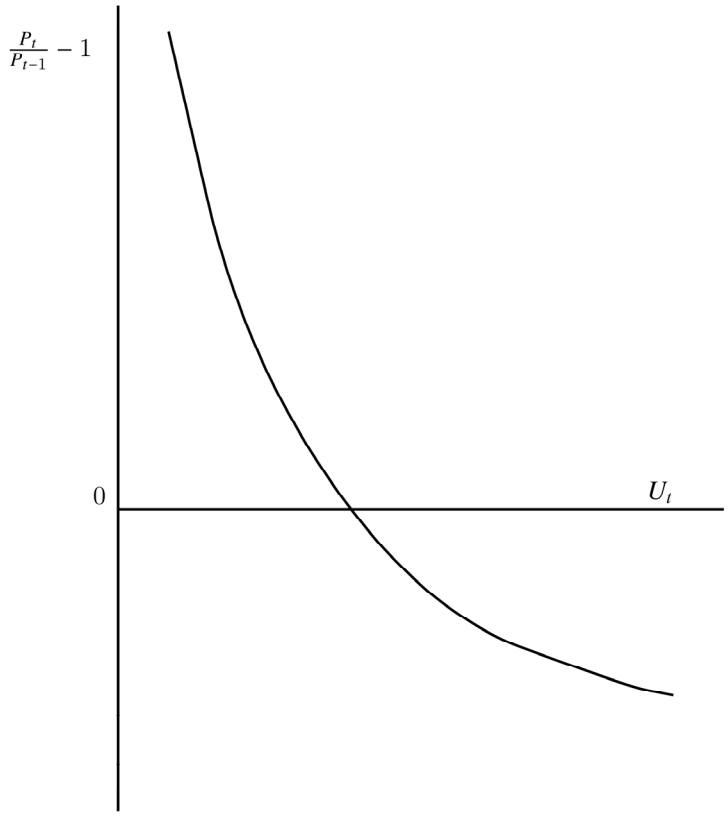
We consider exogenous changes in labor productivity given nominal wage rate. It may be due to a change in the unemployment rate in the previous period as assumed by Otaki and Tamai (2012). Suppose that the labor productivity $y(L)$ in a period, for example, period t increases to $\theta y(L)$with a constant $\theta > 1$ given L. From (13) if g and m are constant, employment L decreases, that is, the unemployment rate in period t increases. (9) means that the price of the goods in period t given W falls because ηan ζ are constant. Let P_t and P_{t-1} be the price of the goods (price of the consumption basket) in period t and that in period $t-1$. Then, the inflation rate from period $t-1$ to t, $\frac{P_t}{P_{t-1}} - 1$, falls given P_{t-1}.

Alternatively, a decrease in the labor productivity ($\theta < 1$) increases employment, decreases the unemployment rate, and raises the price of the goods and the inflation rate from period $t-1$ to t.

Therefore, we obtain the negative relationship between the unemployment rate and the inflation rate in the same period.

Figure 1 depicts an example the Phillips Curve. U_t denotes the unemployment rate in period t.

Figure 1: Phillips Curve

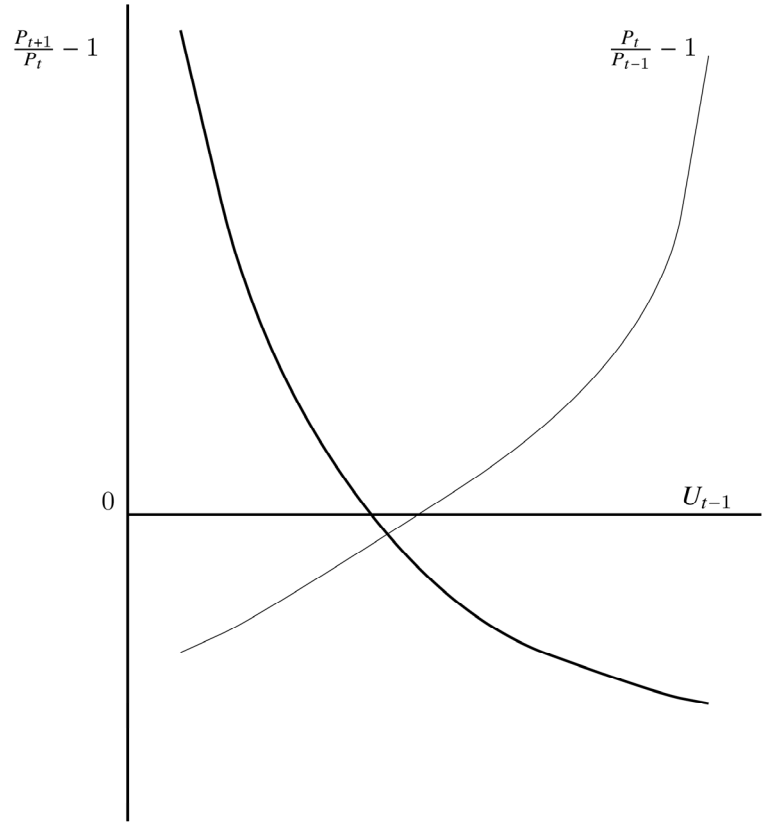


4.2 Analysis by Otaki and Tamai (2012)

Otaki and Tamai (2012) suppose that the low (or high) unemployment rate in a period, for example, period $t-1$ raises (or lowers) the labor productivity in period t by learning effect. If the unemployment rate in period $t-1$ increases, the labor productivity in period t falls. Then, from (9) the price of the goods rises, and the inflation rate from period t to period $t+1$ falls given the (expected) price of the goods in period $t+1$. Alternatively, a decrease in the unemployment rate in period $t-1$ raises the labor productivity in period t. Then, the price of the goods falls, and the inflation rate from period t to period $t+1$ rises given the (expected) price of the goods in period $t+1$. Thus, they have shown the negative relation between the unemployment rate in period $t-1$ and the inflation rate from period t to period $t+1$, $\frac{P_{t+1}}{P_t} - 1$. On the other hand, a fall in the price in period t means that the inflation rate from period $t-1$ to period t falls, that is, the low unemployment rate in period $t-1$ explains the low (not high) inflation rate from period $t-1$ to period t, $\frac{P_t}{P_{t-1}} - 1$.

Their Phillips curve is depicted in Figure 2. U_{t-1} denotes the unemployment rate in period $t-1$.

Figure 2: Phillips curve by Otaki and Tamai (2012)



5. Conclusion

We have shown that in an overlapping generations model under monopolistic competition changes in labor productivity bring about the negative relation between the unemployment rate and the inflation rate in the same period. This conclusion is based on the premise of utility maximization of consumers and profit maximization of firms. Therefore, we have presented a microeconomic foundation of the Phillips curve.

As I mentioned in the introduction, much of the previous literature on the Phillips curve assumed some form of economic incompleteness, such as price rigidity or incomplete information, but I believe the greatest contribution of this paper is that it shows the existence of a negative correlation between prices and the unemployment rate without making such assumptions.

The policy implications of this study are as follows.By equation (13), we can see that an increase in government spending at a given price leads to an increase in employment and output. In Figure 1, this is expressed as a shift of the Phillips curve to the left. In the case of increasing returns to scale, prices may decrease, but employment and output will still increase.

The limitation of our analysis is the assumption that the goods are produced only by labor. Future research could analyze the Phillips curve relation in an economy with capital and labor, and there exist investments of firms.

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Appendix: Derivations of (5), (6), (7) and (8)

From (3) and (4)

$$\frac{\partial u}{\partial X^1}X^1\left(\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz\right)^{-1}\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz=\frac{\partial u}{\partial X^1}X^1=\lambda\int_0^1 p^1(z)c^1(z)dz,$$

$$\frac{\partial u}{\partial X^2}X^2\left(\int_0^1 c^2(z)^{1-\frac{1}{\eta}}dz\right)^{-1}\int_0^1 c^2(z)^{1-\frac{1}{\eta}}dz=\frac{\partial u}{\partial X^2}X^2=\lambda\int_0^1 p^2(z)c^2(z)dz.$$

Since $u(X^1,X^2)$ is homogeneous of degree one,

$$u(X^1,X^2)=\frac{\partial u}{\partial X^1}X^1+\frac{\partial u}{\partial X^2}X^2.$$

Thus, we obtain

$$\frac{\int_0^1 p^1(z)c^1(z)dz}{\int_0^1 p^2(z)c^2(z)dz}=\frac{\frac{\partial u}{\partial X^1}X^1}{\frac{\partial u}{\partial X^2}X^2},$$

and

$$u(X^1,X^2)=\lambda\left[\int_0^1 p^1(z)c^1(z)dz+\int_0^1 p^2(z)c^2(z)dz\right]=\lambda(\delta W+\Pi).$$

From (1) and (2), we have

$$\left(\frac{\partial u}{\partial X^1}\right)^{1-\eta}\left(\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz\right)^{-1}c^1(z)^{1-\frac{1}{\eta}}=\lambda^{1-\eta}p^1(z)^{1-\eta},$$

and

$$\left(\frac{\partial u}{\partial X^2}\right)^{1-\eta}\left(\int_0^1 c^2(z)^{1-\frac{1}{\eta}}dz\right)^{-1} c^2(z)^{1-\frac{1}{\eta}} = \lambda^{1-\eta}p^2(z)^{1-\eta}.$$

They mean

$$\left(\frac{\partial u}{\partial X^1}\right)^{1-\eta}\left(\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz\right)^{-1}\int_0^1 c^1(z)^{1-\frac{1}{\eta}}dz = \lambda^{1-\eta}\int_0^1 p^1(z)^{1-\eta}dz,$$

and

$$\left(\frac{\partial u}{\partial X^2}\right)^{1-\eta}\left(\int_0^1 c^2(z)^{1-\frac{1}{\eta}}dz\right)^{-1}\int_0^1 c^2(z)^{1-\frac{1}{\eta}}dz = \lambda^{1-\eta}\int_0^1 p^2(z)^{1-\eta}dz.$$

Then, we obtain

$$\frac{\partial u}{\partial X^1} = \lambda\left(\int_0^1 p^1(z)^{1-\eta}dz\right)^{\frac{1}{1-\eta}} = \lambda P^1,$$

and

$$\frac{\partial u}{\partial X^2} = \lambda\left(\int_0^1 p^2(z)^{1-\eta}dz\right)^{\frac{1}{1-\eta}} = \lambda P^2.$$

From them we get

$$u(X^1, X^2) = \lambda(P^1X^1 + P^2X^2),$$

$$\frac{P^2}{P^1} = \frac{\frac{\partial u}{\partial X^2}}{\frac{\partial u}{\partial X^1}},$$

and

$$P^1X^1 + P^2X^2 = \delta W + \Pi.$$

Since $u(X^1, X^2)$ is homogeneous of degree one, λ is a function of P^1 and P^2, and $\frac{1}{\lambda}$ is homogeneous of degree one because proportional increases in P^1 and P^2 reduce X^1 and X^2 at the same rate given $\delta W + \Pi$. We obtain the following indirect utility function.

$$V = \frac{1}{\varphi(P^1, P^2)}(\delta W + \Pi) - \delta\beta.$$

$\varphi(P^1, P^2)$ is a function which is homogenous of degree one.

References

Calvo, G. A. (1983) Staggered prices in a utility-maximizing framework. *Journal of Monetary Economics*, 12, 383-398.

Erceg, C., Henderson D. and A. Levin (1998) Trade-offs between inflation and output-gap variances in an optimizing-agent model, *International Finance Discussion Papers*, Board of Governors of the Federal Reserve System, No.627.

Erceg, C., Henderson D. and A. Levin (2000), Optimal monetary policy with staggered wage and price contracts, *Journal of Monetary Economics*, 46, 281-313.

Lucas, R.E. Jr. (1972). Expectations and the neutrality of money. *Journal of Economic Theory*, 4, 103-124.

Mankiw, N. G. and Reis, R. (2002). Sticky information versus sticky prices: a proposal to replace the new Keynesian Phillips curve, *Quarterly Journal of Economics*, 117, 1295-1328.

Otaki, M. (2007) The Dynamically Extended Keynesian Cross and the Welfare-Improving Fiscal Policy. *Economics Letters*, 96, 23–29.

Otaki, M. (2009) A Welfare Economics Foundation for the Full-Employment Policy. *Economics Letters*, 102, 1–3.

Otaki, M. (2011) *Fundamentals of the Theory of Money and Employment (Kahei-Koyo Riron no Kiso (in Japanese)*. Keiso Shobo.

Otaki, M. (2015) *Keynesian Economics and Price Theory: Re-orientation of a Theory of Monetary Economy,* Springer.

Otaki, M. (2016) *Keynes's General Theory Reconsidered in the Context of the Japanese Economy*. Springer.

Otaki, M and M. Tamai (2012) A Microeconomic Foundation for the Phillips Curve under Complete Markets without any Exogenous Price Stickiness: A Keynesian View, *Theoretical Economics Letters*, 2, 482-486.

Taylor, J. (1979) Staggered wage setting in a macro model. *American Economic Review*, 69, 108-113.

Taylor, J. (1980) Aggregate dynamics and staggered contracts. *Journal of Political Economy*, 88, 1-23.

Woodford, M. (2003) *Interest and Prices*, Princeton University Press.

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INTERNAL BRANDING: ANTECEDENTS OF EMPLOYEE ATTITUDES, SATISFACTION, AND ORGANIZATIONAL LOYALTY

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Abstract. As competition between employers has become more intense in recent years, employee-based differentiation has become one of the strategic solutions for many organizations. The objective of this paper is to test a nomological model between internal branding, attitude, satisfaction, and loyalty. Data were collected through a survey among employees of a leading electronics conglomerate from Romania. While the relationship between attitudes and loyalty is partially mediated by satisfaction, the relationship between internal branding and satisfaction is indirect, with full mediation by attitudes being detected. The results of the study agree with previous studies, which suggested that internal branding influenced certain employee behaviors, such as positive attitudes, satisfaction, or loyalty.

JEL classification: M31, M52
Keywords: internal branding, attitudes, satisfaction, loyalty

1. Introduction

Building a strong employer brand is critical today, as competition between employers has become more intense in recent years. In this competitive environment, employee-based differentiation has become one of the strategic solutions for many organizations. One of the advantages of using employees as an element of differentiation is that high-performing employees are difficult to replicate by competitors, at least in a short period of time, as they become real assets for their companies (Terglav et al., 2016).

The recognition of employees as a key element of branding led researchers to examine the concept of internal branding. Internal branding is based on the premise that the quality level of the brand is represented through the company's

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employees and this can be achieved by encouraging employees to understand and celebrate the meaning of the brand and acquire the skills and techniques needed to fulfill brand promises (Wang et al., 2019). Many researchers believe that the internal branding message should be aligned with those of the external branding, which targets customers and other stakeholders in order to provide consistent messages (Vatankhah & Darvishi, 2018).

However, little is known about the mechanism by which internal branding systems influence or lead to the desired results to be reflected in employee behavior. A potential area for understanding the mechanism is the attitude of employees, both towards the workplace and towards the organization. Although this topic has received much attention in practice, the lack of academic research has led some researchers to call for future studies to focus on the role of employee attitudes (Terglav et al., 2016). We address this topic by extending the current research literature with our study. Therefore, the current study examines employees' attitudes as a possible mediator between internal branding and desired outcomes to be reflected in employee behaviors, namely their satisfaction and loyalty. Employee attitudes are considered one of the necessary conditions for high performance in the workplace and the significant contribution to the success of the organization has been demonstrated by Welch (2011).

Building on these ideas, the study continues with literature review, where the relationships between various components of a nomological model are discussed, a methodology section, followed by data analysis and results, and ending in discussion and conclusion section.

2. Literature review

Internal branding can be defined as a cultural change within an organization, in which employees become more customer-oriented and more company-oriented. This can be achieved through various internal marketing strategies and tactics, which will ultimately lead to changes in employee behavior. Meanwhile, once the concept of internal branding is understood, each employee must adopt a certain behavior at work that contributes to the success of the company. This behavior must be maintained through various tactics and applied in accordance with the policies and strategies of human resources, internal communication, and corporate marketing (Li et al., 2018; Liu et al., 2017).

De Chernatony (1999) considers that internal branding is an aspect related to the cooperation of the marketing department and the human resources department. It is important to ensure that internal branding activities are in line with the company's marketing strategy and to encourage their employees in implementing this strategy (Terry, 2003). Marketers possess a deep understanding of the accompanying brand for providing a guide for the work, motivations, needs, and desires of individuals (Terry, 2003). Therefore, they can significantly influence the communication of the brand to the internal public and the formation of their perceptions (Terry, 2003). Internal branding also requires the support of key members of the management team, who have the appropriate qualities to create and lead a brand.

According to the above, we believe that flexible management styles are necessary to ensure a work environment conducive to the development of an internal brand concept within an organization, because the workforce has become incredibly diverse. The currently active workforce comprises four different generations of people who have been trained in different cultural contexts: traditionalists, baby boomers, generation X and millennials. Each generation has different needs and expectations in terms of management style. The key to employee motivation and collaborative management makes every type of employee feel heard. The traditional generation is considered to respect superiors, hierarchy, and to easily obey the rules, while the next generation, baby boomers (born in uncertain times for the future), is known for high adaptability and preference for democratic leadership style. Generation X prefers the type of management based on skills, freedom, and experience. It is much more appreciated by them than loyalty to the company or remuneration. The collaborative and communication-based leadership style in general is specific to the generation of millennials, who are extremely connected because of the years they have developed and flourish when working in teams, share ideas and are empowered to act by positive confirmation for their actions. These being mentioned, we consider that the importance of adapting the leadership style within the teams acquires a high importance, as diversity requires flexibility, and the management style becomes an important influencing factor for a successful internal branding strategy.

One aspect, with important influences on internal branding is *quality*, which is a complex concept, with major influences in all aspects of internal and external marketing. In order to succeed in building a high-performance work environment, which generates performance both internally - employees and externally - customers, the organization must work on issues related to organizational culture, identifying motivators, management performance, workforce development, efficiency development as well as career development. All the aspects mentioned above are not only elements that are part of the concept of quality, but there are also factors that influence employee satisfaction and involvement. An involved and satisfied employee will convey quality to customers through the work he does. Thus, a company that "sells" quality to customers, will convey to its employees that the brand values are strong, and perceptions related to internal branding will be positively influenced.

Another aspect that can be considered both as an influencing factor and as a component element is *communication*, both internal and external. This aspect of internal branding refers to the effort made by companies in staff training process to improve the understanding of brand significance, and to ensure that staff has the necessary skills to deliver the promised brand (M'zungu et.al, 2010). Internal branding is considered more effective when employees participate in the creation of the program for internal branding practices, so a two-way communication between employees and management is encouraged in this regard (Punjaisri et al., 2008). Internal branding activities must be supported by the communication strategy that reflects both external and internal messages (Punjaisri et al., 2008). It is necessary for all members of the organization to have easy access to the information needed to increase employees' awareness of the brand (de Chernatony, 2006). The efficiency of communication will depend on the constant strengthening of the brand. In addition, the organization that seeks to maintain brand standards should remunerate and reward employees accordingly (Hoffman & Mehra, 1999) as well as keep them motivated by various means (M'zungu et.al, 2010).

In the study conducted by Punjaisri et al. (2008) on employees' perceptions of the internal branding process, it was established that both internal communication programs and training and development programs are considered to be the main internal branding mechanisms influenced by personal and situational variables. Researchers have identified a number of key tools in internal branding: "methods of mass communication" of information to employees in a written form (e.g. newsletters or information boards) and face-to-face communication (e.g. briefing) or team meetings (Punjaisri et al., 2008). Staff preferred face-to-face communication because they were given the opportunity to "clarify things" (Punjaisri et al., 2008). Employees also expressed the idea that the training program, as part of the internal branding program, helped them to improve their perception of the brand (Punjaisri et al., 2008).

The positive *attitude* of the employees towards the company brand, as well as the positive internal relations between the employees proved to influence a supportive behavior of the brand (Punjaisri et al., 2008).

It is assumed that internal branding must influence employees to achieve their performance at a higher level, by encouraging them to adopt the necessary changes at the cognitive level (attitude) through internal communication actions, and at the level of behavior (workplace performance). through training and remuneration programs. Thus, the concept of internal branding was considered after consulting the literature, a concept with a high degree of abstraction, so in the proposed analytical framework, internal branding will be a latent variable of the second order, with reflections in communication, training – development, and remuneration.

Following the analysis of published studies on the consequences of internal branding actions on employees, we found that attitudes are influenced by them, as well as the need to distinguish between attitudes towards the workplace and attitudes towards the organization in general. At the same time, when internal branding provides employees with clear organizational directions, then the essential tools for providing brand value will have a positive influence on how employees feel at work (employee satisfaction). Thus, we will consider that internal branding will directly influence attitudes and job satisfaction among employees.

Following the aspects stated above, we propose the first set of hypotheses as follows:

H1 - Internal branding positively influences attitudes towards the workplace.
H2 - Internal branding positively influences attitudes towards the organization.
H3 - Internal branding positively influences job satisfaction.

The attitude of the employees is extremely important in maintaining a positive and optimistic work environment in almost any company, this being a particularly good stimulus for innovative behavior of the employees, as well as in retaining the employees in the company. Because positive attitudes are also generated by the emotional involvement in the relationship with the workplace, we believe that attitudes towards those at work and those towards the organization will influence both satisfaction and loyalty. This is the effect of the emotional involvement of the employee, who will try to maintain the same level of satisfaction and loyalty.

Thus, the following set of hypotheses is proposed:

H4 - Attitudes towards the workplace influences employee satisfaction.
H5 - Attitudes towards the workplace influences employee loyalty.
H6 - Attitudes towards the organization influences employee satisfaction.
H7 - Attitudes towards the organization influences the employees' loyalty.

The positive results of job satisfaction have been documented by many authors in the literature, so most say that it often influences customer-oriented behavior, increases employee involvement in the organization which results in the development of a relationship of loyalty to employee's company. The existence of relationships between employee satisfaction and their implications on loyalty were identified by Gu & Siu (2009). At the same time, Lee et al. (2006) show that employee job satisfaction not only improves work performance, but also contributes to employee engagement and loyalty. Also, studies conducted by Fletcher & Williams (1996), Turkyilmaz et al. (2011), and Wu & Norman (2006) report a positive relationship between employee satisfaction and loyalty to the organization that lead us to state the following hypothesis:

H8 - Employee satisfaction positively influences loyalty.

The present study considers attitudes (towards the workplace and towards the organization) as a mediator between internal branding and satisfaction. Maslach et al. (2001) demonstrate that attitude is a mediating variable for the relationship between working conditions in the company and the results of actual work, such as satisfaction. Thus, an internal branding program that provides signs of support for employees will initiate a social exchange relationship with them. Over time, employees who have used the benefits of the organization's internal branding program will feel compelled to respect good deeds to ensure an equitable return for their actions.

Employees will demonstrate involvement, as their deeds for reciprocity will be conceptualized in the positive attitudes and contributions to their work beyond the demands of the workplace. Thus, the following hypotheses are proposed:

H9 - Attitudes towards the workplace partially mediates the relationship between internal branding and employee satisfaction.
H10 - Attitudes towards the organization partially mediates the relationship between internal branding and employee satisfaction.

The proposed model will also test the premises according to which employee satisfaction is a mediator that links the concepts of attitudes, previously presented, to loyalty, so the following final hypotheses are:

H11 - Employee satisfaction partially mediates the relationship between attitudes towards the workplace and loyalty.
H12 - Employee satisfaction partially mediates the relationship between attitudes towards the organization and loyalty.

3. Methodology

In the present study, the target population was people employed in a multinational electronics manufacturer company, Cluj County, Romania branch, which represented approximately 2200 individuals during the data collection period (second semester of 2019). This population was chosen because it was considered appropriate, to provide answers on the issues studied in this paper. Aspects related to the links between internal branding activities and attitude, satisfaction, and loyalty could be easily captured in the environment of the selected company.

Due to the impossibility of participation of the entire targeted population in this study (lack of access), sampling was performed based on the general characteristics of the company's employees. Thus, a non-probabilistic sampling method was used, respectively the rational selection method, resulting in a sample of 263 respondents.

Of the 263 respondents, half were women, the respondents' age varied between 20 and 55, with an average age of approximately 33 years. An overview of the sample structure based on seniority and education level is also provided in table 1.

Table 1: Sample structure based on seniority and education level

Seniority	**%**
Less than 1 year	23,19
2-3 years	23,59
4-5 years	28,13
More than 5 years	25,09
Education level	**%**
Highschool diploma	36,89
Bachelor's degree	7,98
Master's degree	50,19
PhD	4,94

Because the relations that are supposed to exist between the elements of the proposed model are dependency relationships, and within the respective model there are multiple relationships between dependent and independent variables, according to Hair et al. (2010), the statistical technique that should be used for their analysis is that of Structural Equation Modeling (SEM).

Considering that all factors are treated in this study as being reflective, covariance-based SEM will be performed using IBM SPSS AMOS 20. Firstly, a Confirmatory Factor Analysis (CFA) resulting in a final measurement model is considered, then measurement scales reliability and validity is assessed, followed up by path analysis for the relationships in the proposed nomological model.

To evaluate the results, the values of several indicators of goodness of the proposed model, the predictive relevance of each dependent variable, as well as the significance of standardized regression coefficients between independent and dependent variables will be examined (Hair et al., 2010; Byrne, 2010).

4. Data analysis and results

4.1. Measurement model

As previously mentioned, we begin the data analysis process by performing a confirmatory factorial analysis on the constructs considered within the conceptual model. This determines the construction of a so-called "measurement model", which includes all the variables of measurement of the constructs presumed to exist within the conceptual model. The objectives of a confirmatory factor analysis are (1) to verify the proposed structure of the factors and (2) to identify the need to make significant changes at the level of the proposed structure.

Following the running of the AMOS program, the results obtained for the indicators based on which the quality of this model is evaluated, are presented in table 2.

Table 2: Measurement model – Goodness-of-fit

Category	Acronym	Threshold value	Observed Value
Absolute goodness of fit indicators	GFI	≥0.9	0.801
	RMSEA	≤0.08	0.078
Incremental goodness of fit indicators	AGFI	≥0.8	0.752
	CFI	≥0.9	0.925
Parsimonious goodness of fit indicators	X^2/df	≤2 or 2.5	2.05

Source: authors own calculations

From table 2 it can be observed that for most of the indicators the minimum requirement values are exceeded, resulting in an acceptable measurement model.

Based on the final measurement model, the measurement scales reliability and validity - convergent and discriminating -was evaluated. Regarding the reliability in the measurement scales, it is evaluated with the help of the composite reliability, its value for each factor having to exceed the minimum value of 0.7 (Fornell & Larcker, 1981).

Convergent validity was evaluated by means of average variance extracted, where a value greater than 0.5 for this indicator represents a proof of this type of validity (Fornell & Larcker, 1981).

Regarding discriminant validity, to confirm it, the square root of the average variance extracted for each individual construct should exceed the bivariate correlation between the respective construct and the other constructs within the measurement model.

The values registered by each construct separately, regarding reliability as well as their validity are presented in table 3 (reliability and convergent validity), respectively in table 4 (discriminant validity).

As can be seen from the data presented in the two tables, each construct fulfills the minimum conditions for reliability, convergent validity, and discriminant validity.

Table 3:– Construct reliability and convergent validity

	Composite Reliability	Average Variance Extracted
Loyalty	0,870	0,685
Satisfaction	0,795	0,563
Workplace attitudes	0,862	0,623
Organizational attitudes	0,891	0,675
Internal branding	0,886	0,955

Source: authors own calculations

Table 4: Construct discriminant validity

	Loyalty	Satisfaction	Workplace attitudes	Organizational attitudes	Internal branding
Loyalty	**0,830**				
Satisfaction	0,722	**0,751**			
Workplace attitudes	0,763	0,695	**0,798**		
Organizational attitudes	0,805	0,621	0,788	**0,821**	
Internal branding	0,824	0,711	0,752	0,809	**0,980**

Source: authors own calculations

4.2. Structural model

Having as a starting point, the proposed research hypotheses, a structural model for testing the causal relationships assumed to exist between these constructs will be built based on the constructs in the measurement model.

It is worth mentioning that before the structural model was built, using the AMOS program, the values for each construct in the model were calculated using

imputation. The reason for this approach was to "simplify" the construction of the structural model, as there is no difference in terms of the results obtained between using these newly calculated values or the old values within the measurement model.

Based on the data in table 5, the causal relations supposed to exist between the factors within the proposed structural model will be validated or not.

The mediation hypothesis where tested by comparing direct effects with indirect effects and forming thus a conclusion. The results are presented in table 6.

Table 5: Standardized regression weights

Endogenous variable		Exogeneous variable	Estimate	p-value
Workplace attitudes	<---	Internal branding	0,362	*
Organizational attitudes	<---	Internal branding	0,566	***
Satisfaction	<---	Internal branding	0,002	n.s.
Satisfaction	<---	Workplace attitudes	0,256	***
Satisfaction	<---	Organizational attitudes	0,321	***
Loyalty	<---	Workplace attitudes	0,156	***
Loyalty	<---	Organizational attitudes	0,201	***
Loyalty	<---	Satisfaction	0,565	***

*p-value - *p<0.05; **p<0.01; ***p<0.001; n.s.- non-significant.*
Source: authors own calculations

Table 6: Direct and indirect effects

Hypothesis	Direct effect	Indirect effect	Conclusion
H9	0,002 n.s.	0,352 ***	Full mediation
H10	0,002 n.s.	0,421 ***	Full mediation
H11	0,156 ***	0,224 ***	Partial mediation
H12	0,201 ***	0,256 ***	Partial mediation

*p-value - *p<0.05; **p<0.01; ***p<0.001; n.s.- non-significant.*
Source: authors own calculations

In the following section the results are discussed by comparing them with results from several previous studies conducted on internal branding actions and satisfaction or loyalty.

5. Discussion

The study provides empirical evidence that the internal branding effort, which incorporates training, communication, and remuneration, has a positive effect on employee attitudes. One of the critical success factors for today's organizations is the performance of employees at work, achieved through the positive attitude towards the organization they belong to. The current study shows that in order to encourage employees to have a positive attitude towards the organization in general, it is essential that companies first focus on internal branding through an internal system of communication, training, and remuneration.

This finding is consistent with the theory of social identity proposed by Tajifel & Turner (1985), which implies that employees who receive support from the organization (through internal branding actions in this case), will show positive attitudes both to the workplace, as well as to the organization to which they belong to, by involvement in the workplace and involvement in the organization, insofar as they identify with the organizational brand.

Although Kahn (1990) compares the term employee involvement with the feeling of their moral obligation to become more involved in their role and to be satisfied with their job in exchange for the resources they receive from the organization, the results of the study could not support this hypothesis. Thus, although the internal branding actions do not influence the level of employee satisfaction, the positive attitudes towards the organization manage to influence the degree of employee satisfaction.

Given that internal branding actions do not influence employee satisfaction, and attitudes positively influence employee satisfaction, we tested a hypothesis according to which attitudes partially mediates the relationship between internal branding actions and satisfaction. This hypothesis was also tested and confirmed by Lee & Kim (2015), and by Maslach et al. (2001). In line with expectations, the hypothesis was confirmed also, in the present study.

Because studies conducted by Gu & Siu (2009), Lee et al. (2006), and Fletcher & Williams (1996) demonstrated the existence of links between attitude, satisfaction, and loyalty, the proposed nomological model links the concepts previously mentioned, through both direct and indirect relationships. Thus, we found that although the attitude of employees positively influences loyalty, it is also mediated trough satisfaction.

Although not all direct links between the concepts of attitude, satisfaction, and loyalty were confirmed, after testing the existence of mediating relationships between the concept of attitude and loyalty, it was found that satisfaction mediates the relationship between attitude and loyalty, which is why we support the results of the previous studies.

Following the above, we discovered that the internal branding actions carried out by the company mentioned in the methodology section, namely actions related to internal communication, training programs, and remuneration, positively influence the attitude of the company's employees. At the same time, the attitude of the employees participating in the study, positively influences both their satisfaction and loyalty, which means that attitude is an important factor, which encourages employees to develop behaviors that positively contribute to employee satisfaction and loyalty.

6. Conclusion

Considering the results, this paper contributes to the general knowledge of the concept of internal branding. The incorporation of internal branding concepts with those related to the behaviors developed by employees of large companies, namely attitudes, satisfaction, and loyalty, could be considered a plus, as most studies analyze at most two concepts simultaneously, without considering possible relationships, existing between several concepts, as we tried in the present study.

The importance and influence of internal branding actions on the attitude of employees towards the organization they belong to, is emphasized in this study. Also, it contributes to strengthen the theory of social exchanges, which argues that if an individual receives benefits (in this case, remuneration, training, and adapted communication) from another party or person, will have to offer in return other benefits (in this case, positive attitude, which determines satisfaction and loyalty).

References

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming. 2nd Edition*. Routledge Taylor & Francis.

de Chernatony, L. (1999). Brand management through narrowing the gap between brand identity and brand factors driving successful financial services brands. *European Journal of Marketing*, 15(1/3), 157-179.

Fletcher C., Williams, R. (1996). Performance management, job satisfaction and organizational commitment. *British Journal of Management*, 7(2), 169–179.

Fornell, C., & Larcker, D.F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.

Gu, Z., & Siu, R. C. (2009). Divers of job satisfaction as related to work performance in Macao casino hotels: An investigation based on employee survey. *International Journal of Contemporary Hospitality Management*, 21(5), 561–578.

Hair, J., Black, W., Babin, B., and Anderson, R. (2010). *Multivariate data analysis (7th ed.)*. Prentice-Hall, Inc. Upper Saddle River, NJ, USA.

Hoffman, J., & Mehra, S. (1999). Operationalizing productivity improvement programs through total quality management. *International Journal of Quality and Reliability Management*, 16(1), 72-73.

Kahn, W.A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692–724.

Lee Y. K., Nam J. H., Park D. H., Lee K. A. (2006). What factors influence customer-oriented prosocial behavior of customer-contact employees? *Journal of Services Marketing*, 20(4), 251–264.

Lee Y.K, Kim S., Kim S.Y. (2015) The Impact of Internal Branding on Employee Engagement and Outcome Variables in the Hotel Industry. *Asia Pacific Journal of Tourism Research*. 19(12), 1359-1380.

Li C., Guo S., Cao L., Li J., (2018). Digital enablement and its role in internal branding: A case study of HUANYI travel agency. *Industrial Marketing Management,* 72, 152-160.

Liu G., Ko W.W., Chapleao C. (2017). Managing employee attention and internal branding. *Journal of Business Research,* 79, 1-11.
M'zungu, S. D., Merrilees, B., & Mille, D. (2010). Brand management to protect brand equity: A conceptual model. *Brand Management*, 17(8), 605-617.
Maslach C., Schaufelli W. B., Leiter M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422.
Punjaisri, K., Wilson, A., & Evanschitzky, H. (2008). Exploring the influences of internal branding on employees' brand promise delivery: Implications for strengthening customer-brand relationships. *Journal of Relationship Marketing*, Vol. 7, No. 4, pp. 407-423.
Tajfel, H., Turner, J.C. (1985). The Social Identity Theory of Intergroup Behavior. In:
Worchel, S. and Austin, W.G., Eds., *Psychology of Intergroup Relations*, 2nd Edition, Nelson Hall, Chicago, pp. 7-24.
Terglav K., Ruzzier M.K., Kaše R. (2016). Internal branding process: Exploring the role of mediators in top management's leadership–commitment relationship. *International Journal of Hospitality Management,* 54, 1-11.
Terry, N. (2003). Marketers merit a greater role in internal activity. *Marketing*, pp. 18.
Turkyilmaz A., Akman G., Ozkan C., Pastuszak Z. (2011). Empirical study of public sector employee loyalty and satisfaction. *Industrial Management & Data Systems*, 111(5), 675–696.
Vatankhah S., Darvishi M. (2018). An empirical investigation of antecedent and consequences of internal brand equity: Evidence from the airline industry. *Journal of Air Transport Management*, 69, 49-58
Wang Y.C., Yang J., Yang C.E. (2019). Hotel internal branding: A participatory action study with a case hotel. *Journal of Hospitality and Tourism Management,* 40, 31-39.
Welch M. (2011). Appropriateness and acceptability: employee perspectives of internal communication. *Public Relations Review*, 38, 246-254.
Wu L., Norman I. J. (2006). An investigation of job satisfaction, organizational commitment and role conflict and ambiguity in a sample of Chinese undergraduate nursing students. *Nurse Education Today*, 26(4), 304–314.

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DETERMINANTS OF FINANCIAL INCLUSION IN SOUTHERN AFRICA

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Abstract: The study sought to establish the drivers of financial inclusion in Southern Africa with a specific focus on South Africa. Financial inclusion has been a topic of global interest due to the negative impact of financial exclusion in addressing socio-economic issues like poverty. Using the logit model, the study discovered that financial inclusion is driven by age, education level, the total salary proxy of income, race, gender, and marital status. The variable gender was the only factor with a negative influence on financial inclusion all other significant variables had a positive influence on financial inclusion. As a result, governments in Africa should encourage the use of financial services and products among women, Black Africans, Coloureds and the youths. Products and services tailor-made to satisfy the needs of these groups should be designed to improve financial inclusion among them. This initiative will go a long way in addressing poverty, inequality, and unemployment in the country.

JEL classification: G1, O12, G23, G38
Keywords: Africa**;** Financial Inclusion; Household Survey Data; Determinants South Africa

1. Introduction

Financial inclusion has become an attractive topic at the global level with governments, financial institutions, and policymakers, developing interest in understanding it more deeply (Amoah et al. 2020, Mhlanga et al. 2020). The existence of financial exclusion has been acknowledged by many developed and developing nations as one of the socio-economic challenges on the agenda (Sarma and Pais, 2011; Wentzel et al., 2016). The World Bank in its 2020 targets placed

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universal financial access as one of its objective (Demirguc-Kunt et al., 2018, WBG, 2018). This shows how financial inclusion has become an attractive topic globally and more than 50 countries made headline financial inclusion commitments as of the end of 2014 (Louis and Chartier, 2017, Demirguc-Kunt et al., 2018) The World Bank Group (WBG) in 2017, clearly highlighted that many countries are developing National Financial Inclusion Strategies (NFIS) to ensure that resources and actions are put in place to achieve financial inclusion commitments. NFIS can be defined as roadmaps of actions, agreed and defined at the national or subnational level (WBG, 2017, WBG, 2018, Wentzel et al., 2016).

Moreover, financial inclusion is viewed as one of the strategies which can be put in place to achieve the goals of eliminating poverty unemployment and reducing inequality. The South African government through the National Development Plan Vision 2030, published in November 2011, aims to eliminate poverty, reducing inequality, and achieve full employment, decent work and sustainable livelihood, acknowledges financial inclusion as one of the important tools that will contribute toward the realization of its goals (Louis and Chartier, 2017, WBG, 2017). The South Africa government anticipates the proportion of the population that is banked or has access to transactional financial services and saving facilities to increase from about 63 per cent to about 90 per cent by 2030 (Louis and Chartier, 2017, WBG, 2017). The same document identifies as a priority to continuously broaden access to banking services to poorer people and lowering costs through a combination of competitive pressures and reducing other infrastructure costs (WBG, 2017, Louis and Chartier, 2017).

Empirical evidence that recognised financial inclusion as an instrument which can help to achieve financial development, economic growth, reduction in income inequality, and lifts households out of poverty is there for instance (Beck et al., 2009, Demirguc-Kunt and Levine, 2008, Demirguc-Kunt et al., 2018, Chibba, 2009). It is important to highlight that direct access and use of financial resources is not only the avenue through which financial inclusion can benefit people, but there are other indirect benefits associated with financial inclusion like consumption smoothening and being cushioned from shocks like natural disasters and other economics challenges (Cámara and Tuesta, 2018, Chibba, 2009). Empirically, scholars believe financial inclusion should be embraced as a complement to traditional ways of addressing social challenges like poverty and inequality (Chibba 2009, Mhlanga 2020a, Mhlanga 2020b).

Also, several scholars like Chibba (2009), Mhlanga and Dunga (2020) and Mhlanga et al. (2020) admit to the fact that the global development challenges, global financial crises and other unknown challenges that threaten human prosperity need a holistic approach in applying policies that improve financial inclusion. This is because financial inclusion is important not only in enhancing economic growth, which plays an essential role in lifting household above the poverty line, but it also helps close the gaps of income inequality (Beck et al., 2005, Beck et al., 2011). Demirguc-Kunt et al. (2018) argued that the role played by the financial sector in every economy is important and clear, The authors posit that financial sector promotes economic growth and development through financial intermediation by channelling funds from the surplus unit to the deficit unit of the economy. This is the direct role financial inclusion which can help to fight poverty and inequality through allowing households to invest in future, smoothen their consumption patterns and management of financial risks (Demirguc-Kunt et al., 2018, Beck et al., 2011). Even

the smallest amounts of financial assets provide one with a cushion from economic shocks, as well as possible loss in income in later life. While, households who are financially excluded cannot partake in the different forms of saving or wealth accumulation, such as earning interest, making savings through paying bills via direct debit, or gaining favourable forms of credit (Chibba, 2009, Cámara and Tuesta, 2018, Sarma, 2012).

In South Africa, a study by Wentzel et al. (2016) found that the most significant factors associated with being financial exclusion were educational level, the primary source of income, age, home language and number of dependents. Similarly, in Zimbabwe Mhlanga and Dunga (2020) assessed the determinants of financial inclusion among smallholder farmers. The study concluded that off-farm income, the level of education, distance, financial literacy and age of the household head were the significant variables in explaining the determinants of financial inclusion among the smallholder farmers in Manicaland Province of Zimbabwe. Also, a study by Wokabi (2019) sought to analyse the underlying determinants of financial inclusion among five East African nations which include Kenya, Uganda, Tanzania, Rwanda and Burundi. The study found that rural population and income were the significant factors influencing financial inclusion. The study also found that unemployment had a negative influence on financial inclusion though insignificant. In another study, Prymostka et al., (2020) investigated the determinants of financial inclusion in Ukraine and found out that financial inclusion in is driven lack of funds among the citizens, distrust of banking institutions and unacceptable pricing policy of banks. Motivated by the importance of financial inclusion, the study sought to extends the literature on financial inclusion by investigating the determinants of financial inclusion in South Africa using the 2018 General Household Survey data (GHS).

2. South Africa's Financial System

South Africa's banking sector currently includes seventeen domestic commercial banks, two mutual banks, two cooperative banks, fourteen local branches of foreign banks, as well as representative offices of 43 foreign banks (Louis and Chartier, 2017, Wentzel et al., 2016). However, there are only four(Louis and Chartier 2017) while others put them at five(Louis and Chartier 2017)major South African commercial banks who own and control more than 80 per cent of the banking sector's total assets, approximately 4 trillion Rand or US$ 285 Billion (WBG, 2017, Louis and Chartier, 2017, Cessda et al., Riley, 2019). The banking infrastructure in South Africa is impressive, with a network of over 5,000 branches and nearly 30,000 ATM's (Louis and Chartier, 2017, Riley, 2019, Nanziri and Leibbrandt, 2018). The volume of electronic financial transactions (EFT) including debit card, credit card, and other on-line payments have increased in the country rising by 60 per cent between 2005 and 2013 (WBG, 2017, Louis and Chartier, 2017, Nanziri and Leibbrandt, 2018). According to Louis and Chartier (2017), the banking infrastructure and personnel in South Africa are concentrated in the Gauteng province, home of the country's economic capital Johannesburg and political capital Pretoria. The corporate headquarters of all major South African banks are in Johannesburg. In this regard, South Africa has made significant progress towards

improving financial inclusion when compared with other global nations and regions. The table below shows a comparison of the financial inclusion of South Africa and selected global nations.

Table 1: South Africa Financial Inclusion Comparison with other Global Nations

Country	Accounts (% age 15+)	Formal Savings (% age 15+)	Formal Borrowings (% age 15+)
South Africa	70	33	12
Sub-Saharan Africa	34	16	6
Eastern Europe &Central Asia	51	8	12
World	62	27	11

Source: Louis and Chartier (2017)

On the surface, this data illustrates that South Africa's financial system is considerably more inclusive than Sub-Saharan Africa and more inclusive that Eastern Europe and Central Asia, as well as the world in general. However, this overall data hides a high level of inequalities in South Africa in terms of access to financial products and services. In the country, less than 30 per cent of low-income adults the poorest 25 per cent own a formal bank account as compared to 91 per cent of high-income adults the richest 25 per cent (Louis and Chartier, 2017, Wentzel et al., 2016). The problem exists, in part, because the South African banking industry is a highly concentrated source of wealth and limits access to capital to primarily the wealthy (Louis and Chartier, 2017, Nanziri and Leibbrandt, 2018, Riley, 2019). This imbalance in access to financial products and services between the wealthy individuals and the poor are shown in the table below which shows the amount of time taken to get to access point in South Africa.

Table 2: Time Taken to Get to a Financial Access Point

Access point type	Total	Urban areas	Traditional areas	Farm areas
ATM	28:10:00	20:00	47:40:00	48:20:00
Petrol Station	28:30:00	20:20	49:20:00	48:00:00
Supermarket	28:40:00	26:50:00	34:40:00	29:10:00
Post Office	31:50:00	24:30:00	48:30:00	51:50:00
Bank Branch	34:10:00	26:20:00	53:20:00	54:10:00

Source: WBG (2017)

Table 2 shows the mean time taken to get to an actual or potential financial services access point depending on whether an individual resides in an urban, traditional or farm area. Except for supermarkets, people living in non-urban areas take twice as much time or even more to reach these access points than do people

living in urban areas (WBG, 2017). The reality remains that currently, more than 12 million South African adults lack a basic bank account and millions more are underbanked, those with an existing, but the inactive bank. However, despite the challenges affecting the financial system in South Africa, overall, the banking services and payments infrastructure has a reasonably well-developed network of access points, making extensive use of technology in both enabling and extending the service reach. According to the Banking Association of South Africa, since 2010 more than 90 per cent of households in the country have access to a physical access point within a 10-kilometre radius (WBG, 2017). There are at least transactional access points from a regulated service provider in each of the 278 municipalities in the country (WBG, 2017). There is nevertheless room for improvement, particularly in rural areas.

The National Payment System Framework and Strategy Vision 2025 spelt out the need for financial inclusion through cooperation and collaboration among industry stakeholders in providing access and effective use of formal financial products for all South Africans (WBG, 2017, Louis and Chartier, 2017). In that same document, it is argued that financial inclusion remains one of the South African Reserve Bank (SARB)'s the priority (Wentzel et al., 2016, WBG, 2017, Louis and Chartier, 2017). In October 2015, the National Treasury of South Africa (NTS) sought from other relevant authority's comments on a draft, South African Financial Inclusion Policy and Policy Implementation document. The draft Policy includes, among its objectives, the promotion of improved and sustainable access to and usage of appropriate and affordable financial services (WBG, 2017, Louis and Chartier, 2017). Along with the draft Policy, the NTS consulted relevant authorities for a financial inclusion monitor report, aimed at improving the availability of financial inclusion data to enable monitoring, evidence-based policies and adjustment of initiatives if necessary (WBG, 2017, Louis and Chartier, 2017).

3. Literature Review

The empirical literature on the determinants of financial inclusion is available but limited. Zins et al., (2016) examined the determinants of financial inclusion in Africa. Using the World Bank's Global Findex database on 37 African countries the study found out that being a man who is rich with more education and older improves financial inclusion. The study also discovered that education and income had a higher influence on financial inclusion and that the determinants of informal finance were different from those of formal finance. Some of the findings by Zins et al., (2016) were supported by Sanderson et al. (2018) who investigated the determinants of financial inclusion in Zimbabwe. Sanderson et al.,(2018) discovered that age, education level, financial literacy, income and internet connectivity were the factors positively related to financial inclusion while documentation required to open a bank account and distance to the nearest access point were negatively related to financial inclusion.

In another study by Mhlanga and Dunga (2020) agreed with the findings by Sanderson et al., (2020). Mhlanga and Dunga (2020) assessed the level of financial inclusion among the smallholder farmers in Manicaland province of Zimbabwe. The

study discovered that off-farm income, education level, distance, financial literacy and age of the household were the significant variables in explaining the determinants of financial inclusion among the smallholder farmers in Manicaland Province of Zimbabwe. Kaur et al., (2020) also examined the determinants of accessing institutional and non-institutional finance across male and female-headed households in rural India. Using the multinomial logistic regression, the study also discovered that education level is one of the important factors influencing financial inclusion. Other factors that were discovered were monthly household consumption expenditure, land size holding, access to irrigation land and the levels of scheduled penetration of commercial banks influenced financial inclusion.

Dar et al., (2020) also sought to investigate the determinants and barriers of financial inclusion in India. Using the Global Findex Database (Findex) of 2017, the study found out that gender, age, education and income influence financial inclusion with a significant influence on the informal saving and borrowing. Some of the results by Dar et al., (2020) were supported by Mhlanga and Dunga (2020). Gebrehiwot et al, (2019) also examined the determinants of financial inclusion across 27 Africa countries using the GMM dynamic panel data analysis. The study discovered that the lagged value of GDP per capita and mobile infrastructure positively influences financial inclusion while government borrowing had a negative influence on financial inclusion.

In South Africa, Wentzel et al. (2016) investigated the factors impacting financial exclusion at the bottom of the pyramid in South Africa. The study found out that, South Africa suffers from high levels of financial exclusion, disproportionately at the bottom of the pyramid. The study showed that the most significant factors associated with being financially excluded at the bottom of the pyramid in South Africa were educational level, the primary source of income, age, home language and number of dependents. The study further found that gender, relationship status and homeownership were not associated with being financially excluded. An interesting finding was that living in a rural area as opposed to an urban area was not significantly associated with being excluded. The following section will explain the methodology and data to achieve the objectives of the study.

4. Methodology and Data

Relevant data for the study were extracted from the South Africa 2018 General Household Survey (GHS) dataset. Relevant data for the study were extracted from the data set. Among the numerous variables in the data set, only important variables were selected for this study. Individuals who did not specify whether they had a bank account or not were removed from the analysis and those who did not know as well as those in the age group of 1-14 years who were regarded as dependence who cannot fully decide on whether to have a bank account not. A total of 20 000 individuals of the age group of 15 – 88 was used in the study after removing the stated groups of individuals. The data were thereafter cleaned, re-categorized and recoded, as necessary. The GHS target population consisted of all private households in all nine provinces of South Africa and residents in workers' hostels.

4.1. The Econometric Model

The dependent variable is dichotomous, that is either an individual has a bank account or not represented by a 0 or 1, respectively. The dependent variable is generated from the question which was asking questions on whether a person owns a bank account individually, jointly, or not. Those who owned bank accounts jointly were regarded as owners of bank accounts. As a result, the logit model was used in this study since the model has been widely used for the estimation of the choice model in most of the African countries and its advantages over other models. In Zimbabwe, for example, Sanderson et al. (2018). Kiplimo et al. (2015) investigated factors influencing access to credit among the smallholder farmers using the logit model estimation technique in Kenya. Moreover, since the dependent variable is binary, the three ways that can be used to investigate the determinants of financial inclusion are using the linear probability model, logit model and probit model. The linear probability model is an extension of the linear regression model to cases with the qualitative dependent variables. However, the research did not use the linear probability model because of weaknesses associated with the model.

The linear probability model produces dubious probability, it can be less than zero or greater than one which is unrealistic because probability should lie between zero and one. The error term normally suffers from the problem of heteroscedasticity and they are non-normal. Marginal effects will always be constant regardless of the value of Xi of the dummy variable (Gujarati, 2009, Cameron and Trivedi, 1986). This is mainly because it assumes a linear relationship between the dependent variable and the independent variable (Cameron and Trivedi, 1986). Due to the above weaknesses, the linear probability model was not used, the option available was the logit model or the probit model. However, the researcher used the logit model because of its advantages over the probit model. One of the advantages of the logit model is that it is relatively simple to calculate for the first-order conditions and is the asymptotic distribution (Rao et al., 1973). Also, Maddala et al. (2001) state that the model is simple to compute and interpret as compared to the probity model. Since we are dealing with the survey data logit model is appropriate than the probit model which is appropriate for the experimental data.

4.1.1. The Logit Model

The logit model is a method of estimation used in this study. The logit model takes the following model:

$$P = E\left(Y = {}^{1}/_{X_i}\right) = {}^{1}/_{(1 + \varepsilon(-\beta + \beta 2 x y_i)} \quad (1)$$

Which can be further expressed as follows; $P = \frac{1}{1+e^{-z}} = \frac{e^{z}}{1+e^{z}}$ (2)

Where z is expressed as:

$$Z_i = f(\beta_i + \beta_2 X_i) \quad (3)$$

4.1.2. Specification of The Model

The model specification used in the study can be specified as follows:

Financial Inclusion =F (Race, Age, Highest Education Level, Gender, Marital Status, Total Salary). This can be expressed in a form where financial inclusion is given as P (Financial Inclusion1/X) is the probability that an individual has a bank account given the vector of the observable characteristics. The logistic function is given as G (z) as shown in equation 2 and 3 above. G (z) = $\frac{e^z}{1+e^z} = \mathrm{P}\ (\mathrm{Financial\ Inclusion} = 1/\mathrm{x})$.

4.1.3. Definition and Justification of the Variable

Dependent variable: Financial Inclusion (FI) explained as bank account ownership. The dependent variable is a dichotomous dependent variable which takes value 1 when the individual has a bank account and 0 otherwise. The Independent variables included in the model include gender, age, race, marital status, and the highest education level. These variables were named as follows in the model. Dependent Variable is FI which is dichotomous, that is either an individual has a bank account or not represented by a 0 or 1 respectively, and independent variables are Gender, Age, Race, Marital status, Total salary Proxy of Income, Highest education level. The independent variables are explained in table one below.

Table 3: Description of Independent Variables

Variable	Description
Gender	Is a dummy variable where 1= male and 0 otherwise? The variable is expected to be +.
Age	Is a continuous variable which explains the number of years the individual has? The variable is expected to be +
Race	Is a categorical variable which explains the grouping of humans based on shared physical or social qualities? In this variable 1=African Black, 2= Colored, 3=Indian/Asian, 4=White. The variable is expected to be -/+ depending on the reference category in the dummy variable.
Marital status	Explains whether the individual is married or not, where 1 = legally married and 0 otherwise. The variable is expected to be +
Total salary	Is the total amount of Income Received by the Individual which act as a proxy of Income? The variable is expected to have a positive (+) influence on financial inclusion.
Highest education level	Refers to the level of education of the individuals expected to have a positive (+) influence on financial inclusion

Source: Author's Analysis

5. Presentation and Interpretation of Results

The results from the estimation of the drivers of financial inclusion using the logit model are presented in Table 4.

Table 4: Determinants of financial inclusion-logit estimates

Variable	B	S.E.	Wald	Df	Sig.	Exp(B)
Race			741.554	3	.000	
Race (1)	.363	.040	84.278	1	.000	1.437
Race (2)	1.210	.336	12.937	1	.000	3.354
Race (3)	2.264	.085	706.775	1	.000	9.626
Marital status (1)	.863	.049	315.236	1	.000	2.370
Highest education level	.013	.001	329.490	1	.000	.987
Total salary	.001	.000	898.259	1	.000	1.001
Gender (1)	-.136	.036	13.956	1	.000	.873
AGE	.037	.001	1459.590	1	.000	1.038
Constant	-1.835	.043	1822.951	1	.000	.160

Omnibus tests of model coefficients Chi-square step 8429.185, Block 8429.185, Model 8429.185, df 8, Sig 0.000. Model Summary, -2 Log likelihood 18920.143a, Cox & Snell R Square 0.345, Nagelkerke R Square 0.462.

Source: Author's calculations GHS data

5.1. Discussion of Results

The results from the estimation of the drivers of financial inclusion in South Africa from the 2018 GHS data using the logit model are presented in table 4. The model is free from multicollinearity since all the independent variables had a Pearson product-moment correlation coefficient, with a value of less than 0.8 in absolute terms. Kennedy (2003) outline that, for non-continuous variables, a value of 0.8 and above in absolute terms in one of the correlation coefficients indicates a high correlation between two independent variables. Concerning the overall results of the model, the results showed that there is a positive relationship between race, age, marital status, total salary and highest education level and financial inclusion. On the other hand, gender with males as a reference category had a negative relationship with financial inclusion.

The results show a positive and significant relationship between race and financial inclusion. The coefficient race was significant at all levels with a significant value of 0. 000 for all the races with Black African as the reference category. Among

the four races in South Africa, whites had a higher probability of demand for financial products compared to Black Africans, Coloureds and Indians/Asians. The odds of demand for financial products such as having a bank account is 9.626 higher for whites compared to African Blacks, Indians/Asians and Coloureds. Also, Indians/Asians have a higher probability of demand for financial products compared to Coloureds and African Blacks. The odds of demand for financial products for Indians was 3.354 higher for Indians compared to Coloureds who had 1.437 odds of demand for financial products higher than African Black. Black African had the least odds of demand for a financial product, that is the probability of demand for financial products and services is low among the black compared to other races like whites Coloureds and Indians/Asians.

The study also shows that marital status is a positive significant impact on financial inclusion. The variable was significant at all level with a significant value of 0.000. The results went on to reveal that, the odds of demand for financial products like a bank account is 2.370 higher for married individuals compared to those who are not married. Married people have a higher likelihood of demand for financial products and services compared to individuals who are not married. The study also revealed that education had a positive significant influence on financial inclusion. According to Sanderson et al. (2018), educated people can quickly comprehend the various financial products on the market. This increases their likelihood of participating in the formal financial market. This was supported by Kempson (2000), Berthoud and Kempson (1992) and Kempson (1994). These studies agreed to the fact that educated people easily comprehend the various financial products, which increases the chances of them participating in the financial market. Louis and Chartier (2017) discovered that residence, age, education level, and gender determine account ownership and ninety-four per cent of adults with a college degree own a bank account as compared to only 43 per cent of those with only primary education in South Africa.

The results also showed that total salary a proxy of total income for individuals had a positive significant impact on financial inclusion. As people's income increases financial inclusion also increase. This results in the South African context makes sense because people who earn an income are paid through the bank. In fact, due to high crime risk, even those who work in the informal sector are paid through the bank. This was supported by Sanderson et al. (2018) who discovered that income influences the level of financial inclusion in Zimbabwe.

The study also showed that the age of the individual has a positive significant impact on financial inclusion. As people grow, they tend to understand the importance of financial products and services compared to the young, this will lead them to use more of these services and products. This was supported by several studies (Sanderson et al., 2018, Masiyandima et al., 2017). The results also showed a negative and significant relationship between gender and financial inclusion. In this case, gender was significant at all levels. The meaning of the negative sign on gender implied that access to financial products and services decline as far as women are concerned. This result is in line with the idea that males are the heads of households in many family setups in South Africa. Males being the reference category, the results indicated that demand for financial products is higher for males compared to females. This was supported by Sanderson et al. (2018), Kempson (2000) who found males to have a higher demand for financial products compared to female.

6. Conclusion

The South African government is committed to improving financial inclusion and has since recognised the importance of financial inclusion in the NDP vision 2030 where the government envisage the proportion of the population that is banked or has access to transactional financial services and saving facilities to increase from about 63 per cent to about 90 per cent by 2030. Also, the African government came up with the South African Financial Inclusion Policy and Policy Implementation document. The draft Policy which included, among its objectives, the promotion of improved and sustainable access to and usage of appropriate and affordable financial services. Given the government's commitment towards financial inclusion and the encouraging statistics showing improvement in key financial inclusion indicators, the study sought to establish the drivers of financial inclusion in South Africa. In line with the objective, the study has established that financial inclusion is driven by age, education, the total salary proxy of income, race, gender, and marital status. Of these results age, education, the total salary proxy of income, race, and marital status are positively related to financial inclusion. This implies that an increase in any of these variables significantly increases the level of financial inclusion in South Africa.

On the other hand, being female in South Africa reduces the chances of people being financial included. Therefore, the government should encourage the use of financial services among women, products and services should be designed tailor-made to satisfy the needs of women. The differences in the probability of demand among the different races in South Africa shows us that, there is need for massive financial education among the other races with lower probability of demand for financial products of the benefits of financial inclusion. Since the level of education proves to improve the level of financial inclusion the government needs to ensure that, education is intensified of the people in South Africa so that they will find it good to participate in the financial sector. This will allow the government to achieve the vision 2030 articulated through the National Development Plan vision 2030, published in November 2011, aimed at eliminating poverty, reducing inequality, and achieve full employment, decent work, and sustainable livelihood. Therefore, policymakers, governments and development agencies must consider the following factors race, age, marital status, total salary, highest education level and gender financial inclusion in their efforts to address the problem of financial exclusion and quest to fight poverty among some sections of the community. The study was concentrated on Southern Africa mainly the SADC region with a deep analysis of South Africa due to data limitations. Extending the study to all the countries in Africa with a comparison to other regions like East Africa could have been more academically through the undertaking. Areas of further research may include a deeper analysis of the determinants of financial inclusion across different regions in Africa to compare the results.

References

Amoah, A., Korle, K. and Asiama, R.K. 2020. Mobile money as a financial inclusion instrument: what are the determinants? International Journal of Social Economics. Emerald Group Publishing, vol. 47(10), pages 1283-1297, August.

Beck, T., Demirgüç-Kunt, A. & Honohan, P. 2009. Access to financial services: Measurement, impact, and policies. The World Bank Research Observer, 24, 119-145.

Beck, T., Demirgüç -Kunt, A. & Martinez Peria, M. S. 2005. Reaching out: Access to and use of banking services across countries, The World Bank.

Beck, T., Demirgüç-Kunt, A. & Pería, M. S. M. 2011. Bank financing for SMEs: Evidence across countries and bank ownership types. Journal of Financial Services Research, 39, 35-54.

Berthoud, R. & Kempson, E. 1992. Credit and debt. Policy Studies Institute, London.

Cámara, N & Tuesta, D 2018. "Measuring financial inclusion: a multidimensional index," IFC Bulletins chapters, in: Bank for International Settlements (ed.), The role of data in supporting financial inclusion policy, volume 47, Bank for International Settlements.

Cameron, A. C. & Trivedi, P. K. 1986. Econometric models based on count data. Comparisons and applications of some estimators and tests. Journal of applied econometrics, 1, 29-53.

Cessda, H. L. H., Eric, S. B. E., NSD, G. H. C., Cessda, J. K., NSD, M. M. C., Nidi, T. E. & Cessda, D. B. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654221.

Chibba, M. 2009. Financial inclusion, poverty reduction and the millennium development goal. The European Journal of Development Research, 21, 213-230.

Dar, A.B. and Ahmed, F., 2020. Financial inclusion determinants and impediments in India: insights from the global financial inclusion index. Journal of Financial Economic Policy.

Demirguc-kunt, A., Klapper, L., Singer, D., Ansar, S. & Hess, J. 2018. The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution, The World Bank.

Demirguc-kunt, A. & Levine, R. 2008. Finance, financial sector policies, and long-run growth, The World Bank.

Gebrehiwot, K.G. and Makina, D., 2019. Macroeconomic determinants of financial inclusion: Evidence using dynamic panel data analysis. In Extending Financial Inclusion in Africa (pp. 167-191). Academic Press.

Gujarati, D. N. 2009. Basic econometrics, Tata McGraw-Hill Education.

Kempson, E. 1994. Outside the banking system. Policy Studies Institute, London.

Kempson, E. 2000. In or out? Financial exclusion: Literature and research review, Financial Services Authority.

Kennedy, P. 2003. A guide to econometrics, MIT press.

Kaur, S. and Kapuria, C., 2020. Determinants of financial inclusion in rural India: does gender matter? International Journal of Social Economics.

Louis, L. & Chartier, F. 2017. Financial Inclusion in South Africa: An Integrated Framework for Financial Inclusion of Vulnerable Communities in South Africa's Regulatory System Reform. Journal of Comparative Urban Law and Policy, 1, 13.

Maddala, G., LI, H. & Srivastava, V. 2001. A comparative study of different shrinkage estimators for panel data models. Annals of Economics and Finance, 2, 1-30.

Masiyandima, N., Mlambo, K. & Nyarota, S. Financial Inclusion and Quality of Livelihood in Zimbabwe. 14th African Finance Journal Conference-Africa growth Institute, 2017.

Mhlanga, D., 2020a. Financial inclusion and poverty reduction: evidence from small scale agricultural sector in Manicaland Province of Zimbabwe (Doctoral dissertation, North-West University (South Africa)).

Mhlanga, D. 2020b. Artificial Intelligence (AI) and Poverty Reduction in the Fourth Industrial Revolution (4IR). https://doi.org/10.20944/preprints202009.0362.v1

Mhlanga, D, & Dunga, S. H. (2020). Measuring Financial Inclusion and Its Determinants Among the Smallholder Farmers in Zimbabwe: An Empirical Study. Eurasian Journal of Business and Management, 8(3), 266–281. https://doi.org/10.15604/ejbm.2020.08.03.008

Mhlanga, David, Henry Dunga, S., & Moloi, T. 2020. Financial Inclusion and Poverty Alleviation Among Smallholder Farmers in Zimbabwe. Eurasian Journal of Economics and Finance, 8(3), 168–182. https://doi.org/10.15604/ejef.2020.08.03.004

Nanziri, E. L. & Leibbrandt, M. 2018. Measuring and profiling financial literacy in South Africa. South African Journal of Economic and Management Sciences, 21, 1-17.

Prymostka, L. O., Krasnova, I., Prymostka, O., Nikitin, A., & Shevaldina, V. 2020. Financial inclusion in Ukraine: determinants and evaluation. Financial and credit activity: problems of theory and practice, 2(33), 500-512.

Rao, C. R., Rao, C. R., Statistiker, M., RAO, C. R. & RAO, C. R. 1973. Linear statistical inference and its applications, Wiley New York.

Riley, T. A. 2019. South Africa: reducing financial constraints to emerging enterprises.

Sanderson, A., Mutandwa, L. & Le Roux, P. 2018. A Review of Determinants of Financial Inclusion. International Journal of Economics and Financial Issues, 8, 1.

Sarma, M. 2012. Index of Financial Inclusion–A measure of financial sector inclusiveness. Money, Trade, Finance, and Development Competence Center in cooperation with DAAD Partnership and Hochschule für Technik und Wirschaft Berlin University of Applied Sciences. Working Paper.

Sarma, M. & Pais, J. 2011. Financial inclusion and development. Journal of international development, 23, 613-628.

STATS SA, S. S. A. 2018. General Household Survey. In: STATISTICS (ed.). 28 May 2019: Government of South Africa.

WBG, T. W. B. G. 2017. Achieving effective financial inclusion in South Africa: a payments perspective. In: Finance, M. O. (ed.). South Africa: Government of South Africa.

WBG, W. B. G. 2018. UFA2020 Overview: Universal Financial Access by 2020. October 1, 2018 ed. HEADQUARTERS the World Bank 1818 H Street, NW Washington, DC 20433 USA, World Bank Group.

WentzeL, J. P., Diatha, K. S. & Yadavalli, V. S. S. 2016. An investigation into factors impacting financial exclusion at the bottom of the pyramid in South Africa. Development Southern Africa, 33, 203-214.

Wokabi, V. W. 2019. Determinants of financial inclusion in East Africa International Journal of Business and Management, International Institute of Social and Economic Sciences, vol. 7(1), pages 125-143, May.

Zins, A. and Weill, L., 2016. The determinants of financial inclusion in Africa. Review of Development Finance, 6(1), pp.46-57.

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INVESTIGATING EXTERNAL DEBT AND EXCHANGE RATE FLUCTUATIONS IN NIGERIA: ANY DIFFERENCE WITH ARDL MODEL?

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Abstract. One of the contending issues in Nigeria in the recent time is external debt and exchange rate fluctuations. In view of the above, this study examined the relationship between external debt and exchange rate fluctuations in Nigeria over the period of 1981 to 2018. Consequently, the study employed Autoregressive Distribution Lag Model to address the objective of the study. The major findings that originated in this paper are as follows: external debt, debt service payment and foreign reserve have a significant positive impact on exchange rate fluctuations in the short run in Nigeria. Furthermore, based on these findings, recommendations are made for the policy makers that external debt as a means of financing budget deficit should be minimized if not totally discouraged in Nigeria because its servicing in particular and repayment put pressure on foreign exchange market in the short run and thereby leads to exchange rate fluctuations in terms of depreciation of naira in the country. Also, country's foreign reserve should be strengthened through the implementation of aggressive export promotion policy in Nigeria.

JEL classification: F3, F31
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1. Introduction

External debt could be conceptualized as the resources sourced outside the shores of a country for investment projects, and this does not in any way come from any local citizens, whether corporate or individual. This is usually borrowed from foreign lenders such commercial banks, government or international financial institutions etc. Meanwhile, one of the critical challenges facing developing economies, Nigeria inclusive in the last few decades is debt crisis. The issues of debt crisis among developing economies have become a subject of concern to the multi-lateral borrowers and advanced economies (PNUD, 2011). This is because the majority of developing and emerging countries are constrained by savings, and this makes external debt as an inevitable source of capital for economic develop (Blessy and Lakshmi, 2020).

Meanwhile, the connection between the issue of external debt and other macroeconomic variables cannot be overemphasized in Nigeria because substantial economic growth registered in 1970s was largely due to external debt as the country recorded persistent deficit in currents account which made it inevitable for the country to embark on huge borrowing from international money and capital market to augment payment gaps (Ayadi and Ayadi, 2008; Adepaju et al. 2007). However, external debt can be of a great contribution to the growth of economy if such loan is used to finance viable projects that have the capacity to yield an adequate rate of return. This variable can also bridge the gap that exists between domestic savings and investment in one hand and between exports and imports of goods and services on the other hand.

In the past few decades Nigeria has been bewildered with external debt problems. These problems arose from the inefficient use and control of borrowed funds, low returns to investments, inadequate policy framework for debt management and international developments in interest rates, terms of trade and trade policies and corruption. Historically, huge debts in Nigeria are connected with continued recklessness and selfishness of its leader. For instance, Nigeria had a debt stock of $1 billion in 1971, by 1991, it had risen to $33.4 billion. This story has not changed even to the recent time. From 2015 to 2018, Nigeria external debt profile has risen from $10.32 billion to $22.08 billion in 2018 (DMO, 2018). This implies that Nigeria's debt profile rose by 114.05% within three years of the last without corresponding infrastructural development in the country, rather than gluttonous desire of people at corridor of powers to obtain loans for the execution of white elephant projects in the country (Semenitari, 2005).

It is worth of note that huge debt incurred so far has constituted a worrisome burden in terms of its servicing to the country in such a way that country finds it difficult to ensure the welfare of its citizen. As a matter of fact, Nigeria paid about $4.9 billion annually on debt servicing prior to the debt cancellation deal few years ago (Aluko and Arowolo, 2010). Consequently, it has been established in the literature that there is a link between external debt and exchange rate fluctuation because the multiplier effect of the Paris Club debt cancellation immediately led to noticeable appreciation of naira vis-à-vis the dollar from 132.1 Naira in 2005 to 128.6 in 2006. Also, naira in 2007, naira further appreciated to 125.8 Naira against $1 and then 118.5 in 2008 (CBN 2010).

However, the stability of macroeconomic variables like exchange rate and inflation rate are paramount indices that could sustain the use and repayment of external debt in the domestic economy. The advent of Structural Adjustment Programme in Nigeria in 1986, marked the significant genesis of overdependence of the Nigerian economy on the foreign capital in the forms of external debt to supplement saving-investment deficient gap in the country. It is not a gain to say that the demand for foreign currency poses corresponding effect on exchange rate of the domestic economy. It has been observed that within the period of post SAP era, exchange rate in Nigeria has been fluctuating by various degree of appreciation and depreciation vis-à-vis American dollar (CBN, 2012).

In the recent time, the issues regarding exchange rate and its impact on the various economic performance indicators in Nigeria have been a subject of debate among scholars (Aderemi, 2019; Fagbola et al., 2020; Aderemi et al., 2019; Aderemi et al. 2020). Meanwhile, attributing the major cause of exchange rate fluctuations in Nigeria to external debt has been the major concern of scholars and policy makers in the country. Consequently, an attempt to provide an empirical evidence to validate the above assertion by past studies has generated several arguments, which makes literature to be inconclusive about this subject matter. See Kouladoum (2018), Saheed, Sani and Idakwoji (2015), Ijeoma (2013), Patrawimolporn (2007), Aderemi (2019) and Aderemi et al. (2019).

In the light of the above, the main aim of the present study is: to examine the nexus between external debt and exchange rate fluctuations in Nigeria, which is the major bone of contention among the scholars and policymakers in the country. The objectives to be achieved in this paper are as follows; the analysis of how external debt, debt service payment, and foreign reserve affect exchange rate fluctuations in Nigeria, and the drawing of relevant conclusions. Despite the availability of many studies on this subject, this study has been carried out to provide a clearer evidence regarding the nexus between external debt and exchange rate fluctuations in Nigeria, using an ARDL technique in which majority of recent studies have not fully explored.

2. Literature Review

2.1 The Debt overhang theory

Debt overhang theory has been a subject of interest to developing economies because the relationship between external debt and economic growth is complex phenomenon. It has been argued in the theory that the significant principal variable responsible for slowing down the pace of investment is debt overhang. Meanwhile, the subject matter of debt overhang theory is premised on the fact that if the country's repayment ability is less than debt with some probability in the future, the output of the country will likely lack the capacity to sponsor the expected debt service (Krugman, 1989). In the view of the above, local and foreign investors could be discouraged as a result of high tendency of existing foreign creditors to tax some of the returns from investing in the domestic economy. It is worth of note that debt servicing involves interest payments and repayments of principal by the indebted country. However, debt overhang has a wide scope to the extent that its effect do not only manifest in investment in physical capital but also any activity that has to do with incurring of costs upfront with a view to increasing output in the future. These

activities entail the investment in human capital and in technological advancement which could constitute stronger effects on economic growth over time. The way the indebted country raises the necessary resources required financing external debt service with complementarity of private and public investment is a function of how a debt overhang discourages private investment. For instance, if a government embarks on inflation tax or in a capital levy, this might serve as a discouraging factor to private investment.

In a nut shell debt overhang has been conceptualized as a situation in which the indebted country gets very little benefits from the return on any additional investment due to the obligations of servicing the debt. It is worth of note that the need to service a large amount of external debt could affect performance of economy via some other channels like the crowding out effect as a result of high real interest rate which could worsen the borrowed country and shut-off from foreign credit market. This leads to a decline in investments because of the decrease in available resources for financing investment and macroeconomic conditions.

2.2 Empirical Literature Review

This section provides the account of relevant past studies about the relationship between external debt and exchange rate fluctuations. Ogege and Ekpudu (2010) utilized the OLS technique in examining the impact of debt burden on economic growth in Nigeria. The results of the study show that debt stock had a negative impact on the economic growth of the country. Fagbola et al. (2020) carried out a research about nexus between external debts and economic growth in Nigeria using an ARDL to analysis data from 1981 to 2018. The study confirmed that Nigeria experienced a setback in terms of economic growth due to external debt. Aderemi et al. (2020) evaluated the linkage between exchange rate volatility and balance of the Nigerian trade with the application of the ARDL technique of estimation from 1981 to 2016. The authors submitted that the effect of exchange rate volatility was not favourable to trade balance in Nigeria.

In another study, Ijeoma (2013) investigated the relationship between external debt stock, external debt service payment and some selected macroeconomic variables in Nigeria using a linear regression model. The author concluded that there was a significant relationship between debt servicing and gross fixed capital formation in the country. It was further revealed that exchange rate fluctuations affect external debt shock, external debt servicing and economic growth in Nigeria. In a related work, Siok, Cheau and Mohd (2012) examined a nexus between exchange rate and inflation in different three developed and three emerging countries in Asia. The results from the study show that a significant correlation existed between exchange rate movements and inflation those countries in Asia. Similarly, Blessy and Lakshmi (2020) explored ARDL model to investigate the nexus between original Sin, currency depreciation and external debt burden in India from 2001 to 2018. It was discovered from the study that depreciation of the country's currency increased burden of the external debt significantly.

Aderemi et al. (2019) explored a vector error correction model to estimate how foreign capital inflows affected exchange rate volatility in Nigeria from 1990 to 2016. It was concluded from the study that external debt sparked of exchange rate

volatility in the country. Devereux et al. (2006) discovered that exchange rate depreciation in the foreign exchange market increased external debt in emerging countries. While examining the linkage between external debt and variation in exchange rate from the Romanian economy, Bunescu (2014) used Fisher-Snedecor F-test to estimate the relationship between external debt and exchange rate variation in the Romanian economy. It was discovered from the study that external debt explained the evolution of exchange rate in the study.

Consequently, Alam and Taib (2013) estimated the relationship between external debts, budget deficit, current account deficit and exchange rate depreciation in Debt Trap Countries (DTC) and Non Debt Trap Countries (NDTC) of pacific development countries Asia. The findings the surfaced in the paper posited that there was a positive relationship between external debt, budget deficit, current account deficit and exchange rate depreciation. Meanwhile, the significance of the relationship shows variations in DTC and NDTC. Sene (2004) employed an extension of Obstfeld and Rogoff model to examine how external public debt and equilibrium real exchange rate are related in developing economies. In another perspective, Patrawimolporn (2007) adopted a simple differentiation technique to analyze the relationship between exchange rate, debt, debt services and public debt management in Thailand. The author submitted that exchange rate volatility affects debt services because the exchange rate adjustment led to the savings of a significant amount of debt services.

In another perspective, Mohamed (2005) examined the impact of external debt on economic growth in Sudan from 1978-2002. The author opined that external debt and inflation caused a negative impact on economic growth. Meanwhile, real exports have a significant positive impact on economic growth in the country. Mariano and Delano (2006) adopted a standard neo-classical growth model to examine, external debt, capital accumulation dynamics and economic growth alongside the optimal savings rate within 2000 and 2003 in Philippines. It was concluded from the study that higher ratio of change in interest rate spread to change in debt-to-GDP which reduces welfare in long run in the country. Similarly, Hameed, et al (2008) opined that there was an existence of adverse effect of external debt servicing on labour and capital productivity which was the principal factor that retards economic growth in Pakistan while exploring the dynamic effect of external debt servicing, capital stock and labour force on the economic growth between 1970 and 2003 in Pakistan. While investigating the feedback relationship between short term external debt and GDP growth rate in 27 Latin American and Caribbean countries between 1970 and 2003, Butts (2009) established that the presence of granger causality in thirteen countries. Aderemi et al. (2019) provided an empirical evidence using Vector Error Correction Model to argue that external debt motivated volatility in exchange rate in Nigeria.

However, David et al. (2010) used multiple regression technique to evaluate the relationship between exchange rate fluctuations and performance of manufacturing industry in Nigeria. The results of the regression analysis indicated the presence of a negative relationship between exchange rate volatility and manufacturing sector performance in the country. Adepoju et al. (2007) estimated the relationship between time behaviour of donor agencies in regarding external debt and economic growth in Nigeria spanning from 1962 to 2006. The researchers submitted that the Nigerian economic growth is negatively affected by external debt.

In another perspective, Aliyu (2011) submitted that appreciation of exchange rate leads to an increment in imports and reduction in exports but depreciation causes an expansion in export and contraction in import. In the same vein, depreciation of exchange rate is likely to lead to a shift from foreign goods to domestic goods, as a result of this, there is a diversion of income from importing countries to exporting countries exporting via a shift in terms of trade and consequently affects economic growth of both the exporting and importing countries. In the same vein, Palić et al. (2018) investigated long run linkage between nominal exchange rate depreciation and external indebtedness in Croatia. The authors submitted that the exchange rate depreciation caused a rise in the external debt burden in the country because most of the country's external liabilities were domiciled in foreign currency.

Furthermore, Asher (2012) concluded that economic growth in Nigeria is positively affected by real exchange rate while examining the link between exchange rate fluctuation and the Nigerian economic growth within the period of 1980 – 2010. Carrera and Vergara (2012) examined how real exchange devaluation was caused by the fiscal cost in five Latin American economies. The author posited that accumulation of foreign currency debt could cause fiscal adjustment if devaluation is persistent. Meanwhile, Akpan (2008) investigated the impact of foreign exchange market on economic growth from 1970 to 2003 in Nigeria. The author asserted that there was a presence of a positive relationship between exchange rate and economic growth in the country. In a related work carried out by Hargreaves et al. (2011), it was argued that exchange rate depreciation was a result of external debt in the country, and this could have a significant direct impact on the gross domestic product. Obansa et al. (2013) estimated the nexus between the relationship between exchange rate and economic growth in Nigeria from 1970 to 2010. The paper established that economic growth was strongly impacted by exchange rate and exchange rate liberalization was good to the Nigerian economy because it serves as a promoting factor to economic growth in the country. Azeez et al. (2012) critically examined the relationship between the exchange rate volatility and macroeconomic performance in Nigeria between 1986 and 2010. The study pointed out that exchange rate and Gross Domestic Product were positively related in the country.

Similarly, Aderemi (2019) utilized the technique of DOLS to submit that there is an insignificant inverse linkage between exchange rate volatility and external debt in Nigeria. Furthermore, it could be pinpointed from the above reviewed literature that the studies on external debt and exchange rate fluctuations in Nigeria are ongoing, and the literature is still inconclusive about their nexus in the country.

3. Methodology

This study made use of secondary data from 1981 to 2018. Data on external debt, debt service payment and foreign reserve were extracted from Central Bank of Nigeria statistical bulletin (2018). External reserve is measured by total sum of foreign exchange reserve. The values of External debt, Debt service payment and Foreign reserve were converted to the Nigerian currency (Naira) based on the exchange rate of the corresponding year. E-Views software was employed for the running of the data.

3.1 Model Specification

In setting up a model in this study, insight was drawn from some recent studies like Aderemi, (2019), Fagbola et al. (2020), Aderemi et al. (2019), Aderemi et al. (2020) by adapting the model with the elimination of variables that are not relevant to this study.

In a general form, we specify the model as follows;

EXCHR = F (ExDebT, DSP, FR)…….. (I)

A further step to linearize the adapted model led to model (II) as follows

$LnEXCRt = \beta_1 + \beta_2 LnExDebTt + \beta_3 LnDSPt + \beta_4 FRt + \mu_i$ …..…….. (II)

However, the variables could be explained thus; EXCR represents exchange rate fluctuations. ExDebT is used to denote external debt. DSP stands for debt service payment. And FR represents foreign reserve, while μ is error term which is assumed to be serially uncorrelated. t is period of analysis (1981-2018). The a priori expectations are as follows $\beta 2$ and $\beta_3 > 0$, $\beta 4 < 0$

3.2 ARDL Model Specification

According to Pesaran et al. (2001), Pesaran and Pesaran (1997), an autoregressive distributed lag model is considered as an appropriate technique for this study because findings from unit root test indicated that the orders of integration of the variables are. I(1) and I(0). As thus, ARDL model could be specified as follows:

$$\Delta EXR_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \ \Delta EXR_{t-1} + \sum_{i=0}^{p} \beta_2 \Delta DSP_{t-1} + \sum_{i=0}^{p} \beta_3 \Delta FR_{t-1} + \varepsilon_{2t}$$ ------ (III)

3.3 Result and Discussion

Table 1: Descriptive Statistics of Annual Data Series (1981-2018)

Descriptive Statistics	LDSP	LEXCHR	LExDebT	LFR
Mean	10.76358	3.293779	6.077476	11.99862
Median	10.74401	3.811329	6.437942	11.43748
Maximum	15.32974	5.535333	8.495003	18.04121
Minimum	6.996041	-0.494255	0.846383	8.608806
Std. Deviation	1.953560	1.947659	1.932532	2.220557
Skewness	0.059060	-0.735476	-1.050327	0.830079
Kurtosis	2.860318	2.202196	3.407236	3.201404
Jargue-Bera	0.050195	4.200288	6.867885	4.195028
Probability	0.975215	0.122439	0.032260	0.122761
Sum	387.4888	118.5761	218.7891	431.9503
Sum. Sq. Deviation	133.5738	132.7681	130.7138	172.5806
Observation	38	38	38	38

Source: Authors' Computation (2020)

The descriptive statistics of the dataset is presented in the above table to verify the normal distribution of the dataset for further econometric analysis. As shown in the table above, the data is normally distributed because the mean and median values of all the adopted variables are almost the same. The normal distribution of dataset is symmetrical when the mean, modal and median values of the dataset are identical (Karmel and Polasek 1980). Furthermore, the other useful information which also attests to the normal distribution of the dataset is shown in the values of minimum and maximum; and how the sample is distributed measured through the values of skewness, kurtosis and Jaque-Bera statistics.

Table 2: Unit Root Test

Variables	ADF Test			PP Test		
	Level	1st Diff.	Remarks	Level	1st Diff.	Remarks
LDSP	-2.981038**		I (0)	-2.948404**		I (0)
LEXCHR	-2.948404**	-2.951125**	I(1)	-2.948404**	-2.951125**	I(1)
LExDebT	-2.951125**	-2.951125**	I(1)	-2.948404**	-2.951125**	I(1)
LFR	-2.960411**	-2.954021**	I(1)	-2.948404**	-2.951125**	I(1)

Source: Authors' Computation (2020) ** %5 level

The data for this work were subjected to a unit root test through the standard Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The estimated results reported as shown in table 2 clearly proved that the data on exchange rate, external debt and foreign reserve are stationary after first differencing. This implies that these data are said to possess a unit root. However, data on debt service payment is stationary at a level. This indicates that the data does not have a unit root. In a nutshell, the data employed in this study comprise the mixture of I(1) and I(0) data.

Table 3: ARDL Bounds Test

Sample: 1985 2018
Included observations: 35
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	2.058660	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
5%	3.23	4.35

Source: Authors' Computation (2020)

The estimated result of Bound Test is shown in table 3 with a view to establishing the existence or otherwise of a long run relationship among the variables of interest in this work. From the above, it could be established that the Null hypothesis of no long run relationship could not be rejected because the F-Statistic value is lower than the upper and lower Critical Value Bounds at all level of significance. This shows that there is no cointegrating relationship among the variables in the model.

Table 4: Short Run Relationship Dependent Variable: EXCH

Variable	Coefficient	t-statistics	P-value
LEXCH(-1)	-0.353840*	1.517105	0.1487
LEXCH(-2)	-0.416136**	2.214302	0.0417
LExdebT(-1)	0.500641***	5.879661	0.0000
LExdebT(-2)	0.212419**	2.054453	0.0566
LFR(-1)	0.208740**	2.611069	0.0189
LFR(-2)	0.169710**	2.316026	0.0342
LDSP(-1)	0.221351**	3.195151	0.0056
C	0.074763	0.111878	0.9123

Source: Authors' Computation (2020) ***Significant at 10%, **Significant at 5%, *** Significant at 1%**

The ARDL result of the short run relationship between external debt and exchange rate fluctuation is presented in the above table. All the explanatory variables have the expected sign except foreign reserve. External debt has a significant positive relationship with exchange rate fluctuations at lag 1 and 2. At lag 2, a unit change in external debt causes an increment in exchange rate fluctuations by 0.21%. This finding is validated by the submission of Saheed et al. (2015) and Alam and Taib (2003) despite adoption of different methodology. Kouladoum (2018) and Blessy and Lakshmi (2020) also asserted the same conclusion in a similar studies in Chad and India respectively. This finding is also in tandem with conclusions of Devereux et al. (2006) in emerging economies and Hargreaves et al. (2011) in New Zealand concurrently. Similarly, debt service payment and exchange rate fluctuations have a significant positive relationship with each other in Nigeria. At lag 1, a unit change in debt service payment increases exchange rate fluctuations by 3.2% in the country. This result is consistent with the findings of Saheed et al. (2015) and Patrawimolporn (2007) but contradicts the submission of Kouladoum (2018). However, foreign reserve and exchange rate fluctuations have a significant direct relationship in the country. The reason for this positive might be as a result of the over dependence of the country on foreign goods.

3.4 Conclusion and Discussion

This study investigates the short run relationship between external debt and exchange rate fluctuations in Nigeria over the period of 1981 to 2018. Consequently, the summary of the major findings in this study are summarized as follows: external debt, debt payment service and foreign reserve have a significant positive impact on exchange rate fluctuations in the short run in Nigeria. Furthermore, based on the

findings that originated from this work, this study make the following recommendations for the policy makers in the country that external debt as a means of financing budget deficit should be minimized if not totally discouraged in Nigeria because its servicing in particular and repayment put pressure on foreign exchange market in the short run and thereby leads to exchange rate fluctuations in terms of depreciation of naira in the country. Also, country's foreign reserve should be strengthened through the implementation of aggressive export promotion policy in Nigeria.

Finally, it is instructive to stress that a limitation to this work lies in its inability to assess the parallel market exchange rate situations in the country. A list of both practical and theoretical implications of this work is embedded in discouraging deficit budget financing in Nigeria. Therefore, it is imperative to develop further studies considering how external debt affects parallel exchange rate situations in the country.

References

Aderemi T.A., Ogunleye G.A., Abalaba B.P., Owolabi, O.O. (2020) Exchange Rate Volatility and Trade Balance in Nigeria: Bound Test and ARDL Approach, *Euro Economica,* 39(1), 7-16

Aderemi, T.A. (2019) Exchange Rate Volatility and Foreign Capital Inflows in Nigeria (1990-2016), Cointegration, DOLS and Granger Causality Approach, *Management Studies and Economic Systems*, 4(2), 161-170

Aderemi T. A., Akinbode S. O., Omogboye M.A., Fagbola L. O. (2019) Exchange Rate Volatility and Foreign Capital Inflows in Nigeria: A Vector Error Correction Model Approach, *Acta Universitatis Danubius. Œconomica*, 15(5), 34-43

Akpan, P.L. (2008) Foreign exchange market and economic growth in an emerging petroleum based economy: Evidence from Nigeria (1970-2003), *African Economic and Business Review,* 6 (2), 46-58.

Adepeju A. A., Salau A. S., Obayelu, A. E. (2007) the effects of External Debt Management on Sustainable Economic Growth and Development: Lessons from Nigeria, *Munich Personal Respective (MPRA) Paper* No.2147

Alam N., Taib F. (2013) An Investigation of the Relationship of External Public Debt with Budget Deficit, Current Account Deficit and Exchange Rate Depreciation in Debt Trap and Non-Debt Trap Countries, *European Scientific Journal,* 9 (22), 23-31

Aliyu, S.R.U. (2011) Impact of oil price shock and exchange rate volatility on economic growth Nigeria: An empirical investigation, *Research Journal of International Studies*

Aluko F., Arowolo D. (2010) Foreign Aid, the Third World's Debt Crisis and the Implication for Economic Development: The Nigeria Experience, *African Journal of Political Science and International Relations,* 4(4), 120-127

Asher O.J. (2012) The Impact of Exchange rate Fluctuation on the Nigeria Economic Growth (1980 – 2010). Unpublished B.sc Thesis of Caritas University Emene, Enugu State, Nigeria

Ayadi, F. S., Ayadi F. O. (2008) the impact of external debt in economic growth: A comparative study of Nigeria and South Africa, *Journal of Sustainable Development in Africa*, 10 (3), 234-264.

Azeez B.A.; Kolapo F.T., Ajayi L.B. (2012) Effect of Exchange rate Volatility on Macroeconomic Performance in Nigeria, *Interdisciplinary Journal of Contemporary Research in Business*. 4 (1), 149-155

Blessy A., Lakshmi K. (2020) Original Sin, Currency Depreciation and External Debt Burden: Evidence from India, *International Journal of Economics and Financial Issues*, 10(3), 58-68

Bunescu L. (2014) The Impact of External Debt on Exchange Rate Variation in Romania, *Economics and Sociology*, 7(3), 104-115

Calvo G.A., Reinhart C. M. (2002) Fear of floating, *Quarterly Journal of Economics*. 117 (2), 379-408

Carrera C.M., Vergara, R. (2012) Fiscal sustainability: The impact of real exchange rate shocks on debt valuation, interest rates and GDP growth, *World Development*, 40(9), 1762-1783

CBN (2012) Annual Statistical Bulletin.

David U., Ameh A. 2010. The Effect of exchange rate fluctuations on Nigeria manufacturing sector, *African Journal of Business Management,* 4 (14), 2994-2998

Devereux M.B., Lane P.R., Xu J. (2006) Exchange rates and monetary policy in emerging market economies, *The Economic Journal,* 116(511), 478-506.

Dickey, D.A., Fuller, W.A. (1979) Distribution of the Estimators for Autoregressive Time Series with a Unit Root, *Journal of the American Statistical Association,* 74, 427–431

Fagbola L. O., Sokunbi, G. M., Aderemi T. A., Adebayo, A. G. (2020) External Debt and Economic Growth in Nigeria: An Implication for Debt Overhang Theory, *Journal of Economics, Law and Politics,* 7(2), 29-39

Hameed A., Ashraf H., Claudlary M. A. (2008) External Debt and its Impact on Economic and Business Growth in Pakistan, *International Research Journal of Finance and Economics Issue* 20

Ijeoma N.B. (2013) an Empirical Analysis of the Impact of Debt on the Nigerian Economy, *International Journal of Arts and Humanities*, 2 (7), 165-191

Jean-Claude Kouladoum (2018) External debts and real exchange rates in developing countries: evidence from Chad. Online at https://mpra.ub.uni-muenchen.de/88440/ MPRA Paper No. 88440, posted 19 August 2018 02:32 UTC

Hargreaves, D., Watson, E. (2011) sudden stops, external debt and the exchange rate, *Reserve bank of New Zealand: Bulletin*, 74(4), 17-27

Karmel P. H., Polasek M, (1980). Applied statistics for economists. Pitman Publishing

Krugman, P. (1989) Market Based Debt reduction Schemes. NBER Working Paper No. 16827, February 2011

Obansa S.A.J., Okoroafor O.K.D., Aluko O.O., Millicent E. (2013) Perceived relationship between exchange rate, interest rate and economic growth in Nigeria: 1970-2010, *American Journal of Humanities and Social Sciences,* 1 (3), 116-124

Ogege S. A., Ekpudu J.E. (2010) The Effect of Debt Burden on the Nigerian Economy, *Journal of Research in National Development,* 8 (2), 13-21

Palić I., Banić F., Matić L. (2018) The analysis of the impact of depreciation on external debt in long run: Evidence From Croatia, *Interdisciplinary Description of Complex Systems,* 16(1), 186-193.

Patrawimolporn P. (2007) Effect of Exchange Rate on Debt, Debt Services and Public Debt Management in Thailand in the 1980s, *Asian Economic Journal,* 5,3

Pesaran M. H., Shin Y., Smith R. J. (2001) Bounds testing approaches to the analysis of level relationships, *Journal of Applied Econometrics*, *16*, 289-326

Pesaran M., Pesaran B. (1997) *Microfit 4.0 (windows version). New York: Oxford University Press Inc*

Phillips P. C., Perron P. (1988) Testing for a unit root in time series regression, *Biometrika,* 75, 335-346

PNUD (2011) Rapport mondial sur le développement humain.

Saheed Z. S., Sani I. E. Idakwoji B. O. (2015) Impact of Public External Debt on Exchange Rate in Nigeria, European Journal of Business and Management, 7(21), 55-59

Semenitari I. (2005) The Road to Debt Relief. Tell Magazine, 29, July 19, 38

Sene B. (2004) The Impact of Debt Overhang on Equilibrium Real Exchange Rate in Developing Countries: A Theoretical Model. EURISCO Working Paper, No. 04-17

Siok K. S., Cheau P. O., Mohd T.I. (2012) Investigating the Relationship between Exchange Rate and Inflation Targeting, Applied Mathematical Sciences, 6(32),1571-1583