Regulating Bitcoin – The Challenges Ahead

Ionela-Gabriela Matei[39], Erik Wouter Baks[40]

Abstract: This article provides an overview of several challenges that involve Bitcoin and other cryptocurrencies. After briefly discussing the underlying technology, it discusses challenges related to cryptocurrencies that regulators face at this point in time. This includes issues regarding Initial Coin Offerings and cryptocurrencies in general, as well as cryptocurrencies as an investment instrument. It also includes an analysis of cryptocurrencies compared to the real economy. The article concludes that scholars are not unanimous regarding the regulation of Bitcoin and cryptocurrencies, and that cryptocurrencies, at least up till now, do no follow trends of the real economy.

Keywords: Cryptocurrency; Bitcoin; Initial Coin Offering; Financial Regulation; Financial Policy

JEL Classification: G18; F38

1. Introduction

The most famous cryptocurrency, Bitcoin, has been brought to life as an electronic payment system that is based on cryptographic proof instead of trust (Nakamoto, 2008). The reasoning behind this, is that because of this technology, in the case of electronic payments two willing parties can transact directly with each other without the need for a trusted third party. Instead of relying on financial institutions that were almost exclusively needed to process these payments, buyers and sellers can now make transactions without any other parties to be involved. These cryptocurrencies are distributed, worldwide, decentralized digital currencies, based on an open source cryptographic protocol, in which there are no institutions such as governments, companies, or banks in charge of issuing or managing these currencies (Filippi, 2014).

Bitcoin, and other cryptocurrencies, are created using a process that is called mining. It is a process that rewards users based on the amount of computing power they contribute to the network in the form of newly created currencies. The more computing power the user offers, the bigger the rewards. The computing power is

[39] PhD Student, Alexandru Ioan Cuza University of Iasi, Romania, Address: Carol I Blvd., No. 11, 700506, Iasi, Romania, Tel.: +40749578896, Corresponding author: matei.ionelagabriela@gmail.com.
[40]MSc Student, Alexandru Ioan Cuza University, Iasi, Romania, Address: Carol I Blvd., No. 11, 700506, Iasi, Romania, E-mail: erikbaks89@gmail.com.

used to resolve complex mathematical problems, also known as Proof of Work, which become more difficult the more the network increases in strength. Mining is used to ensure the integrity and security of the system by providing a means to verify transactions using a decentralized network of peers. These peers process transaction data simultaneously, often with fees involved. After this data is processed, the transaction is recorded into a public ledger, also known as a blockchain. This technology does not rely on a central bank or authority. Instead, it relies on cryptographic algorithms and peer-to-peer technologies, which can be used to securely transfer money without passing through a trusted third party. Unlike fiat-currencies, which have a value that is derived through regulation or law and underwritten by the state (J.P., 2011), cryptocurrencies have no intrinsic value. Ergo, the only real value is purely based on supply and demand.

Both within and outside the financial system, cryptocurrencies have generated a great deal of innovation and experimentation. Bitcoin, and other cryptocurrencies have seen a significant growing rate of acceptance, both by online and offline merchants. This could raise issues regarding for example cyber criminality and law enforcement. Contrary to popular belief, transactions that make use of Bitcoin or other cryptocurrencies, are not fully anonymous. Brito & Castillo (2013), for example, state that the Bitcoin protocol makes it possible to trace a transaction back to its pseudonymous Bitcoin address, which then can be linked to a particular identity. However, since it is quite difficult to track down the identity of anonymous users, as stated by Reid & Harrigan (2011), the cryptocurrencies are often used to blur the source of destination of a specific financial transaction. This is the case in for example online gambling practices, black market operations, fraud, or money laundering (Stokes, 2012).

In this paper, we will take a closer look at the challenges that the cryptocurrencies create for regulators. The structure of this paper is as follows. We discuss the existing literature in section 2. In section 3 and 4, we will present a comparative analysis of three large cryptocurrencies and the real economy measured in GDP, and in section 5 the conclusion will be discussed.

2. Literature Review

Bitcoin, and other cryptocurrencies create several challenges for regulators. Cryptocurrency has begun to be in the sphere of attention of states and their regulators later, in 2011-2013 (Y., 2018). The lack of regulations, both nationally and internationally, expose the cryptocurrency to operational, credit and liquidity risks, under the aegis which the security of systems can be compromised, as well as fraud (Cvetkova, 2018).

A Bitcoin system lacking adequate regulation leads to social instability and an economic downturn (Wang, 2018). Bitcoin regulation is treated by people in various ways (Filippi, 2014), which the most highlighted were those on regulatory denial due to pressures on the privacy and free trade of this type of product, and on the other hand, regulation is required for a better control of users behavior and reduce illegal or criminal activities.

Therefore, in Japan (Ishikawa, 2017) were questioned three issues regarding the nature and legal status of virtual currencies, the existence of regulations applicable to users and their protection.

In this chapter we will take a look at Initial Coin Offerings, cryptocurrencies itself, and cryptocurrencies as an investment tool.

2.1. Initial Coin Offerings (ICOs)

However, until now, unified and well-established approaches to legal regulation of this phenomenon have not only developed internationally but also in individual jurisdictions, fact evidenced by the fact of repeated changes in the policies of different governments (Utkin, 2018).

The first challenge that we will discuss regarding the regulation of Bitcoin and other cryptocurrencies are their Initial Coin Offerings (ICOs). techche et al. (2018) suggest that, based on their research, the ICO volume has passed the 25 billion USD mark. These ICOs are being used to attract financial support for new ideas, and the amount of ICOs grow with an accelerating rate. There are, however, flaws when it comes to ICOs. There are examples of ICOs being Ponzi schemes and outright scams, which is also stated by Chocan (2017). Due to governance concerns countries came with regulatory responses. For example, China (Chocan, 2017; Zetsche et al., 2018) and South Korea banned ICOs from happening in the first place, and warning notices have been issued by the European, US and other regulators. There have also been more supportive approaches, by for example countries as Singapore and Switzerland.

There are certain typical issues that arise related to ICOs. We will discuss the most significant ones. First of all, there is the issue with information asymmetry. Before an ICO, the issuing party writes a so called white paper for potential investors. The sample of Zetsche et al. (2018) shows that 17.96% of the white papers analyzed in their sample only provide technical information about the product. They find that in 31.04% of the white papers, there is no information provided regarding the initiators or backers, and that in 23.28% of the cases the papers do not provide the reader of information about the project's financial circumstances. This means that it remains unclear how the capital that is collected will be used. They also find that in 85.8% of the white papers there is no information whether the invested money by participants will be pooled or if it remains segregated. Several white papers that were analyzed were set up in a professional way, with the help of lawyers that were schooled in the

customs of security markets. However, most of the papers showed that the information they provided were inadequate, and mainly contained information about the technology only. Compared to Initial Public Offerings (IPOs), this is remarkably different.

A second issue that surfaces is capital misallocation. The research of Zetsche et al. (2018) finds that oversubscription is particularly common for the larger ICOs. It also shows that less than 10% of all tokens can be put to use by their investors. The remaining tokens are only available for trading, which shows that these are purely used as speculative instruments. And even trading remains a challenge in some situations. Transfer issues, for example, cause complicated legal issues in the ICO country, mostly overlooked by investors. In conclusion, this overall overexcitement appears to be an indicator of rather irrational market behavior, with bubble characteristics that has the potential of not only harming individuals who lose their money, but also potentially jeopardizes the benefits of this new technology due to the misallocation of capital. In a range of frauds and scams, it seems that ICOs show many signs of ways to channel funds to the recipients for personal use, rather than using it for something productive, which ICOs are initially intended for.

Thirdly, there is the problem regarding weak legal protections. The white papers only give information about the applicable law in 31% of the sample (Zetsche et al., 2018). In 48.11% of the cases, the papers do not give the name of the initiators, and there is no information available about their background, for example their address. There are also examples in which the name of the author or authors are different from the names of the ICO issuer or initiator. This is the case in 33.26% of the sample. Thanks to this lack of basic information, private law liability is limited when it comes to the law as a correcting factor. The law's arms are tied if there is no certainty about the parties involved in a transaction.

Lastly, we would like to discuss systemic risk. One may argue that the current market for ICOs is too small to justify regulatory actions, since the estimate of the ICO market capitalization ranges from several billions to several hundred billions at this point in time. However, potential concerns arise taking into consideration that the volume of cryptocurrencies is certainly hundreds of billions, with ICOs being a growing component of this market, and is growing fast. For example, the three largest players in the money market funds are Vanguard, Fidelty, and Schwab. These players were established in respectively 1975, 1946, and 1971. How let's take a look at Alibaba, a company that offered a fully online fund online in 2014. Within just nine months, this fund was the world's fourth largest money market mutual fund in the world (Zetsche et al., 2018) and nowadays, it became the largest money market fund with an estimate of 222 USD billion. ICOs have been used by desirable entrepreneurial companies to raise funds, while the role of venture capitalists remained rather unclear in this market. ICOs could therefore claim a significant part

of the market. What is happening now, is that venture capitalists are becoming more and more active in the pre-ICO stage, by buying rights to acquire tokens through contractual agreements, or by making certain equity deals. Zetsche et al. state that startups raised over 3.6 billion USD through ICOs in 2017, while 52.6 billion USD was raised overall by venture capitalists. Even though this gap seems large, the numbers are increasing. Mokhtarian & Lindgren (2017) reported that 110 crypto hedge funds have been active in the ICO market since 2011. A total of 84 of those hedge funds were established in 2017, and manage 2.2 billion USD of assets. The involvement can be seen as the market maturing, but also makes the link between the established banking sector stronger. This enhances systemic risk.

2.2. Cryptocurrencies

The Blockchain technology behind the Bitcoin system uses a type of accounting Log/Transaction log (distributed register) to approach that is not falsified to validate all the units produced and the operations performed and verified. Information is stored redundantly and distributed (Read, 2018).

"Virtual currencies are being used as an instrument to facilitate crime, particularly in regard to the laundering of illicit profits." This is a quote from Rob Wrainwright (as cited in Reuters, 2014), who is the head of the EU law enforcement agency for criminal intelligence, Europol. "Financial transactions for criminal activities are not reserved cryptographic payment forms", as stated by Ivo Opstelten (as cited by Coindesk, 2014), involving a case in which a US citizen sold a gun to a Dutch policeman through SilkRoad, which is an online black market known for drug trafficking and other illegal activities and on which cryptocurrencies were frequently traded. These are just two quotes of many, showing us that cryptocurrencies have the potential to be involved in transactions related to illegal activities.

Besides this, cryptocurrencies can also constitute a potential threat to national sovereignty, since they escape the scope of many governmental policies (Filippi, 2014). As stated by Kleiman (2013) and Twomey (2013), the decentralized and unregulated character of Bitcoin may jeopardize most of the economic and financial policies established by nation-states. Filippi (2014) argues that taxation is most likely to be the most relevant issue. Cryptocurrencies are independent from any financial intermediary. Therefore, it is virtually impossible to monitor or control how the currency is being used. Also adding the fact of anonymity, cryptocurrencies are the best candidate to qualify as a new tax haven (Gruber, 2013). Also, where state-regulated currency market capitalization is determined by a central bank, cryptocurrency market capitalization is determined in advance based on the underlying protocol. Because of this, central authorities can not intervene in the case of increases or decreases of the deflation rate. Besides these issues, there is no single entity in charge of the overall interest rate for Bitcoin or any other cryptocurrency. This means that, in the hypothetical case of a global adoption of cryptocurrencies,

states can potentially lose their ability to regulate their economy while making use of traditional monetary policies.

Another issues regarding Bitcoin and other cryptocurrencies is the legal status of these currencies. While Bitcoin-related regulation up till now have been largely focused on the application of "know your customer", anti-money-laundering rules, and customer protection licensing, the next major wave will likely be aimed at financial instruments, which include securities, derivatives, prediction markets and gambling (Brito, Shadab, & Castillo, 2014). They argue that financial regulators should consider to exempt or exclude certain financial transactions denominated in Bitcoin or other cryptocurrencies, using private securities offerings and forward contracts as examples. They also suggest that policymakers should consider to make efforts to encourage resilience and adaptations.

There are also cases that argue against regulation of Bitcoin, and thereby other cryptocurrencies. Kaplanov (2012), for example, states that both traditional Bitcoin users and miners fall outside of the regulatory provisions under federal banking, money transmission, and securities laws. The author claims that Bitcoin transactions should be treated as a community currency, meaning it should receive full contractual enforcement and being treated as a traditional currency in every other way. Kaplanov (2012) also states that, instead of prohibition, policymakers and judges should become familiar with the technology, and suggests that they should use existing investigatory tools to investigate and prosecute illegal activity. He concludes that trying to prohibit Bitcoin or other cryptocurrencies would only be problematic. Contrary, letting these currencies flourish could provide limitless possibilities in commerce around the globe.

To diversify portfolio risks, cryptocurrencies and the CRIX index (a crypto market benchmark) are a good option, according to Chuen, Guo, and Wang (2017). They find that correlations between cryptocurrencies and traditional currencies are consistently low, and the average daily return of most cryptocurrencies is higher than that of traditional investments. They state, however, that these currencies are still in an experimental stage, and that there are many other issues that should be addressed before these currencies will be seen as an asset class that institutions would be interested in. In the next chapter we will take a look at the growth rates of certain cryptocurrencies and compare them to two variables that indicate the real economy.

3. Data & Methodology

In our analysis, we will compare the growth rates of the three largest cryptocurrencies according to their market capitalization with the growth rates of the real economy. The three cryptocurrencies used in this analysis are Bitcoin, Ethereum, and Ripple. The data on these cryptocurrencies are extracted from Yahoo!

Finance. The indicators that we used to represent the real economy are the Gross Domestic Product (GDP) growth rate that covers 26 European countries, and the global GDP growth rate. The data is extracted from the OECD. We make use of quarterly data, covering a time period from Q4 of 2015 until Q4 of 2017. The descriptive statistics can be found in table 1, displayed below.

To compute the quarterly growth rates for both the cryptocurrencies, we make use of the following formula (1):

$$r = \frac{(\mathrm{Qx}-\mathrm{Qp})}{\mathrm{Qp}} \quad (1)$$

where r is the growth rate, Qx is the value of quarter x , and Qp is the value of the variable in the previous quarter.

Table 1. Descriptive Statistics

Variable	Mean	Standard Deviation	Median	Minimum	Maximum
Bitcoin Close	2668.63	3435.090	965.49	369.84	10226.86
Ethereum Close	193.40	360.196	11.86	2.20	1111.31
Ripple Close	0.18	0.369	0.007	0.006	1.14
GDP European Countries	0.005	0.003	0.005	0.001	0.008
GDP Global	0.006	0.002	0.006	0.003	0.008

Source: Author's calculations based on data provided by Yahoo! Finance and the OECD.

This graph shows the descriptive statistics of the variables used for the comparison.

4. Results

Table 2. Calculation of the quarterly growth rates

Time period	Bitcoin	Ethereum	Ripple	GDP EU	GDP Global
Q4 2015	18.83%	153.57%	22.27%	0.54%	0.29%
Q1 2016	21.28%	301.36%	11.81%	0.46%	0.42%
Q2 2016	38.65%	34.31%	-12.80%	0.50%	0.47%
Q3 2016	12.35%	-8.01%	32.98%	0.14%	0.42%
Q4 2016	38.19%	-1.83%	-19.66%	0.11%	0.72%
Q1 2017	40.02%	645.38%	714.04%	0.75%	0.56%
Q2 2017	113.27%	152.20%	215.83%	0.84%	0.76%
Q3 2017	123.75%	50.82%	19.84%	0.73%	0.72%
Q4 2017	58.53%	266.00%	477.22%	0.75%	0.65%

Source: Author's calculations based on data provided by Yahoo! Finance and the OECD.

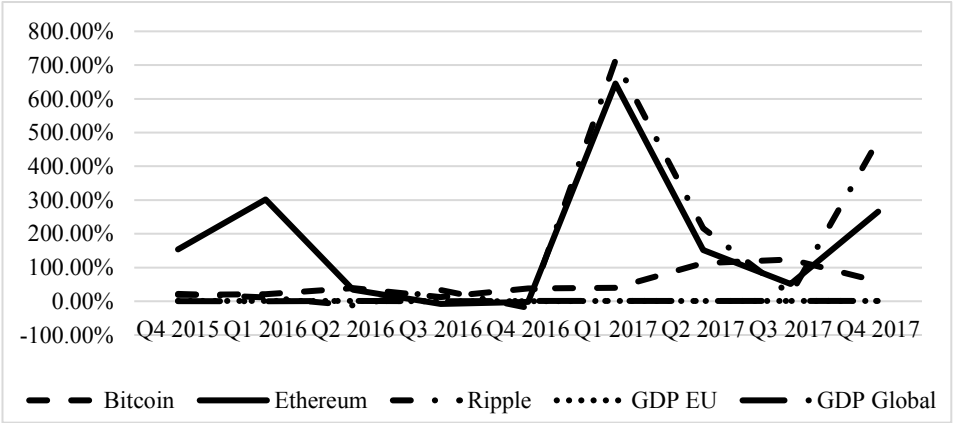
This table shows the calculations of the growth rates of the cryptocurrencies Bitcoin, Ethereum, and Ripple based on their closing price, and the GDP growth rates, covering 26 European countries and the global GDP over a period from Q4 of 2015

until Q4 of 2017. The 26 European countries include Austria, Belgium, The Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, The Netherlands, Norway, Poland, Portugal, The Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey and The United Kingdom.

The results of our computations can be found in table 2. Graph 1 shows are visual representation of the results.

As we can see in table 2 displayed above, both the GDP for the European counties and the global GDP are moving at quite a similar rate. Bitcoin appears to follow a positive trend every quarter, while both Ethereum and Ripple seem to be more volatile. Q1 2017 knows the strongest increase, with Ethereum growing with 645.38% compared to the previous quarter, and Ripple with a growth of 714.04%.

Based on our results displayed in graph 1, we can see that none of the three cryptocurrencies follow the trends of the real economy. Bitcoin appears to be the most consistent in our sample, while both Ethereum and Ripple seem to closely follow each other. As discussed earlier, Q1 2017 shows us a big peak, and Q4 2017 knows a significant increase as well.



Graph 1. Growth rates of the three largest cryptocurrencies and the real economy

Source: Author's calculations based on data provided by Yahoo! Finance and the OECD

This graph shows the growth rates of Bitcoin, Ethereum, and Ripple in percentages, compared to the growth rates in percentages of the global GDP and the GDP that covers 26 European countries.

5. Conclusions

Bitcoin, and other cryptocurrencies, are digital currencies, based on an open source cryptographic protocol, and have a decentralized and unregulated character. They are created with a process called mining, which rewards that offer computing power to the network to solve complex mathematical problems. The technology generated a great deal of innovation and experimentation. However, there is also reason for concern. Initial Coin Offerings (ICOs), for example, seem to be increasing in numbers, but knows several flaws. The most significant flaws are information asymmetry, capital misallocation, weak legal protection for investors, and the potential of systemic risk.

The cryptocurrency markets still seem to be growing, but also here, there are some challenges that should be taken into consideration. While the technology was initially designed for two parties to make transactions without the involvement of a third party, there are cases in which the cryptocurrencies have been used for illegal activities, such as fraud, gambling, black market activities, and money laundering. Another challenge is the legal status of these currencies. While there are some scholars that expect the next wave of regulations will be aimed at financial instruments, there are others that argue that Bitcoin and other cryptocurrencies should not be regulated, since these currencies fall outside of the regulatory provisions under federal banking, money transmission, and securities laws. There are also cases that support cryptocurrencies as an instrument to diversify portfolio risk, but with the remark that these currencies are still in an experimental stage.

We analyzed the growth rates of the three largest cryptocurrencies (Bitcoin, Ethereum, and Ripple) and compared them to the growth rates of a cluster of 26 European countries and the global GDP, indicators for the real economy. While both the GDP indicators move very similarly, we find that none of the cryptocurrencies closely follow these trends. Bitcoin appears to be the closest to the GDP growth rates, while both Ethereum and Ripple show signs of a much higher volatility.

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Financial Inclusion Condition of African Countries

Tough Chinoda[41], Farai Kwenda[42]

Abstract: We assessed the financial inclusion environment and its determinants in Africa. We used the Financial Inclusion index computed through the Principal Component Analysis that is generally acknowledged as the best at estimating the financial inclusion level and the two-step system GMM approach with robust and orthogonal deviation option to study countries for the period 2004 to 2016. We found wide discrepancies in financial inclusion amongst the 49 African countries under study. Only two countries had an average financial inclusion index above 50 percent, and the majority are below 40 percent validating the argument that the African region need immediate intervention. Hence, we concluded that the African region has financial inclusion gaps and is contestable. As such, we recommend, among other things, that policy makers should device measures to ensure an ongoing financially inclusive environment while stimulating other variables which acts as barriers to financial inclusion.

Keywords: Financial inclusion condition; Africa; Financial Inclusion index; Principal Component Analysis

JEL Classification: G21; L10

1. Introduction

The concept of financial inclusion has become the catchphrase for researchers, market practitioners, regulators, policymakers, and other stakeholders. A number of theoretical and empirical studies have reported the significant role of financial inclusion in ensuring economic growth (Gurley & Shaw, 1955; Law & Singh, 2014; Sharma, 2016; Lenka & Sharma, 2017; Adeola & Evans, 2017; Kim, Yu & Hassan, 2018). This has steered more than 50 countries to set formal targets of attaining universal financial access by 2020 and many more countries tasking their supervisory and regulatory agencies with encouraging financial inclusion (Sahay et al., 2015). The African region has progressed well from these efforts, but whether the progress has translated into the much anticipated financially inclusive

[41] PhD Scholar Finance Division, University of KwaZulu-Natal, South Africa, Address: University of KwaZulu-Natal Westview Campus, J Block, Level 4, University Road, Durban, South Africa, Tel.: +263776045609, Corresponding author: toughchinoda@gmail.com.
[42] Senior Lecturer, PhD, University of Swaziland, Address: Swaziland, Tel.: +27749227477, E-mail: kwendaf28@gmail.com.

environment still leaves a lot to be desired. According to Dermiguc Kunt *et al.*, (2015), more than 75 per cent of the adult population in Africa remained unbanked in 2014. The region is also characterised by a wide heterogeneity in account ownership across countries. Whilst 82 percent, 75 percent and 70 percent of the adult population in countries like Mauritius, Kenya and South Africa are respectively banked, only 7 percent have a formal bank account in Burundi, Guinea and Niger (Demirgüç-Kunt et al., 2015).

There is scarcity of information on the condition of financial inclusion across the globe. This according to Lenka and Sharma, (2017) has limited the ability of financial service providers and policy makers to locate where opportunities exist, what is working and what is not working, thereby hindering policy. Musau, Muathe and Mwangi (2018) have contended that the aspirations for development in Africa will be unpacked once issues of financial inclusion are addressed. Then the question is, how financial inclusive are African economies? The purpose of this study is to investigate the financial inclusiveness of African countries. This is imperative since policy makers and regulators have to first know how countries have reacted to existing policies and regulations for them to be able to craft good policies. Our study differs from existing literature in various ways. First, we documented topical financial inclusion trends for 49 African countries by showing the progress from 2004 to 2016 covering almost the entire continent. Second, we focused on comprehensive indicators of financial inclusion making the study unique. Thirdly, unlike most existing studies, we considered both macro and micro-level factors of financial inclusion. This allows the understanding of their importance as contributing factors of financial inclusion.

The rest of the paper is structured as follows. Section 2 reviews theories and empirical literature on financial inclusion. The data and methodology of the study is considered in Section 3. Section 4 presents the results of the study. Section 5 presents the conclusions as well as policy implications of the paper.

2. Concepts and Measurement of Financial Inclusion

There is no consensus over the definition of financial inclusion as differences emanate from the context wherein the term is used, the state of economic development and geographical location of the area. Sarma (2008) defines financial inclusion as a process of ensuring ease access to, availability, and usage of formal financial systems to all members of an economy. In contrast, Amidžić, Massara and Mialou (2014) and Sharma (2016) define financial inclusion as the process of maximising access and usage while minimising involuntary financial exclusions. Therefore, they focus more on access, usage, and barriers, which capture both the demand and supply-side of financial access. World Bank concurred with Sarma

(2008) and defined an inclusive financial system as one that ensures easy access to or use of affordable financial services and products (transactions, credit, savings, payments, and insurance) that meets the necessities of businesses and individuals, conveyed in a responsible and viable manner (World Bank, 2017). Although different definitions of financial inclusion have been put forward, they all seem to concur that financial inclusion ensures easy access to and usage of formal financial services. This study follows the definition by Sarma (2008) and the World Bank (2017) which includes numerous dimensions such as availability, accessibility, and usage, which can be discussed separately. The definition is also measurable and can be easily incorporated into theoretical and empirical work.

For policy makers to understand the concept of financial inclusion and be able to design policies to improve financial inclusion, they require reliable information on the prevailing state of financial inclusion. The information can be used for monitoring and also to deepen understanding around factors of financial inclusion and successively, the effect of policies (Lenka & Barik, 2018). There appears to be no standard method of measuring financial inclusion (Young & Mercado, 2015). The difficulties in differentiating between voluntary and non-voluntary financial exclusion bring about challenges in measuring financial inclusion (World Bank, 2008). Voluntary financial exclusion denotes the population that has the capacity to access financial services, but does not do so voluntarily. This population segment needs to be excluded from financial exclusion estimations, posing measurement challenges.

An early attempt to measure financial inclusion has been made by Honohan (2008) who constructed estimates of the proportional formally banked households and subsequently compared them to inequality and poverty. Using average deposit size, household access and GDP per capita, to calculate the estimates for more than 160 countries, the study found that Latin America and the Caribbean had the highest mean percentages, but countries in Africa and Eastern Europe and Central Asia had the lowest mean percentages. Each of the indicators mentioned above provides useful and important information on financial system outreach of an economy. While used individually, they however fail to offer a comprehensive measure on the inclusiveness of the banking system. The use of singular indicators may correspondingly lead to wrong interpretation of the results on financial inclusion in an economy. A country may be well positioned in one dimension, but not in the other. For instance, in 2015, Zimbabwe had 14.38 branches per 100 000 adults whereas Angola had 11.75 branches per 100 000 adults. On the other hand, Zimbabwe had 81 depositors per 1000 adults whilst Angola had 592 depositors per 1000 adults. Using bank branches per 100 adults Angola ranks lower than Zimbabwe but looking at the other dimension, Zimbabwe ranks lower than Angola within the same year.

Sarma (2008) proposed a multidimensional financial inclusion index on the banking sector outreach using macroeconomic data in an effort to combine meaningfully several indicators, such as availability, accessibility and usage of banking services. Adopting the Human Development Index (HDI) concept on one usage variable and three accessibility variables, Sarma (2008) computed a comprehensive financial inclusion index which is comparable across countries or provinces at a particular point in time. The measure also enforces non-varying weights for each dimension. The measure can also be used to monitor financial inclusion initiatives policy progress in countries over time (Beck et al., 2007) and Honohan (2008). Following Sarma's (2008) method, a number of researchers have also calculated the financial inclusion index for specific countries and examined how it relates to other social factors such as inequality, urbanisation, income, or even literacy (Kumar & Mishra, 2009; Mehrotra et al., 2009; Arora, 2010; Sarma & Pais, 2011; Gupte et al., 2012; Sarma, 2010; 2012; Kumar, 2016). Pal and Chakravarty (2010) improved upon Sarma's method by employing the axiomatic measurement approach to establish how various factors contribute towards inclusion. Cáamara and Tuesta (2014) measured financial inclusion levels at country level using the supply-and-demand information for eighty-two countries. They used a two stage PCA to compute a composite index of financial inclusion. In addition, the global Findex database which was initiated by the World Bank make available indicators of financial inclusion based on a primary survey conducted 148 countries on 150 000 adults during 2011 (Demirgüç-Kunt & Klapper, 2012). Amidžić, Massara, and Mialou (2014) computed a financial inclusion index as a compound indicator of variables in relation to outreach (demographic and geographic penetration), usage (lending and deposit), and quality (cost of usage, disclosure requirement, and dispute resolution).

Following the argument made by Sarma (2008) and Gupte *et al*. (2012), this study constructed a multidimensional index of financial inclusion to measure the level of financial inclusion between countries. The study used several dimensions and current time trend which were omitted in previous studies and tested whether adding more indicators and dimensions to the index makes it more holistic and comprehensive. The index is built across many years (2004–2016) and several countries (49), a time-series estimation, which, to the best of the researcher's knowledge has not been done before. This study also contributed to literature by constructing a unique financial inclusion index and combining the normalised weights from Camara and Tuesta's (2014) principal component analysis with Sarma's (2008) multidimensional approach to address the weaknesses of each methodology.

3. Methodology

An inclusive financial system reduces poverty and drives economic growth (Sharma, 2016). This suggests that for African countries to tap its potential for growth, its

economies should have enhanced financial inclusion. It has been argued that developmental aspirations in Africa will be unlocked once issues of financial inclusion in Africa are addressed. Then the question is how financially inclusive are African economies?

3.1. Model Specification

We computed a new index of financial inclusion by combining the Sarma's (2008) and Camara and Tuesta's (2014) approaches to overcome the weaknesses of each methodology. Like Sarma (2008), we used usage, access, and availability as dimensions of the financial inclusion index. We computed the indicator for each dimension as:

$$\wp_{i,d} = \frac{\varkappa_{i-m_i}}{M_{i-m_i}} \ldots\ldots (1)$$

Where $\varkappa_i$ is the value of indicator i, m_i is the minimum (lowest) value of indicator *i*, M_i is the maximum (highest) value of dimension *i*. $\wp_{i,d}$ is the standardised value of indicator *i* with d being the dimension. We followed the footsteps of Camara and Tuesta (2014) in using PCA in aggregating each indicator to a dimension index. We denotes λ_k (*k* = 1… *p*) as the k^{th} eigenvalue, subscript *k* is the number of principal components that also matches with the number of standardised indicators *p*. we assumed that $\lambda_1 > \lambda_2 > \cdots \lambda_p$ and denote P_l (*k* = 1… *p*) as the l^{th} principal component. Each dimension index was derived in line with the weighted averages:

$$\mathfrak{H}_d = \frac{\sum_{k,l=1}^{p} \lambda_k P_l}{\sum_{l=1}^{p} \lambda_k} \ldots\ldots (2)$$

Where $\mathfrak{H}_d$ is dimension *d* index and $P_l = \Re\lambda_k$. λ_k signifies the variance of the principal component (weights) and $\Re$ is the indicators matrix. Following Camara and Tuesta (2014), we also took into account 100 percent of the total variation in the indices of dimensions to avoid dumping information that could precisely estimate the overall financial inclusion index of a country. Having established the dimension indices, we ran another principal component analysis as in Equation 3 below to compute the dimension weights for the overall financial inclusion.

$$FII_i = \frac{\sum_{k,l=1}^{p} \lambda_k P_{li}}{\sum_{l=1}^{p} \lambda_k} \ldots\ldots (3)$$

Where FII_i is the aggregate financial inclusion index for country *i*. $P_l = \Re\lambda_k$. λ_k is the variance of the k^{th} principal component (weights) and $\Re$ is the dimensions matrix. Decreasing weights were assigned to each component and we also account for 100 percent of the total variation in the FII. The above equation can also be represented as:

$$FII_i = \omega_1 \mathfrak{H}_{1k} + \omega_2 \mathfrak{H}_{2k} + \omega_3 \mathfrak{H}_{3k} \ldots\ldots (4)$$

Where ω represents the weights obtained from PCA and $\mathfrak{H}_i$are the dimensions. Equation 4 above shows that the financial inclusion index for the sampled size is a weighted average of individual dimensions.

We followed the footsteps of the OECD's handbook in constructing composite indicators of financial inclusion. We began with data selection followed by an identification and treatment of missing data; multivariate analysis; normalisation; aggregation and weighting before linking the index to other variables respectively. A PCA was performed for both access and usage indices to examine the statistical balance and importance of the indicators used for the index. Given that the indicators are not expressed using the same scales, we used the Min-Max method to normalise the data thereby making the indicators comparable. The Factor Analysis was later used to allocate the weights for the singular indicators of the indices before aggregating the indices. Finally, we related the index to other specific factors, so as to ascertain linkages through regressions. Therefore, we combined together time series data of the sampled cross-sectional countries in Africa using the generalised method of moments (GMM). The benefits offered by the technique to the study justify the choice of panel data analysis.

3.2. Generalised Method of Moments

The application of the regression of the link between financial inclusion and other determinants in Africa banks is done using the GMM regression. The conventional estimators of dynamic panel data like; pooled OLS, first difference, and generalised least squares are inept in handling dynamic panel bias, thus the proposed use of instrumental variables to alleviate endogeneity issues in the lagged endogenous variables. The GMM is free from normality and has greater assumptions of data generating process and adaptability in the presence of lagged variables. The estimation model is based on Arellano and Bond (1991) and Arellano and Bover (1995) GMM which is considered more applicable for unbalanced panels by Roodman (2006).This allows the application of the economies specific variables that drive financial inclusion while controlling for various macroeconomic variables.

Financial institutions normally expand their service provision if there exists a significant market for their product. This study used population size as a proxy for market size in line with Beck and Feyen (2013). A larger population size is expected to enhance financial inclusion as a result of scale effects, which potentially give rise to efficient service provision in bigger economies than smaller ones, whose population may be less urbanised and/or more highly dispersed (Beck & De la Torre, 2008). The variable is expressed in logarithm form in the model estimation. Financial inclusion is expected to increase with an increase in population density and size. Financial institutions can easily accumulate savings when potential depositors have easy access to them. As population size increases there exists greater chances of individuals and businesses making savings, deposits and insurance to cushion

against risk. This study also used population size and density as determinants of financial inclusion consistent with Beck and Feyen (2013). The relationship between inflation and financial inclusion could be either direct or indirect. Access to bank accounts by the poor can cause them to invest the money and not use it leading to curve inflation. Inflation can also affect money supply within an economy thereby reducing financial inclusion. The level of income is also expected to positively contribute towards financial inclusion. Higher income levels may encourage individuals and firms to save and insure their assets against risk thus increasing financial inclusion levels. Below is an expression of the estimable form of the model;

$$FII_{it}=\delta_{it} + \lambda \; FII_{it-1} + \Psi_{it} \; \sum \chi_{i\,t} + \varrho_{i\,t} \sum \aleph_{i\,t} + \upsilon_{i,t} \ldots\ldots (5)$$

Where the subscripts it represents the country and year respectively. FII measures the one period lagged financial inclusion, δ is the intercept, whilst λ, Ψ and ϱ are coefficients. $\sum \chi$ represent the country specific variables that drives financial inclusion, these are; population density, population size, broad money, and financial development. The macroeconomic variables considered are the level of income measured by GDP per capita, inflation rate represented by $\sum \aleph_i$ with υ as the error term.

3.3. Data

To compute the degree of financial inclusion of African countries, we used a panel of 49 countries from the African region sourced over the period 2004-2016. The choice of period is informed by the availability of data on the World Development Indicators (WDI) Databases, which provides data for 189 countries across the globe. The WDI Database is much broader and contains significant details on financial inclusion and other variables. In addition, it facilitates better comparison across countries. However, the major limitation of this database is that of missing data on several countries. Countries with issues on data integrity were also excluded.

3.4. Empirical Results

Table 1 below provides a summary of the indicators of financial inclusion used in this study. The data shows the presence of great discrepancies between various indicators of financial inclusion. For example, the mean number of ATMs per area in Africa is only 12 which differs greatly from the East Asia and Pacific and Middle East which have 215 and 125 respectively. This figure is also far from the average World figure of 75, thereby providing evidence why financial exclusion is high in Africa. Generally, the African region ranks lowest on almost all indicators of financial inclusion, except on branches of commercial banks per 1 000 km^2 and the number of ATMs per 1000 adults where it is ranked second lowest and also the indicators of financial inclusion in the African region rank far below world average. The region also ranks below average, even when compared to other countries in the same income groups. Numerous studies also allude to the same (Demirgüç-Kunt,

Beck & Honohan, 2008; Beck et al., 2007). On average the East Asia and Pacific continent, Europe and Central Asia have recorded the highest levels of financial inclusion over the period under review. Although financial inclusion has been contemplated as a universal challenge, the situation in Africa requires immediate action. These large discrepancies may be as a result of a number of political or socio-economic reasons like regime durability and transition, levels of autocracy, executive and legislative electoral competitiveness, checks and balances, gender, age, bank concentration in rural areas, but it is still interesting to realise that these differences and are widespread in almost all the variables. Both policy makers and private sectors should make a united effort towards improving financial inclusion within Africa.

3.4.1. Pearson Correlation and Multi-collinearity Test

Correlation analysis helps in tracing the existence of multi-collinearity within the econometric model. Table 2 below presents the empirical correlations matrix between the indicators of financial inclusion under study. As shown in Table 2, a strong significant correlation exists among the financial inclusion indicators. The 0.96 significant correlation coefficient between ATMs per 1000 km^2 and bank branches per 1000 km^2 indicates a near perfect multi-collinearity scenario. It simply indicates that ATMs per 1000 km^2 and bank branches per 1000 km^2 have a 0.96 significant positive relationship. The findings also indicate 0.87 and 0.96 significant positive correlation between ATMs per 1000 km^2, outstanding loans as a percentage to GDP and bank branches per area. The variable ATMs per 1000 km^2 was dropped to deal with the problem of multicollinearity

Table 1. **Summary Statistics-Indicators of Financial Inclusion**

Variable	World			EAP	LAC	ECA	ME	SA	NA	Africa	LICs
	Mean	Max	Min	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Outstanding deposits with comm. banks (% of GDP)	53.9	496.3	1.2	72.2	47.7	58.8	63.6	43.8	60.3	31.5	28.2
ATMs per 1,000 km2	71.8	3963	0.03	214.2	36.9	84.3	124.2	36.0	18.4	8.7	13.6
ATMs per 100,000 adults	60.8	248.6	0.03	47.2	40.9	67.6	47.6	8.3	108.3	10.2	10.4
Branches of commercial banks per 1,000 km2	30.8	1419	0.01	75.7	19.1	54.5	30.5	31.8	5.5	8	8.6
Branches of commercial banks per 100,000 adults	18.8	287.2	0.1	16.3	28.1	34.9	17.4	9.4	29.5	6.3	12.8
Borrowers at commercial banks per 1,000 adults	198.9	1233	0.01	258.4	286.5	306.8	121.6	67.6	N/A	52.6	90
Commercial banks deposit accounts per 1,000 adults	1119.6	7000	1.3	1515	963.4	2031	1331.2	642.6	N/A	400.9	560
Depositors with commercial banks per 1,000 adults	675.5	3388	0.4	765	679.6	1108	781.3	456	N/A	250.7	404.3
Commercial banks loan accounts per 1000 adults	307.9	1854	0.4	206.8	311.1	601.8	402.7	83.4	N/A	82.5	119.3
Number of countries	181			24	32	49	20	8	2	49	35

Source: Financial Access Survey-International Monetary Fund (2017)

Key: EAP- East Asia and Pacific, ME- Middle East, LAC- Latin America and Caribbean, LICs- Low Income Countries, SA- South Asia, ECA- Europe and Central Asia, NA- North America

Table 2. Correlation Financial Inclusion Indicators

	ATMs per Pop.	ATMs per area	Bank Branches per pop.	Bank Branches per area.	Outstanding Loans(% GDP	Bank Accounts per pop.
ATMs per pop.	1.0000					
ATMs per area.	0.6899*	1.0000				
Bank Branches per pop.	0.6432*	0.3115*	1.0000			
Bank Branches per area	0.5716*	0.9584*	0.2427*	1.0000		
Outstanding Loans (% GDP)	0.7407*	0.8756*	0.5520*	0.8902*	1.0000	
Bank Accounts per pop.	0.7676*	0.6606*	0.6415*	0.5490*	0.7472*	1.0000

Source: Authors' calculations from World Bank Development Indicators (2017)

Standard error in parentheses; * $p < 0.05$

3.4.2. Trends in Indicators of Financial Inclusion

Although the African region ranks lowest in all financial inclusion indicators, the data suggest that, there have been a steady increase over the years, in basically all the indicators as shown in Figure 1 below. Sarma (2008) cited access to banking services as the first aspect of financial inclusion. All the indicators, that is, ATMs per 100 000 adults, ATMs per 1 000 km^2, bank branches per 100 000 adults, branches of commercial banks per 1 000 km^2 have shown an increase as highlighted in Figure 1. There were 7 ATMs per 1 000 km^2 in 2004; no increase from 2004 to 2005; increased from 7 to 9 in 2009 then to 12 in 2013 before increasing by slightly less than 50 percent to 17 in 2016. There has been a tremendous improvement in increase of ATMs per 100 000 as they increased by 100 percent from 2004 to 2009; no increase from 2009 to 2011 and increased by 70 percent from 2011 to 2016. Despite an increase in percentages; the number of ATMs per population and per area is still very low reaching 17 in 2016 thereby justifying why financial inclusion is low in Africa. Access to financial services measured by bank branches per 1 000km^2 increased by approximately 150 percent from 4.1 in 2004 to 10.4 in 2016. Bank branches per 100 000 adults improved from 4.3 in 2004 to 9.41 in 2016 an increase of slightly more than 100 percent. The number of commercial bank branches abruptly increased between 2007 and 2008, which is the same period the World Bank published the first global financial inclusion report which gave emphasis to financial inclusion and this could have stirred the need for increased financial inclusion for countries in Africa, as suggested by the data. Generally, all the dimensions show that financial inclusion has been improving from 2004 to 2016. Despite the increase in access indicators, Africa has a long way to go with respect to financial inclusion indicating that access alone is not enough but should be coupled with usage and quality of services. Bhattacharya and Wolde (2010) established that low access to

finance is one of the leading factors that have contributed to lower economic growth in the Middle East and North Africa (MENA) compared to other regions.

3.4.2.1. Access Indicators

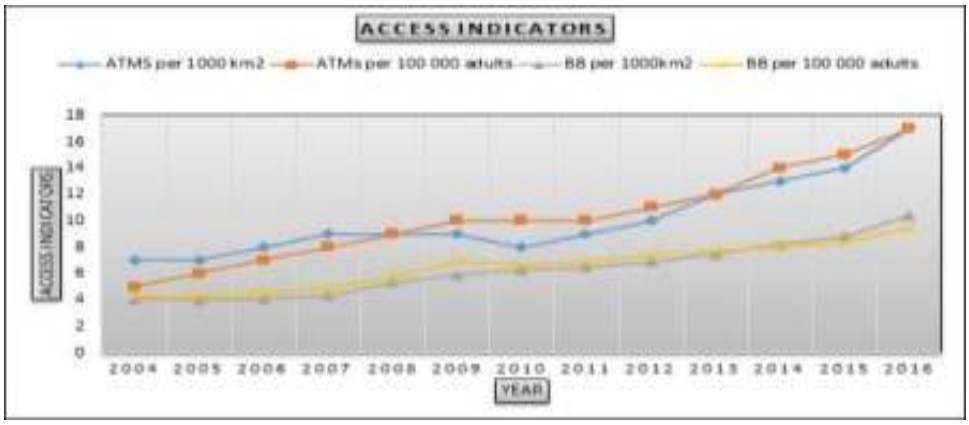
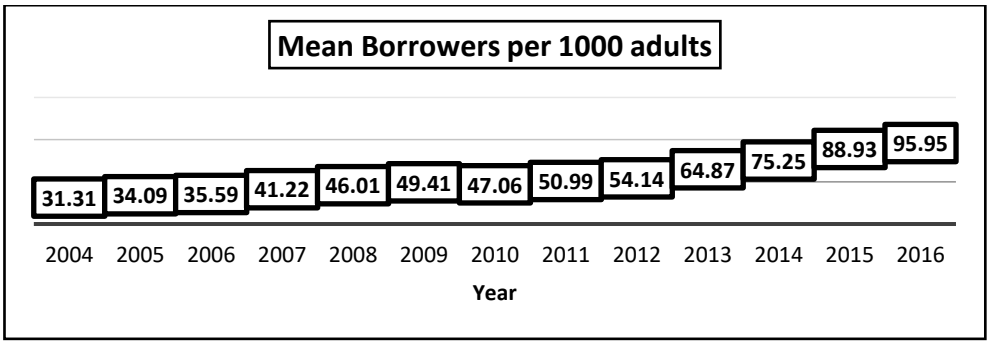


Figure 1. Trend in Access to Finance Indicators

Source: World Development Indicators Database, World Bank (2017)

3.4.2.2. Penetration Indicators



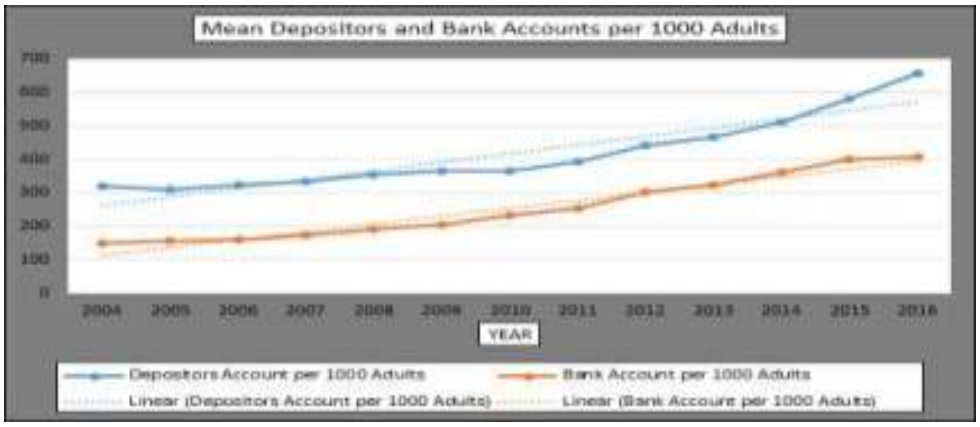


Figure 2. Trend in Penetration Indicators

Source: World Development Indicators Database, World Bank (2017)

As much as penetration is concerned, it can be seen that generally the number of deposits accounts with commercial banks have increased by more than 100 percent from 2004 to 2016. From 2004 to 2005, the number of accounts decreased from 322 to 309 but gradually increased between 2005 and 2016. This might have been caused by closure of inactive bank accounts due to requests by central banks regulators. The loan accounts per 1 000 adults which is another indicator of penetration shows an increase of more than 200 percent from 2004 to 2016. Loan accounts only decreased in 2010 possibly due to the global financial crisis and continued to increase until 2016. Unlike Ndlovu (2017) and Yorulmaz (2016), we included bank accounts per 1000 adults which is another indicator of penetration. Generally, the number of bank accounts has increased by more than 250 percent from 151 in 2004 to 407 in 2016.

3.4.2.3. Usage Indicators

Figure 3 below shows the usage of financial services. It is a significant dimension of financial inclusion as it compares outstanding loans and deposits with GDP. In line with Sharma (2016), the indicators reflect an important contribution of commercial banks in Africa to the economic growth as both outstanding loans and deposits with commercial banks have increased from 2004 to 2016.

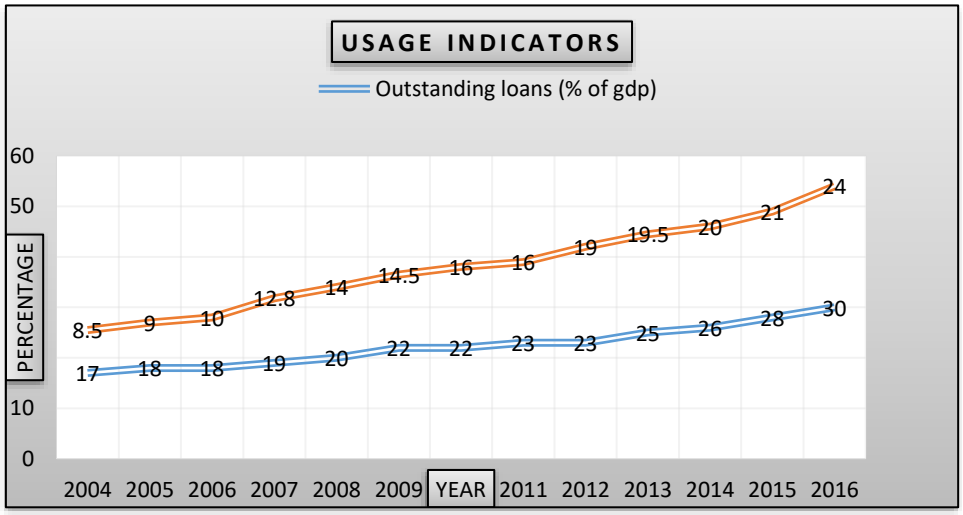


Figure 3. Trend in Usage Indicators

Source: World Development Indicators Database, World Bank (2017)

The period 2010 and 2011 saw the number of borrowers largely unchanged compared to a striking element within the same period where a sharp increase in loan accounts was witnessed. This action increases the number of loan accounts without growing the number of borrowers. This may also signal customers' credit kite flying where multiple loan accounts are opened by a single customer. However, the number of loan accounts evens out between 2011 and 2012 as they remain fairly stable, whilst there was a notable increase in the number of borrowers in the same period, hence reversing the anomaly thus validating the inclusion of both usage and access indicators in capturing financial inclusion. Generally the usage trend is increasing.

3.4.2.4. Regional Comparison-Indicators of Financial Inclusion

(a) Access Indicators

African countries should come up with strategies to overcome the barriers that hinder people from accessing formal financial services. The region has the lowest number of ATMs per area and per capita, with 9.83 ATMs per area and 10.29 ATMs per capita compared to other regions such as East Asia and Pacific with 214 ATMs per area and North America with 199 ATMs per capita (World Bank, 2017).

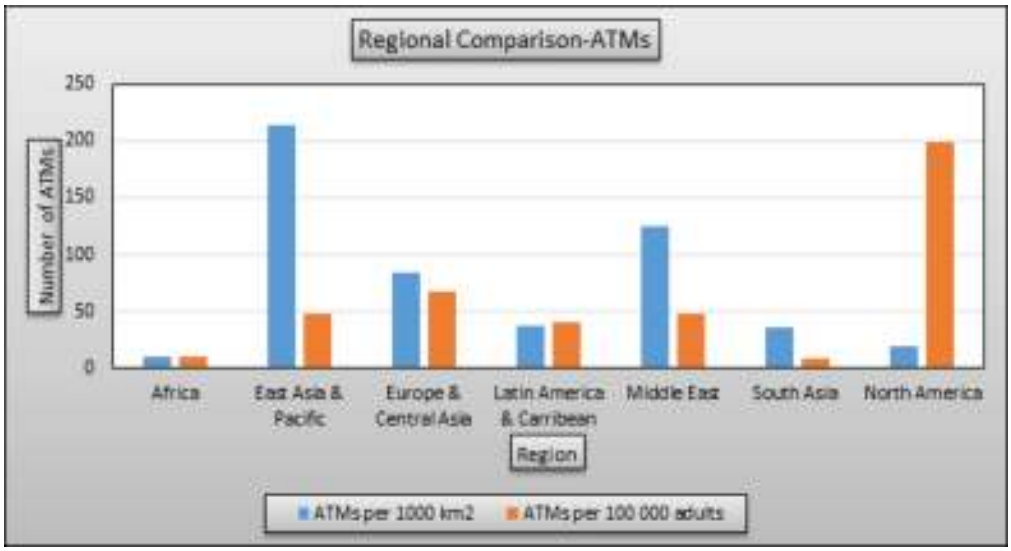
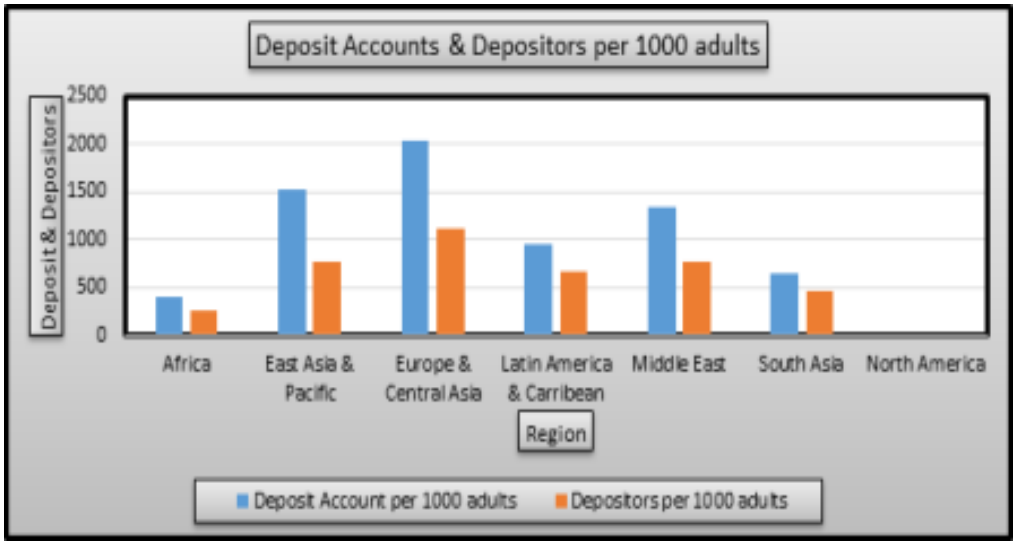


Figure 4. Trend in Access Indicators (Regional)

Source: World Development Indicators Database, World Bank (2017)

b) Penetration Indicators



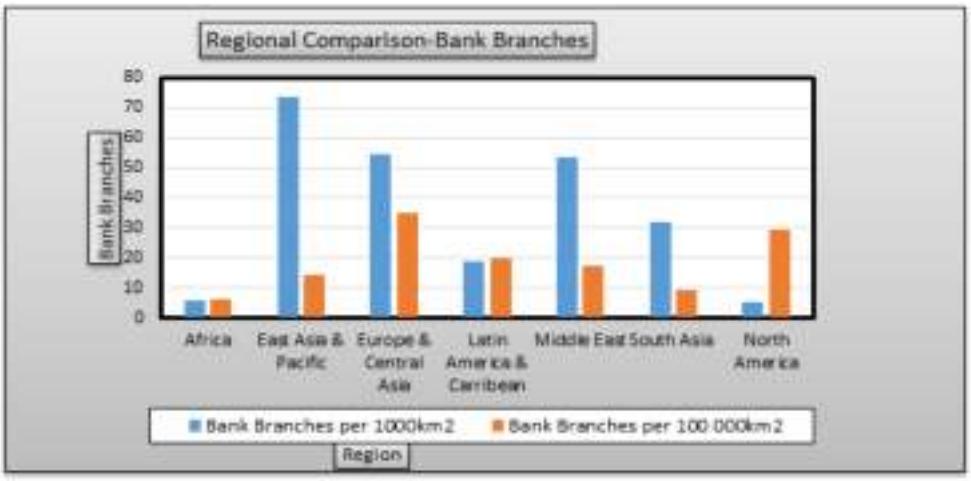


Figure 5. Trend in Penetration Indicators (Regional)

Source: World Development Indicators Database, World Bank (2017)

This graph shows a low penetration rate in Africa as compared to other regions. The region had 6 bank branches per area and per capita compared to East Asia and Pacific with 74 branches per area and North America with 30 branches per capita. Presumably, the low bank branch penetration in Africa could be due to difficulties in achieving minimum viable scale in low-income areas and sparsely populated areas, though technological innovations is rising to meet that challenge (Beck & Cull, 2013). The trend is also the same for depositors' accounts and deposits per 1000 adults.

Usage Indicators

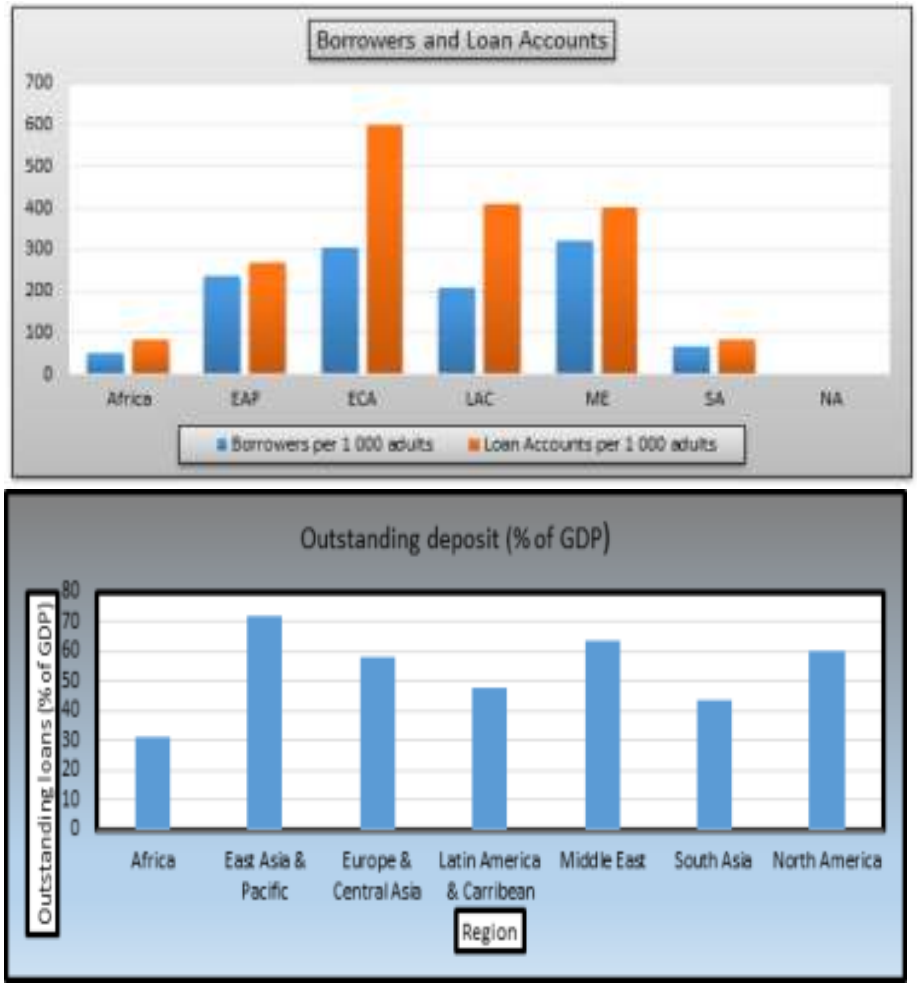


Figure 6. Trend in Usage Indicators (Regional)

Source: The World Bank-Global Financial Development Database June 2017

As shown above and below, the region lags behind all global regions, in all dimensions of financial inclusion.

3.4.3. Financial Inclusion Index Results

Table 3 shows the summary statistics of the financial inclusion indices for the African countries for the period 2004-2016. This summary shows some remarkable features of the nature of financial inclusion in the African region. We found that the average financial inclusion in Africa ranges between 0 in 2011-2013 and 0.88 in 2016 as portrayed by the maximum and minimum values. The implication is that despite the fact that some countries have low financial inclusion levels, others have

high degrees of financial inclusion supporting the view that Africa is characterised by severe financial inclusion disparities (Ndlovu, 2017). However, despite the existence of large disparities in financial inclusion within Africa, their mean values are close to the standard deviation than to the minimum value. Two possible implications can be construed from this. Firstly, it is implied that there are very few countries with high financial inclusion levels. This is consistent with literature; using the Boone indicator, the study found that banking sectors in Africa are somehow concentrated. Secondly, the closeness of the means to the standard deviation suggest some kind of financial inclusion within the region as the minimum values are near to zero which meant a financially exclusive region. The standard deviation confirms this suspicion providing credibility to the conclusion of a region characterised by low levels of financial inclusion. The descriptive statistics also show severe gaps between the maximum values and minimum values thereby confirming the presence of wide variations in all sample indicators across economies. These figures index the existence of severe financial exclusion within the African region.

Table 3. Financial Inclusion Index Summary Statistics-Africa

Year	Mean	Standard Deviation	Maximum	Minimum
2004	0.13	0.16	0.80	0.01
2005	0.14	0.17	0.84	0.01
2006	0.10	0.17	0.17	0.00
2007	0.14	0.18	0.82	0.01
2008	0.15	0.18	0.83	0.01
2009	0.16	0.18	0.78	0.01
2010	0.16	0.18	0.77	0.01
2011	0.16	0.18	0.75	0.00
2012	0.16	0.18	0.79	0.00
2013	0.16	0.19	0.86	0.00
2014	0.17	0.18	0.86	0.02
2015	0.17	0.18	0.87	0.03
2016	0.17	0.19	0.88	0.02
Average	0.15	0.18		

Source: Author's Estimation (2018)

3.4.4. Financial Inclusion Analysis

Figure 7, Figure 8, and Table 4 portrays the financial inclusion index results, giving a picture of the analysis of the financial inclusion trend in the regions between the periods 2004 to 2016. Precisely, Figure 7 indicates the country analysis of financial inclusion providing a pictographic view of the descriptions of financial inclusion. It serves to say that the graph clearly shows wide discrepancies in financial inclusion among the countries of the region, with Chad and Guinea having the least at 0.01 and Seychelles and Cape-Verde with the highest at 0.82 and 0.63 respectively. Over the period 2004 to 2016, only Cape-Verde and Seychelles had an average financial inclusion index above 50 percent as shown in Figure 7, and the majority falls below

40 percent. This validates further the argument this study raised earlier that, the African region is characterised by very high levels of financial exclusion and also confirms the argument that most African countries need immediate intervention although financial exclusion is a global concern. These findings are also consistent with those obtained by Ndlovu (2017) who used less indicators and data span in his study. Mauritius was however excluded from the sample due to unavailability of data on bank accounts per 1000 adults; however, it had higher values for the other indicators of financial inclusion. The average index of financial inclusion is 0.15, which would suggest that the average financial inclusion level is at 15 percent based on the index. Figure 8 portrays the evolution of year-on-year access to finance in the African region from 2004 to 2016. The indices were highest in 2016 at 0.17 and least in 2004 at 0.13. The study noted an upward trend in financial inclusion from the graph over the period as shown by the trend line. This upward movement continued between 2004 and 2016.

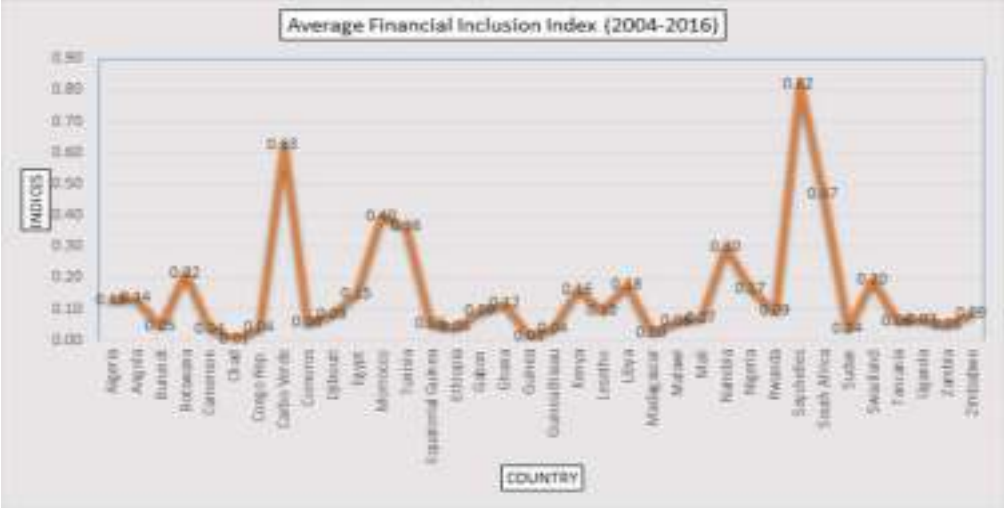


Figure 7. Average African Financial Inclusion Index by Country (2004-2016)

Source: Own Calculations from International Monetary Fund - Financial Access Survey (2017)

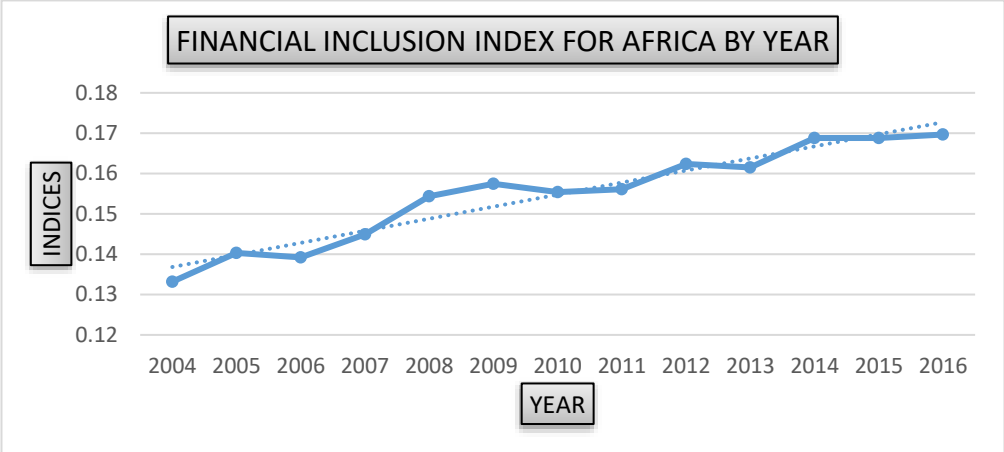


Figure 8. Average African Financial Inclusion Index by Year (2004-2016)

Source: Own Calculations from International Monetary Fund - Financial Access Survey (2017)

Table 4 below indicates the rankings of African countries depending on their FII values. Borrowing from Sarma (2008), those countries that fall within the 0-0.3 range are classified as low financial inclusion, those from 0.3-0.5 are classified as medium financial inclusion, and those from 0.5 to 1 are classified as high financial inclusion. As shown in Table 5.4, Seychelles, Cape Verde and South Africa have the highest overall FII values over the period 2004-2016. On the other end of the spectrum, Chad, Guinea and Madagascar had the lowest overall rank of FII at most of the years during these periods. The overall index shows that only Seychelles falls within the high level FII category. In addition, the medium level FII category varies across the years. Thus, there were only three countries in this category, in 2004, while there were only four in 2010 and 2016.

More than 95 percent of the African countries falls within the low financial inclusion range thereby justifying the call for immediate action in Africa. The FII values that the study computed across the African countries is consistent with other studies which concluded that financial exclusion is high in Africa (Ndlovu, 2017). The study computed the mean FII by aggregating the index of financial inclusion values for each country between 2004 and 2016 and dividing by 13 which is the time interval between 2004 and 2016. The ranking of countries is done according to the alphabetical order of the sampled countries.

Table 4. Ranking of Countries according to Financial Inclusion Index

Country	2004	Ranking	2005	Ranking	2006	Ranking	2007	Ranking	2008	Ranking	2009	Ranking	2010	Ranking
Algeria	0,13	10	0,14	10	0,13	11	0,14	11	0,13	12	0,14	11	0,17	12
Angola	0,03	29	0,06	13	0,07	13	0,09	14	0,10	14	0,11	14	0,14	13
Burundi	0,00	36	0,01	36	0,01	37	0,01	38	0,01	38	0,04	28	0,01	37
Botswana	0,22	6	0,21	7	0,21	7	0,27	6	0,25	7	0,24	7	0,22	8
Cameroon	0,03	29	0,04	17	0,04	18	0,04	19	0,04	19	0,04	20	0,04	18
Chad	0,01	31	0,01	20	0,01	20	0,01	21	0,01	22	0,01	23	0,01	20
Congo, Rep.	0,01	31	0,01	20	0,01	20	0,02	20	0,02	21	0,02	22	0,03	19
Cape Verde	0,66	2	0,69	2	0,73	2	0,79	2	0,82	2	0,87	2	0,89	2
Comoros	0,04	27	0,03	18	0,03	19	0,03	20	0,03	20	0,04	29	0,05	17
Djibouti	0,09	26	0,01	36	0,07	17	0,08	17	0,07	16	0,09	15	0,10	13
Egypt	0,20	8	0,20	8	0,17	9	0,16	10	0,15	10	0,13	12	0,12	12
Morocco	0,29	3	0,17	9	0,13	9	0,16	9	0,17	4	0,41	4	0,43	4
Tunisia	0,17	4	0,18	4	0,17	4	0,18	4	0,17	4	0,17	5	0,18	5
Equatorial Guinea	0,03	29	0,03	18	0,04	18	0,04	19	0,05	18	0,07	18	0,07	17
Ethiopia	0,06	26	0,06	13	0,07	17	0,09	18	0,05	18	0,04	28	0,04	18
Gabon	0,08	24	0,09	13	0,08	14	0,08	15	0,08	17	0,08	16	0,07	17
Ghana	0,11	22	0,12	11	0,11	12	0,12	12	0,12	13	0,12	13	0,10	13
Guinea	0,01	31	0,01	20	0,01	20	0,01	21	0,01	22	0,01	23	0,01	20
Guinea Bissau	0,01	31	0,01	20	0,01	20	0,02	20	0,01	20	0,04	28	0,03	19
Kenya	0,10	23	0,10	12	0,10	13	0,11	13	0,14	11	0,17	10	0,16	9
Lesotho	0,08	24	0,10	12	0,10	13	0,09	14	0,08	15	0,08	16	0,09	14
Libya	0,21	7	0,19	9	0,18	8	0,17	9	0,16	9	0,18	8	0,17	10
Madagascar	0,03	29	0,03	18	0,03	19	0,03	20	0,03	20	0,03	21	0,04	18
Malawi	0,04	28	0,05	16	0,07	17	0,06	17	0,08	17	0,07	17	0,07	17
Mali	0,07	25	0,07	14	0,07	15	0,07	16	0,07	16	0,08	16	0,06	16
Namibia	0,21	7	0,22	6	0,22	6	0,22	7	0,28	6	0,30	6	0,31	7
Nigeria	0,17	21	0,12	11	0,11	12	0,10	10	0,20	8	0,24	7	0,18	8
Rwanda	0,02	30	0,04	17	0,03	19	0,04	19	0,10	13	0,10	14	0,10	13
Seychelles	0,80	1	0,84	1	0,82	1	0,82	1	0,83	1	0,78	1	0,77	1
South Africa	0,41	3	0,44	3	0,45	3	0,47	3	0,51	3	0,52	3	0,50	3
Sudan	0,01	31	0,02	30	0,04	18	0,04	19	0,04	19	0,04	28	0,04	18
Swaziland	0,18	18	0,21	7	0,23	5	0,23	5	0,22	5	0,20	5	0,19	6
Tanzania	0,06	26	0,06	13	0,06	16	0,06	17	0,07	16	0,06	18	0,07	17
Uganda	0,05	27	0,06	15	0,06	16	0,06	17	0,08	15	0,07	17	0,07	15
Zambia	0,03	29	0,04	17	0,04	18	0,05	18	0,07	16	0,06	18	0,05	17
Zimbabwe	0,14	20	0,14	10	0,14	10	0,09	14	0,08	17	0,08	16	0,07	17

Source: Own computation from World Development Indicators Database

Source: Own computation from World Development Indicators Database

3.4.5. GMM Results

The financial inclusion index computed through the PCA as a proxy of financial inclusion (FII) is regressed against total population, financial development index, income (GDP per capita), inflation, broad money (Money), population density and proportion of domestic credit provided by financial sector to GDP (Credit). The regression results using Arellano-Bond and Arrelano-Bover/Bundell-Bond system dynamic panel-data and the economic implications of the regressions of significant variables are shown in Table 5 and 6 respectively.

Table 5. GMM Regression Result

Dependent Variable: FII	**Arrelano-Bond GMM Model (FII)**	**Arrelano-Bover/Bundell-Bond**
Lagged FII p-Value	0.121*** (0.000)	0.549*** (0.000)
Financial Development Index p-Value	0.062*** (0.004)	0.189*** (0.000)
Money (M2GDP) p-Value	-0.0001 (0.184)	-0.0005 (0.332)
Inflation	-0.0385***	-0.0426***

p-Value	(0.000)	(0.000)
Population (log Pop) p-Value	-0.022 (0.149)	-0.101*** (0.000)
Population Density p-Value	0.0001 (0.184)	-0.00001 (0.617)
Income (log GDP per capita) p-Value	0.024*** (0.000)	0.059*** (0.000)
Credit (% GDP) p-Value	0.003 (0.128)	0.002 (0.294)
Constant	0.118 (0.239)	0.488*** (0.000)
Observations	360	395
R-Squared		
Wald (Chi^2)	6374.99	10732.83
Prob>F/Chi^2 =	0.000	0.000
Sargan Test	0.130	0.285
AB Test	0.516	0.702

Source: Author's Estimation (2018)

Standard error; ** $p < 0.05$, *** $p < 0.01$,

A glance at the results showed that the economic implication of the lagged value of financial inclusion (L.FII) is positive and strongly significant indicating that financial inclusion in the past period has a significant effect in certifying financial inclusion in the current period and is persistent over time. Statistically significant lagged FII estimates mean that lagged financial inclusion has a significant impact on contemporary financial inclusion and would hence indicate a "catch-up effect". A zero coefficient implies a full catch-up, and a between zero and one coefficient would denote partial catch-up, which is the case in the models of this study. Since the lagged financial inclusion estimates falls between zero and one, it implies that countries with undersized financial inclusion have a propensity to recover most of any financial inclusion deficit incurred in the past. In fact, the lagged financial inclusion has an impact of up to 0.42 percent on the current financial inclusion of the African continent. The study also found financial development to be positive and strongly related to financial inclusion. This is also in line with the theoretical expectations and coefficient of correlation obtained earlier on. An increase in financial development also increases financial inclusion. In fact, the economic implication indicates that a one standard deviation increase in financial development increases financial inclusion by 4.3 percent in line with Ndlovu (2017) and Lenka and Barik (2018). The economic implication of the outcome of the regression of money supply (M2GDP) and financial inclusion shown in Table 6 shows that a one standard deviation increase in money supply result in a fall of 7 percent in financial inclusion. This could have been caused by too much money that is circulating in the informal financial system. For example, more than 40 percent of the population in

Africa set aside or saves money regularly, but only half of them do so in the formal financial system (Demirgüç-Kunt & Klapper, 2012).

Table 6. Economic Impacts of Regression Results

Dependent Variable: FII	FII
Financial Development Index	0.0426
Money (M2GDP)	-0.0696
Inflation	-0.3087
Population (log Pop)	-0.4011
Population Density	-0.0068
Income (log GDPPC)	0.1609
Credit (% GDP)	0.2117

Source: Author's Estimation, 2018, from Table 3.8 with Economic

$$\text{Impact} = \frac{SD\ of\ independent\ variable * R.C\ of\ independent\ variable}{SD\ of\ dependent\ variable}$$

Where R.C is regression coefficient and S.D is standard deviation

The study found a significant inverse relationship between inflation and financial inclusion. The study found the economic implication of inflation being negative as a one standard deviation increase in inflation significantly reduced financial inclusion by 31 percent. The inverse relationship signifies that economic volatility and price increase lower the level of financial access. Since inflation erodes the time value of money, lenders normally increase interest rates to compensate for the loss. The significant inverse relationship signifies that an increase in financial inclusion reduces inflation which is at times used to proxy the effectiveness of the monetary policy in Africa. The implication is that, it is vital to enhance the drive for financial inclusion at basic level, since financial inclusion stabilises prices and curbs inflation which is vital for economic growth. Also, headline inflation is the most relevant for the conduct of monetary policy in an economy with a low level of financial inclusion, but as more consumers are on board, central banks may focus more on core inflation to improve welfare. This is in keeping with Hung (2016) who found the same results in his study. Similarly, the study found a significant inverse association between population and financial inclusion and also between population density and financial inclusion though the effect was insignificant. The result of the study shows a significant inverse relationship between population size and financial inclusion. This is consistent with Allen *et al*. (2014) despite their coefficient being insignificant. This shows that countries with large population size are not immune to challenges in enhancing financial inclusion. This could be a result of high dependency from the high population, which may be caused by negative externalities like unemployment, reduced savings and poverty, which reduces the demand and supply of financial services. Beck and De la Torre (2007) found that most African countries are characterised by a lower bankable population than the banked. This suggests the

implementation of policies aimed at improving financial inclusion by focusing on increasing the bankable population, by either taking advantage of economies of scale or by encouraging banks to expand services to the unbanked or by liberalising the market to increase foreign market and/or non-bank participation.

The study also found a significant positive economic impact of the level of income on financial inclusion. This also reiterates the literature rooting for levels of income as the fundamental reasons for financial inclusion (Chithra & Selvam, 2013; Tuesta, et al., 2015; Fungáčová & Weill, 2015). This shows that countries with high income per capita have financial systems which are highly inclusive. Countries with low income levels have comparatively lower literacy rates and poorer connectivity and appear to be more financially exclusive. High income is expected to be correlated with higher usage of formal credit and accounts. It is thus vital for policy makers to craft and implement policies that facilitate productive employment thereby boosting income and increased use of financial services to spur economic growth. Financial status of people always plays a fundamental role in accessing financial services. Poor people with low income face challenges in accessing financial services. Finally, the economic implication of credit availability on financial inclusion is significant and positive. This was anticipated and could be as a result of variables such as lack of credit information and collateral amongst others which extremely subdue credit in Africa. This result contradicts Chithra and Selvam (2013) who found a significant association between credit and deposit penetration and the level of financial inclusion in India. Policy makers should come up with credit registry or other means of identifying credit worthy customers such as 'know your customer' so as to enhance the distribution of credit. Overall, the results are in agreement with the GMM regression models requirements as shown in Table 3.8 above. The fitness of the overall result is good as shown by the Wald test probability, and the Hansen J statistics results gives the confidence that the instruments are not over identified and AR(2) confirms the absence of serial correlation.

3.6. Conclusions

We constructed a new index of financial inclusion for 49 African economies using weights derived from principal component analysis in aggregating indicators for access, availability, and usage. Using the World Bank's Global Findex database, we combined Sarma's (2008) multidimensional approach with the normalized weights from principal component analysis of Camara and Tuesta (2014) in deriving our index. The financial inclusion index shows that there exist wide discrepancies in financial inclusion among the 49 African countries, with Chad and Guinea having the least at 0.01 and Seychelles and Cape-Verde with the highest at 0.82 and 0.63 respectively. Over the period 2004 to 2016, only Seychelles and Carbo-Verde had an average financial inclusion index above 50 percent, and the majorities are below 40 percent. This validates further the argument that, the African region is

characterised by very high levels of financial exclusion and thus needs immediate intervention. We also found that the lagged financial inclusion, financial development, income, credit and inflation are significant factors in explaining financial inclusion. Interestingly, we found an insignificant inverse link between financial inclusion and population density and population size.

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United States–Nigeria's Trade Relations before the African Growth and Opportunity Act

Temitope Peter Ola[43]

Abstract: The application of the African Growth and Opportunity Act (AGOA) to United States (U.S.)–Nigeria's trade relations is a watershed in bilateral trade experience. However, extant literature is inconclusive on the existential conditions of U.S.–Nigeria's economic interactions which necessitated the emergence of AGOA. This study discussed the foundations for United States (U.S.)–Nigeria's trade relations within the African Growth and Opportunity Act (AGOA). Data is obtained from primary and secondary sources. The centre-periphery brand of the dependency theory is used to x-ray U.S.–Nigeria's economic prior to the commencement of the application of the provisions AGOA in 2001. The results indicate that though U.S.–Nigeria's trade relations intensified in the years preceding AGOA there were built-in impediments to the bilateral trade. It establishes that an adequate appreciation of the pre-policy situation is needed for AGOA to make comprehensive impacts on U.S.–Nigeria's bilateral trade. It recommends the need to bring Nigeria's dependence on the U.S. to an end.

Keywords: Preferential Trade Arrangement; Dependency; Development.

JEL Classification: F43

1. Introduction

The application of the provisions of the African Growth and Opportunity Act (AGOA) to United States (U.S.)–Nigeria's trade relations starting from year 2001 is a radical departure from existential economic relations between the two nations. However, the period, 1960–2000, laid the foundation for U.S.–Nigeria's trade relations under AGOA. In discussing U.S.–Nigeria's trade relations under AGOA extant literature have not paid adequate attention to understanding the pre-policy trade conditions of the trade partners which necessitated the introduction of AGOA. Economic historians might object to the cut-off date of 1960 because they consider pre-1960 interactions as equally important. Important as such interactions may be (or indeed are), they are not crucial to understanding U.S.–Nigeria's trade under AGOA because it is not concerned with territories or entities or activities except those that took place after the creation of modern Nigeria as a sovereign political

[43] Lecturer, PhD, Bowen University, Nigeria, Address: P.M.B. 284 Iwo, Osun State, Nigeria, Tel.: 2348060087183, Corresponding author: olatemitope33@gmail.com.

unit. As a sovereign political unit in the international arena Nigeria came into being in 1960. Though its making spawns hundreds of years and embraces periods of Arabic influences in the North and European influence in the South (Nigerian Handbook, 1970). But then, what is AGOA and what is it about U.S.–Nigeria's economic relations that made AGOA imperative?

2. AGOA

According to the U.S. Congress, the formulation of AGOA was based on certain findings. Among the findings are (1) the U.S. and sub-Sahara African (SSA) countries have a mutual interest in promoting stable economic growth in SSA; (2) SSA is rich in natural and human resources; (3) SSA is of economic and political significance to the U.S.; (4) trade represents a powerful tool for economic development; and (5) reduction of trade barriers will enhance SSA's commercial and political ties with the U.S.

To qualify as an eligible country to participate in AGOA the Act demands that SSA countries meet certain eligibility criteria. AGOA authorises the U.S. President to (1) designate a sub-Saharan African country as an "eligible" sub-Saharan African country if the President determines that the country meets specified eligibility requirements and (2) terminate a designation if the President elects that an eligible country is not making continual progress in meeting those requirements. Some of these criteria are (a) established and making continual progress toward establishing a market-based economy, rule of law, elimination of barriers to U.S. trade and investment; (b) does not engage in activities that undermine U.S. national security or foreign policy interests; and (c) does not engage in gross violations of internationally recognised human rights or provide support for acts of international terrorism and cooperates in international efforts to eliminate human rights violations and terrorists activities. Based on these criteria, the U.S. monitors and evaluates SSA countries annually to determine which of them should remain eligible to AGOA.

AGOA's duty-free provisions cover about 6000 articles including steel items, automotive components, handbags, gloves, footwear, iron, oil, petroleum, minerals, precious stones, textiles, apparel and a variety of food products (USTR, 2015) from SSA countries. According to Jones (2009) and Schneidman and Lewis (2012) majority of tariff reduction under AGOA is for non-agricultural commodities such as oil, petroleum, minerals, precious stones, textiles, and apparel. Meanwhile, SSA countries' articles get to the U.S. market duty-free only when the growth, product, or manufacture of such a country is not import-sensitive in the context of imports from beneficiary SSA countries.

For instance, duty-free applies to SSA countries' textile and apparel if (1) an effective visa system, domestic laws, and enforcement procedures to prevent

unlawful importation to the U.S.; (2) enacted legislation to permit United States Customs Service verification teams to the country; (3) report promptly to the United States Custom Service's request on the country's total exports and imports; and (4) report timely to the United State Customs Service's request for document establishing the place of production, the number and identification of the types of production machinery used, number of workers employed in its production, and certification from the manufacturer and exporter of such articles.

3. The Nature of U.S.–Nigeria's Economic Relations Prior to AGOA

Prior to the creation of AGOA British colonialism in sub-Sahara Africa prepared the ground for economic relations between the U.S. and Nigeria. The external economic relations structure left behind in Nigeria by the British in 1960 was predominantly Anglo-centric. From the 1960s, a bilateral relationship developed between Nigeria and the U.S. after the former's independence from Britain. This began with the understanding that the veto of the U.S was required for Nigeria's entry into the United Nations Organisation and becoming a member. The U.S. was, however, conscious not to disrupt the links between Britain and Nigeria lest British economy be dislocated. This was due to the substantial British investments in Nigeria immediately after colonialism. So, the U.S. simply followed Britain's lead in economic relations with Nigeria.

As a consequence, up till the 1970s, the U.S. neither had nor adopted a coordinated or coherent economic view for its relations with Nigeria. This was excused on the understanding that the U.S. does not enjoy a deep-seated historical relationship with SSA. The fact that the U.S. was never a colonial power made it somewhat distant to Nigeria. At most, Washington was contented with its ally's (Britain's) hold on Nigeria in so far as it was seen as an attempt to keep out Nigeria from communism. The economic relation between Nigeria and the U.S. was understood and projected on that basis. Consequent upon that, the two countries for a long time never had a coordinated economic policy towards each other.

Therefore, U.S.–Nigeria's economic relations emerged not through the dynamics of economic linkages, but from British colonialism. U.S. policy towards Nigeria after independence snowballed from the established presence of its ally, the United Kingdom, in the country. Beyond Britain, it became expedient that U.S.–Nigeria's economic relations be anchored on certain foreign economic policy for national self-adjustment and adaptation to the external world. In the words of Akindele

It is by the means of such a policy that the country communicates its economic "demands" and needs to the external world, advertises its domestic economic resources for export purposes, seeks to augment its resource deficiencies, defines and articulates its conception of a just and equitable international economic order

and participates generally in the continuously expanding cobweb of international economic transactions (Akindele, 1988, p. 12).

The main objective of such a policy, in the context of the competitive struggle for power, influence and domination in the global economic system, Akindele (1988) went further, is to, … promote the country's national interest, especially by seeking not only to influence the external behaviour of other states in the image of its preferences but also to minimise the influence of other states in its actions (Akindele, 1988, p. 18).

The submission by Akindele (1988) agrees with the report of one United States Special Mission to Africa which defined American interest in Africa (including Nigeria) as follows:

An interest in the evolution of Africa in a manner not inimical to our democratic type of government, the exclusion of influences unfriendly to our way of life, the hope of having access to the raw materials of that continent, primarily to safeguard our minimum strategic needs; to increase our trade with all African countries, and to exercise moral leadership as benefits our honourable traditions (Smith, 1961, p. 8).

Notwithstanding, it was not until 1976 when Jimmy Carter came to power in the U.S. that Washington started what can be regarded as a coordinated economic policy towards Nigeria. Carter's administration had many young black citizens like Andrew Young. The administration was thus disposed towards SSA in general and Nigeria in particular. Carter tried to 'weave a world wide web of bilateral, political and, where appropriate, economic relations with new emerging regional "influential" (Brzezinski, 1983, pp. 53-54). In pursuit of this, in 1978, Carter visited Nigeria. This was the first visit by an American President.

The U.S. and Nigeria have a few similarities and dissimilarities. While Nigeria has the largest concentration of black people in Africa, the U.S. house the largest number of blacks in the Diaspora (Ola, 2017). Nigeria is characterised by underdeveloped and dependent economic system and by a low standard of living for the majority of its people. Nigeria's peripheral position in the international capitalist system is largely a function of its colonial conquest, which is maintained today through the neo-colonial processes. The U.S., on the other hand, is characterised by a strong commitment to liberal, democratic, political values. It has also been characterised by sustained economic growth and technological progress, almost full employment, structurally transformed and flexible economic system with a considerable amount of international economic, financial and military power. The U.S. occupies a hegemonic position in the contemporary international system why Nigeria attempts to occupy such a position in Africa.

From the onset, the relationship between the U.S. and Nigeria was anchored on the great differences in resources, technologies, interests, perceptions and influence

(Ola, 2017). While Nigeria recognises the limits of its power the U.S. opted to integrate Nigeria into its sphere of influence by offering patronising aid and hand-downs. Indeed, domestic economic considerations of both U.S. and Nigeria have been the foundations of the relations. This is not really different to what generally happens at the international arena. As a matter of fact, the history of international economic interactions portrays a saga of cheating, chicanery, and all manners of both tasteful and distasteful appropriation and maneuver of economic position. In this saga, the successful states have often been those defined the rules to cheat and maneuver economic position to prevent economic parity. This shows that in real economic life, growths rarely ever occur by the charity or benevolence of states. Rather, what winning states do is to develop through foreign and domestic policies the application of economic policies for domestic use and later for international exploitation. That is why the critical parameter for assessing economic proficiency in a state is whether that state benefits maximally from its economic interactions.

The Nigerian economy is a typical Southern peripheral, mono-cultural economy. Nigeria's participation in international trade has been based on the production of primary commodities-oriented mainly towards the market of U.S. (among others). Because of the international capitalist division of labour and the law of comparative advantage, what Nigeria owns in the U.S.–Nigeria's economic equation, as its national asset, is only raw materials (crude oil and gas) which are mostly exhaustible. This is in contrast to the U.S. that owns; controls and dominates capital and technology, the instruments that mediate between man and nature in production.

Nigeria's energy resources, Nigeria's very life-blood, is controlled by the world market and continued to feed the American economy, which dominates the international system of management. Not even OPEC has been able to help Nigeria flex its economic muscle as an owner of an important resource needed by the U.S. Rather Nigeria has been at the mercy of the U.S. concerning demand and prices. For instance, in 1974, the U.S. in concert with other Western governments set up the International Energy Agency (IEA) with the function to abolish competition resulting from the energy crisis between Western consumer governments. The long-term strategy of IEA is to enforce a uniform strategy for the defence of the common interests of the Organisation for Economic Cooperation and Development (OECD) governments, vis-à-vis OPEC governments, like Nigeria's. Its tasks include guaranteeing the supply of oil to all its members, coordinating measures to reduce consumption of OPEC's, nay Nigeria's, oil, establishing an information system on the oil market, and drawing up and implementing a long-term cooperation programme for a more rational use of energy and for production of substitutes and alternative sources of energy (Nwoke, 1987).

Despite the skewed beginnings of U.S.–Nigeria's economic relations aid and development assistance were early starters in the bilateral interactions. According to

the U.S. State Department, "the primary interest of the U.S. in Nigeria is to see it grow and prosper, within the free world, as a leader and good example for other African countries" (U.S. Department of State, 1964, SP70D19114862:3). For instance, in the 1962-68 National Development Plan the sum of $949.2 million (for public expenditure and constituting 50 percent of the total cost of the plan) was to be raised through external loans and grants. Of this amount, the U.S. alone provided more than 50 percent. In the immediate aftermath of Nigeria's independence in 1960 a five-man U.S. delegation visited Nigeria to study areas of possible economic cooperation. On the basis of the economic mission's recommendations the U.S. government announced that it would provide Nigeria with $225 million aid which was given through USAID. In 1964, Nigeria received 50 percent of U.S. overall aid to Africa (Ate, 1988). The disbursement of the aid package, which proceeded unevenly had a particular significance and laid the foundation for expansion in U.S.–Nigeria's economic relations. The aid offer opened a floodgate for increased economic ties; it became an avenue for a great influx of American technical assistance personnel, while it stimulated American companies' investment prospects in Nigeria. Consequently, Nigeria developed a dependent asymmetrical network of relationship with the U.S. over time.

By 1966 the U.S. has become the largest single contributor of aid and technical assistance to Nigeria which amounted to 49.5 percent and 52.2 percent respectively (Ate, 1988, p. 199). Overall, the United States government and its related agencies constituted the dominant source of foreign aid for Nigeria in the period. U.S. contribution of technical assistance personnel by 1966 was about 52 percent. Between 1960 and 1967 capital aid and technical assistance were the centre-piece of U.S.–Nigeria's economic relations. In the area of foreign trade, about 80 percent of Nigeria's exports went mainly to Britain and the United States. Seventy percent of its imports came from the same sources. Nigeria concentrated its fullest economic attention in the United States and Britain and cooperated rather intimately with the U.S. on major contemporary African issues. The simple reason for this is that the Nigerian leadership of the time and other factions of the ruling strata were products and beneficiaries of the United States. As a matter of fact, the Nigerian government of the era espoused definite interests whose attainment they considered possible only within a framework of a neo-colonial relationship with the United States (Ate, 1986).

4. Local Industries and Businesses in Nigeria Prior to AGOA

Between 1960 and 2000, Nigeria's economy was underdeveloped and primarily resource-based. Its manufacturing sector, engaged predominantly in consumer goods production and, is heavily imports dependent. For instance, the nation's apparel production sector comprised primarily of a cottage industry of small or individual tailoring operations scattered throughout the country's informal sector markets.

There was only one apparel facility in the Export Processing Zone in Calabar that adds value to tee shirts by packaging them. This is known locally as a "packet shirt" operation (Personal interview at Manufacturers Association of Nigeria (MAN) office, Lagos, 2016). Nigeria has other apparel making firms like;

I. Afprint of Lagos is one of the largest textile groups in Nigeria. As a member of a multinational conglomerate, Afprint has sister companies in the Philippines, Indonesia, Sri Lanka and related businesses in 25 other countries.

II. Bhojsons Industries of Lagos manufactures cotton and polyester yarns and fabrics. With 152 looms and 113 jets up to 153cm widths, they are able to manufacture mattress covers and are exporting cotton sheeting to Europe.

III. The Churchgate Group of Lagos is a large industrial conglomerate with eight textile related companies including state-of-the-art cotton and polyester spinning and weaving, textile supplies and an export business. They supply men's suiting and shirting to the European markets in a wide range of weaves, weights, blends and yarn counts. Sister companies are involved in chemicals and dyes, research and development, and textile finishing.

IV. United Nigerian Textiles of Kaduna employs about 20,000 people in its cotton African print operations. This company now exports to ECOWAS countries used to export to the US and Hong Kong.

V. African Textile Manufacturing, Ltd. in Kano is a four-year-old manufacturer of African printed cotton with about 2,000 employees (Ola, 2017).

Nigeria had all of the necessary competitive elements for a successful apparel manufacturing industry. This includes:

1. Installed textile manufacturing base and materials cluster with world-class potential to service AGOA quota;

2. Cotton producer—medium staple adequate for many apparel applications;

3. EPZ capability with legal provisions for soft working capital and subsidised utility infrastructure;

4. Ample labour at competitive rates;

5. More favourable port location in comparison to Mauritius, Madagascar, South Africa, etc. — import economy with huge backhaul availability at competitive cost saving 2-8 days shipping times over Eastern African ports;

6. History of FDI from Asia and India;

7. Large rural population—apparel manufacturing plants can do well competitively if they are located a significant distance from large cities (Ola, 2017).

But, during the period under study, local industries and businesses in Nigeria could not utilised the advantages due to several challenges. To start with, technology exchange between the U.S. and Nigeria during the period explains the difficulties experienced by local industries and businesses. The growth of knowledge intensify production by increasing scientific and technological interactions and the need for innovation complicates the importance of the four dimensions of a national system of innovation — human capital, knowledge creation, supply innovation capacity, demand innovation capacity and their complementarities — as a force majeure in determining Nigeria's potential. Institutions in Nigeria have benefited from facilities like the internet online learning, telemedicine and teleconferencing with their partners in the U.S. (Personal interview at USAID office, Lagos, 2016).

This U.S. to Nigeria's technology transfer occurred through a variety of processes, including licenses and patents, supplies of machines and equipment, exchange between scientific bodies of Nigeria and the U.S. (Personal interview at FIIRO office, Lagos 2016). Others came in through purchases of technical publications, consulting and engineering services of Americans (Personal interview at United States Agency for International Development (USAID), Abuja, 2016). The rest were acquired through on-site training of Nigerian personnel by American experts (Personal interview at Nigeria national Petroleum Corporation (NNPC) Headquarters, Abuja, 2016), and Nigerians studying in the United States. However, estimates of U.S.–Nigeria technology flow vary from the modification and adaptation process actually costing Nigeria more than if it had developed its own technology to a value added of fourteen times what would have been received if developed domestically by Nigeria.

It is clear that the fundamental challenge in Nigeria is the appallingly inadequate infrastructure and sore lack of capacity. The search for new inventions and innovations as vital resources to position Nigeria on the path of economic development cannot be over-emphasised. That is why a major concern of local industries and businesses in Nigeria relates to the 'appropriateness' of the meagre technology that came to them from the U.S. (Personal interview at OPEXA office, Lagos, 2016). Much of the technology transferred was typically capital intensive and labour saving, whereas the chief problem in Nigeria was unemployment (Personal interview at FIIRO office, Lagos, 2016). Given Nigeria's need to provide employment those technologies are inappropriate for local industries and businesses (Personal interview at MAN office, Lagos, 2016). The problem was compounded by different circumstances under which such technology was developed and the unwillingness of U.S. multinational corporations to adapt them to the Nigerian settings (Personal interview at FIIRO office, Lagos, 2016). Additionally, most of the machinery and equipment transferred to Nigerian local industries and businesses from the U.S. were "inappropriate" because they were machines of older vintage (Personal interview at MAN office, Lagos, 2016). Not only was the technology out

of date their consumers in Nigeria were charged high prices. The contradiction between local industries and businesses' needs for modern technology and the desire to pay only "justifiable prices" is a function of the different values of global economy.

Nigeria is also incensed by the fact that payments for technology strain its balance-of-payment position vis-à-vis the U.S. (Personal interview at Ministry of Trade and Investment, Abuja, 2016). One contributor to the unnecessarily inflated price of the technology which Nigerian acquired from the U.S. has to do with the fact that technology is often sold in packages (Personal interview at OPEXA office, Lagos, 2016). For example, tie-in clauses in certain contracts compel a license to purchase unpatented goods from the licensor; in other cases, technology are supplied only through turnkey operations where the U.S. undertakes full responsibility for construction of a plant and managing it until local personnel are ready to do so (Personal interview at OPEXA office, Lagos, 2016). Particularly where the recipient of the technology is a subsidiary of the supplier, as often was the case, Nigeria acquires little, if any, 'new' technical know-how. What local industries and businesses in Nigeria find most repugnant is that more often than not some elements of the package are overpriced, unnecessary, and or available locally (Personal interview at OPEXA office, Lagos, 2016).

Generally, the technology available to Nigeria was much more heavily reliant on the use of raw materials and has a lower marginal product of labour (Personal interview at MAN Office Lagos, 2016), and so firms using that technology pay lower wages. Meanwhile, the wages that are paid within a nation are dependent on the extra output that an extra worker is able to produce (the marginal product) and the cost of the other inputs (capital, materials etc.) required to enable that worker to produce. But economic development through productive activities occurs mostly through the channel of wages (Personal interviews in Lagos and Abuja, 2016). A few local industries and businesses in Nigeria were, however, exposed to new technology and employee training (Personal interview at OPEXA office, Lagos, 2016). But, the skills needed to maintain, use and develop the knowledge were not transferred. This means that Nigeria remains stuck in the primary sector. To worsen the case, most American consumers do not expect to find processed food and consumer products in their local Wal-Mart with a "made in Nigeria" label, without the exploration and development of new sectors equalling the global economic trading of services and technology.

The overwhelming proportion of Nigerian firms and businesses regard power and voltage fluctuations as major obstacles to their operations (Personal interviews in Lagos and Abuja, 2016). Most of the firms and businesses ranked electricity as their number one problem. This is followed by problems associated with road networks and third, by telecommunications. Most Nigerian firms and businesses, for example,

have to make a significant investment in the private provision of generators as insurance against uncertainties associated with poor publicly provided electricity. Thus, the need for back up alternatives in respect of power supply contributes significantly to the cost of doing business and the lack of competitiveness in external markets. Ultimately, the costs of doing business in Nigeria remain among the highest in the world. This submission agrees, substantially, with the World Bank (2010) report which stated that it costs 80% of an average Nigerian's annual salary to register a company in the country.

In sum, the U.S. undermined Nigeria's production base in favour of American manufactured goods (Personal interview at MAN office, Lagos, 2016). The status of local industries and businesses in Nigeria shows that Nigeria lacked the capabilities to attain economic development. Nigeria tended to have neglected the iron law of industrialisation that stipulates convergence of domestic use of resources and consumption (Clive Threat) as the foundation for autonomous development. For instance, Nigeria has not been able to effectively implement policies on research; expatriate quota has been abused, the educational system, the foundation of all development has been riddled with crisis and for some inexplicable reasons, Nigeria did not to come to terms with the idea that only Nigerians can and will develop Nigeria while foreign interests will only play in accordance with the environment they meet.

5. Opportunities and Challenges of U.S.–Nigeria's Trade Relations prior to AGOA

Before the emergence of the African Growth and Opportunity Act (AGOA), U.S.–Nigeria's economic relations were characterised by disarticulation and incoherence. U.S.–Nigeria's economic relations was characterised by the absence of forward and backward linkages, complementarity and reciprocity in production. There was an absence of reciprocity of exchange between them. The extraction of resources in Nigeria was dictated, partly, by the needs of the U.S. It appears that the Nigerian extractive industries were purely functional for gathering and exporting the commodities of Nigeria, to the U.S. It did not constitute in any way a coherent line of production. Neither did it contribute to the building of a coherent economy with Nigeria.

The story of the Nigerian extractive industry, especially crude oil, illustrates the haphazard development. The oil industry of Nigeria is an excellent example of the disarticulation of U.S.–Nigeria's economic relations. Nigerian refineries were non-functional. The incoherence of the oil industry rendered related ancillary industries chaotic as well. Optimum performing refineries are lacking in Nigeria; since the extractive industries are posed to supply unrefined crude to the U.S. rather than get

finished products to local consumers. This means that the extractive industries were not designed in a way that they would yield maximum benefit to the growth of Nigeria. And, U.S. demand for Nigerian oil makes the exploitation at Nigerian oil fields uneconomical.

Something similar to the activities of extractive industries happened in the development of Nigerian primary commodities for the American market. The U.S. was naturally interested only in the most profitable Nigerian commodities. To obtain an adequate supply of the preferred commodities the U.S. covertly discouraged the production of some other commodities. This was done by refusing to buy such commodities from Nigeria. When this happens, it was accepted without too much thought on the implications of encouraging the production of particular commodities. It was assumed that what was good for international capitalism of the U.S. was good for Nigeria.

Nigeria's trade with the U.S. was characterised by reliance on a few export commodities for foreign exchange earnings, especially oil. It would be recalled that it was after the arrival of American oil multinational corporations that crude oil was successfully exported from Nigeria. Nigeria had not started exporting crude oil until about 1947. But the exportation of crude oil grew so rapidly that it soon began to dominate the Nigerian economy. By 1971 the country was already the biggest exporter of crude oil in SSA. By 2000 crude oil accounted for about 80% of the value of Nigeria's exports. The problem of a narrow resource base is related to the basic fact that the U.S. trade with Nigeria was done in the interest of capitalist accumulation and not in the interests of growing Nigeria's economy. The U.S. made Nigeria to put a lot of effort in the production of crude oil, because overseas demand was good starting from the 1970s, through incentives. Before export of crude oil from Nigeria its exports had been dominated by palm kernels, palm oil, groundnuts, cocoa, and bananas (Ukeje, 2011).

Instead of adding to the old sources of foreign exchange the new commodity replaced the old ones so that the composition of export commodity changed without achieving diversification. Thus, in U.S.-Nigeria's economic relations oil replaced palm kernels and groundnuts and cocoa instead of supplementing them. It might be tempting to attribute this narrow base for foreign exchanges earnings to the natural endowments of Nigeria – its mineral endowments, and its climatic conditions. But this would be quite mistaken because U.S.–Nigeria's economic relations had much to do with it. In the main, Americans tried to market what manufactured goods they could. They encouraged the development of export commodities when and where it was profitable to do so and did not really bother themselves much with the question as to how their economic relations fitted in with the overall growth of Nigeria. With this, Nigeria began to experience shortages in the supply of traditional food crops, changes in land use creating changes in land tenure, uneven distribution of wealth,

dependence on a few export products. Associated with all these sort of changes were profound economic imbalanced and growth which led to social disequilibrium that upsets the balance of the Nigerian economy.

Furthermore, U.S. economic relations with Nigeria did not do very much to encourage the growth of manufacturing. U.S. economic interest in Nigeria lay primarily in the fact that it was a source of raw materials and market for American manufactured goods. American companies doing business in Nigeria did not consider that the industrialisation of the country merited serious attention. The Nigerian government itself appeared to have had little or no enthusiasm for manufacturing. Manufacturing was further discouraged by the rudimentary development of the infrastructures in the country as well as the limited possibilities of economies of scale.

However, some degree of development in manufacturing took place though the manufacturing or industrial activity was of a most rudimentary nature: food and beverages, tobacco, base metal, non-durable consumer goods, basic chemical products, building materials, furniture, leather and leather products. The reasons for the rudimentary development of manufacturing in Nigeria are discernible. Those who made investment decisions did so according to the necessities of the process, particularly the quest for maximum return on investment in the minimum amount of time. To sum up, the factors for minimum manufacturing in Nigeria are as follows: the multiplicity of decision centres, the ad hoc and interest-oriented character of investment decisions, the reliance of the manufacturing sector on imported materials, the non-availability of infrastructures which especially influenced the type and location of investment.

In contrast, the Nigerian oil economy displays a pathological maturity, like a highly accelerated ageing process. The oil economy suffered the disadvantages of monopoly without having enjoyed the advantages of competition. On the one hand, a typical monopoly economy thrives by the continuous capitalisation of surplus-value. It creates and sustains demand for the goods and services which it offers. When the monopolist is able to beat competitors and corner the market all the better for it. To improve its competitive status, the monopolist tries to expand production to take advantage of economies of scale and reduce his unit cost. He may also try to increase the productivity of labour by introducing mechanisation and thereby increasing the organic composition of capital. Here lies the positive role of monopoly and competition.

On the other hand, the competition among capitalists leads to the development of productive forces – as capitalists expand production to reduce costs, develop new tools, introduce new machines that make things better or cheaper, gain new sources of the supply of raw materials, and develop new processes of production. This is why capitalism has contributed more to the development of productive forces than all the

modes of production which preceded it, and it has been able to do so because of the dynamics of competition inherent in it. But in the Nigerian capitalism – oil exploration and export – short-circuited history and moved directly to a monopoly stage. This monopoly hampered the development of productive forces by discouraging competition. This point bears importantly in any attempt to understand the persistence of Nigerian underdevelopment.

To take on another dimension to the underdevelopment of Nigeria, the control of Nigeria's reserves and the issues of currency rested in the U.S. – through the International Monetary Fund (IMF). Such control was justified by arguing that it gave Nigeria monetary stability and international status and helped its trade. However, Nigeria's monetary dependence on the U.S. was essentially a means of exploitation. For instance, the IMF mobilised capital from Nigeria's external reserves and loan it to American businessmen. The exploitation of Nigeria's monetary dependence was done mainly through the manipulation of Nigeria's reserves and currency. The Nigerian Naira issued by the Central Bank of Nigeria (established in 1958) was to be backed by the dollar reserves held in the U.S. Now, the foreign exchange which Nigeria earned by the sale of its exports was held in the U.S.

Therefore, through its membership of neo-liberal institutions of capitalism (The IMF, the World Bank and the WTO) and friendship with the money lenders in the triad: America, Western Europe and Japan, that controls globalised capitalism, Nigeria agreed to abdicate its primary responsibilities to the citizenry namely: the provision of basic needs of the people. These needs include basic education, basic healthcare, shelter, water, employment, individual and collective security, electricity, means of transportation and communication. The elimination of the developmental state and the promotion of the market is the policy prescription imposed on the countries of the Global South by neo-liberal institutions of capitalism.

Perhaps there was no alternative course of action for Nigeria. Thus, as a matter of necessity and to interact successfully with the United States, Nigeria agreed to carry out economic reforms based on the 'Washington Consensus'. The reform prescriptions favoured by the World Bank, the IMF and the United States Treasury. As a matter of fact, the U.S. all-purpose solution to Nigeria's economic backwardness was rapid "downsizing" of government, de-regulation, liberalisation and privatisation, focusing not on equity and social justice concerns but sterile gross domestic product (GDP) growth figures. According to the U.S. when Nigeria grants unfettered freedom to the market, all its problems will be solved.

Contrary to that view, Russia has shown that privatisation has often been abused by powerful groups and those with political connections. De-regulation, on the other hand, has often increased the risks to the poor in some countries without necessarily

delivering sustained growth. Needless to say that, the chief beneficiary of the de-regulation of the Nigerian economy is the U.S. economy. The de-regulation results in a massive increase in the rate of capital flight from Nigeria as American monopoly investors (among others) take advantage of the liberal environment to repatriate profits, dividends, royalties, technical fees and all manner of payments, including through transfer pricing, to the detriment of Nigeria's poverty alleviation programmes.

Given America's domination and control of the Nigerian economy and coupled with Nigeria's dependence on American finance capital the country lacked the leverage to take any proactive action. Thus, American finance capital collaborates with a powerful group of Nigerian allies to implement neo-liberal economic policies and makes the Nigerian economy neo-colonial. Meanwhile, the bedrock of the Washington Consensus economic reform favoured by the U.S. is the unfettered right of capital to move about the globe demanding low taxes, little regulation of wages and work conditions, small government, privatisation and anti-people policies. And, the unrestricted right of international capital is the most profound cause of Nigeria's economic poverty. The pattern of U.S. investment in Nigeria shows that the result of unrestricted international capital has not always been positive as domestic forces are not able to ensure that U.S. enterprises work in tandem with local development policies. U.S. investments are invariably conduit for illegitimate capital outflow. They tend to indulge mostly in assemblies without R&D. They exclude Nigerians from critical skills. In many cases, they imported patented goods rather than working the process thereby precluding the opportunity for the acquisition or transfer of technology. Thus, the weakness of the Nigerian economy is the result of the peripheral position which Nigeria occupies in the international capitalist division of labour as a producer of raw materials for export to the United States. As a result of the position, the Nigerian economy is characterised by excessive dependence on international finance capital (which largely comes from the U.S.), a weak production base, lack of internal inter-sectorial linkages, and lack of internal coherence, mass poverty, technological dependence, and excessive external orientation.

Within the period under study, Nigerian leaders seem to have accepted the U.S., and its economic and financial institutions, as senior partners whom they surrendered all decision-making about financial and credit policies, economic system, and political organisation. Legume (2006) talks about how U.S. has ruled much of sub-Sahara Africa through the IMF and the World Bank since the 1980s.

Elected governments did formally take policy decisions and passed laws through their parliaments. However, the budgets of governments under SAPs had to be approved by officials of one or both of these international financial institutions, and there was often neither the expertise nor the confidence on the part of developing countries to protest against this perverse process. The omnipotence of the Bank and

the Fund was such that opposition to their policies was apparently impossible. Moreover, it did not take long for aspiring politicians to understand what policies to propose to garner powerful foreign support. The global market ideology has consumed governments everywhere, especially since the fall of the Soviet Union in 1991 (Legum, 2006).

Unlike the World Trade Organisation (WTO) which has responded to its numerous critics who see it as the Worst Trade Organisation, by claiming to now promote development and raising living standards, rather than maximising trade, the U.S. could not respond. The U.S. continued to see the trade with Nigeria as an end in itself. The U.S. sees the trade with Nigeria as synonymous with development (Moore, 2000, p. 17). Trade is the lens through which the U.S. sees Nigeria's development. Thus, U.S.–Nigeria's economic relations have a market access, rather than development, mindset.

The U.S. carries on with the belief that further integration of the Nigerian economy into the global economy will lead to economic growth and development and reduce poverty. But the whole concept of getting growth through trade is controversial. Thus, the U.S. economic relations with Nigeria is imperialism as it (a) foists, or attempts to foist on Nigeria, capitalist values, capitalist institutions, and capitalist development; (b) it focuses development analysis on the question of how to make Nigeria more like the U.S.; and (c) it propagates mystifications and modes of thought and action which serve the interests of the U.S.

The year 2005 was declared the United Nations (UN's) "Year of Development". By September that year, the UN Millennium Summit Meeting of Heads of States publicised a report. The report contains the advanced countries' intention to review the extent of the fulfillment of their promise to each provide 0.7 percent of their Gross National Product (GNP) for aid to poor countries on a path of meeting the MDGs. But the 0.7 percent of GNP target was set several decades before. In the heat of the Third World's struggle for a New International Economic Order (NIEO), is it not curious that that odd figure of 0.7 per cent has continued to be retained for several decades? Even at that, many of the developed states, including the U.S., did not meet the target.

However, at the Millennium Summit; new "commitments" were made concerning trade and aid. On aid, the discussion centred, once again around the progress towards achieving the old target of 0.7 as well as the conditions attached to them. However, the high-level Millennium Summit discussions were informed by two (2) flawed assumptions: (a) that developed countries like the U.S. is serious in taking actions that can materially shape development in Less Developed Countries (LDCs) like Nigeria; and (b) that these actions should consist largely of providing financial resources to poor countries. The effects of aid on Nigeria belie both assumptions. It is indeed not in the objective interest of the U.S. to ensure economic independence

of Nigeria. Therefore, it is an illusion for the U.S. to pose as the guarantor of growth for Nigeria by offering financial resources and trade contracts, especially as these come under restricting conditions.

In the period under study, U.S.–Nigeria's economic relations centred on Nigeria's removal of tariff and non-tariff barriers to U.S. goods. But even Adam Smith, the father of classical economics and champion of capitalism and free trade, had warned about the dangers of free trade for countries like Nigeria when he wrote that;

Were those high duties and provisions taken away all at once, cheaper foreign goods of the same kind might be poured so fast into the home market as to deprive all at once many thousands of our people of their ordinary employment and means of subsistence. The disorder which this would occasion might no doubt be very considerable (Smith, 1936, p. 8).

By the close of the 20th century the proposition of Adam Smith had been fulfilled in all segment of the Nigerian economy. But, while the U.S. chanted market access mantra in Nigeria, it carefully preserved its protectionist policies at home. It gave massive support to its agriculture sector. It did this while mounting very high tariffs on many products from Nigeria (Wood, 1995, pp. 57-80). To seal the fate of Nigeria, the U.S. branded the protection of Nigerian industries heretical. Christian Aid (2005) has rightly observed that through a combination of ideological dogma, conditions attached to aid and loan, and straightforward bullying, poor countries have been convinced, forced and threatened into accepting that free trade is their only option.

In pursuit of free trade, the principle of government intervening to safeguard people's livelihoods and set their course for growth and development – something that has worked in the past for almost all of today's developed countries – has been wrongly abandoned (Aid, 2005, p. 3).

The major instruments used to achieve U.S. objectives were the World Bank and the IMF. The influence of the twin Bretton Woods institutions in Nigeria is immense. By attaching trade liberalisation conditions to grants and loans and by offering trade liberalisation-based "advice" to Nigeria, the IMF and the World Bank tore down many barriers to U.S. market penetration of Nigeria.

By history and by experience, by temperament and by inclination, Americans and Nigerians are ill-prepared to admit the inevitable outcomes and challenges which their economic relations have brought about. The interactions have been made too suddenly, and the demands of relations have increased too rapidly, for the evolution of a satisfactory economic agreement. Moreover, the state of U.S.–Nigeria's economic relations has been such that a satisfactory economic agreement is probably impossible. U.S.–Nigeria's economic relations satisfy no one. That is why at the end of the period under study, questions arose on the possibilities for Nigeria. Questions such as what sort of accountability the decision-makers are subject to, what sort of

regulation they have to face, who are they answerable to are crucial. As soon as you talk about that, you get into the political structures of which trade agreements are signed. What political structures have been set up which guarantee that those who are the decision-makers; President, Cabinet ministers, face some tough test from the civil society. Do Nigerians question their leaders, do they renew them, do they throw them out because no matter what you say, it the poor who pay the price of economic retardation. As the century ebbed to a close, it was hoped that the two sides (the U.S. and Nigeria) will turn the bitter lessons of their economic relations into constructive venture in bilateral relations. AGOA reflects that idealism.

6. Conclusion

This study illuminates one central fact about Nigeria's economic relations with the U.S. before AGOA. That is, no nation, no matter how populous or geographically impressive is economically self-sufficient and every nation in one form or the other imports/exports some types of economic goods/service from/to one or more other state(s). Nigeria's economic relations with the U.S. have greatly intensified over the years, despite ostensible efforts at diversification and professed promotion of intra-African economic promotion. The U.S. was a primary source of Nigeria's imports, private investment, technologies, and external development capital. Nigeria's exports to the U.S. are constituted of primary commodities which suffered habitual price distortions and fluctuations. Nigeria's export activities with the U.S. account for the bulk of its gross national product (GNP) and as the source for procuring foreign exchange. On the other hand, U.S. exports to Nigeria were dominated by industrial and processed consumer goods with continuously escalating prices. The study shows that there are built-in impediments in the pattern of trade between Nigeria and the U.S. This made Nigeria export primary products to the U.S. and imported industrial goods from it. The years of trade relations simply expanded areas of further penetration by American capital, agencies, personnel, contractors, and consumer goods (including food). This strengthened Nigeria's dependence on the U.S. prior to AGOA. This dependency which has continued under AGOA needs to be brought to an end if there need be equity in bilateral trade.

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Implementation of the Corporate Governance and Index Value of Manufacturing Companies in Stock Exchanges

(Case Study in Indonesia)

Tutik Arniati[44]

Abstract: Previous research related to the implementation of GCG was mostly related to operational performance, for example, ROI and ROE. However, there is no research on GCG implementation that is related to corporate value and earnings quality as moderating objects. Corporate value is a measure of market performance that is very important because high corporate value describes the market value of a company that is more valuable than the company's noted value. Therefore, this study wants to develop GCG implementation that associated with a corporate value, which is practically influenced by stock and asset prices also how the influence of corporate governance implementation on corporate value and earnings quality as moderating variables. Thus, in general, this study aims to determine the practice of corporate governance with the implementation of the CG Index. This study aims to examine the effect of implementing the CG Index on Corporate Value, specifically.

Keywords: Corporate Governance; Corporate Value; CG Index; Stock Value

JEL Classification: G34

1. Introduction

Good corporate governance (GCG) is a system that regulates and controls the companies that create additional value for all stakeholders (Dewi, Suhadak & Handayani, 2017). This concept emphasises two things, namely the importance of the shareholders right to obtain information correctly and promptly as well as the obligation of companies to conduct accurate, timely and transparent disclosure of all information on company performance, ownership, and stakeholders. There are five main components needed in the concept of GCG, namely Commitment to CG, Structure and Function of the Directors Board, Environment and Processes Control, Transparency and Disclosure, and also the Rights of Minority Shareholders (Demirag, 1998). The five components are necessary because the application of GCG principles is consistently proven to improve the quality of financial statements

[44] Lecturer, STIE Malangkucecwara Malang, Indonesia, Address: Jl. Terusan Candi Kalasan, Blimbing, Mojolangu, Kec. Lowokwaru, Kota Malang, Jawa Timur 65142, Indonesia, Tel.: +62 341 491813 Corresponding author: dee.xaxo@gmail.com.

and also be an obstacle to fraudulent activities which results in undescribed financial statements of the company's fundamental values. From the various results of previous studies, it shows that the implementation of corporate governance in Indonesia is deficient still. This condition happens mainly because companies in Indonesia do not yet have a corporate culture as the core of Corporate Governance. This understanding opens the horizon that companies in Indonesia have not implemented governance properly and effectively.

In Indonesia, issues related to corporate governance reinforced after the financial crisis that occurred in Asia in mid-1997 (Husnan, 2001; Lukviarman, 2016). In its development, this issue has become increasingly popular after multilateral financial institutions such as the World Bank and Asian Development Bank (ADB) revealed that the financial crisis that hit Asia, among others, was caused by the weak implementation of corporate governance. Indonesia is claimed to be the country that suffered the most and the slowest rise from the impact of the crisis (ADB, 2000). The ADB report (2000) shows the phenomena that occur in Indonesia, among others, the absence of professional company management because the concentration of ownership allows the occurrence of affiliation between the owner, supervisor and manager of the company, and the non-functioning of the Board of Commissioners. According to Zarkasyi (2008), the results of the 1998 Booz-Allen and Hamilton survey showed that the effectiveness of corporate governance in Indonesia was the lowest in East Asia (2.88) compared to Thailand (4.89), Malaysia (7.72), Singapore (8.93), and Japan (9.17). In 2014, a survey conducted by Credit Lyonnais Securities Asia (CLSA) regarding the evaluation of the implementation of corporate governance in Asia Pacific countries showed Indonesia's position at number 10 with a score of 39 (using the CG Watch Market Score) from 11 Asia Pacific countries (Abdullah, Percy & Stewart, 2015; Lukviarman, 2016).

Previous research related to the implementation of GCG was mostly related to operational performance, for example, ROI and ROE. However, there is no research on GCG implementation that is related to corporate value and earnings quality as moderating objects. Corporate value is a measure of market performance that is very important because high corporate value describes the market value of a company that is more valuable than the company's noted value. Therefore, this study wants to develop GCG implementation that associated with a corporate value, which is practically influenced by stock and asset prices also how the influence of corporate governance implementation on corporate value and earnings quality as moderating variables. Thus, in general, this study aims to determine the practice of corporate governance with the implementation of the CG Index. This study aims to examine the effect of implementing the CG Index on Corporate Value, specifically.

Background

The implementation of GCG serves as an increase in competitiveness among companies and ultimately increases competitiveness with foreign countries. GCG implementation can certainly improve company performance and ultimately increase corporate value. The company aims to maximise the welfare of shareholders by maximising corporate value. Company value is the market value of a company's stock that reflects the owner's wealth. The higher the stock price signifies, the higher the owner's wealth. Investors will choose to invest in companies with maximum company value because they can provide maximum shareholder prosperity — the maximum company value achieved if the company can operate by achieving targeted profits. The targeted profit will obtain if the company can implement GCG. In the long run, the company's goal is to maximise corporate value. The higher corporate value describes, the more prosperous the owner. Corporate value, which forms through indicators of stock market value, is strongly influenced by investment opportunities. Investment expenditures provide a positive signal about the company's growth in the future, thus increasing stock prices as an indicator of corporate value (Arniati, 2008). One measurement of corporate value is Price to Book Value (PBV), which is a comparison of the market price of a stock with its Book Value (BV). PBV shows how far the company can create corporate value. Companies that run well generally have PBV above 1, which shows market value is higher than the value of the book. With a high PBV ratio shows high stock prices. In addition to PBV, the indicator used to measure corporate value is Tobins' Q ratio.

1.1. Corporate Governance

Corporate Governance is a system designed to direct the management of the company professionally based on the principles of transparency, accountability, responsibility, independence, fairness, and equality (Effendi, 2016). Corporate governance is a concept that approachable by various kinds of theories, one of which is agency theory. Corporate governance is expected to function as a tool to provide confidence to investors that they will receive returns on funds that invested. Corporate governance is related to how investors are confident that the manager will provide benefits for his investment. Investors believe that managers will not embezzle or invest in unprofitable projects, and are related to how investors control managers (Larcker, Richardson & Tuna, 2007). Corporate governance practices in each company reflect the mindset of top management and the value system adopted by the company for a long time. In most companies, corporate governance did not develop through natural business processes but forced to adopt due to legal compliance requirements from certain countries or follow certain industry standards (Nisa & Warsi, 2008). Each company establishes corporate governance code based on the condition of the company. At present, the company's operations are not limited to one country but have crossed various countries. In such conditions, there

is a need for governance standards that can be universally accepted by each company operating in various countries.

1.2. Corporate Value

Corporate value is an investor's perception that often associated with stock prices. High stock prices increase corporate value. Corporate value commonly indicated by a high PBV will make the market believe in the company's prospects going forward. There are several ratios used in measuring corporate value, among others, by using Tobin's Q ratio which is the market value of a company by comparing the market value of a company listed on the financial market with the value of replacing company assets (Lindenberg & Ross, 1981). If the market value merely reflects the assets recorded in a company, then Tobin's Q will be equal to 1. If Tobin's Q is greater than 1, the market value is higher than the value of the listed company assets. The words indicate that the stock overvalued. If Tobin's Q is less than 1, the market value is smaller than the value of the company's recorded assets. The indicates that the stock is undervalued. The Q-ratio is a more accurate measure of how effectively management uses economic resources in its power. Research conducted by Lindenberg and Ross (1981) shows how the Tobin-q ratio applies to each company. They found that some companies could maintain a Tobin-q ratio higher than one would attract new resource and competition flows until the q-ratio approached one.

2. Hypothesis Development

In the perspective of agency theory, agents who are risk-averse and tend to be selfish will allocate resources from investments that do not increase the value of a more profitable investment company. Agency problems will indicate that the value of the company will increase if the owner of the company can control the behaviour of management so as not to waste company resources, both in the form of investments that are not feasible or in the form of shirking. Corporate Governance is a system that regulates and controls companies that are expected to provide and increase the value of the company to shareholders. Thus, the application of GCG is believed to increase company value (Herawaty, 2008) According to Nasution and Setiawan (2007), corporate governance is a concept that is proposed to improve company performance through supervision or to monopolise management performance and establishing management accountability to stakeholders based on the regulatory framework. The concept of corporate governance is proposed to achieve more transparent corporate management for all users of financial statements. Because of increasing company value, management often takes opportunistic actions by conducting earnings management. The corporate governance mechanism will limit the actions of opportunistic earnings management because of the control mechanisms within the company.

Some public companies that have participated in corporate governance perception index (CGPI) have benefited from the application of good corporate governance (GCG), including the application of GCG to maximise company value through increasing orientation on the principles of openness, accountability, responsibility, independence and fairness in carrying out business activities. The fundamental thing falls from the implementation of GCG is the commitment of the leadership and all members of the company to adapt GCG principles in their business activities (Ramadhani, Andreas & Desmiyawati, 2015). The existence of corporate governance ratings in the form of CGPI, investors can expect that companies that rank highest will be better corporate governance than companies that rank below. CGPI ranking obtained by the company can attract the interests of stakeholders so that the value of the company will increase. The higher CGPI score indicates that the company is increasingly trusted by interested parties (stakeholders) That makes the company able to increase high profitability and can attract investors to invest in expanding their business Amman, David and Markus (2011) find a strong and positive relationship between corporate governance and the value of the company an. The results of the study indicate that better corporate governance practices are reflected in statistics and economics significantly in higher market values.

The results of previous studies show mixed results, but there is a tendency that corporate governance practices in public companies are positively related to firm value. The implementation of corporate governance indicates by the score of applying CG index which has a positive effect on firm value. According to the World Bank Group (2014), the CG index consists of a commitment to CG, structure and functioning of the board of directors, control environment and processes, transparency and disclosure, and rights of minority shareholders. Based on the above arguments, the research hypothesis formulates as follows:

H1: Commitment to CG has a positive effect on corporate value;

H2: Structure and functioning of the Board of Directors has a positive effect on corporate value;

H3: Control environment and processes have a positive effect on corporate value;

H4: Transparency and disclosure have a positive effect on corporate value;

H5: Rights of minority shareholders have a positive effect on corporate value;

H6: Profit Quality reinforces the positive influence of commitment to CG on corporate value;

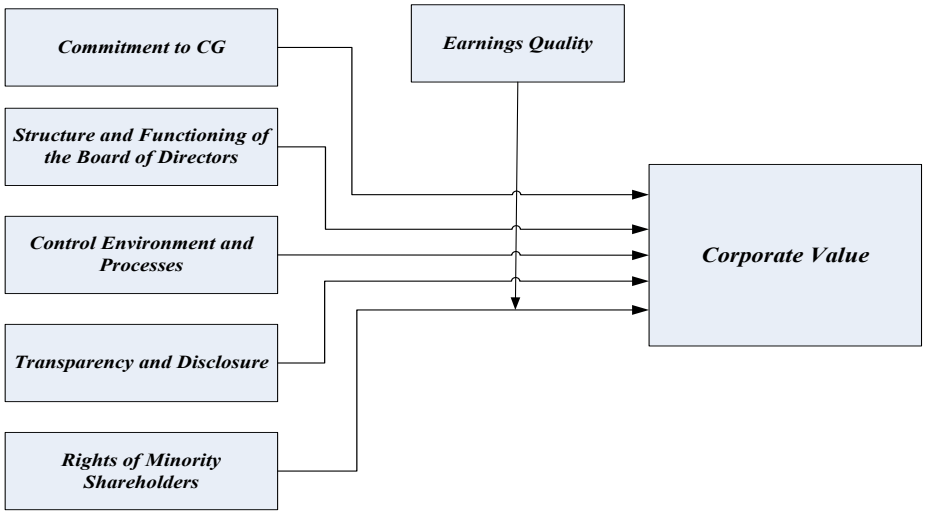
H7: Profit quality reinforces the positive influence of structure and functioning of the Board of Directors on corporate value;

H8: Profit quality strengthens the positive influence of control environment and processes on corporate value;

H9: Profit quality reinforces the positive influence of transparency and disclosure on corporate value;

H10: Profit quality strengthens the positive influence of rights of minority shareholders on corporate value.

3. Research Concept



4. Research Method

The sample of this research is manufacturing companies listing in the Indonesian capital market from 2012 to 2016. The results of a preliminary survey on the Indonesia Stock Exchange (IDX) obtained data on manufacturing companies listing up to 2016 as many as 138 companies. Based on sample selection, obtained 115 companies that fulfil the data. Observations were made over 5 years so that the number was 575 cases. This study uses secondary data, namely company data published on the Indonesia Stock Exchange, consisting of:

a. Company annual report (annual report) consisting of reports of the Board of Commissioners and Directors and Financial Reports: (statement of financial position (balance sheet), income statement and cash flow statement, and notes to financial statements);

b. Corporate governance components include a commitment to CG, structure and functioning of the board of directors, control environment and processes, transparency and disclosure, and rights of minority shareholders.

Research variables group into independent variables, dependent variables, and moderating variables. The independent variable is the CG consumption index which consists of a commitment to CG, structure and functioning of the board of directors, control environment and processes, transparency and disclosure, rights of minority shareholders. Measurement of variables using CG disclosure scores reported by companies in the annual report. The dependent variable is Corporate Value, which is the value of the company measured by the value/ratio of Tobin-Q (Q ratio) with the formula:

Q Ratio = ME + (ME + PS + Debt)/TA

Notes

ME = Value of stock price
PE = Value of preferred stock
Debt = Total Debt - Current assets + inventory

Moderating variables are earnings quality, which is the quality of corporate earnings as measured by the lateral discretion value developed by Kothari, Leone, & Wasley (2005) using proxy performance-adjusted discretionary accruals. In particular, researchers estimate the accrual discretion values as follows:

$$\mathbf{TAccr_{i;t} = \alpha_0 + \alpha_1(1/Assets_{i,t-1}) + \alpha_2 \Delta Rev_{i;t} + \alpha_3 PPE_{i;t} + \alpha_4 ROA_{i;t} + \varepsilon_{i;t}}$$

Notes

Residuals from the regression model are discretionary accruals. The researcher used the absolute value of discretionary accruals (DisAccr) multiplied by -1 as the proxy for earnings quality.

5. Analysis Method

The analysis method uses two stages, using Regression Analysis (RA) and using the Moderating Regression Analysis (MRA) with moderating variables. The statistical model presents below.

$$\mathbf{CorpValue} = \alpha + \beta_1 KomitCG + \beta_2 StrFuncBoD + \beta_3 ConEnvProces + \beta_4 TransDisclos + \beta_5 RightsMinor + \varepsilon \quad (1)$$

$$\mathbf{CorpValue} = \alpha + \beta_1 KomitCG + \beta_2 StrFuncBoD + \beta_3 ConEnvProces + \beta_4 TransDisclos + \beta_5 RightsMinor + \beta_6 EarnQual + \varepsilon \quad (2)$$

$$\mathbf{CorpValue} = \alpha + \beta_1 KomitCG + \beta_2 StrFuncBoD + \beta_3 ConEnvProces + \beta_4 TransDisclos + \beta_5 RightsMinor + \beta_6 EarnQual + \quad (3)$$

β_7KomitCG *EarnQual + β_8 StrFuncBoD *EarnsQual + β_9ConEnvProces *EarnQual + β_{10} TransDisclos *EarnQual + β_{11} RightsMinor *EarnQual ε

……

Notes

α	:	*Constant*
β	:	*Regression Coeffisien*
CorpValue	:	*Corporate Value*
KomitCG	:	Commitment to Corporate Governance
StrFuncBoD	:	Structure and Function of the Board (Board of Commissioners)
ConEnvProces	:	Environmental and Process Control
TransDisclos	:	Transparency and Disclosure
RightsMinor	:	Rights of Minority Shareholders
EarnQual		Earning Quality
KomitCG *EarnQual	:	Interaction Commitment to CG with Earning Quality
StrFuncBoD	:	Interaction Structure and Function of the DK with Earning Quality
ConEnvProces	:	Interaction of Environmental Control and Process with Earning Quality
TransDisclos *EarnQual	:	Interaction of Transparency and Disclosure with Earning Quality
RightsMinor *EarnQual	:	Interaction of the Rights of Minority Shareholders with Earning Quality
ε	:	Error term

6. Findings and Discussion

Corporate governance (CG) implementation on the commitment aspect of CG which has seven items with an average score of 6.24, the highest score of 7 and the lowest score of 0, the highest score of 7 is 59.4%. These results illustrate that most manufacturing companies have implemented seven items (out of 7 items) in the

aspect of commitment to CG including ownership of CG charter, implementing CG rules, codes of ethics and CG policies, expressing compliance with CG, and having the official responsible for implementing CG.

CG implementation in the structure and function aspects of the Board of Commissioners (DK) which has 13 items with an average score of 7.71, the highest score of 12 and the lowest score of 0, the highest score of 10 is 31.7%. This result illustrates that most manufacturing companies have implemented 10 items (out of 12 items) on the structure and function aspects of the DK, including the structure and structure of the DK, having independent commissioners, having committees tasked with assisting DK, DK's role in directors, having diversity of expertise, and conducting DK meetings periodically.

Implementation of environmental control aspects and processes that have 16 items with an average score of 9.26, the highest score of 16 and the lowest score of 0, the highest score of 10 is 46.5%. These results illustrate that most manufacturing companies have implemented ten items (out of 16 items) environmental control aspects and processes including adequate internal controls, having an Audit Committee, having risk restrictions and risk management systems, having internal audit functions, having compliance programs, and has internal and external audits.

Implementation of transparency and disclosure aspects that have six items with an average score of 4.64, the highest score of 6 and the lowest score of 0, the highest score of 5 is 69.3%. These results illustrate that most manufacturing companies have implemented 5 items (out of 6 items) aspects of transparency and disclosure, among others in the form of presenting financial statements according to accounting standards (general SAK), disclosing principal transactions, transactions with related parties, off-balance-sheet activities, and other material events, the DK/Audit Committee reviews the critical elements of the financial statements, has a material (financial and non-financial) written information disclosure policy, is timely and equally available to all stakeholders.

Implementation of aspects of the rights of minority shareholders who have five items with an average score of 4.64, the highest score of 5 and the lowest score of 0, the highest score of 1 is 49.5%. This result illustrates that most manufacturing companies have implemented 1 item (out of 5 items) aspects of the rights of minority shareholders, among others in the form of preparations and calls for annual and extraordinary GMS that allow the participation of all shareholders (sufficient notice, agenda and supporting material. All of that includes propose agenda items; participation in person or through a proxy; right to ask questions; dissemination of results of meetings).

Table 1. Description of Research Variables

	Commitment to CG	*Structure and functioning of the BoD*	*Control the environment and processes*	*Transparency and disclosure*	*Rights of minority shareholders*	*Corporate Value*	*Earnings Quality*
Mean	6.24	9.71	9.26	4.64	1.34	1.68	0.34
Median	7.00	10.00	10.00	5.00	1.00	0.94	0.04
Mode	7.00	10.00	10.00	5.00	1.00	-2.39	-0.55
Std. Deviation	1.25	2.05	2.08	1.18	1.16	2.50	3.99
Minimum	0.00	0.00	0.00	0.00	0.00	-2.39	-0.88
Maximum	7.00	12.00	16.00	6.00	5.00	18.40	56.82

7. Conclusion

The results of the analysis and testing of hypotheses presented in the Table show that the commitment to CG (commitment to CG) and the protection of the rights of minority shareholders have a positive effect on corporate value. The results of interaction testing indicate that earnings quality strengthens the positive influence of the CG index, structure and function of the Board of Directors, and protection of minority rights (shareholders' rights) on corporate value (corporate value). While earnings quality strengthens the negative influence of CG index, commitment to CG (commitment to CG), transparency and disclosure to corporate value (corporate value). Thus it can be concluded that commitment to CG (commitment to CG) and transparency and disclosure (transparency and disclosure) have a positive effect on corporate value. However, after being moderated by earnings quality earnings, showing that the protection of the rights of minority shareholders (rights of minority shareholders consistently has a positive effect on corporate value), the commitment to CG (commitment to CG) hurts company value). The results of hypothesis testing summarised as follows:

Hipotesis	**:**	**Statement**	**Decision**
H_1	:	Commitment to CG has a positive effect on corporate value	Proven
H_2	:	The structure and functioning of the Board of Directors has a positive effect on corporate value	Not proven
H_3	:	Environment and processes control have a positive effect on corporate value	Not proven
H_4	:	Transparency and disclosure have a positive effect on corporate value	Not proven
H_5	:	Rights of minority shareholders have a positive effect on corporate value	Proven
H_6	:	Profit Quality reinforces the positive influence of commitment to CG on corporate value	Evidenced by the opposite results
H_7	:	Profit Quality reinforces the positive influence of structure and functioning of the Board of Directors on corporate value	Not proven
H_8	:	Profit quality strengthens the positive influence of control environment and processes on corporate value	Not proven

H_9	:	Profit quality reinforces the positive influence of transparency and disclosure on corporate value	Evidenced by the opposite results
H_{10}	:	Profit quality strengthens the positive influence of rights of minority shareholders on corporate value	Proven

Table 2. Results of Regression Analysis and Hypothesis Testing

Model		Unstandardized Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.312	.716		.435	.663
	Commitment to CG	.267	.124	.134	2.147	**.032****
	Structure and functioning of the BoD	-.123	.085	-.101	-1.443	.150
	Control environment and processes	.004	.082	.003	.049	.961
	Transparency and disclosure	.109	.115	.052	.945	.345
	Rights of minority shareholders	.212	.109	.098	1.942	**.053***
	Earnings Quality	2.138	2.729	3.419	.784	.434
	ContEnviron*EarnQual	-.316	.193	-5.160	-1.641	.102
	TranspDisc*EarnQual	-.365	.198	-2.807	-1.837	**.067***
	Right*EarnQual	2.835	.934	4.535	3.035	**.003****
R		0.233				
R Square		0.054				
Adjusted R Square		0.037				
F		3.145				
Sig.		0.001***				

a. Significancy Level ***1%. **5%. *10%
b. Dependent Variable: Corporate Value
c. Predictors: (Constant), Right1_EarnQual1, Transparancy & Disclusure 1, Right & Shareholders 1, Commitent 1, Control & Enviroment 1, Structure & DK 1, TranspDisc1_EarnQual1, ContEnviron1_EarnQual1, EarnrQual1

Table 3. Results of Regression Analysis and Hypothesis Testing (Extention)

Excluded Variables						
Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	*Komit*EarnQual*	-16.801[b]	-1.975	**.049****	-.089	2.625E-5
	*StrukDK*EarnQual*	22.413[b]	3.227	**.001*****	.144	3.887E-5

a. Significancy Level ***1%. **5%. *10%
b. Dependent Variable: Corporate Value
c. Predictors: (Constant), Right1_EarnQual1, Transparancy & Disclusure 1, Right & Shareholders 1, Commitent 1, Control & Enviroment 1, Structure & DK 1, TranspDisc1_EarnQual1, ContEnviron1_EarnQual1, EarnrQual1

8. Conclusion

The results of the study show that commitment to CG and protection of shareholders' rights have a positive effect on company value. The results of interaction testing indicate that the quality of earnings reinforces the positive influence of the CG index:

the structure and function of the DK and the protection of the rights of minority shareholders to the value of the company. While earnings quality reinforces the negative influence of CG index: commitment to CG, transparency and disclosure of company value. The results concluded that commitment to CG and the protection of the rights of minority shareholders had a positive effect on the value of the company. However, after being moderated by earnings quality, it shows that the protection of the rights of minority shareholders is consistently positive for firm value, whereas commitment to CG hurts their value.

The results of the study contribute to corporate governance practices and the assessment of corporate governance in manufacturing companies in the Indonesia Stock Exchange. The implementation of corporate governance, especially the aspect of commitment to CG and protection of the rights of shareholders, can increase the value of the company. This aspect is undoubtedly considered important by stakeholders, especially investors, that the company runs the principles of good corporate governance. However, aspects of the protection of shareholders' rights are still limited to the points of preparation and annual and extraordinary GMS calls that allow the participation of all shareholders (sufficient notice, supporting agenda and material; propose agenda items; participation privately or through a proxy; the right to ask questions, dissemination of meeting results, agenda, participation in person or through a proxy, the right to ask questions, dissemination of results of meetings.

This research has limitations in accessing data related to the implementation of qualitative corporate governance. The explanations revealed in the company's annual report are partially incomplete, making it difficult to give conclusions and scoring. Researchers use the interpretation of disclosure of the implementation of CG based on the subject matter of the researcher. Also, this study uses scoring disclosure of corporate governance aspects with a score of 1 (revealing) and a score of 0 (not revealing). This kind of disclosure scoring certainly has limitations in the value of implementation only to the information disclosed in the annual report.

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What Derives Foreign Direct Investment Inflows; Evidence from a Panel Analysis of BRICS Countries?

Aderemi Timothy Ayomitunde[45], Opele Adedayo Mathias[46] Ebere Chindima E.[47], Amusa Bolanle Olubunmi[48]

Abstract: The aim of this study is to investigate the variables that derive foreign direct investment in BRICS countries. Recent past studies have shown mixed results which make further study on this subject matter imperative. Data was collected from the United Nations Conference on Trade and Development and World Bank Indicator from 1990– 2017 and the study employed various Panel Data Techniques such as Fixed Effects Model, Random Effects Model, Hausman Test and Panel Fully Modified Least Squares. The findings that emerged in this study established the active variables that derive inflows of FDI in BRICS countries as gross domestic product per capita and the standard of living of people in these countries. Whereas market size was discovered to be a passive variable that propels FDI inflows in the BRICS economic region. Based on these findings the study recommends as follows: firstly, the policy makers in BRICS countries should embark on further policy measures that will ensure the continuous improvement of living standard of people in one hand and expansion of gross domestic product per capita growth on the other hand. In addition, more policies and stable political goodwill should be embarked upon towards making local market attractive to foreign investors in these countries.

Keywords: FDI; Active Variable; Passive Variable; Panel Analysis and BRICS Countries

JEL Classification: F21; F23; F36

1. Introduction

In the last two decades, foreign direct investment inflows have been skewed among the developing countries. The industrial revolution and aggressiveness in economic management orchestrated the advent of some newly emerging economies Brazil, Russia, India, China and South Africa. In 2001, Jim O'Neill tagged these economies

[45] Department of Economics, Olabisi Onabanjo University, Nigeria, Address: Ago Iwoye, Ogun State, Nigeria, Corresponding author: aderemi.timothy@gmail.com.
[46] Department of Business Administration, Bells University of Technology, Nigeria, Address: Ota, Nigeria, E-mail: opeleadedayo@yahoo.com.au.
[47] Department of Economics, Babcock University, Nigeria, Address: Ilishan Remo, Ogun State, Nigeria, E-mail: eberec@babcock.edu.ng.
[48] Department of Business Administration and Management, Gateway (ICT) Polytechnic, Nigeria, Address: Saapade, Ogun State, Nigeria, E-mail: bolabunmiakanni@gmail.com.

BRIC block with the inclusion of South Africa in 2010, which metamorphosed the acronyms to BRICS Economic Block.

Consequently, these countries have positioned themselves to be a paramount heart of this contemporary globalized world, and the unique factors that distinguish these economies from any other emerging countries are the capacity they possess to influence and to be influenced by the world economy (O'Neill, et. al., 2005). These countries have been the major destination of FDI inflows in the recent time. Brazil, Russia, India and China were among the top FDI inflows recipient in 2016. China was the second highest FDI inflows destination after USA in 2017. (UNCTADstat, 2018).

However, apart from the huge domestic market possessed by these countries, the sporadic rate at which their economies are growing in the last decade has created a vantage position for the BRICS economies to be the destination of multinational manufacturing companies in the world.

Meanwhile, the critical roles in which these newly emerging economies are playing in global FDI inflows and outflows have sparked off debate among the scholars and the policy makers about the aftermath effects of FDI inflows on economic growth of BRICS countries. See Ceyhun (2016), Gaurav (2015). However, there have been few attempts to establish the motivating factors behind the current flow of FDI into BRICS economies in the literature in the recent time. Also, economic structures of these countries are very complex which have made them to be subjected to several factors like competitiveness of the business environment, low labour cost, domestic market size, infrastructure, gross capital formation, governance efficiency and regulatory quality openness to trade, and rule of law. It is expedient to state here that the literature has shown divergent views about these factors. See Jadhav (2012), Nonnenberg and Mendonca (2004), Sahoo (2006), Jadhav and Katti (2012) and Vijayakumar et al. (2010), which invariably connotes the inconclusiveness of the literature about the subject matter of this paper. Hence, the relevance of this study.

This paper is arranged in the following ways: section 1 presents the background information about the study, and section 2 provides the theoretical and empirical review of literature relating to the factors that derive FDI inflows in BRICS countries in particular and developing countries as a whole. Consequently, section 3 discusses the potential relevant variables that are expected to attract FDI inflows in the BRICS economies. Data and model specification are also provided in this section alongside with empirical results, summary, conclusion and policy recommendation.

1.1. Literature Review

In this section an attempt has been made to provide the account of recent past studies on factors that derived FDI inflows in BRICS countries in particular and developing/emerging economies in general.

Author(s)	Year	Study & Country	Methodology	Results & Conclusion
Gui-Diby	2014	Estimation of nexus between FDI and economic growth in 50 countries in Africa between 1980 and 1994.	GMM Technique	A negative relationship exists between FDI and economic growth over the period 1980-1994 but reverse was the case between 1995 and 2009. The positive impact in the latter period of the study was attributed to the significant improvement in the business environment and the multiplier effect of export on the economies
Vijayakumar et al.	2010	Estimation of the factors propelling FDI inflows in BRICS countries.	Panel Data Analysis	The paper concludes that the market size, labor cost, infrastructure, and gross capital formation are the significant positive variables that are propelling FDI inflows in BRICS countries, but trade openness and inflation are identified to be insignificant propelling factors.
Kyrkilis and Pantelidis	2003	Investigation of the key determinants of FDI inflows in both developing and developed countries	Quantitative Analysis	It was discovered that effective exchange rate, real GNP, and human capital are the key determinants of FDI flows in the countries under investigation by the researchers
Tiwari	2011	Estimation of the effectiveness of foreign aid, foreign direct investment, and economic freedom 28 economies in Asia	Econometrics Technique	It was concluded from the results of the study that a rise in the financial freedom, fiscal freedom and domestic capital stock are the significant factors that directly affect growth of the economy. Meanwhile, freedom from corruption, FDI inflows and foreign aid are identified as the significant factors that inversely affect economic growth
Mahmood et al.,)	2010	Examination of the relationship between economic freedom and economic growth in SAARC Member Countries	Econometrics Technique	The study discovers that government size has a negative correlation with growth, but financial, trade, investment, business, property rights, and freedom from corruption show a positive relationship with growth
Azman-Saini, Baharumshah , and Law	2010	Evaluation of the nexus between systemic, foreign direct investment, economic freedom and economic growth	Econometrics Technique	It could be established from the findings from the paper that foreign direct investment has an indirect positive effect on economic growth, but the impact of FDI is contingent on the level of economic freedom in

				the host economies. This implies that the countries with higher level of economic freedom get higher benefits from the inflows of cross border capital
Pearson et. al.	2012	Analysis of the link between economic freedom, state growth and FDI of fifty states in the United States of America	Panel Data Analysis	The authors discover that both economic freedom and growth rate of the each of the state have both positive and significant impact on the inflow of FDI
Janicki and Wunnava)	2004	Evaluation of the relationship between economic growth, political risk, trade openness, labor cost and FDI inflows in Central and Eastern European nations	Panel Data Analysis	It was discovered from the results of the study that economic growth, political risk, trade openness and labor cost are the major variables that caused FDI inflows to Central and Eastern European nations
Akinlo	2003	Investigation of the impact of FDI inflows in 12 African countries.	Panel Data Analysis	The author submits that the impact of FDI inflows is primarily felt by economic growth through accumulation of capital, as opposing to increasing productivity
Jadhav	2012	Investigation of institutional and political determinants of foreign direct investment in BRICS countries	Panel Data Analysis	The paper concludes that openness to trade, market size, and rule of law play strategic roles in attracting FDI to BRICS economies, but the availability of natural resources shows a negative effect. This connotes that the flows of FDI to BRICS countries is largely market-oriented
Jadhav and Katti	2012	Evaluation of the link between efficient governance, quality of regulatory and FDI inflow in BRICS economies.	Panel Data Analysis	It was discovered from the study that efficient governance and quality of regulatory show a direct impact on FDI inflow in BRICS economies. However, the reverse is the case for political instability, voice, accountability, and control of corruption.
Asiedu	2004	Investigation of the relationship between foreign direct investment, market size, government policy, the role of natural resources, institutions and political instability in Africa	Fixed Effect Panel Model	The paper concludes that infrastructural development, natural resources, human capital, market size, host countries' investment policies, reliability of legal system and stability of political climate propel FDI flows in Africa, meanwhile reverse is the case for corruption, political instability
Sahoo .	2006	Estimation of determination and impact of FDI inflows in South Asian countries	Panel Co-integration Test	The author submits that the market size, the growth of labour force, infrastructure index, and openness of economies are the main

				determinants of FDI inflows in South Asian countries
Saibu and Akinbobola	2014	Estimation of the nexus between globalization, FDI and economic growth in some selected Sub Saharan African countries	Vector Error Correction Modeling (VECM)	The author posits that trade liberalization has an insignificant effect on economic growth process of the SSA nations, and also the upsurge in the capital flows to African nations was not sufficient to insulate the African economies from the global economic shocks.
Lucas	1993	Investigation of factors that determine FDI inflows in some selected East and South Asian	Multiple Regression	The author argues that FDI inflows show higher degree of responsiveness to aggregate demand of exports than domestic exports, and similarly higher degree of responsiveness to interest rate than wages.

Source: Authors` Compilation (2019)

However, the empirical literature reviewed above shows that studies of FDI inflows in BRICS countries are limited and it is clear that there was no consensus yet regarding the variables that derive FDI inflows in these countries. Hence, the relevance of this study.

2. Methodology

This study makes use of secondary data from 1990 to 2017. The data on FDI are sourced from UNCTAD database published by World Bank. Meanwhile, data on market size, growth rate of the economy, growth per capita and per capita output are extracted from World Bank Development Indicator. E-Views software was employed for the running of the panel data.

2.1. Model Specification

FDI = F(MKTZ, GRT, GDP/CA, PCA/OP) ----------1

If model 1 is linearized to form model 2

$LnFDI_{it} = \propto_i + \beta 0 LnMKTZ_{it} + \beta 1 GDPGRT_{it} + \beta 2 GDP/CA_{it} + \beta 3 PCA/OP_{it} + \varepsilon_{it}$----------2

Where $LnGDP_{it}$ is log of real GDP to proxy the market size of economy, $LnFDI_{it}$ is log of FDI inflows, $GDPGRT_{it}$ is annual growth rate and GDP/CA_{it} is annual GDP per capita growth and PCA/OP connotes per capita output which measures the standard of living of people in the country and ε captures error term. Meanwhile, i= 1…5, t= 1990----------2017.

$\propto$ *is an intercept and* $\beta 1$, $\beta 2$ *and* $\beta 3$ *are slope parameters.*

By estimating model 2, it would give us the results of the variables that derive FDI inflows in BRICS countries, as evidenced from the panel analysis.

2.2. Estimation Technique

This study employs a panel data analysis which allows the control of variables that are unobservable or immeasurable. The fixed and random effects models were introduced to address the issue of heterogeneity in the estimation technique. It should be stressed that the fixed effects model assumes that the unobservable variables or country specific variables factored in the error term are correlated with the explanatory variables or regressors, whereas the random effects model assumes that the unobservable variables are not correlated with the explanatory variables or regressors. The Hausman test is adopted to test the validity of fixed or random effects in the study.

From the results to test for the heterogeneity effect of the panel models by the test statistics (Pr> $\chi 2$=0.000). This implies that the fixed effects model is the more appropriate model for the analysis of the study.

2.3. Results and Discussion

This study utilizes secondary data of BRICS countries from 1990 to 2017. Data on FDI were extracted from UNCTAD database published by World Bank. Meanwhile data on GDP and growth were sourced from World Bank Indicator.

Table 1. Descriptive Statistics of Annual Data Series (1990-2017)

Descriptive Statistics	LMKTZ	LFDI	GDP/CA	STD OF LIVING	GRT RATE
Mean	3.15E+13	7.12E+10	8.721429	2921.214	9.532143
Median	2.36E+13	5.71E+10	8.600000	1398.650	9.350000
Maximum	7.86E+13	1.36E+11	13.60000	8827.000	14.20000
Minimum	6.42E+09	3.49E+09	2.400000	317.9000	3.900000
Std. Deviation	2.25E+13	4.25E+10	2.429193	2840.364	2.444941
Skewness	0.639811	0.183548	-0.008820	0.890488	0.251021
Kurtosis	2.148039	1.708151	3.209016	2.243657	2.863887
Jargue-Bera	13.78575	10.52120	0.256659	21.83959	1.578336
Probability	0.001015	0.005192	0.879563	0.000018	0.454222
Sum	4.41E+15	9.97E+12	1221.000	408970.0	1334.500
Sum. Sq. Deviation	7.02E+28	2.51E+23	820.2357	1.12E+09	830.9054
Observation	140	140	140	140	140

Source: Authors` Computation (2019)

The descriptive statistics such as mean, median, minimum and maximum values; and the distribution of the sample measured by the skewness, kurtosis and Jaque-Bera statistics of the data are examined in this paper.

However, it is important to state that when the values of mean, mode and median are converged, this implies that the distribution of data is symmetrical. From the table

above, the values of mean and median are very close for the majority of the study which indicates that the distribution of data is nearly symmetrical.

Table 2. The variables that derive FDI inflows: Panel Data Estimation Results Based on Fixed Effects (FE) and Random Effects (RE) Models

Dependent variable: LFDI		
Variables	FE Estimation	RE Estimation
LMKTZ	0.0006* (1.9)	0.0021** (8.7)
GDP/CA	3.6110** (9.2)	7.4609** (9.2)
GRTRATE	-3.521** (9.1)	-7.511** (5.8)
STD OF LIVING	67796** (3.0)	-31871* (1.5)
Adj. R^2	0.96	0.97
Hausman test (prob> chi^2) 10.12 (0.138		

Source: Authors` Computation (2019)

a. The asterix ** indicates 5% level of significance, * indicates 10% level of significance b. *Figures in the parenthesis represent t- value*

c. A constant term is included but not reported

Table 3. Determinants of FDI Inflows: Panel Data Estimation Results Based on Panel Fully Modified Least Squares (FMOLS)

Repressors	Coefficient	t-statistics	P-value
LMKTZ	0.0003*	1.12	0.2631
GDP/CA	3.7000**	12.7	0.0000
GRTRATE	-3.5810**	12.4	0.0000
STD OF LIVING	87610**	5.11	0.0000
R-Squared	0.965934		
Adjusted R-Squared	0.963771		

Source: Authors` computation (2019)

*Notes: Figures in the parenthesis represent t- value, ** denote 5% percent level of significance & a constant term is included but not reported.*

In this study various variables such as the market size, GDP per capita growth, growth rate of economy and standard of living have been subjected to various tests in order to establish the factors that derive FDI inflows in BRICS countries.

Consequently, the result from the fixed effect model established that GDP per capita and standard of living are significant variables that derive FDI inflows in the BRICS country. However, the market size of these country though a contributory factor but not significant in propelling inflows of FDI in these economies. In another perspective, the finding from the random effect model submitted that the market size

and GDP per capita growth are the major variables that catalyzed the inflows of FDI in the BRICS countries in the last 2018.

In order to address the problem of heterogeneity associated with the panel data analysis, the estimated result of Hausman test favours adoption of the fixed effect model as the more appriopriate for this study. In the same vein, the results from the Panel Fully Modified Least Squares (FMOLS**)** corroborates that GDP per capita and standard of living are the principal variables that derive FDI inflows in the BRICS countries, while market size is not a significant variable, though contributory factor. This finding is in consonance with the result of the fixed effect model.

2.4. Conclusion and Recommendation

This study examined the potential variables that derive inflows of FDI in BRICS countries during the period of 1990 to 2017 with the aid of various panel analysis techniques. From the findings that originated from the study, it is paramount to establish the following about the factors that derive FDI inflows in BRICS countries. The study herby establishes among others, that there are two categories of the variables that derive FDI inflows in these economies, namely active variable and passive variable. The active variables that derive inflows of FDI in BRICS countries are gross domestic product per capita and the standard of living of people in these countries. Whereas market size was discovered to be a passive variable that propels FDI inflows in the BRICS economic region. Based on the findings that originated from this study, it is expedient that this paper makes the following recommendations. Firstly, the policy makers in BRICS countries should embark on further policy measures that will ensure the continuous improvement of living standard of people in one hand and expansion of gross domestic product per capita growth on the other hand. In addition, more policies and stable political goodwill should be embarked upon towards making local market attractive to foreign investors in these countries.

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Level of Development and Pretection of Economic Competition in Kosovo-Case Study Gjilan Region

Gani Asllani[49], Bedri Statovci[51]

Abstract: This paper investigates development and protection of economic competition in Kosovo focusing on the analysis of the level of competition in the Gjilan region. The paper deals with the legislative aspect of competition, the sensitive sectors (banks, insurance, gas stations and pharmacies) where the competitions is damaged and finally are presented the measures on improvement based on the EU practices. Like other economies in transition, the economy in Kosovo the activity for protection of competition is faced with many challenges. Moreover, these challenges result from the fact that Kosovo was the last country in South-eastern Europe to start implementing the principles of a free market economy after 1999. Through a case study, it is attempted to give a realistic picture of the level of competition development, where competition is undermined, general business knowledge about the functioning and enforcement of the law on competition protection, and concrete measures to be taken in order for competition to function based on the rules of the market economy.

Keywords: Market economy; economic competition; monopoles; abuse of dominance position

JEL Classification: F12

1. Introduction

The creation of a market economy and the free operation of market mechanisms is an important objective for sustainable economic development. The realization of this objective imposes the need for decision-makers to create such economic policies adapted to adequate legislation that will impact economic growth through a competitive market on the one hand and on the other hand eliminate the behavior that harms the free market. The sound competition policy and the encouragement of competitiveness among market participants have multiple positive effects on the state's economy, businesses and consumers in particular. The importance of protection and development of competition, among other things, is seen as:

[49] Associate Professor, PhD, Univesity Haxhi Zeka, Law Faculty of University Haxhi Zeka, Kosovo, Address: Peja, Kosovo, Corresponding author: gani.asllani@unhz.eu.
[51] Assistent Professor, PhD, Univesity Haxhi Zeka, Economic Faculty of University Haxhi Zeka, Kosovo, Address: Peja, Kosovo, E-mail: bedri.statovci@unhz.eu.

- Competition should be the basis for determining the quality of goods and services provided, based on certain standards that will be offered to consumers. Competition creates an economic environment where firms can operate freely in achieving these objectives, while consumers, in turn, benefit from the prices set on the basis of the interaction between demand and supply forces (Gavil, Kovacic & Baker, 2002);

- Competition brings dynamism, so it ensures that businesses are under constant pressure to deliver the best possible goods and services to customers at the best possible prices. In this way it affects the improvement of the allocation of production factors and the growth of the welfare of the society (Gerber, 2001);

- Competition forces firms to always improve their products and promote the development of new technologies. It should eliminate as much as possible reduced choices or scarce innovations. It promotes initiatives and innovations as well as adapting new technologies;

- Competition also hampers the creation of monopolies because they have been detrimental both to the economy and to the consumer, because the latter benefit from the possibility of elections, quality, fair prices and new products;

- Competition affects investment growth by eliminating various barriers and thereby increasing the employment rate, ultimately;

- Increasing the economic efficiency of different entities and increasing economic growth and disciplining the management of these entities. Competition is the main driver of competitiveness among firms and leads to a country's economic growth. It forces outbid firms to market inefficient firms and redistributes production resources from failed firms to more powerful competitors.

The implementation of the Law on Protection of Competition by the Institutions for Protection of Competition, other commercial law laws and the development of proper anti-trust policies in order to promote it amongst the contestants in the market and the growth of competitiveness is a continuous work and it benefits all market players. It can be said that protection and development of competition is realized through its two main pillars: Competition Law and Competition Policies. Within the Competition Law are included: controlling cartels, controlling concentration and controlling abuse of dominant position. While competition policies include: economic activities of economic regulators as well as economic policy areas where competition is affected.

2. Legal Aspect of the Competition Controle-Law on Pretection of Competition

The Constitution of the Republic of Kosovo, article 10 lays down economic system of Kosovo as a system based in free market economy and freedom of economic activity.[56] Free market means the economy where the decision about production and consumption are taken by individuals and private companies. Price, quantity and production method is set out by market. To fulfill this function the market must have competition rules and such rules to be implemented. There shall not be a free market economy where the production opportunities are kept away from companies with dominant position in market, whether they are private or public. When a company achieves to have a considerable position in market (point where the demand equals with offer), by this company itself, in this case consumers are not able to play their role in setting the prices and are affected by losing. The difference between the investigation of agreements and the dominant position from one side and concentration of companies in the other side consists by analyzing two cases: in the first case is based on: a) Past (is performed *ex post*), whereas in the second case and b) is based prognosis for the future (performed *ex ante?*).[57]

Law on protection of competition respects share of control *ex ante and ex post*, by treating from one side forbidden agreements and excluding from prohibition (article 4 of Law) and abuse of the companies in dominant position (article 10) and the other side and anticipatory control of Concentrations (article 13). In the other part the law lays down the competition authority as responsible body for law implementation (article 24). Kosovo Competition Commission has been established by a decision of the Assembly of the Republic of Kosovo, in 2008, but in fact was active in March 2009. Now the competition in Kosovo is regulated by the Law on Protection of Competition nr.03/l-229, of October 7th 2010 (official gazette of Republic of Kosovo).[58] This law amended the Law 2004/36. The law set out the opportunity of market monitoring by two methods: a) By controlling actions of enterprises, and b) By controlling the market structure.[59]

3. Histrorical Environment of Kosovo

Kosovo is situated in the middle of the South-East Europe, positioned in the center of Balkan Peninsula. It represents an important crossroad between South Europe and

[56] Constitution of the Republic of Kosovo, https://gzk.rks-gov.net.
[57] Asllani, G. Competition and Competition rights, Pristine, 2016.
[58] Law on Protection of Competition no. 03/1-229, October 7, 2010.
[59] Regulation No. 1/2003, European Competition Commission.

Middle Europe, Adriatic Sea and Black Sea. The Kosovo's area is 10,887 km². It is forecasted that Kosovo has 1,907,592 residents and the density of the population is around 159 persons per km^2, and it is divided in 38 Municipalities. Kosovo was under UNMIK administration since 1999. During this time Kosovo was administered by United Nations Mission and Provisional Institutions of Self-Government, while the security issues were trusted to NATO- (KFOR) troops. On 17th February 2008 the Kosovo's Assembly has declare the independence of Kosovo. On 2011 has been organized the general registration of the population, apartments and households, but the Statistical Office of Kosovo and come out with the final results of registration. The previous last registration of the population has taken place in 1981.[60]

4. Stady Case- Region of Gjilan

The study focuses on the analysis of economic competitiveness in the Gjilan region. Equal to the level of development of Economic Competition in Kosovo and Gjilan Region faces the same challenges, so by researching some of the most vulnerable sectors where competition is being affected is attempted to give a clear picture of the level of competition development and law enforcement for the protection of competition. The Republic of Kosovo is divided into the first level of local government in seven administrative regions, which are: Pristina, Mitrovica, Gjilan, Ferizaj, Prizren, Gjakova and Peja region.

Graph 1. The Kosovo map is divided into administrative units

Source: Statistical Agency of Kosovo

[60] Kosovo Agency of Statistics, http://ask.rks-gov.net/.

The District of Gjilan is one of the seven districts (the higher-level administrative divisions) of Kosovo. The district of Gjilan has a total of 6 municipalities: Gjilan, Kamenica and Vitia as bigger municipality as well as Ranilug, Partesh and Kllokot municipality with population and small territory (inhabited by Serbian minority). The research is focused in the three major municipalities while other municipalities in terms of competition, market size and market impact do not have any relevance.

Graph 2. Map of Gjilan Region

Source: Statistical Agency of Kosovo

4.1. Research Methodology and Data

For the purpose of developing this paper, through the comparative analyzes, the use of the sample method and the primary data extracted from the questionnaire, attempts to answer the research questions.

Research question?

The research question consists in the fact that Businesses in Gjilan Region have difficulties in doing business because of unfair competition and how well are these businesses knowledgeable and enforce competition protection law?

Hypotheses

The hypotheses put forward consist in that:

H1- The enforcement of the law on protection of competition will affect the creation of fair economic competition and

H0 - Does the enforcement of the law on competition protection have any significance in making the business easier and with this growing competition?

Restrictions of Paper

Difficulties in providing information are on the problems with questionnaire filling, hesitation in answering the questionnaire, location, technical and organizational conditions.

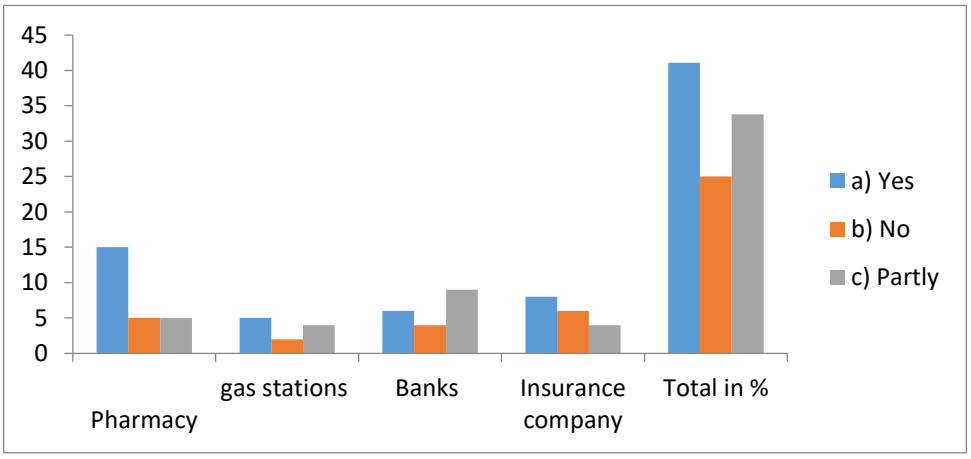
4.2. Empirical Analysis

In order for the research to be more reliable and to receive objective information, a questionnaire was prepared for the sectors of: Pharmacy, Insurance Companies, Gas stations, Banks. Relevant market research has been done by defining the geographic market (Gjilan region) and the product market. The hypotheses put forward relate to specific questions and enable the receipt of reliable replies.

The respondents (respondents) have been selected with high school diploma: high school, bachelor and undergraduate studies in order to have their answers relevant.

From the answers given by the respondents from the questionnaire, the following findings result:

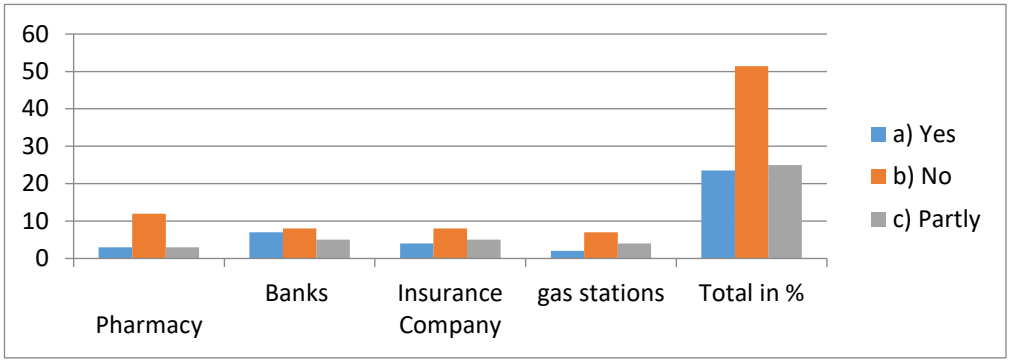
1. Are there any difficulties in doing business in the Gjilanit region?



Graph 3

Source: The data from the questionnaire

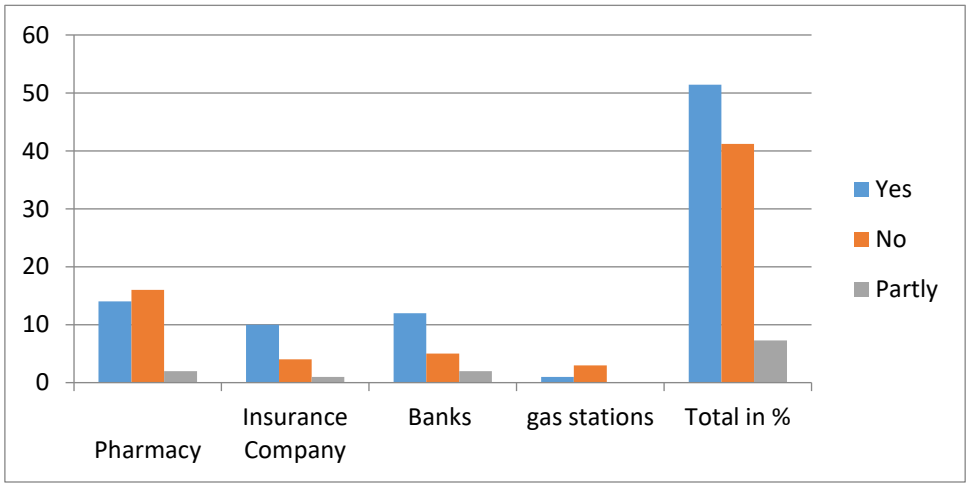
2. Does the Republic of Kosovo have sufficient legal basis for the functioning of the proper competition in the field of business?



Graph 4

Source: The data from the questionnaire

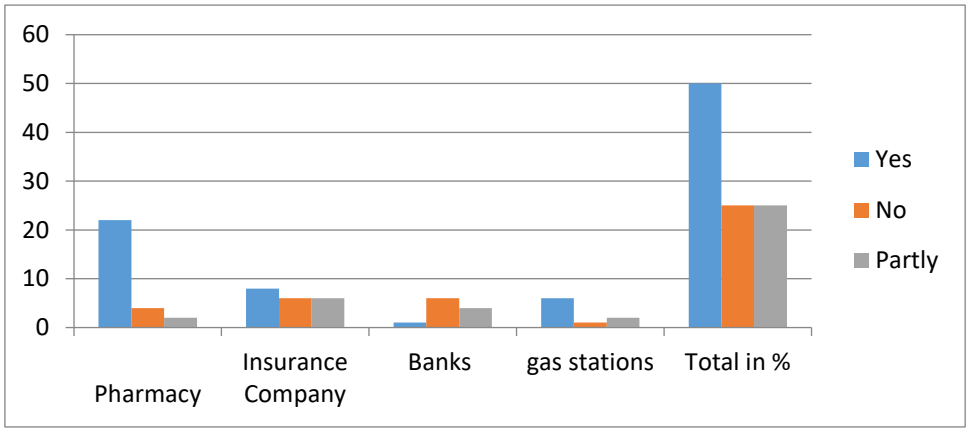
3. Are you aware that the Republic of Kosovo has the Law no. 03/l-229 on Protection of Competition?



Graph 5

Source: The data from the questionnaire

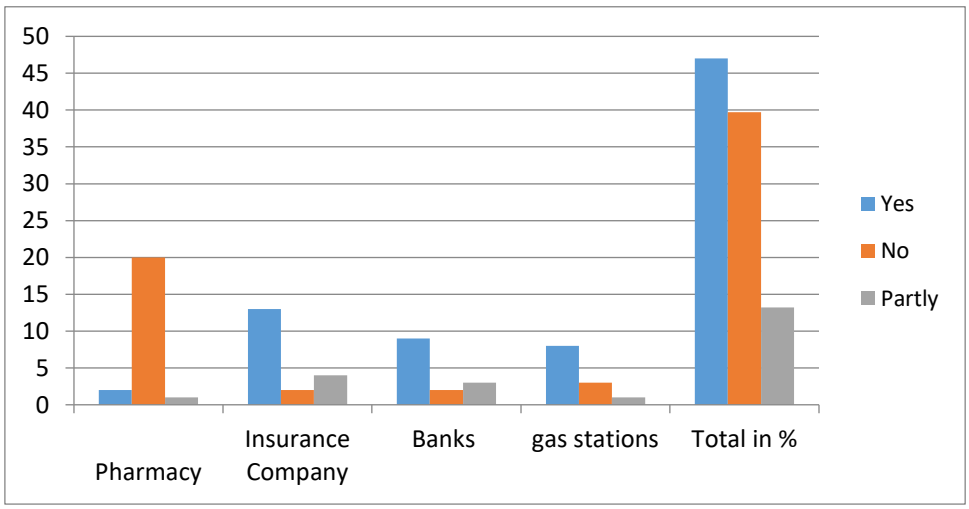
4. Monopoly as an economic phenomenon is present in your business field?



Graph 6

Source: The data from the questionnaire

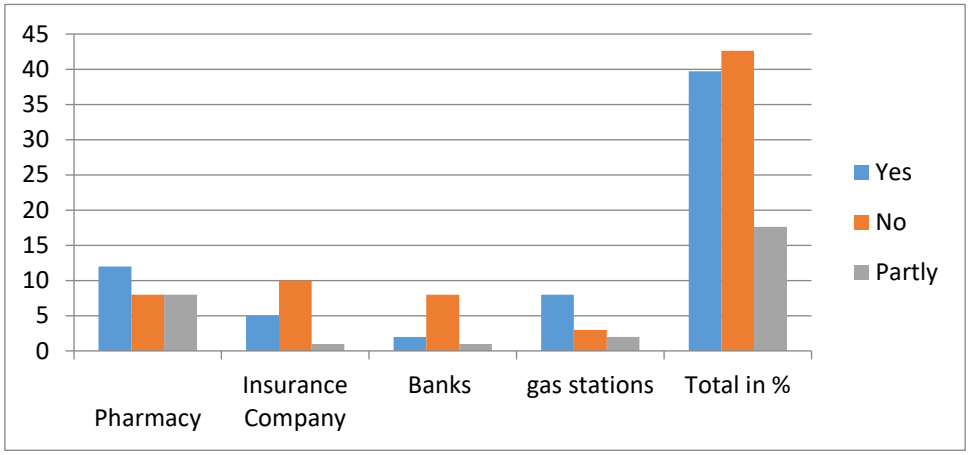
5. Competition Authority are there occasions when it intervened in defense of genuine competition in the nature of your business?



Graph 7

Source: The data from the questionnaire

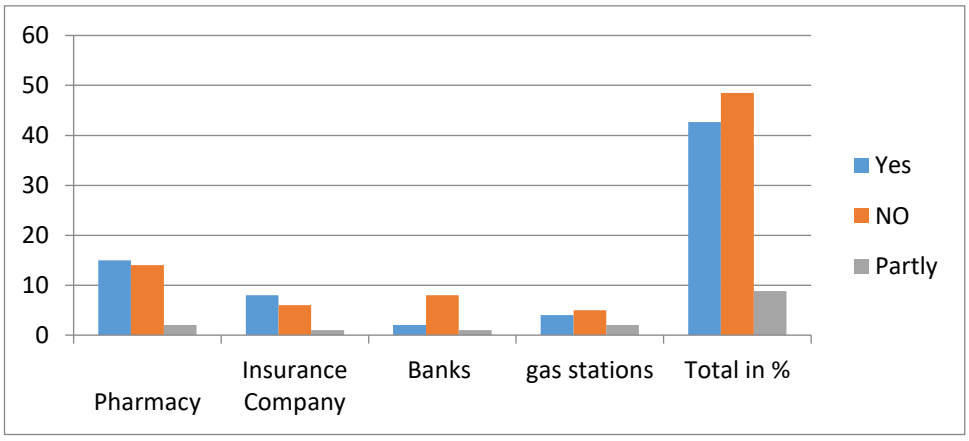
6. Do you think there are legal obstacles to making genuine competition in Kosovo?



Graph 8

Source: the data from the questionnaire

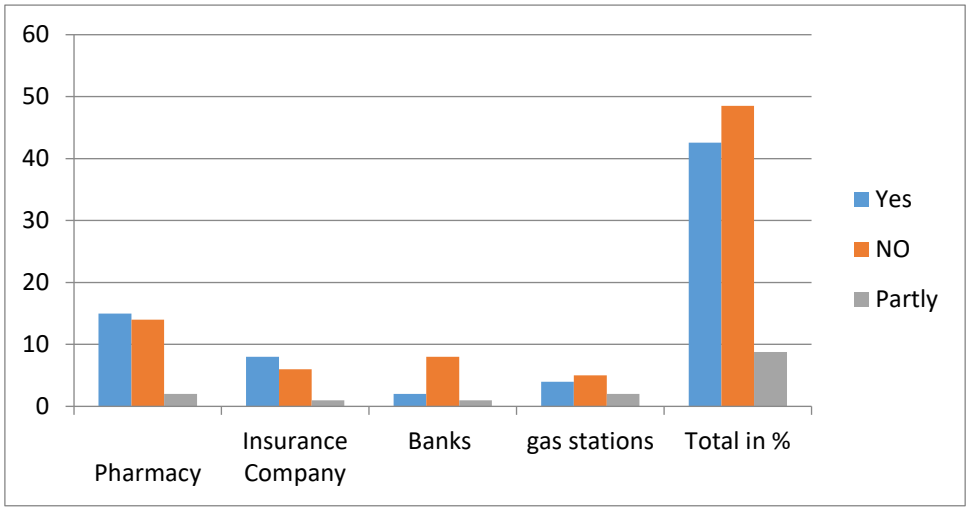
7. In the nature of your business, are there cases when businesses have entered into agreements on the unique services and prices offered to consumers?



Graph 9

Source: the data from the questionnaire

8. Do you think that the business you represent is damaged as a result of agreements prohibited by economic participants in the market?



Graph 10

Source: the data from the questionnaire

5. Conclusion and Recommendation

Based on the data collected from the questionnaire and their analysis, we can draw some conclusions related to the hypotheses set out in the paper:

- The recognition and enforcement of competition law has positive effects on the growth of competition. The research shows that the regulated sectors (Bank and Pharmacy Sector) show a modest level of competition development compared to the sector of Insurance Companies and Gas stations.

- Respondents indicate that in the other surveyed sectors (Insurance Companies and Petrol Pumps) these two markets need to be regulated in terms of functional laws and their implementation. Where there is insufficient knowledge to enforce the law on competition protection, there is the possibility of market damage, abuse, and other difficulties associated with the ease of doing business.

And finally, it is very important to have more advocacies by Kosovo Competition Authority regarding to the importance of competition, introduction to law on protection of competition and another administrative acts. There is a need that the authority should have regular cooperation with economic regulatory bodies with a view to create fair competition. All these acts shall create sustainable environment for further development of free competition and its protection, as one the fundamental condition for sustainable economic development and protection of consumer health.

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Fiscal Sustainability and Interdependence of Primary Balance and Public Debt in South Africa

Elvis Munyaradzi Ganyaupfu[61], Zurika Clausen Robinson[62]

Abstract: The main goal of this study was to evaluate sustainability of fiscal policy in South Africa, and assess the interdependence of primary balance and public debt, as ratios of gross domestic product, over the sample period 1997q4 to 2016q2. The Vector Error Correction (VEC) model was applied to estimate the fiscal reaction function using EViews program, while the VEC Granger-Causality/Block Exogeneity Wald test, impulse response functions and variance decompositions were applied to test for presence of interdependence between primary balance and public debt. Empirical results show strong evidence of consistency of government fiscal policy with the intertemporal budget constraint and interdependence between primary balance and public debt over the period under review. In implementing corrective fiscal adjustment measures to ensure fiscal sustainability, government should therefore consistently take into consideration the interdependency between primary fiscal balance and public debt profiles.

Keywords: fiscal policy; sustainability; interdependency; primary balance; public debt

JEL Classification: H11; H30; H61; H62; H63

1. Introduction

The manner in which government conducts fiscal policy in an economy plays a fundamental role towards achievement of broad macroeconomic objectives. Since the global financial crisis during 2008, the South African economy has experienced prolonged unpredicted fiscal deterioration which led the country to face economic challenges that have further adversely affected the level and composition of public debt (Magubu, Maisonnave, Chitiga & Decaluwé, 2015). While the total balance of public debt in the domestic bond market remains high, interest payable on public debt remains one of the key items of annual government expenditure in an environment characterised by largely low interest rates (Magubu et al., 2015). The

[61] School of Economic and Financial Sciences, Department of Economics, University of South Africa, South Africa, Address: Muckleneuk Campus, Pretoria, South Africa, Tel.: +27781228145, Corresponding author: elvisganyaupfu@gmail.com.

[62] Professor of Economics, School of Economic and Financial Sciences, Department of Economics, University of South Africa, South Africa, Address: Muckleneuk Campus, Pretoria, South Africa, E-mail: robinz@unisa.ac.za.

domestic bond market provides as the main source of new financing, providing about 70% of the annual requirement (Magubu et al., 2015). National Treasury (2018) notes that the liquid domestic capital market remains as government's main source of borrowing despite the volatile market conditions. The proportion of domestic debt to total public debt was 96.3% in 1994/95, and declined marginally to 90.1% in 2016/17.

Comparatively, the main budget balance as a ratio of output has largely been in the deficit territory over the period 2000/01 to 2014/15. The respective balance reached -6.3% in 2008/09, narrowed to -3.8% in 2016/17, and averaged -4.4% over the period 2010/11 to 2016/17 (National Treasury, 2018). Concurrently, the primary balance-to-output ratio fluctuated between -1.5% in 2010/11 and -0.3% in 2016/17, and averaged -0.9% during 2010/11 to 2015/16. Such fiscal developments suggest the need to constantly monitor fiscal risks in the economy to ensure sustainability of fiscal policy. The International Monetary Fund (IMF, 2009) defines fiscal risks as possible deviations of actual fiscal outturns from outcomes that were expected at the time of tabling the national budget; which is consistent with Stuart and Dlamini (2015) who define fiscal risks as possible adverse events that can substantially affect the probability of government to attain fiscal sustainability.

This paper is organised as follows: Section 1 provides the introduction, while Section 2 presents literature and theoretical framework. Section 3 provides the econometric methodology, Section 4 presents the results, and Section 5 provides concluding remarks.

2. Literature and Theoretical Framework

The majority previous studies on fiscal sustainability largely anchor on concepts of static budget constraint and inter-temporal budget constraint (Abdulla, Mustafa & Dahalan, 2012). The static budget constraint is fulfilled if government can finance its current spending with its revenue and new borrowing, and rolling over its maturing liabilities; while the inter-temporal budget constraint hinges on the solvency criterion and requires present discounted value of future primary balances to be at least equal to the unpaid debt stock value (Hamilton & Flavin, 1986; Chalk & Hemming, 2000; Burnside, 2004; Polito & Wickens, 2005; Kirchgaessner & Prohl, 2006).

Preceding studies that assessed fiscal policy sustainability in South Africa, but did not explicitly evaluate interdependence between primary balance and public debt (as ratios of output) include Tshiswaka-Kashalala (2006), Burger, Stuart, Jooste & Cuevas (2011), Jibao, Schoeman & Naidoo (2011), and Ganyaupfu (2014). The respective studies applied different estimation techniques, which include Vector Error Correction (VEC) models, Ordinary Least Squares (OLS), Threshold

Autoregressive (TAR) models, Vector Autoregressive (VAR) models, State Space modelling, and Linear Smooth Transition Error Correction Model (LSTECM) using Non-linear Least Squares (NLS) method.

Following Bohn (1998), the reaction of primary balance (b_t) to variations in public debt levels in the past period (d_{t-1}), as ratios of output, serves as a strong indicator for fiscal sustainability defined by the function $b_t = \alpha + \beta d_{t-1} + \theta b_{t-1} + \pi Z_t + \mu_t$; where b_t is primary balance, d_{t-1}, is public debt in past period, Z_t is a vector of exogenous variables, μ_t is the Gaussian white noise with variance σ^2.

Given a constant interest rate (i) and growth rate (η), the relationship between primary balance and debt becomes $d_t = (1+i-\eta)d_{t-1} - b_t$, such that $d_t = (1+i-\eta-\beta)d_{t-1} - \theta b_{t-1} - \alpha - \pi Z_t - \mu_t$. Realizing that $b_{t-1} = (1+i-\eta)\, d_{t-2} - d_{t-1}$, d_t becomes $d_t = (1+i-\eta-\beta+\theta)d_{t-1} - \theta(1+i-\eta)d_{t-2} - \alpha - \pi Z_t - \mu_t$. The Augmented-Dickey Fuller (ADF) regression function for d_t yields $\Delta d_t = [(i-\eta)(1-\theta)-\beta]d_{t-1} + \theta(1+i-\eta)\Delta d_{t-1} - \alpha - \pi Z_t - \mu_t$; such that d_t becomes stationary if $\beta \geq (i-\eta)(1-\theta)$, and stabilises in the long run if primary balance positively responds significantly to a change in the debt level, assuming $i > \eta$. Thus, fiscal policy can be deemed sustainable if $\beta/(1-\theta)$ exceeds interest rate minus growth rate ($\beta/(1-\theta) > 1-\eta$).

In present value budget constraint (PVBC) terms, current and future primary spending in present value terms must not exceed current and future revenue (net of interest payments) formulated as:

$$\sum_{i=0}^{\infty} \frac{PE_{t+i}}{\prod_{h=1}^{i}(1+r_{t+h})} \leq \sum_{i=0}^{\infty} \frac{GDP_{t+i}}{\prod_{h=1}^{i}(1+r_{t+h})} - (1+r_t)D_{t-1} \qquad (2.1)$$

where PE_t is primary expenditure (net of interest payments), GDP is national income, D_t denotes public debt stock at the start of period t-1, and r_t represents the nominal interest rate.

Equation (2.1) demonstrates that regardless of satisfying the solvency condition, liquidity can be deemed to exist when government holds liquid assets and financing instruments sufficient to meet or rollover maturing obligations. In line with this particular condition, fiscal sustainability occurs when the present value budget constraint is satisfied, defined by the function:

$$D_t = \sum_{i=0}^{\infty} \frac{B_{t+i}}{\prod_{h=0}^{i}(1+r_{t+h})} = \sum_{i=0}^{\infty} \frac{Z_{t+h}}{\prod_{h=0}^{i}(1+r_{t+h})} - \sum_{i=0}^{\infty} \frac{PE_t}{\prod_{h=0}^{i}(1+r_{t+h})} \quad (2.2)$$

where D_t represents government debt stock at the start of period t, B_t denotes primary balance, Z_t signifies government total revenue, PE_t represents primary expenditure (total spending less interest payments), and r_t denotes the nominal interest rate.

The condition given by equation (2.2) indicates that current government debt must not exceed, or at most equal, the excess sum of future primary surpluses over primary deficits in present value terms. Therefore, government can experience temporary primary deficits as long as such primary deficits can eventually be offset by the total of future primary surpluses. Expressing variables in equation (2.2) as ratios of output (GDP) yields the PVBC in the functional form formulated as:

$$d_t = \sum_{i=0}^{\infty} \frac{\prod_{j=1}^{i}(1+\eta_{t+j})}{\prod_{h=0}^{i}(1+r_{t+h})} b_{t+i} = \sum_{i=0}^{\infty} \frac{\prod_{j=1}^{i}(1+\eta_{t+j})}{\prod_{h=0}^{i}(1+r_{t+h})} b_{t+1} - \sum_{i=0}^{\infty} \frac{\prod_{j=1}^{i}(1+\eta_{t+j})}{\prod_{h=0}^{i}(1+r_{t+h})} e_{t+i} \quad (2.3$$

where the lower cases of variables denote the respective variables expressed as ratios of GDP, and η represents the nominal growth of GDP. Since government debt comprises of domestic debt denominated in local currency and external debt denominated in foreign currency, equation (2.3) can be altered to express domestic debt and external debt components defined by the function as:

$$d_t = dd_t + \phi_t ed_t = \sum_{i=0}^{\infty} \left[\frac{(1+\mu_{t+i})}{\prod_{h=0}^{i}(1+r_{t+h})} + \frac{\mu_{t+i}\,\varepsilon_t \prod_{h=0}^{i}(1+\tau_{t+h})}{\prod_{h=0}^{i}(1+r^f_{t+i})} \right] \prod_{j=1}^{i}(1+\eta_{t+j}) b_{t+i} \quad (2.4)$$

where dd_t is the initial government domestic debt stock dominated in local currency at period t, ed_t denotes the initial government external debt stock dominated in foreign currency, ϕ_t is the nominal exchange rate, μ_t denotes the rate of appreciation of the nominal exchange rate, and r^f represents the nominal interest rate on external debt.

The public debt function expressed by equation (2.4) indicates that the main determinants of public finance sustainability are government revenue, primary

expenditure, domestic, and foreign debt stocks with corresponding nominal interest rates, nominal exchange rate and real GDP growth (Yamauchi, 2004). The exchange rate implicitly impacts fiscal policy sustainability via the amount of domestic currency the country has to pay towards securing the external debt component of the total government debt stock. The variations in growth of nominal gross domestic product, denoted by η, remain critical to ensuring fiscal sustainability particularly in respect of the manner in which government reacts to cyclicality in output.

3. Econometric Methodology

3.1. Data

Timeseries quarterly data for primary balance-to-GDP ratio (B/Y) and debt-to-GDP ratio (D/Y) for the period 1997q4 to 2016q3 was sourced from South African Reserve Bank (SARB, 2017). Data series for exogenous variables gross domestic product (GDP) and central bank policy rate (r) were sourced from International Monetary Fund (IMF, 2017) International Financial Statistics (IFS). The GDP data was used to compute output gap ($\hat{y}_t$) using Hodrick-Prescott filter.

3.2. Stationarity Tests

The Augmented Dickey-Fuller (ADF) method, which performs well also when sample size is small (Dickey & Fuller, 1979), was used to test for presence of unit roots based on the AR(p) process defined as $\Delta X_t = \pi + \beta X_{t-1} - \sum_{i=1}^{p-1} \alpha_i \Delta X_{t-i} + \varepsilon_t$; where ε_t is a white noise error term, and p is a class of autoregression.

3.3. Optimal Lag Order Selection

The optimal lag length was selected based on Likelihood Ratio (LR) statistic, Akaike Information Criterion (AIC), Final Prediction Error (FPE), Schwarz Information Criterion (SIC) and Hannan-Quinn Information Criterion (HQIC) techniques.

3.4. Vector Auto-Regressive (VAR) Model

The unstructured VAR framework, which allows endogenous variables to interact without imposing theoretical structures on estimates, was used to model interrelations of a system of multivariate equations for B/Y and D/Y, and examine the joint dynamic behaviour among such variables given by the matrix:

$$\begin{bmatrix}\left(\frac{B}{Y}\right)_t\\ \left(\frac{D}{Y}\right)_t\end{bmatrix}=\begin{bmatrix}\alpha_{11}\\ \alpha_{21}\end{bmatrix}+\begin{bmatrix}\pi_{12} & \theta_{13}\\ \pi_{22} & \theta_{23}\end{bmatrix}\begin{bmatrix}\left(\frac{B}{Y}\right)_{t-1}\\ \left(\frac{D}{Y}\right)_{t-1}\end{bmatrix}+\begin{bmatrix}\gamma_{12}\\ \gamma_{22}\end{bmatrix}[r_t]+\begin{bmatrix}\delta_{13}\\ \delta_{23}\end{bmatrix}\begin{bmatrix}\hat{y}_t\end{bmatrix}+\begin{bmatrix}\varepsilon_{11t}\\ \varepsilon_{21t}\end{bmatrix} \quad (3.1$$

The VAR (p) model (equation 3.2) is a seemingly unrelated regression (SUR) with lagged (B/Y) and (D/Y) as endogenous variables, while (r) and output gap ($\hat{y}_t$) are exogenous variables.

3.5. Cointegration Test

The Johansen's procedure (Johansen, 1988), which applies VAR(p) as a starting point, was used to test for presence of a cointegrating relationship between endogenous variables B/Y and D/Y in form of a vector X_t defined by the function:

$$X_t=\Phi_1 X_{t-1}+\Phi_2 X_{t-2}+.....+\Phi_p X_{t-p}+u_t \quad (3.2)$$

where: X_t is a 2x1 vector of B/Y and D/Y variables that are I(1), u_t is a 2x1 vector of innovations, Φ_1 through Φ_p represents 2x2 coefficient matrices, and the impact matrix Φ denotes the degree of system cointegration. The Johansen's procedure used to detect cointegration between B/Y and D/Y was conducted based on the Maximum Eigenvalue and Trace likelihood ratio (LR) statistics techniques.

3.6. Vector Error Correction (VEC) Model

In order to determine the interdependence between B/Y and D/Y, the government's fiscal reaction function $(B/Y)_t=\alpha+\beta(B/Y)_{t-1}+\tau(D/Y)_{t-1}+\varepsilon_t$ was formulated to first assess whether or not the intertemporal budget constraint (IBC) condition was satisfied. Estimation of the reaction function was conducted using the Vector Error Correction (VEC) model comprising a system of equations:

$$\Delta\left(\frac{B}{Y}\right)_t=\alpha_{11}+\pi_{12}\left[\left(\frac{B}{Y}\right)_{t-1}-\theta_{12}\left(\frac{D}{Y}\right)_{t-1}-\theta_{13}\right]+\varphi_{11}\Delta\left(\frac{B}{Y}\right)_{t-1}+\varphi_{12}\Delta\left(\frac{D}{Y}\right)_{t-1}+\gamma_4(r_t)+\delta_5(\hat{y}_t)+\varepsilon_{11t}$$

(3.3)

$$\Delta\left(\frac{D}{Y}\right)_t=\alpha_{21}+\pi_{13}\left[\left(\frac{B}{Y}\right)_{t-1}-\theta_{12}\left(\frac{D}{Y}\right)_{t-1}-\theta_{13}\right]+\varphi_{21}\Delta\left(\frac{B}{Y}\right)_{t-1}+\varphi_{22}\Delta\left(\frac{D}{Y}\right)_{t-1}+\gamma_4(r_t)+\delta_5(\hat{y}_t)+\varepsilon_{21t}$$

(3.4)

The one period lagged B/Y in equation (3.3) captures inertia in government behaviour. Parameters $(B/Y)_{t-1}-\theta_{12}(D/Y)_{t-1}-\theta_{13}$ in both equations denote the

deviation from the long-run equilibrium. The parameter π_{12} in equation (3.3) denotes the error correction term (ECT), which measures the fiscal (primary balance) reaction to the debt position or deviations from the long-run equilibrium.

3.7. VEC Granger Causality/Block Exogeneity Wald Test

Following assessment of fiscal policy sustainability, endogeneity in government fiscal behaviour was evaluated by testing for interdependence between B/Y and D/Y using VEC Granger causality /Block Exogeneity Wald test approach (Granger, 1969). The respective test was conducted based on the null that all lags of one given variable can be excluded from each equation in the system.

The scalar random variable $(D/Y)_t$ can be deemed not to Granger cause $(B/Y)_t$ if and only if:

$$E\left[\left(\frac{B}{Y}\right)_t \left| \left(\frac{D}{Y}\right)_{t-1}, \left(\frac{B}{Y}\right)_{t-1}, \ldots \right.\right] = E\left[\left(\frac{B}{Y}\right)_t \left| \left(\frac{B}{Y}\right)_{t-1}, \ldots \right.\right] \quad (3.5)$$

Similarly, the random variable $(B/Y)_t$ can be deemed not to Granger cause $(D/Y)_t$ if and only if:

$$E\left[\left(\frac{D}{Y}\right)_t \left| \left(\frac{B}{Y}\right)_{t-1}, \left(\frac{D}{Y}\right)_{t-1}, \ldots \right.\right] = E\left[\left(\frac{D}{Y}\right)_t \left| \left(\frac{D}{Y}\right)_{t-1}, \ldots \right.\right] \quad (3.6)$$

Therefore, $(D/Y)_t$ does not Granger cause $(B/Y)_t$ if the forecast of $(B/Y)_t$ remains the same whether or not conditioned upon the past values of $(D/Y)_t$; and vice versa. Following Granger (1969), if $(D/Y)_t$ and $(B/Y)_t$ exhibit stationarity in respect of spectral systems, then $(D/Y)_t$ can be expressed in the form $\left(\frac{D}{Y}\right)_t = \int_{-\vartheta}^{\vartheta} e^{it\theta}\, d\Phi_{(D/Y)}(\pi)$, where: $\Phi_{(D/Y)}(\pi)$ denotes a complex random process $E\left[d\Phi_{(D/Y)}(\pi)\overline{d\Phi_{(D/Y)}(\varpi)}\right] = dF_{(D/Y)}(\pi)$, if $\pi = \varpi$; or else $E\left[d\Phi_{(D/Y)}(\pi)\overline{d\Phi_{(D/Y)}(\varpi)}\right] = 0$, where $dF_{(D/Y)}(\pi)$ can be specified as $dF_{(D/Y)}(\pi) = f_{(D/Y)}(\pi)d\pi$. The cross spectrum between $(D/Y)_t$ and $(B/Y)_t$ gets defined by $E\left[d\Phi_{(D/Y)}(\pi)\overline{d\Phi_{(D/Y)}(\pi)}\right] = \Xi(\pi)d\pi$ if $\pi = \varpi$; and covariance is $\mu_t^{db} = E\left[\left(\frac{D}{Y}\right)_t \overline{\left(\frac{B}{Y}\right)_{t-\tau}}\right] = \int_{-\vartheta}^{\vartheta} e^{i\tau\theta}\, \Xi(\pi)d\pi$. Following Enders (2003), the Granger causality/Block Exogeneity Wald test statistic was defined as $(T-3p-1)\left(\log|\Sigma_{re}| - \log|\Sigma_{un}|\right) \sim \chi^2(2p)$; where T is the number of observations; $\sum_{un}$ denotes variance or covariance matrices of the unrestricted VAR system; $\sum_{re}$

denotes the variance or covariance matrices of the restricted system when the lag of a variable was excluded from the system, p denotes the number of lags of the variable that was excluded from the system.

3.8. Impulse Response Functions

Impulse response functions (IRFs) analysis was conducted to assess the impact of a shock to an endogenous variable (X) on itself and on the other endogenous variable (Y); and the time horizon it took variable (Y) to return to long-run equilibrium path owing to a shock in variable (X). The unstructured VAR was transformed into a vector moving-average (VMA) based on the property that for every stationary VAR (p), there exists an infinite VMA which follows the decomposition:

$$X_t = \varepsilon_t + \zeta_1 \varepsilon_{t-1} + \zeta_2 \varepsilon_{t-2} + \ldots = \sum_{i=0}^{\infty} \zeta_i \varepsilon_{t-i} \tag{3.7}$$

The matrix ζ_s can be interpreted as $\zeta_s = (\partial X_{t+s}) / (\partial \varepsilon^{/})$. If the first element of ε_t gets changed by ρ_1, second element by ρ_2, third element by ρ_3, and so on, joint effect of vector X_{t+s} can be shown as:

$$\Delta X_{t+s} = \frac{\partial X_{t+s}}{\partial \varepsilon_{1,t}} \rho_1 + \frac{\partial X_{t+s}}{\partial \varepsilon_{2,t}} \rho_2 + \frac{\partial X_{t+s}}{\partial \varepsilon_{3,t}} \rho_3 + \ldots + \frac{\partial X_{t+s}}{\partial \varepsilon_{n,t}} \rho_n = \zeta_s \rho \tag{3.8}$$

The parameter $\rho = (\rho_1, \rho_2, \rho_3, \ldots\ldots, \rho_n)^{/}$ for which the row i and column j element of ζ_s as a function of s yields the IFR given by $(\partial X_{i,\, t+s}) / (\partial \varepsilon_{j,\, t})$; which depicts the dynamic multiplier or response of $X_{i,t+s}$ to a one-time previous impulse in ε_{jt}. The matrix of the unstructured VAR given by equation (3.1) was reintroduced as containing merely endogenous variables (B/Y) and (D/Y) and rewritten more compactly into an infinite VMA representation; yielding the function:

$$X_t = H_0 + H_1 X_{t-1} + e_t \;\Rightarrow\; X_t = \frac{H_0}{I - H_1 L} + \frac{e_t}{I - H_1 L} \tag{3.9}$$

Solving the first component on the RHS of equation (equation 3.9) provides:

$$\frac{H_0}{I-H_1}=\frac{(I-H_1)^a H_0}{|I-H_1|}=\frac{\begin{bmatrix}1-\pi_{12} & -\theta_{13}\\ -\pi_{12} & 1-\theta_{23}\end{bmatrix}H_0}{\begin{vmatrix}1-\pi_{12} & -\theta_{13}\\ -\pi_{22} & 1-\theta_{23}\end{vmatrix}}=\frac{\begin{bmatrix}1-\theta_{23} & \pi_{22}\\ \theta_{13} & 1-\pi_{12}\end{bmatrix}\begin{bmatrix}\alpha_{11}\\ \alpha_{21}\end{bmatrix}}{(1-\pi_{12})(1-\theta_{23})-\pi_{22}\theta_{13}}=\frac{1}{\Delta}\begin{bmatrix}(1-\theta_{23})\alpha_{11}+\pi_{22}\alpha_{21}\\ \theta_{13}\alpha_{11}+(1-\pi_{12})\alpha_{21}\end{bmatrix}=\begin{bmatrix}\overline{\frac{B}{Y}}\\ \overline{\frac{D}{Y}}\end{bmatrix}$$

(3.10)

Following fulfilment of the stability condition, which requires the roots of $I-H_1L$ to exist outside the unit circle, the second component of VMA representation was expressed in the functional form:

$$\frac{e_t}{I-H_1L}=\sum_{i=0}^{\infty}H_1^i e_{t-i}=\sum_{i=0}^{\infty}\begin{bmatrix}\pi_{12} & \theta_{13}\\ \pi_{22} & \theta_{23}\end{bmatrix}\begin{bmatrix}e_{11,t-i}\\ e_{21,t-i}\end{bmatrix} \tag{3.11}$$

The VAR system was thus formulated as a VMA with standard VAR's error terms as:

$$\begin{bmatrix}\left(\frac{B}{Y}\right)_t\\ \left(\frac{D}{Y}\right)_t\end{bmatrix}=\begin{bmatrix}\left(\overline{\frac{B}{Y}}\right)\\ \left(\overline{\frac{D}{Y}}\right)\end{bmatrix}+\sum_{i=0}^{\infty}\underbrace{\begin{bmatrix}\pi_{12} & \theta_{13}\\ \pi_{22} & \theta_{23}\end{bmatrix}^i}_{H^i}\begin{bmatrix}e_{11,t-i}\\ e_{21,t-i}\end{bmatrix} \tag{3.12}$$

The VMA error terms (equation 3.12) are composite errors comprising of structural innovations. Following Shin and Pesaran (1998), the impulse response function (IRF) was then defined by the function $IR(m,h,Z_{t-1})=E(y_{t+m}|\varepsilon_t=h,Z_{t-1})-E(y_{t+m}|=Z_{t-1})$; where m denotes time, h ($h_1,\ldots,h_m$) denotes n x 1 vector that signifies the size of shock, Z_{t-1} denotes accumulative information about the economy from the past period up to time period t-1. Following Sim (1980), OIRFs were defined as $IR_{ij}^{0}(m)=Q_m P\varepsilon_j$ where m = 0, 1, 2, ….., k , and $Q_m=A_1Q_{m-1}+A_2Q_{m-2}+\ldots+A_pQ_{m-p};\ Q_o=I_n$.

3.9. Impact Multipliers

Impact multipliers were computed to measure the impact effect of a one unit change in a structural innovation. The impact effect of $\varepsilon_{(D/Y)t}$ on the $(B/Y)_t$ and $(D/Y)_t$ was, for instance, computed as:

$$\frac{d\left(\frac{B}{Y}\right)_t}{d\varepsilon_{(D/Y),\,t}} = \Omega_{12}(0) \qquad \frac{d\left(\frac{D}{Y}\right)_t}{d\varepsilon_{(D/Y),\,t}} = \Omega_{22}(0) \tag{3.13}$$

The impact effect of one period ahead on $(B/Y)_t$ and $(D/Y)_t$ was computed as:

$$\frac{d\left(\frac{B}{Y}\right)_t}{d\varepsilon_{(D/Y),\,t+1}} = \Omega_{12}(1) \qquad \frac{d\left(\frac{D}{Y}\right)_t}{d\varepsilon_{(D/Y),\,t+1}} = \Omega_{22}(1) \tag{3.14}$$

Concomitantly, the impact effect expressed in equation (3.14) was the same effect on $(B/Y)_t$ and $(D/Y)_t$; and of a structural innovation one period ago calculated as:

$$\frac{d\left(\frac{B}{Y}\right)_t}{d\varepsilon_{(D/Y),\,t-1}} = \Omega_{12}(1) \qquad \frac{d\left(\frac{D}{Y}\right)_t}{d\varepsilon_{(D/Y),\,t-1}} = \Omega_{22}(1) \tag{3.15}$$

The IRF of (B/Y) to a unit change in a shock to (D/Y) was equal to $\Omega_{12}(0), \Omega_{12}(1), \Omega_{13}(2), \ldots$; and the sum of IRFs was computed as $\sum_{i=0}^{\infty} \Omega_{12}(i)$, and the long-run cumulated effect was $\lim_{n \to \infty} \sum_{i=0}^{n} \Omega_{12}(i)$.

3.10. Cholesky Variance Decomposition

Variance decomposition was conducted to measure the amount of change in a given variable owing to its own shock as well as shocks of other variables in the model. Each variable was explained as a linear combination of its own current innovations and lagged innovations of other variable in the dynamic system. Variances of (B/Y)'s and (D/Y)'s n-step ahead forecast errors were computed as:

$$\sigma^2_{(B/Y),n} = \underbrace{\sigma^2_{(B/Y)}\left(\Omega^2_{11,0} + \Omega^2_{11,1} + \ldots + \Omega^2_{11,n-1}\right)}_{\text{proportion of variance in (B/Y) due to own shock}} + \underbrace{\sigma^2_{(D/Y),n}\left(\Omega^2_{21,0} + \Omega^2_{21,1} + \ldots + \Omega^2_{21,n-1}\right)}_{\text{proportion of variance in (B/Y) due to shock in (D/Y)}}$$

$$\downarrow \qquad\qquad\qquad\qquad\qquad\qquad \downarrow$$

Decreases over time — Increases over time

(3.16)

$$\sigma^2_{(D/Y),n} = \underbrace{\sigma^2_{(D/Y)}\left(\Omega^2_{21,0}+\Omega^2_{21,1}+\ldots+\Omega^2_{21,n-1}\right)}_{\text{proportion of variance in (D/Y) due to own shock}} + \underbrace{\sigma^2_{(B/Y),n}\left(\Omega^2_{11,0}+\Omega^2_{11,1}+\ldots+\Omega^2_{11,n-1}\right)}_{\text{proportion of variance in (D/Y) due to shock in (B/Y)}}$$

Decreases over time ↓ Increases over time ↓

(3.17)

In circumstances where $\varepsilon_{(D/Y)}$ explains none of the forecast error variance of $(B/Y)_t$ over the forecast horizon $\left(\partial\sigma^2_{(B/Y)\,n}\right) \div \left(\sigma^2_{(D/Y)}\right) \approx 0$, $(B/Y)_t$ is deemed exogenous. However, if $\varepsilon_{(D/Y)}$ explains most of forecast error variance of $(B/Y)_t$ over the forecast horizon $\left(\partial\sigma^2_{(B/Y)\,n}\right) \div \left(\sigma^2_{(D/Y)}\right) \approx 0.9$, $(B/Y)_t$ is endogenous.

4. Results and Discussion

4.1. Stationarity Tests

Table 4.1. ADF stationarity tests statistics in first differences

Series	Model	Lag length	α = 1%	α = 5%	α = 10%	t-statistic $\tau_c, \tau_{tc}, \tau_n$
B/Y	Constant	6	-3.530	-2.904	-2.589	-3.496**
	Trend and Constant	6	-4.098	-3.477	-3.166	-3.462*
	None	6	-2.599	-1.945	-1.613	-3.449***
D/Y	Constant	7	-3.531	-2.905	-2.590	-1.073
	Trend and Constant	7	-4.100	-3.478	-3.166	-2.211
	None	7	-2.599	-1.945	-1.613	-1.133
r	Constant	11	-3.538	-2.908	-2.591	-4.614***
	Trend and Constant	11	-4.110	-3.482	-3.169	-4.984***
	None	11	-2.602	-1.946	-1.613	-4.110***
ŷ	Constant	8	-3.533	-2.906	-2.590	-3.181**
	Trend and Constant	8	-4.103	-3.479	-3.167	-3.147
	None	8	-2.600	-1.945	-1.613	-3.209***

[***] (**) * represent significance at 1 percent, (5) percent levels and [10] percent levels; respectively

τ_c, τ_{tc}, τ_n and $Ø_c$, $Ø_{tc}$, $Ø_n$ represent ADF and PP test results computed using constant, trend and constant, and none; respectively

The selections of proper lag lengths of unit root tests were determined automatically by EViews based on the AIC

Results presented Table 4.1 for unit root tests in first differences show that primary balance-to-GDP ratio (B/Y), central bank policy rate (r) and output gap (ŷ) were stationary at 1% level of significance based on the model with no constant. The debt-to-GDP ratio (D/Y) remained non-stationary at 10% significance level, hence second

differenced was applied upon which the unit root hypothesis was rejected. The optimal lag length selection results are presented in the appendix.

4.2. Cointegration Test

Table 4.2. Cointegration test with linear deterministic trend and lag interval: 1 to 1

Null hypothesis (H_0) [Alternative hypothesis (H_1)]	r = 0 [r = 1]	r ≤ 1 [r = 2]
Trace statistic Critical value (p-value)	49.656* 15.494 (0.000)	1.073 3.841 (0.300)
Maximum-Eigen statistic Critical value (p-value)	48.583* 14.264 (0.000)	1.073 3.841 (0.3002)

* denotes rejection of the null hypothesis at 5% significance level

The Johansen Trace and Maximum-Eigen test statistics show existence of 1 cointegrating equation at 5% level of significance level based on the computed Trace statistic (= 49.65697) greater than the critical value (= 15.49471; $p < 0.05$) and Max-Eigen statistic (= 48.58367) larger than the analogous computed critical value (= 14.26460; $p < 0.05$). The presence of a cointegrating equation for series B/Y and D/Y validated the rationale to test for fiscal sustainability using the VEC model.

4.3. VAR Representation of VEC Model Estimates

Table 4.3. VAR model – substituted parameters†

Primary balance-to-GDP ratio equation

$$d(B/Y) = \underset{\{-6.095\}}{-0.696} * \left[(B/Y(-1)) + \underset{\{2.441\}}{1.627} * d(D/Y(-1)) + 0.854 \right] \underset{\{-1.449\}}{-0.176} * d(B/Y(-1)) \underset{\{-4.210\}}{-1.377} * d(D/Y(-1),2) \underset{\{-3.878\}}{-10.133}$$

$$+ \underset{\{3.868\}}{4.744} * r(-2) + \underset{\{2.859\}}{0.748} * y\_gap(-2) \quad \text{(eqn 3.3}$$

Public debt-to-GDP ratio equation

$$d(D/Y,2) = \underset{\{4.982\}}{0.218} * \left[(B/Y(-1)) + \underset{\{2.441\}}{1.627} * d(D/Y(-1)) + 0.854 \right] \underset{\{-4.272\}}{-0.199} * d(B/Y(-1)) \underset{\{-1.803\}}{-0.226} * d(D/Y(-1),2) + \underset{\{3.091\}}{3.104}$$

$$\underset{\{-3.105\}}{-1.463} * r(-2) \; -0.152 * y\_gap(-2) \quad \text{(eqn 3.4)}$$

†Figures in {} represent computed t-statistics for the respective estimated coefficients

The VAR version estimates of VEC model (Table 4.3) reveal evidence of a statistically significant positive relationship between primary balance and public debt (as ratios of output) in the long-run. For every 1% increase in public debt ratio, the primary balance ratio increased by an average of 1.62% over the period 1999q1 to 2016q2. The systematic positive reaction of primary balance ratio to changes in

public debt ratio indicate evidence of consistency of government's behaviour with the government inter-temporal budget constraint; hence fiscal policy was sustainable. The short-run dynamics of the of the primary balance ratio equation show that about 0.69% of the transitory deviation from long-run equilibrium relationship between primary balance and public debt was corrected through reductions in the primary balance ratio during the first quarter after occurrence of the deviation.

4.4. VEC Granger Causality/Block Exogeneity Wald Test

The VEC Granger causality/Block Exogeneity test results were computed to determine whether or not some endogeneity exists in the behaviour of government by examining the short run causality between primary balance and public debt, as ratios of output; with results presented in Table 4.4.

Table 4.4. VEC Granger causality/Block Exogeneity Wald tests

Panel A – Dependent variable: d(B/Y)		Panel B – Dependent variable: d(D/Y, 2)	
Excluded	Chi-square (prob)	Excluded	Chi-square (prob)
d(D/Y, 2)	17.729 (0.000)	d(B/Y)	18.256 (0.000)
All	17.729 (0.000)	All	18.256 (0.000)

Granger-causality results on joint tests for each of the equation show evidence of endogeneity of primary balance and public debt, as ratios of output. Panel A estimates indicate that the null hypothesis that debt ratio does not Granger cause primary balance ratio was rejected at 1% level of significance. The lagged difference of the debt ratio could thus not be excluded in the estimated differenced primary balance equation. Panel B estimates indicate that null hypothesis that primary balance ratio does not Granger cause the debt ratio was rejected at 1% significance level, thus the lagged difference of primary balance ratio could not be excluded in the differenced debt equation.

4.5. Impulse Response Functions

The impulse response functions and variance decompositions were applied as alternative approaches of characterising the interdependence between primary balance and public debt, as ratios of output.

Panel A: Response of B/Y) to a shock in (B/Y)	Panel B: Response of (B/Y) to a shock in d(D/Y)

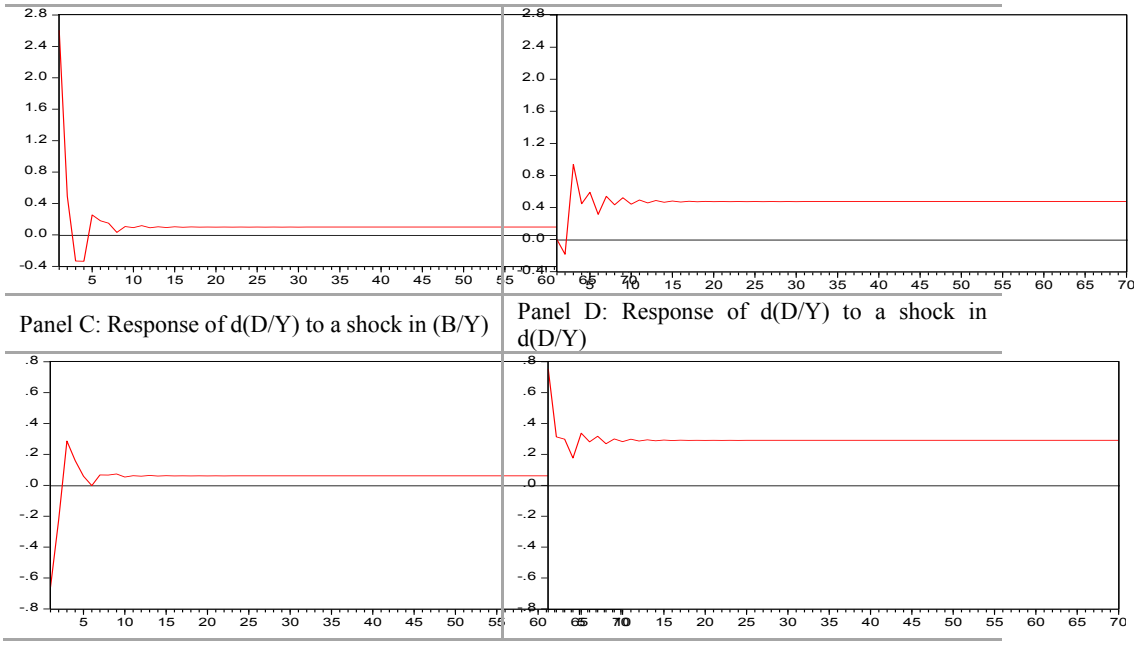

Figure 4.1. Impulse response functions for (B/Y) and d(D/Y) over 70 quarters (1999q1-2016q2)

Figure 4.1 Panel A shows that a negative shock to primary balance ratio had a significant negative effect on its future values, improved to 0.25% in the 5th quarter and remained significantly positive at 0.1% in the long-run. Panel B shows that a negative shock in the debt ratio had a significant positive impact on future primary balance ratio; which fluctuated between 0.31% and 0.58% from 4th quarter through to the 16th quarter, and remained significantly positive and constant at 0.47% from the 17th quarter throughout the long-run. Panel C shows evidence that a shock in the primary balance had a statistically significant positive impact on future path of debt ratio, which reached 0.28% in the 3rd quarter, declined to an insignificant mark of -0.00% in the 6th quarter, rebounded with slight variation between 0.05% and 0.07% through to the 10th quarter, and reverted to the equilibrium where it remained significantly positive and constant at 0.06% over the long-run. Panel D shows that a shock to debt ratio had a profoundly declining positive impact on its future path from 0.75% in the 1st quarter to 0.17% in the 4th quarter, varied between 0.26% and 0.33% in the 5th and 16th quarters, and remained significantly positive and constant at 0.29% in the long-run.

4.6. VAR Cholesky Variance Decompositions

Table 4.5. Variance decompositions of forecast errors

Percentage of forecast error in:	Periods	Explained by shocks to:			
		Order B/Y, d(D/Y)		Order d(D/Y), B/Y	
		B/Y	d(D/Y)	B/Y	d(D/Y)
B/Y	10	74.69	25.31	51.66	48.34
	40	45.41	54.59	56.81	43.19
	70	33.33	66.67	58.91	41.09
d(D/Y)	10	31.36	68.24	29.25	70.75
	40	15.83	84.17	49.33	50.67
	70	11.58	88.42	54.70	45.30

Variance decompositions results (Table 4.5) show that with order (B/Y, d(D/Y)), primary balance shock accounted for 74.7% of variance in itself in the 10th quarter, while the percentage decreased to 45.4% in the 40th quarter, and to 33.3% in the 70th quarter. The percentage increased to 58.9% in the 70th quarter when the reverse order (d(D/Y), B/Y) was used. With order (B/Y, d(D/Y)), the contribution of a shock to debt ratio on variance of primary balance ratio increased from 25.3% in the 10th quarter to 54.6% in the 40th quarter, and 66.7% in the 70th quarter. When the reverse order (d(D/Y), B/Y) was used, the percentage of variance dropped to 41.1% in the 70th quarter.

Concomitantly, the percentage of variance of the forecast error in government debt ratio emanating from a shock to primary balance ratio was 31.4% in the 10th quarter and declined to 11.6% in the 70th quarter with the order (B/Y, d(D/Y)). When the reverse order (d(D/Y), B/Y) was applied, such percentage of variance of forecast error in debt ratio explained by primary balance ratio increased to 54.7% in the 70th quarter. With order (B/Y, d(D/Y)), the percentage of variance in the debt ratio explained by a shock to itself increased from 68.2% in the 10th quarter to 88.4% in the 70th quarter. The percentage however decreased to 45.3% when the reverse order (d(D/Y), B/Y)) was used.

5. Conclusion

The results of the fiscal reaction function reveal strong evidence of a positive relationship between primary balance and public debt, as ratios of output; showing evidence of consistency of the government's behaviour with the government intertemporal budget constraint condition. The Granger-causality, impulse response functions and variance decompositions results all point to evidence of presence of endogeneity and interdependence between primary balance and public debt ratios. Simulations of the impulse response functions provide strong evidence that the macroeconomy can correct itself from transitory deviations in the short-run to the

medium term, and return to the long-run equilibrium path after occurrence of a shock.

However, despite evidence of fiscal sustainability, coupled with the fiscal governance framework anchored on sound institutional arrangements, the country's fiscus currently faces potential fiscal risks emanating from contingent and accrued liabilities attributed to government guarantees of funding to a number public enterprises with weak financial positions. Sustained need by public enterprises for financial bailouts to meet operating costs, debt obligations and working capital requirements has heightened the country's fiscal risk of guarantee exposure. Given the pressure to finance social spending programmes, there is need for strong commitment by government to avoid populist spending, implement and consistently monitor fiscal austerity measures across spending priorities in order to maintain fiscal policy sustainability.

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The Art of Valuing SMEs in South Africa

Louise van Scheers[63], Thea Visse[64]

Abstract: Aim. There is no formal structured market where the most correct values of SMEs could be determined therefore valuing SME type businesses is more of an art than a science. The aim of this research was to obtain a better understanding and knowledge of the appropriate valuation methods and value factors contributing to the most correct market value of SME type businesses. **Problem investigated.** The problem emanates from the fact that SMEs cannot properly be appraised, and a value be attached to it is the effect of a slow transfer of skills and a slow growing SME sector in the South Africa economy. **Methodology.** Quantitative paradigm was deemed appropriate for the primary research. The goal was to interview 10 different SME business brokers, 30 SME buyers and 30 SME sellers in order to conduct a creditable investigation and recommendation. **Research Findings & Conclusion.** The conducted research confirmed that strategic value contributing factors for selling an SME are recognised by the general market. Generic valuation method for five types of SMEs, namely: Supermarket, restaurant, liquor store, coffee shop and hardware shop were created. **Significance of the research for South African SMEs.** SMEs play a vital role in the economy of South Africa, and therefore, their sustainability is crucial. This study will indicate to SME owners how to value their SME

Keywords: SMEs; valuation factors; valuation methods; valuation types

JEL Classification: M39

1. Introduction

The South African accounting system requires yearly valuations of all assets owned by entities (business and personal) where the financial reporting statements are used by a third party, such as the South African Revenue Services (SARS), shareholders, financial institutions and/or investors. This also includes the valuation of businesses and equipment in the SME market place. There is no formal structured market where the most correct values of SMEs could be determined, like the Johannesburg Stock Exchange (JSE) as a structured governing body for listed companies. Valuing these SME type businesses is therefore more of an art than a science. Financiers such as banks have the problem that they cannot securitise non-bankable assets like goodwill and expertise. This problem is enhanced by the fact that most SMEs work at a loss

[63] Prof DMRM, School of Business Management, CEMS, University of South Africa, South Africa, Address: Po Box 329, Unisa 0003, Corresponding author: vscheml@unisa.ac.za.
[64] Dr Department of Business Management, School of Business Management, CEMS, University of South Africa, South Africa, Address: Po Box 329, Unisa 0003, E-mail vissed@unisa.ac.za.

on their financial reports, but most of the owners stay in big houses or drive expensive cars, while indicating that they do not make any profit. When it comes to selling these businesses, the seller always wants the maximum possible price, but for a SME that does not show a "book profit". The question arises: How does one place a value on such a "profitable bankrupt" SME to sell it, and to enhance the chances of success to obtain finance for such a business? The valuation of a business works on imperfect information. It is not like selling a house in a street of similar houses in which case one knows what the one down the road sold for a couple of months ago. There is also no other business 100% the same as the subject one, in the same location and of similar size. Even if there were, how would you determine its value?

According to Allen (2012), calculating the value of a business is a challenge because value is a subjective term with many meanings. The author opines that a key component of any financial strategy is determining the value of the business, as a realistic value figure is needed no matter which avenue is taken to raise growth capital. However, valuation of, specifically, early-stage private businesses is a subjective process fraught with the challenge of predicting future earnings in a highly uncertain environment, and with no track record on which to base these projections. Moreover, the already difficult task of valuation is exacerbated by the fact that most valuable assets that businesses hold, are intangible. That is, they consist of patents, knowledge and people instead of plant and equipment (Allen, 2012). Andriessen (2005) notes that research seeking to compare, and contrast, the potential for the practical application of valuation methods is scarce, even though the need to establish their validity and applicability is clear. Furthermore, determining what a business is worth is a complex task (Baron, 2014; Vallejo-Alonso, Arregui-Ayastuy, Rodriguez-Castellanos & García-Merino, 2013) and is a concern to entrepreneurs (Hisrich, Peters & Shepherd, 2013). Most attempts at implementing valuation models have involved large businesses, while very little research has focused on valuation methods applicable to SMEs (Vallejo-Alonso, García-Merino & Arregui-Ayastuy, 2015). SMEs also have fewer resources to identify and manage intangibles, while they usually have less developed information databases (Vallejo-Alonso, Garcia-Merino & Arregui-Ayastuy, 2015). Brunninge, Nordqvist and Wiklund (2007) argue that larger top management teams are likely to have more sources, skills and increased cognitive diversity to result in better decision-making. Furthermore, a difficulty for venture capitalists lies in a complicated valuation process in an entity where the price is not defined by a market, but through financial considerations that play a small part alongside other considerations, such as industry characteristics (structure, trends and markets) and the business's characteristics (development stage, competitiveness) (Dimov & Shepherd, 2005). Furthermore, Deaconu and Nistor (2009) argue that the legitimacy concerning the valuation methodology elaboration for financial reporting, which falls back on accounting or valuation bodies, is not clearly established.

Limited research was conducted in South Africa on valuing SMEs; hence, this paper attempts to fill this important gap. This investigation approaches the situation with the view that because SMEs cannot properly be appraised, and a value be attached to it is the effect of a slow transfer of skills and a slow growing SME sector in the South Africa economy. This study will therefore explore the possibility of establishing standard, practical valuation methods (benchmarks) for top selling SMEs, in the quest to assist key players with unlocking some potential that is tied up in this sector by trading more with SMEs. The main aim of this research is then to obtain a better understanding and knowledge of the appropriate valuation methods and value factors contributing to the most correct market value of SME type businesses. The paper is structured as follows: First, we provide the problem statement and research methodology. This is followed by a review of the literature. Lastly, we report on the results and findings, and conclusion.

2. Problem Statement

The average number of active businesses in South Africa is between 450 000 and 1 million, of which about 30% fall into the SME size categories (http://www.statssa.gov.za/publications/ P0276/P02762013.pdf). This means that between 135 000 and 300 000 SMEs in South Africa change ownership or are bought/sold in South Africa on an annual basis, and in an unstructured market place (http://www.statssa.gov.za/publications/P0276/P02762013.pdf). Most of the time this change of ownership is associated with a pre-determined price for the business which has various financial implications, like the capital gains tax payable on the sale, business finance requirements and the structuring of the transaction from a legal and risk point of view. The two main parties involved in a transaction of this nature are typically the buyer and the seller and the question frequently asked by them is: *"Did I pay too much for the business?",* or *"Did I sell the business for too little?"* Often a business broker gets involved in these transactions in an advisory capacity or from a marketing point of view. Most advice required from this person is usually about the value of the business.

There are various basic theoretical valuation methods, but these can seldom be used when valuing SMEs, specifically because of a lack of information and misrepresentation of the true financial state of the business. The question therefore arises: Is there a "rule of thumb" or benchmark valuation technique(s) that can be applied in principle to estimate the current market value of some of the most commonly traded SMEs in the Gauteng region of South Africa?

3. Research Methodology

Primary and secondary sources were used to gather information about the current market value of some of the most commonly traded South African SMEs. The main secondary sources were articles and books. Since the aim of this research was to answer a research question by understanding the valuing of SMEs, a quantitative paradigm was deemed appropriate for the primary research. The goal was to interview 10 different SME business brokers, 30 SME buyers and 30 SME sellers in order to conduct a creditable investigation and recommendation.

4. Literature Review

4.1. The Concept of Valuation

Valuation is an incremental process of bringing together "key pieces of information" that gives some insight into the health and future of the business (Allen, 2012). Value is also defined as the present value of estimated future cash flows expected to merge from the continuing use of an asset and from its disposal at the end of its useful life, or a reasonable estimate thereof (International Accounting Standards Board [IASB], 2009). Valuation standards have an advantage over accounting standards as valuation applications, with a higher technical character, are developed along with the former. Kuratko (2017) claims that the value of a business drives what price investors will pay for the business. Information used to determine valuation comes out of the due diligence process and has to do with the strength of the management team, market potential, the sustainable advantage of the product/service and potential financial returns. Another way to look at valuation is how much money it will take to make the business a success. In the end, the value of a business is the price at which a willing buyer and seller can complete a transaction.

According to Allen (2012), the following definitions of value are in common use:

• Fair market value: The price at which a willing seller would sell, and a willing buyer would buy in the transaction. By this definition, every sale would ultimately constitute a fair market value sale;

• Intrinsic value: The perceived value arrived at by interpreting balance sheet andincome statements through ratios, discounting cash-flow projections and calculating liquidated asset value;

• Investment value: The worth of the business to an investor, based on his/her individual requirements in terms of risk, return and tax benefits;

• Going-concern value: The current financial status of the business as measured by financial statements, debt load and economic environmental factors (i.e. government regulation) that may affect its long-term continuation;

• Liquidation value: The amount that could be recovered by selling off all business assets;

• Book value: An accounting measure of value that reflects the difference between total assets and total liability. It is essentially equivalent to shareholders' or owners' equity.

Those who finance ventures also use some non-financial yardsticks to measure value. These include: firstly, the experience level of the management team; secondly, the innovative level of the firm's distribution channels; thirdly, the nature of the business's relationships in the industry and with customers; fourthly, the business's ability to be fast and flexible; and finally, the business's amount and kind of intellectual property (Allen, 2012). Lipmann (2001) argues that risk determines the value of the business. If the business takes more risks, the higher the rate of return that is required, otherwise no one would take on the additional risk. The corollary is that the higher the rate of return required, the lower the price will be. It is therefore the assessment of the risk which will place a value on the business. Allen (2012) states that value is not cost or price. A bargain is where the value is less than the cost, whereas paying dearly or excessively is where the cost is more than the value. The author defines value as "the representation of all future risks and benefits of ownership compressed into a single payment".

4.2. How do you Value South African SMEs?

Between 135 000 and 300 000 SMEs change ownership or are bought/sold in South Africa on an annual basis (http://www.statssa.gov.za/publications/P0276/P02762013.pdf). SMEs are typically businesses with a market value of less than R2, 5 million. However, may vary in size, as the classification is more about the number of employees and annual turnover, than market value or sales price of the business.

The valuation of a business works on imperfect information. There is no other business the same as yours in the same location and of similar size. Even if there were, how would you know its value?" (Allen, 2012). There are no rules to tell one what the business is worth and there is no such thing as a correct price. These and various other value contributing factors are faced by most sellers, buyers, business brokers, financiers and other key players in the SME industry today. As a result, it causes a lack of participation, stimulation and growth in most SMEs, which create a situation where the economy could suffer as a result.

This investigation approaches this situation with the view that because SMEs cannot properly be appraised, and a value be attached to it, is a major cause rather than the effect for a slow transfer of skills and a slow growing SME sector in the South Africa economy. This study explores the possibility of establishing a standard, practical valuation model or benchmark for the top selling SMEs in the quest to assist key

players with unlocking some potential tied up in this sector by trading more with SMEs. Businesses are typically valued on the amount of money they earn, combined with the desirability of the industry and the risk factor. Higher prices will be paid for businesses in more desirable industries that are operating in a market perceived as low risk. These types of businesses are in stronger demand and therefore the value of these businesses will be greater than for those in a less sought-after industry. They are also perceived to have a higher risk factor attached to it, despite that both businesses may make the same amount of money (Allen, 2012).

4.3. Valuation Factors

Valuation is at the core of determining how much ownership an investor is entitled to for a certain amount of funding for a business and this is determined by considering certain factors in valuation. According to Hisrich, *et al*. (2013), the first factor is the nature and history of the business. The characteristics of the business and the industry in which it operates are fundamental aspects in the evaluation process. The second factor involves an examination of the financial data of the business compared with those of other businesses in the same industry. The third factor is the book (net) value of the stock of the business and the overall financial condition of the business. The fourth factor, the future earning capacity of the business, is the most important factor in valuation. The firth valuation factor is the dividend-paying capacity of the venture. Since the entrepreneur in specifically, a new venture, typically pays little (if any) in dividends, it is the future capacity to pay dividends rather than actual dividend payments made, that is important. An assessment of goodwill and other intangibles of the business is the sixth valuation factor. These intangible assets usually cannot be valued without reference to the tangible assets of the business. The seventh factor in valuation involves assessing any previous sale of equity. Previous equity transactions and their valuations represent the future sales. The final valuation factor is the market price of equity of the business engaged in the same or similar lines of the business. A critical issue is the degree of similarity between the publicly traded business and the business being valued.

Hendrikse and Hendrikse (2003) and Baron (2014) claim that the following principal factors influence value:

• The *cost* factor, which represents the intrinsic cost and reproduction or replacement cost;

• The *market* factor, which is about the saleability and transferability of the asset. This includes the condition of the asset, its age, economic lifespan, depreciation, market conditions, micro and macro-economic conditions, ownership entity and control of ownership;

• The *earnings* factor*,* which the revenue earning capacity of the business determines. The earnings factor of the asset includes the productivity attributes, utility attributes, goodwill, brands, future benefits, risk factor, maintainable earnings and the required rate of return; and

• The *legal* factor, which is about the usage rights of ownership in the asset, possible restrictions of use, and the scope of ownership.

According to Puttick and Van Wyk (2000), the value of an enterprise is a function of two inter-related factors, namely (a) the value of the underlying assets (tangible, intangible and monetary assets); and (b) the ability of the assets to generate a return that will add value to the investment in the business by its owners. The authors also define the value of a going concern as: "The value of an enterprise which has tangible assets, resulting from factors such as having a trained work force, operational plant, equipment, facilities and resources and the necessary licenses, systems and procedures in place, and where the business is in operation".

Factors which also intervene in the valuation process and which influence the final valuation of the business include:

Firstly, start-up costs (some buyers are willing to pay more for a business than what the valuation methods illustrate its worth to be). Secondly, accuracy of projections (sales and earnings of a business should always be projected on the basis of historical financial and economic data); and lastly, the control factor (degree of control an owner legally has over the firm and which can affect its valuation) (Kuratko, 2014; Kuratko, 2017). A study conducted by Vallejo-Alonso, *et al*. (2015) showed that SMEs that consider the financial valuation of their intangibles to be important experienced improved business performance and a significant growth in profits. On the other hand, SMEs that believe the financial valuation of their intangibles is important in order to facilitate information for external stakeholders and which are pressured to do so, have higher levels of leverage. In addition, the load of intangible resources in relation to total resources with the weight of intangible resources became statistically significant. Grandis and Palazzi (2015) highlight reasons for valuation. Which include firstly, the contribution of a business or a business unit/area as a going concern in a new business. Secondly, the recess of a partner from an enterprise. Thirdly, transfer of a business/business unit or shareholdings; fourthly, mergers and acquisitions; and the expert's report for civil suit. Finally, the definition of new arrangements because of the entrepreneurial succession process and monetary re-valuation of minority shareholdings (unlisted in the stock exchange market) to benefit the fiscal advantages *ex lege,* informational/strategic purpose. Influences that create value in the business are divided into the following five categories (Stokes & Wilson, 2017):

• Customer base and market position. (a) Quantity of customers: A weakness of many businesses are their over-reliance on a small number of customers. (b) Quality

of customers: The quality of the customer base is determined by the loyalty of customers and the strength of their own businesses;

• Embedded knowledge and intellectual property. A key asset of any business is the knowledge of the owner (entrepreneur) running it;

• The entrepreneurial team. If the value of a business is not to be over-dependent on the expertise and knowledge of the owner, a management team capable of running the business on a day-to-day basis needs to be in place;

• Process and facilities – the business model. Businesses create value by bringing together resources and processes in a way that constitutes a viable "business model". A business model is the system that transforms an intangible business idea into products/services that have value in the market place; (Hedman & Kalling, 2003; Osterwalder & Pigneur, 2010).

• Cash flow and profits growth. The ability of the business to generate cash through profitable trading is a crucial part of its value, and the relationship between cash generation and profits will also affect the value of the business.

4.4. Types of Valuation Methods

According to Hatten (2016), there are three principal types of valuation approaches, namely the market approach, the income approach and the cost approach. A forth approach is the "rule of thumb" approach which is usually linked with the income approach. The cost, income and market approaches are the tools of valuation. Any type of asset can be valued by using one of these principle types of valuation methods or a combination thereof. The "rules of thumb" approach should only be used to test valuation calculations reached by other methods.

The Market Approach to Value: Allen (2012) define the market approach value method as follows: "This approach is based in the principle of comparability and substitution. The assumption is that if similar assets in a similar market place have been sold at a particular value, then the comparable asset will also sell at a similar price. Key elements to consider during this approach are: (a) How active is the market; (b) How public is the market, and (c) Whether there is an exchange of comparable assets (properties, businesses or shares). What makes this approach difficult is when the asset has unique features and benefits that make comparison virtually impossible. This approach is mostly effective for valuing estates, general use machinery, motor vehicles, liquor licenses and franchise type operations.

To utilise the market approach in the valuation of a business, the valuer would investigate and analyse the reported sales, including other business enterprises. If the valuer is fortunate, some might be found and be similar enough to the business to be used as a comparison. In other words, to be useful in the valuation process, there should be a high degree of comparability in the sales data, otherwise the adjustment

process becomes so extreme that it renders the exercise worthless. Sometimes the "rule of thumb" method can be used when there is an especially active market for a specific type of business and there is enough similarity in the tangible assets, the revenue streams and operating expenses. This approach is less effective for special purpose machinery and equipment, most tangible assets and intellectual property, and non-listed business enterprises.

The Income Approach to Value: Allen (2012) define the income approach as "an approach which is based on a measurement of the present worth of the economic benefits of ownership". In the case of an enterprise, the benefits of ownership are in the form of future profits. The present worth of those future profits is the value of the enterprise. Where the market approach focuses on recent past transactions, the income approach focuses on the future performance of the assets or the business, and specifically, the income-producing capability of the asset. The value of the asset or business can be measured by the present worth of the economic benefit to be received over the life of the asset. Key elements to address include:

• The economic life of the business;

• Choice of period over which the income is expected to be generated;

• Earnings attributable to tangible and intangible assets;

• Choice of appropriate capitalisation rate;

• Choice of period over which income is expected to be generated; and

• The risk associated with realising the earnings' expectations.

The cost approach to value: This approach seeks to measure the future benefits of ownership in the asset or business by quantifying the amount of money that would be required to replace the future service or earnings' capability thereof. This approach examines the current cost of replacement and adjusts this cost by the depreciation and obsolescence factors. The following key elements should be considered:

• The original cost of the asset;

• The current cost of replacing the asset;

• The insured value of the asset;

• Depreciation and obsolescence; and

• The economic life of the asset.

The underlying assumption of the cost approach is that the price of a new asset is commensurate with the economic value of the service that the asset can provide during its life. The market place is therefore the best testing place for this equation.

For example, if the price of a specific new machine was set at a level far above the value of the future economic benefits of owning the machine, then none would be sold. If the opposite was true, then demand would outstrip supply and presumably the price would rise. The price of this new machine, absent from some market aberration, is then equal to its fair market value. This approach therefore focuses more on the current capital costs of replacing the asset of a business.

Hatten (2016) states that approaches to valuing a business and which focus on the value of the business's assets, are referred to as "balance-sheet methods of valuation". They are appropriate for businesses that generate earnings primarily from their assets, rather than from the contributions of their employees. Approaches that focus more on the profits or cash flow that a business generates are referred to as "income-statement methods of valuation". This method is often considered the preferred tool with which to value a business. What sets this approach apart from other approaches is that it is based on future operating results rather than on historical operating results. As a result, businesses can be valued based on their future cash flows, which may be somewhat different than the historical results, especially if the buyer expects to operate some aspects of the business differently.

Valuation can also be classified into three typologies, depending on the degree of formalisation, namely informal, formal or official. Informal valuation is voluntary and not binding, whereas the formal valuation is equally voluntary but binding among counterparts. A legal authority according to the laws of a civil code imposes official valuation. Ultimately, it is important to specify the selected valuation method adopted by a professional. The corporate value of the business should be defined through capitalisation of future earnings; however, the practice application of this income statement-based method is not always possible, especially in SMEs in which planning, and budgeting systems are absent. In addition, the method selection, specifically, depends on the purpose of the valuation of the business (Grandis & Palazzi, 2015). Gilligan and Wright (2014) highlight the following two ways of valuing a business and which follow the nature of the assets to be valued, namely:

• Market or other valuation of the assets to be acquired. Tangible assets tend to be valued this way. Property, fixtures and fittings, equipment, stocks and debtors can all be physically, and separately, identified and valued;

• Multiple of annual profits. Rather than evaluating individual assets, a buyer can consider the earning power of the business now and in the future. This is the usual way of assessing the value of intangible assets. If intangibles cannot be physically measured or counted, their effectiveness in the marketplace can be evaluated; the usual yardstick for this is profit;

5. Results and Findings

5.1. Experience of Business Broker, Number of SMEs Sold and Top Selling SMEs

The first question of the questionnaire seeks to establish the level of experience of the business broker which will give an opinion about which type of SMEs is most commonly sold. The frequency distribution in Table 1 shows the level of experience from these respondents.

Table 1. Years of experience of business broker

Experience	Number of business brokers	Percentage
Less than 2 years	3	16.7%
2-4 years	9	50.0%
5 years>	6	33.3%

More than 80% of the respondents had experience of more than two years.

The purpose of the second question was to determine the average number of SMEs sold by the business broker on an annual basis. The frequency distribution is shown in Table 2.

Table 2. Average number of SMEs sold per annum

SMEs sold per annum	Number	Percentage
1-5	4	26.7%
6-10	8	53.3%
11-20	3	20.0%
21-30	0	0.0%
31>	0	0.0%

A total of 53% of the respondents sell between 6 and 10 SMEs per annum. None of the respondents sells more than 20 SMEs. The following question was also posed to respondents: “Which are the top selling SMEs in the Gauteng area as per your experience?” The responses are presented in Table 3.

Table 3. Top selling SMEs in the Gauteng area

Top selling SMEs	Type
Top selling	Supermarket
2nd best selling	Restaurant
3rd best selling	Liquor store
4th best selling	Coffee shop
5th best selling	Hardware shop

5.2. Empirical Research: Results and Discussions

Different theoretical valuation methods have been applied to estimate a market value for a business. The most strategic value factors as recognised by the general market aim to establish a generic or "rule of thumb" valuation method for these businesses, were determined. Respondents were also required to list the five most strategic value contributing factors from most important to less important, and as shown in Table 4.

Table 4. Most strategic value contributing factors

Strategic value contributing factors	Supermarket	Restaurant	Liquor store	Coffee shop	Hardware shop
Most important value factor	Location is easy accessible	Quality and value for money menu	Location is easy accessible	Location and convenience	Quality and value for money menu
2nd most important value factor	"Friendly" rental agreement	"Friendly" rental agreement	"Friendly" rental agreement	Quality and value for money menu	"Friendly" rental agreement
3rd most important value factor	Computerised management systems	Well equipped and great atmosphere	Computerised management systems	"Friendly" rental agreement	Sufficient stock on site
4th most important value factor	Sufficient space, stock and equipment	Computerised management systems	Sufficient space, stock and equipment	Well equipped and great atmosphere	Computerised management systems
5th most important value factor	Security and parking	Location and secure parking	Security and parking	Computerised management systems	Well trained and experienced staff

Respondents were requested to estimate a current market value for each of these businesses. No guidelines were provided, and respondents had to indicate the estimated value that he/she had calculated for the business. These estimated values were then added together per group (buyer, seller, broker) and divided by the number of surveys conducted per group. The average calculated values are presented in Table 5.

Table 5. Value expectations

Estimated value for:	SME buyers R	% of average	SME sellers R	% of average	SME business brokers R	% of average	Average R
Supermarket	2 753 000	83%	3 832 000	115%	3 420 000	103%	3 335 000
Restaurant	1 890 000	86%	2 440 000	111%	2 270 000	103%	2 200 000
Liquor store	1 310 000	73%	2 230 000	125%	1 815 000	102%	1 785 000
Coffee shop	1 420 000	80%	2 115 000	119%	1 790 000	101%	1 775 000
Hardware shop	2 327 000	89%	2 950 000	113%	2 538 000	97%	2 605 000
Average		82.2%		116.6%		101.1%	

Based on the information in Table 5, the estimated values of the different types of SMEs and according to the buyers, were on average 82%, or 18% lower than the estimated average market values of these SMEs. Expectations of the sellers were on average 16.6% higher than the calculated averages, while the professional business brokers were only 1% on their value expectations. Various valuation methods were applied to the simulated information, and the outcome per valuation method is presented in Table 6.

Table 6. Outcme per valuation method

A) Earnings capitalization valuation method	Supermarket	Restaurant	Liquor store	Coffee shop	Hardware shop
$CE = E^1/r$					
CE (capitalised earnings value)	R1 800 000	R1 805 000	R1 190 000	R1 480 150	R1 625 000
E^1 (most recent earning per annum)	R720 000	R722 000	R476 000	R592 060	R650 000
r (capitalisation rate)	40%	40%	40%	40%	40%

Notes on the application of this valuation method:

• Most recent earnings represent net profit before interest and tax and less depreciation, for the latest available financial period;

• The same capitalisation rate of 40% was applied throughout. This capitalisation rate was before owner's drawings and interest and tax, which could reduce this percentage even further; and

• All necessary financial information was available to apply this valuation method.

Next the price earnings ratio (PE) valuation method will be indicated in table 7

Table 7. Price earnings ratio (PE) valuation method

B) Price earning ratio (PE) valuation method	Supermarket	Restaurant	Liquor store	Coffee shop	Hardware shop
E' X Fair P/E ratio E' (most recent earning per annum) Fair price earnings	R2 160 000 R720 000 3	R2 166 000 R722 000 3	R1 428 000 R476 000 3	R1 776 180 R592 060 3	R1 950 000 R650 000 3

Notes on the application of this valuation method:

• Most recent earnings represent the net profit before interest and tax and less depreciation, for the latest available financial period;

• The same price earnings ratio of 3 was applied throughout; and

• Most of the required financial information was available to apply this valuation method, although the price earnings ratio could vary from time to time and from buyer to buyer because of various micro- and macroeconomic-related factors.

The present value of future earning $\mathbf{PVE = \sum E^1 / (1 + r)^1 + E^2 / (1 + r)^2 + E^3 / (1 + r)^3}$ was not applied because no information regarding future earnings was available.

Notes on the application of this valuation method:

• This valuation method provides a good estimate of the business value; however, no information regarding any future earnings were provided. As a result, this valuation method was not applied.

Next in table 8, the payback period method is applied.

Table 8. The payback period method

D) The payback period method	Supermarket	Restaurant	Liquor store	Coffee shop	Hardware shop
Payback period = Market value / After tax profits Payback period in years Market value After tax profits	 4 R2 544 000 R636 000	 4 R2 266 400 R566 600	 4 R1 613 600 R403 400	 4 R1 898 536 R474 634	 4 R2 288 000 R572 000

Notes on the application of this valuation method:

• After tax profits represent the net profit before interest and tax, less depreciation, less interest and less tax payable for the latest financial period;

• In the above stated calculations this formula was applied in reverse, and the same payback period of 4 years was applied in all (five) cases in order to generate an estimated market value for each of the SMEs; and

• Most of the required financial information was available in order to apply this valuation method, although the payback period could vary from time to time and from buyer to buyer because of various micro- and macroeconomic-related factors.

In table 9 the net asset valuation method is applied.

Table 9. Net asset valuation method

E) Net asset valuation method	Supermarket R	Restaurant R	Liquor store R	Coffee shop R	Hardware shop R
Value = Total assets – Total liabilities					
Total assets:					
Assets: Equipment	1 000 000	500 000	500 000	750 000	800 000
Current assets	845 067	230 600	708 000	128 594	990 000
Less liabilities:					
Current liabilities	1 061 067	1 081 067	888 800	354 600	1 208 000
Long term liabilities	700 000	70 000	150 000	250 000	400 000
Total net asset value	84 000	-400 467	169 400	273 994	182 000

Notes on the application of this valuation method:

• This valuation method is not based on the profitability of the business, but rather on the current "breakdown value" of the business;

• As a result, this is not an accurate valuation method to determine the most correct market value of the business, but rather a valuation method to estimate a minimum value for a going concern business;

• The "total assets" represent all the assets of the business. It includes cash, money in the bank, stock, collectable debtors and all equipment at market value;

• The "total liabilities" include all loans, creditors, bank overdrafts and outstanding taxes;

• This valuation method is largely influenced by the balance sheet of the business rather than the income statement items; and as a result, is not accurate regarding the true market value of the business; and

• Most of the required financial information was available in order to apply this valuation method.

In table 10 the price multiplier valuation method is applied.

Table 10. The price multiplier valuation method

F) Price multiplier valuation method	Supermarket	Restaurant	Liquor store	Coffee shop	Hardware shop
Price = benchmark base X multiplier					
Benchmark = annual gross sales/fees, or annual gross profit					
Annual gross sales	R8 000 000	R2 400 000	R3 600 000	R2 200 000	R6 000 000
Annual gross profit	R2 560 000	R1 680 000	R1 440 000	R1 760 000	R3 000 000
Annual net profit	R720 000	R722 000	R476 000	R592 060	R650 000
Stock value	R666 667	R120 000	R500 000	R53 000	R750 000
Multiplier = number of time X benchmark base, or percentage X benchmark base	11%	35%	27%	42.5%	34%
Benchmark base = sales, fees, gross profits and net profits	Annual TO + stock	2-3 times Gross profit	Annual TO + stock	Annual TO + stock	Annual TO + stock
Calculated value 1	R6 543 455	R2 062 857	R1 762 963	R1 393 082	R1 911 703
Calculated value 2	R8 666 667	R4 200 000	R4 100 000	R2 255 000	R6 750 000

Note that TO = turnover

Notes on the application of this valuation method:

• The annual gross profit is the difference between sales and cost of sales, for the latest financial period. It should be kept in mind that wages and electricity could also be seen as cost of sales in some cases, and the applicant should ensure that he/she compares “apples with apples” when this calculation is applied;

• Annual net profit represents the net profit before interest and tax and less depreciation, for the latest available financial period;

• Stock value represents the stock value for the latest financial period;

• The “benchmark” percentages and ratios used in these calculations are based on the table used byHendrikse and Hendrikse (2003). It should also be kept in mind that this table is based on market averages and not specifically privately-held SMEs. By applying these benchmark percentages and averages to the subject data and SMEs, a better estimate or average could be obtained to arrive at an estimated “fair average market price” per SME;

• Different stock levels and the construction of cost of sales figures could have a direct impact on the calculation of market value by using this valuation method; and

• Most of the required financial information was available to apply these valuation methods.

In summary and based on all of the above listed valuation methods, the estimated and calculated average market values for each of the SMEs are listed in table 11.

Table 11. Calculated average market values for each of the SMEs

	Supermarket R	Restaurant R	Liquor store R	Coffee shop R	Hardware shop R
Average calculated market values of SMEs	3 633 354	2 016 632	1 710 660	1 512 824	2 451 127

Respondents were also required to list what they perceive as strategic value-adding factors for each of the five different SME type of businesses. Based on these data, the following statements can be made:

• Value adding factors were not seen as, for example, "a high return on investment" or a low "price earnings ratio", but as underlying factors that unlock value in each of the SMEs;

• The strategic value-adding factors were very similar for the various SMEs with "location", "value for money" and "a friendly rental agreement" almost always amongst the two most important value-adding factors;

• Computerised management and control systems were also prominent items; and

• It should be kept in mind that results are based on SME type businesses, and not large corporations/companies.

Based on this information, it can be confirmed that the following valuation methods generated the most accurate market value estimates for each SME:

Type of SME	**Valuation method**
Supermarket	Payback period valuation method
Restaurant	Price earning ratio valuation method
Liquor store	Price multiplier valuation method
Coffee shop	Price earning ratio valuation method
Hardware shop	Payback period valuation method

In conclusion, these valuation methods are influenced by micro- and macro-economic factors such as interest rates, taxes, and currency fluctuations and legislation, and may change from time to time.

6. Conclusion

This study focused on establishing which theoretical valuation methods can be used when determining a market value for privately held SMEs in South Africa. The conducted research confirmed that strategic value contributing factors for selling an SME are recognised by the general market and it aims to establish a generic valuation method for these five types of SMEs. For a supermarket, the most strategic value contributing factor for selling was "location is easy accessible", for a restaurant it was "quality and value for money menu", for a liquor store it was "location is easy accessible", for a coffee shop it was "location and convenience", and for a hardware shop it was quality and value for money menu".

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A Thematic Discussion on the Role of Descriptive Analysis in the Study of Informal Economy–a Case Study for the Republic of North Macedonia

Dashmir Asani[65], Elmira Kushta[66], Dode Prenga[67]

Abstract: In this paper we present some thematic aspects related to the study of informal sector in the Republic of North Macedonia for the period [1998, 2016]. So, by conventional application of CDA model we perceived problematic issues in the estimation of the informal economy. To recover the model aftermaths, we assisted the calculation procedures by additional descriptive analysis aimed on avoiding the regression disturbances from critical dynamics. By evidencing the presence of self-organization regimes in some money-type variables, we identified the intervals where data series behaved highly nonlinearly. Consequently, by excluding parts of series up to a reasonable point (herein before 2004), the CDA predictions for the size of informal economy and the relationship with its factors has been improved remarkably. Next, we used factorial analysis to facilitate the design of the n-p-m MIMIC model. This investigation applied in 22 candidate factors suggested the configuration 9-2-3 as optimal structure for the model. In particular this model anticipated two terms confined in the latent variable structure, respectively in the range [0.35, 0.38] and [0.023, 0.08] part of the GDP. We assigned them as subparts of informal economy reflecting differenced influences or weights of certain cause factors. We observed that the estimated effect of the factors included in the model followed theoretical expectation.

Keywords: linear econometric model; informal economy; factor analysis; correlations.

JEL Classification: C13; C52; E25

1. Introduction

Informal economy in a country includes all economical activities that avoid government regulation and taxation or other duties. It interacts with registered economy (the GDP) by affecting its dynamics and modifying certain economic indicators, becoming therefore assessable in some way. It can be evaluated by

[65] PhD student, Faculty of Economy, University of Tirana., Albania, Address: Street Arben Broci, Tirana, Albania, E-mail: dashimrasani2@gmail.com.
[66] PhD, Department of Applied Mathematics, Faculty of Technical Sciences, University of Vlora, Albania, Address: Skelë, Rruga Kosova, Vlorë 9401, Albania, E-mail: kushtamira@gmail.com.
[67] Professor Associate, Department of Physics, Faculty of Natural Sciences, University of Tirana, Albania, Address: Street Arben Broci, Tirana, Albania, Corresponding author: dode.prenga@fshn.edu.al.

survey's analysis or by modeling. The trustworthiness of the estimation for this hidden quantity depends on methodical calculation procedures and on the characteristics of the economic system under the study. Theoretical aspects and modeling remarks have been deliberated in a large literature as for example in (Schneider & Williams & Colin, 2013), etc. In this work we consider some particularities observed in the calculation of informal economy for a concrete and specific system, the Republic of North Macedonia for the period [1998, 2016]. It is specific because the number of data points is small, the economy of the country has been under transformation processes, (Shukarov, 2012) and non-standard variables as migration and remittances impose their particular effects on the economy. We will present in following some conceivable analysis that helped to improve the measurement of informal economy when using indirect or model approach. Remember that direct approaches practice surveys, so their accurateness depends on the quality of the responded questionnaires and moreover their realization needs additional expenses. Indirect methods are mostly macroeconomic (Schneider & Buehn, 2016), so the calculations in this case use models comprising variables from professional and official databases. In this view, model approaches are practical and easy evaluation techniques. The most used indirect methods are discrepancies approach, monetary approach and physical input approach. A more general technique is based on structural equation methods (SEM) known as multiple indicator multiple causes model (MIMIC). The discrepancies approach admits that the difference between expected and real values for an economic quantity reflects the effects of informal economy, and therefore this last can be evaluated by a straightforward procedure. SCR model (simple currency ratio) asserts that informal economy is observed directly in the ratio of the currency out of deposits (C) by money in deposits (D). The simplified calculation formula has the form $\frac{InformalEconomy}{GDP} = \frac{C - kD}{(k+1)D}$ where $k = \frac{C}{D}$ in absence of informality. CDA (currency demand approach) model assumes that informal economy is generated from the fiscal evasion and other duty's avoidances. Therefore, informal activities seek to use only transactions in cash that increase the demand for currency (in circulation). Methodically, by evaluating the excess in this last, the size of informal economy is measurable using the regression of the type $\log(C/D, M) = \sum_{(i)} \alpha_i x_i$ where x are some factors and M is money aggregate. In MIMIC method, informal economy stands in-between factors or cause-variables and some macroeconomic quantities called indicators. So, by a two-step regression, this method offers the measurement of the size of informal economy, its cause factors and its indicators. From the calculation perspective, the rigorousness of linear modeling that appears in all abovementioned approaches is conditioned by the fulfillment of some requirements for variable data series. In (Dell'Ano & Schneider, 2006) it is underlined that (specific) economic

mediums impose additional constraints, and from our perspective, we should consider them in modeling and data elaboration stages. In our case-study intended on evaluating informal economy in a given specific system, we got questionable results compared to the general expectation. To improve the evaluation we performed an ad-hoc stationary analysis to avoid possible causes of problems observed in the use of CDA, and the factorial analyses to assist the MIMIC model setup. The reviewed models have produced reliable results and additional information for our system. In the following, we will present those undertakings.

2. Matching the Time Interval for a Truthful Use of CDA

The measurement of the informal economy for R.N. Macedonia for various periods up to 2005 has been addressed recently in many researches as (Osmani, 2004; Willimas, 2015) and references therein. So, the level of informal sector has been reported in the range 35%-30% of the GDP. Generalized analyses given in (Schneider& Buehn and Montenegro, 2010) advocated that the size of informality for economies in transitions might take values in the range [0.25-0.55] of GDP. Knowing that the economy under study belongs to the group of economies in transition, we acknowledged those estimations as reference boundaries. In (Dietz, 2010) and (Angelescu, 2009) it is underlined that the economy of the country has known dynamical changes last years due to the remittances and migration effects. Therefore, we had to consider econometric and methodical aspects when modeling for the period considered. In the first attempt we used CDA in the Cagan form

$$\ln\left[\frac{C}{D;M}\right] = a + \alpha \ln GDP + \beta \log(1 + .T) - \gamma I + ...\varepsilon \tag{2}$$

as given in (Schneider & Williams, and Colin, 2013). In (2) M denotes a money aggregate quantity (we used M_1 and M_2), D denotes the amount of the money in deposits, GDP is the gross domestic production, T denotes the averaged or weighted taxes and I signify the interest rate applied on deposits, whereas ε is an uncertainty or error term. Applying standard routines of linear multivariate regressions, we observed that original C/D and C/M data series resulted co-integrated I(1). The procedure of unit root removal by first differences was not conclusive in this case. In this situation we proceeded nevertheless with the regression (2) following other standard steps of the procedure, but managing a lower significance level for statistical tests. Remember that for such a small size series (16 points), statistical analysis becomes practically incoherent. Thus made, using initial series of [1998, 2016] in the regression (2), we got abnormal low value for informal sector at around 5%-10% of GDP for the years 1998-1999. This value is characteristic for a few highly developed countries (Schneider, 2016), so we flagged it as a wrong evaluation. The estimated value for informal economy in the middle of the period

was high, around 60% of the GDP. This value corresponds to the collapsing economy, which clearly was not our case. Other shortages regarding to the sign of the coefficients have been observed too. Therefore we tried the Tanzzi formulae for CDA:

$$\ln\left(\frac{C}{p_t}\right) = a_0 + a_1 \ln\left(\frac{C}{p_{t-i}}\right) + a_2 \ln\left(GDP_{t-i}\right) + a_3 \ln\left(I_{t-i}\right) + a_4 \ln\left(1 + T_{t-i}\right) \quad (3)$$

where i is the time lag that considers the delayed response in the indicator variable, p is the deflator index, C is currency or normalized currency to the money M. By using (3) we attained a little improvement, but the problem of a reliable regression remained unsolved. So, for optimal time lag ($i=1$) the coefficient α_4 was found negative which is theoretically wrong. Next the abnormal low values in the edges of the period remain unresolved. Considering those findings we hypothesized that shortcomings have originated from local high non-stationary behavior of some variables included in (2) or (3). The dynamics on econometric variables and its effects on linear modeling have been addressed in (Libanio, 2005; Kwiatkowski et al, 1992). So far, in an effort to recuperate the application of the formulas (2) and (3), we assumed that the variables in l.h.s of (2) or (3) may have undergone complicated dynamics around certain time-points in the interval considered. Therefore, linear regressions (2) or (3) have lost their trustworthiness nearby those points. To localize the possible extreme events associated with such dynamics, we considered monthly data series of C/D and C/M variables. The idea is that highly non-linear dynamics of daily or monthly variable behavior would be replicated somewhat in the yearly data values, displaying local deviances from a smooth trend. Consequently we checked such series for the presence of highly non-stationary regimes known as self-organization behavior. They are common events for financial time series and typically leads to extreme behavior of the type bubble or anti-bubble as described in (Sornette et al, 2004). Based on the analysis provided in (Sornette et al, 2011; Jiang, et al, 2010), such self-organization process is characterized by a log-periodic trend

$$y(t) = A + B(t - t_c)^m \left[1 + C\cos\left(\ln\omega(t - t_c) + \alpha\right)\right] \quad (4)$$

Note that theoretically the trend (4) has a critical point $t=t_c$, but in practice its signifies strong oscillation and high amplitudes associated to the behavior of variable y. In (Sornette et al, 2004) is stated that critical time t_c denotes merely the most probable moment for a regime change to occur, so we will consider this last property of the critical points in (4). Evidently A, B, C are (real) constants, ω is the cyclic frequency and α in the initial phase. By analyzing the fit of (4) to the C/D monthly data series, we evidenced the presence of a mixed self-organization regime as seen in Figure 1. So, by spanning the time windows in the interval [1998, 2016], we observed that a near-to-log-periodic process of anti-bubble type seemed to has

started around the middle of the year 2003 and would (probably) finish at June 2018 (at the critical time t_c). We referred near-to-characteristic regimes in the context of discussion in (Prenga, 2016).

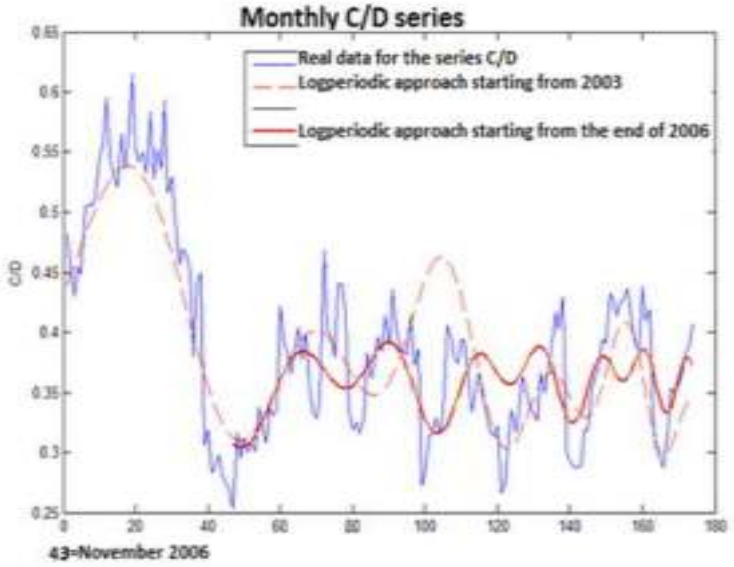

Figure 1. Mixed regime in the C/D data series

Another adjoining such process is likely to have started around November 2006 (in the monthly coordinate 43) and would be active until 2020 in condition *ceteris paribus*. Therefore a special point corresponding to a starting self-organization regime is located in-between 2003 and 2006. Similarly, the other special point corresponding to the end of this regime is found near 2018, which is out of our interval. So, we banned the data points before 2006, as hosting particular points which we assigned as undesired for regression procedures. The remaining segment [2006, 2016] was qualified as the appropriate interval for CDA regression.

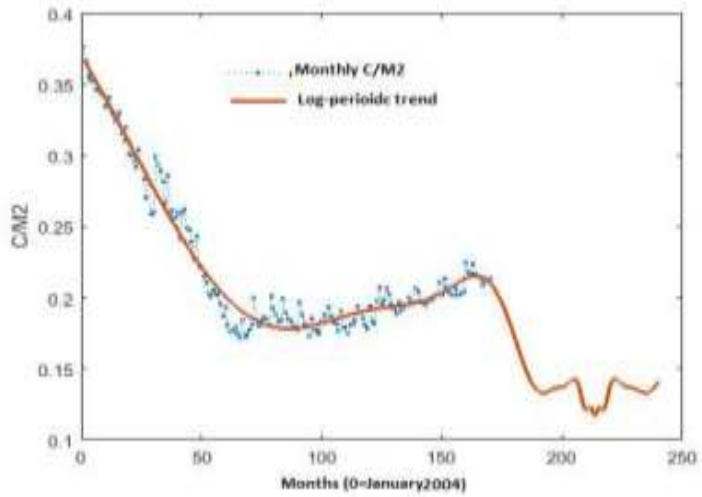

Figure 2. Near to log-periodic trend of C/M_2

Putting series C/M_2 in (4) we observed that a near to self-organization regime has originated before 2003 and will end at 2019 (around the coordinate 213), Figure 2. Therefore regarding to the formula (3) the period [2003, 2016] has been qualified as the interval where C/M_2 variable is smooth enough to be used in the regression (3). We observe that in this case, the unit root was removed in first difference of the series. Introducing above correction, we obtained remarkable improvement on the estimation of the informal economy. So, for the period [2004, 2016] this parameter is evaluated in the range [0.18-0.35] using (3). The underestimation problem remained unresolved for the beginning of the interval, but it differs significantly from the abnormal values of 5%-10% obtained when considering the [1998, 2016] time segment. Next, by putting the VAT in the role of taxes and GNP instead of GDP in (2) and (3), all the coefficients in (2) and (3) resulted with expected sign. As preliminary conclusion, we underlined that shortening the series as to exclude critical behavior from them has produced a significant improvement of the CDA predication for informal economy in our system.

3. Use of Monotonic Correlations in Modeling

A preliminary empiric view on a given system could be helpful for modeling. Note that if the number of data points is small as in our case, it is difficult to decide from the regression results which variable plays at best a certain role in the linear model. Specifically, we were interested on the role of remittances in the size of informal economy. This variable does not appear in standard models because it is not a typical economic parameter, but in our case it is significant, and is expected to affects the

currency demand and other economic parameters of the country. We proposed to analyze the level of association between some variables including the remittances, and thereafter to judge which one is appropriate to be considered in CDA model. We calculated Spearman correlation coefficients for those variables in the time sequences [2003, 2008; 2009;…]. So we were able to learn about the advancement of their association by the time.

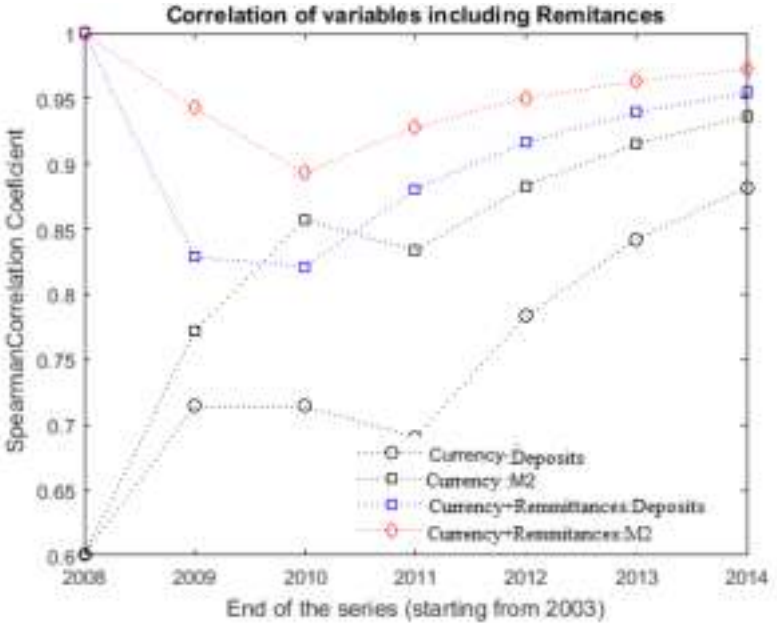

Figure 3. Monotonic Correlation coefficients for some variables

As seen in the Figure 3, the monotonic correlation coefficients between C and D or M_2 showed apparent changes for successive periods. The pair of variables C+R and D or M_2, exhibited higher monotonic correlation coefficients. Moreover, it remained high along all the core period of our interests. The monotonic correlation between {C+R, M_2} variables was found the highest among other combination and therefore we preferred them to use in CDA approach for interval [2006, 2014]. The results obtained accordingly, confirm an improvement in the regression's statistics. The size of informal economy in the problematic zone 2004-2005 is obtained at 25% of the GDP that is much better than when we using simply C in (3).

4. Using Factor Analysis to Assist MIMIC Modeling

The MIMIC model used in econometric studies is a structural equation approach. SEM models assume that latent variable *Y* are observed in the indicators set *Z,* whereas it is caused by the factors *X* where *X, Y* and *Z* in general are vectors. So the

relationship between *n* factors and *m* indicators is realized by the intermediacy of *p* unknown variables. The indicators of informal economy are in general the GDP, unemployment rate, normalized currency C/M, but other socio-economic parameters may appear as indicators too. The set of factors depends on concrete economy and involve numerical and categorical variables. The generalized SEM model aims evaluating Y, having known indicators Z and factors X. It has the n-p-m matrix equation form:

$$Z = AY + u; Y = BX + v; \quad (5)$$

In (5), A and B are matrices of coefficients, u and v assign the measurement errors for each equation. They are assumed to be normally distributed with zero mean. The MIMIC calculation procedure is described in many references as in (Schneider & Williams, 2013), etc. The calculation algorithm is detailed in (Jorskog & Goldberg, 1975) and additional clarifications can be found in (Steiger, 1990). Modeling starts by fixing the structure n-p-m. In MIMIC application for informal economy, usually it is assumed p=1 but this is not compulsory. Once the n-p-m dimension is fixed, the concrete set of variables could be selected based in general econometric arguments. Specifics of the factors influencing in the informal economy depend on concrete economies as seen in (Schneider & Savaan, 2007; Schneider & Buehn; Montenegro, 2010; Davidescu, 2015) etc., therefore choosing a correct set of cause variables is very important for further analysis. In this step we performed a data-oriented empirical analysis to fix the set of cause variables. Firstly we grouped the factors in five categories, *taxes, econometric indexes, interests and rates, government performance indicators, and currency-like variables*. For each of them we inspected subsets wherein at least 80% of total variance was explained. We observed that for the group of taxes and tariffs with six elements, more than 80% of the variance was explained by a single variable and 98% in only 2 variables. For 5 variables of the type *indexes* we obtained that 82% of the variance was explained in a single variable, for 3 variables of the type *interests and rates*, 80% of the variance was explained in one variable, for 5 variables of the type *governance 85*% of the variance was explained in two variables and for *money-typ*e variables 98% of variance was explained in two variables. So far, the minimal number of factors could be reduced in 7 variables according to those findings. A more descriptive set based on 98% variances explained for all categories, should include 9 factors selected among the categories above. Finally we fixed n=9 for further calculation. The set of indicators Y is taken from general theoretical views, e.g., the effect of informality is expected to affect specifically {*GDP, Unemployment Rate, Money*} etc. Finally we used factorial analysis to fix the number of principal components that described the system of the factors and proposed to consider this last as the number of latent variables. We observed that 95% of the variance of the set of variables fixed above was described by one component whereas more than 98% by two components. Therefore our optimal model is fixed 9-2-3 where *X= [Rural Population, VAT, Total*

Taxes, House Holdings, Net Wages, GDP.Capita, Interest, Remittances, Government Expenditures]; Y=[E1,E2]; Z= [Unemployment, C/ M1, GDP. Deflator]. We obtained that the first latent variable which we identified hereto as classical informal economy had its normalized values to the GDP in the range [30%-32%] for the interval [2004, 2016], Figure 4. The other latent variable had the normalized values in the range [6%-9%], Figure 5.

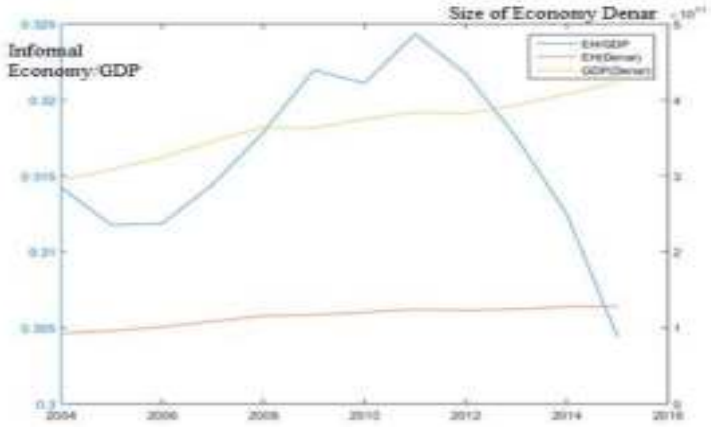

Figure 4. Recalculation of Hidden Economy recalculation in 9-2-3 MIMIC model

Thus, the informality in the R. N. Macedonia for the period [2004, 2016] would be described at best by an array encompassing two terms, which of one reflecting different relationship with the set of factors X.

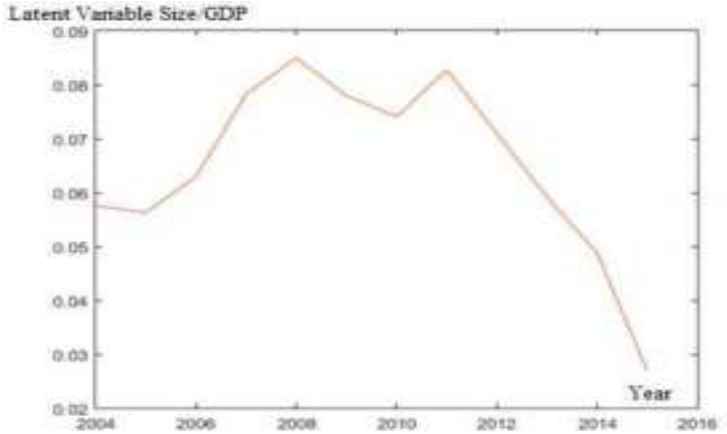

Figure 5. Second latent variable using 9-2-3 MIMIC model

The total informal economy is obtained by simply summing up those two terms.

Accordingly, the level of informality in 2004 is estimated at 36.5% of the GDP, going at 39% -41% of the GDP in the period [2008, 2012] and falling to 31% of the GDP at the end of 2015 as given in Figure 5. The overall estimated informal economy for this period was found in the range 90-130 billion dinars and is keeping increasing but apparently slower than the GDP. The major contributors on informal economy have been identified the variables *rural population ratio, value added taxes* and *government expenditures*. All of those promoted it as expected in theory. Other finding have resulted statistically reliable and matching with other estimation and expectations. We qualified the model obtained as described in this paragraph as optimal and its predictions as realistic. Therefore, the factorial analysis has worked as helpful tool in the designing n-p-m structure of MIMIC model in our system. Again, it can be suggested for similar cases too.

Conclusions

The stringent use of CDA and MIMIC models in our study of informality for the R. N. Macedonia during [1998, 2016] has produced initially questionable results. By evidencing the presence of self-organization regime, we localized the zones where currency type variable showed high nonlinear dynamics and excluded them from the study. Therefore, we qualified the interval [2004, 2016] as the appropriate reference for linear regression. Using series in this interval, the CDA estimations for informal economy exhibited a remarkable improvement. Next, by using factorial analysis in designing n-p-m MIMIC structure we identified the 9-2-3 structure as optimal for this system. In particular, we observed that informal economy herein was better modeled as a two-term structure. It resulted that each of those terms encompassed differenced effects of certain factor variables, which consists in additional information learned from the model. In general, this evaluation produced an enhanced estimation for the size and the causes of the informal economy in the period [2004, 2016]. Thus, we guesstimate that descriptive analysis is a useful instrument that could help to improve the estimation and the analysis of informal economy using linear models in similar systems.

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Is There Hysteresis in South African Unemployment? Evidence from the Post-Recessionary Period

Vuyokazi Pikoko[68], Andrew Phiri[69]

Abstract: High unemployment in South Africa possess as the country's most problematic economic issue faced by South African policymakers and hence is considered an overriding priority within the design of large scale government expenditure programmes. In this study, we investigate the hysteresis hypothesis for 8 categories of unemployment in South Africa using a battery of individual and panel unit root testing procedures applied to quarterly data collected in the post-recession period of 2008:q1 to 2017:q2. Indeed our empirical results confirm the hysteresis hypothesis for a majority of unemployment classifications with the exception of unemployment associated with persons aged 55 to 64 years old. Overall, our obtained empirical results hold far-reaching ramifications towards domestic policymakers in the sense of encouraging government to implement more labour focused policies in their fight against unemployment.

Keywords: Unemployment; Hysteresis; Unit root tests; South Africa; Sub-Sahara Africa (SSA)

JEL Classification: C22; C23; C51; E24.

1. Introduction

The global financial turmoil of 2007 is very commonly referred to as the worst financial crisis since the Great Depression of 1936. Having resonated via a bursting an asset bubble in the US housing market, and the subsequent closing of major investment Banks in the US during the period of 2007, the most severe repercussions of the sub-prime crisis can be summarized by two major events; the global recessionary period of 2008-2009 as well as the sovereign Euro debt crisis of 2010. In similarity to it's predecessor the Great Depression, one prominent feature of the 2009 global recessionary period was the imminent increase in unemployment rates worldwide, which has been more pronounced in the US and other Western economies. These developments have been humbling to majority of policymakers

[68] Post graduate student, Nelson Mandela University, University Way, South Africa, Address: Summerstrand, Port Elizabeth, South Africa.
[69] Senior Lecturer, PhD, Nelson Mandela University, University Way, South Africa, Address: Summerstrand, Port Elizabeth, South Africa, Tel.: +27 41 504 2650, Corresponding author: phiricandrew@gmail.com.

and have prompted an impulse amongst academics alike to be preoccupied with unravelling the underlying dynamics of the unemployment process in hope of avoiding a spiral of uncontrollable unemployment rates more especially over the long run.

The question regarding whether unemployment is stationary or contains hysteresis lies at the heart of the empirical debate on the underlying dynamics of the unemployment process. On one hand, stationarity implies that shocks to the unemployment process, such as those caused by the global recession period of 2009, would temporary deviate unemployment from its "natural rate" at which it will eventually revert back to over the steady-state. Conversely, the hysteresis in unemployment implies that shocks to the variable are not transitionary but are permanent such that unemployment would not revert back to it's equilibrium in the face of exogenous shocks to the economy. Empirically, the hysteresis hypothesis is rejected if the time series found to be a levels stationary process whilst hysteresis is confirmed once a unit root is detected within the unemployment process. So if, for instance, an economy is found to exhibit hysteresis on the unemployment series, then policymakers should be aware that unemployment which arises due to recessions and other adverse shocks will be more problematic over the long run to deal with compared to the case where unemployment conforms to the natural rate hypothesis. Up-to-date, a bulk majority of the previous empirical literature has been predominantly focused on the US and other Western economies[70], Roed (1996), Leon-Ledesma (2002), Ghoshray and Stamatogiannis (2015), Marques et al. (2017)). In light of the abundance of empirical literature on the hysteresis hypothesis in the unemployment for Western economies, the absence of empirical efforts dedicated towards developing countries, and in particular African countries remains somewhat of a mystery. This is rather disconcerting since African economies are historically characterized by excessive levels of unemployment, poverty and inequality thus rendering a case study for these countries as worthwhile. The argument for the investigation into the hysteresis hypothesis for SSA countries is thus well justified and serves as a source of motivation for academics to focus more of their research efforts towards SSA countries. The obtained findings would be most welcoming towards policymakers in the SSA region in terms of their endless quest to eradicate unemployment and other social ills via strategic large scale fiscal programmes.

In our study, we examine the unemployment hysteresis hypothesis for the South African economy which is widely recognized as the most advanced country in the SSA region. Our empirical strategy involves applying a battery of individual and panel unit root tests applied to time series data of seven nationwide categories of unemployment collected in the post-crisis period of 2008 to 2017. What makes South Africa a particular interesting case study is the fact that the country is commonly

[70] See (Brunello, 1990).

dubbed as being a dual economy, in the sense of exhibiting favourable economic features such as a highly developed financial system as well as a sound fiscal system. Nevertheless, the country is currently is faced with high unemployment affecting society and its governance and this has had crippling effects on the economic welfare, production, crime, and social stability within an economy (Kingdon & Knight, 2004). In fact since the democratic elections of 1994, unemployment in the country has been unacceptably high, of which according to Banerjee et al. (2008) can be attributed to the aftereffects of the former Apartheid regime. The importance of this study to local policymakers cannot be overemphasized as the economy possess the strategic authority to battle unemployment considering that the underlying dynamics of unemployment are clearly understood.

Having provided a background and motivation for the study, the rest of the manuscript has been arranged as follows. The next section of the paper briefly provides a historical overview of large scale government policies implemented in addressing unemployment in South Africa. The third section of the paper presents the literature review which discusses both theoretical and empirical developments in accordance with the literature. In the fourth section, we introduce the individual and panel unit root tests employed in our study are outlined. The fifth section describes the time series data and presents the empirical results based on our empirical analysis. The paper is then concluded in the fifth section of the study.

2. Historical Overview of Policies Dealing with Unemployment

a) Reconstruction and Development Programme (RDP)

Subsequent to abolishment of the Apartheid regime and the holding of the first democratic elections in 1994, the newly elected ANC government was faced with severe social-economic problems as inherited from the former Apartheid government. In response to this daunting task of correcting the inherited social imbalances, the Reconstruction and Development Programme (RDP) was formulated in 1994 and represents the country's first large scale fiscal policy programme in post-democratic South Africa. The prime objectives of this programme were to provide jobs, houses, water and electricity, social welfare, health care services, nutrition, and a clean environment (Pauw et al, 2008). Part and parcel of these objectives were the attainment of a low and stable inflation rate, stability within the exchange rate and real interest rates, the promotion of domestic and foreign investment as well as the promotion of investments, small and medium business through training (Pauw et al, 2008). Concerning unemployment, the main emphasis of the programme was on the reconstruction of labour market intuitions as well as job creation through public works programmes aimed specifically at alleviating youth unemployment. However, the RDP programme was deemed

unsuccessful and eventually abandoned on the premise of poor policy co-ordination and implementation methods.

b) Growth, employment and redistribution (GEAR) programme

In 1996 the government introduced a macro-economic plan, namely the Growth, Employment and Redistribution (GEAR) programme whose primary focus was to make the economy grow fast, be sustainable, labour-intensive, internationally competitive, attract foreign investment as well as to focus more on exports. The programme has been labelled as being neo-classical in nature and having specific macroeconomic policy objectives of improving growth, reducing inflation and the budget deficit, reforming taxation and easing the balance of payments. The underlying belief under the GEAR policy was that in order for government to achieve their ultimate goal of eradicating poverty and inequality would require the economy to attain a 6 percent GDP growth rate per annum. However, in similarity to the RDP programme, the GEAR strategy did not live up to all the expectations of increasing employment. In particular, between 1996 and 2001, the economy grew by a low 2.7 per cent per annum, instead of the expected 6 per cent. On the other hand, employment levels decreased over this period, instead of increasing by 3 per cent (Van der Westhuizen et al., 2012).

c) Accelerated and shared growth initiative (ASGISA)

ASGISA was established in 2006 with the main aim of raising domestic growth rates and sharing the sharing the benefits of such growth in an effort to reduce inequality and poverty (Arangies et al*.,* 2008). This programme identified areas to develop namely, women and youth, tourism sector, black economic empowerment, access to finance, investment and infrastructure development (Pauw et al, 2008). The primary objective of this policy was to reduce unemployment long-term unemployment rates with a specified target of reducing unemployment from 28% in 2004 to 14% by 2012 which was to be achieved over two planned phases. In the first phase, a period ranging between 2005 and 2009, government sought an average annual growth rate of 45 per cent. In the second phase, between 2010 and 2014, the average annual growth rate was to increase to 6 per cent of GDP (Phiri, 2017). Even though ASGISA had managed to achieve a certain level of success in terms of improved investment and a reduced government deficit, unemployment continued to grow whilst overall GDP growth declined.

d) New growth path (NGP) and National development plan (NDP)

Subsequent to the global recession period of 2009, two main fiscal policies were implemented and are currently the blueprint of fiscal spending programmes, those being the NGP and NDP which were both introduced in 2013. These policies programmes acknowledge and attempt to address the key problems currently facing South Africa those being high unemployment, low levels of domestic savings and

investments, persistent balance of payments deficits, an overvalued exchange rate, skilled labour shortages, energy and infrastructural bottlenecks, economic concentration, government inefficiency, rent-seeking and regulatory burdens on business. In also differing from previous policy programmes, the NGP and NDP do not rely on an economic model to create jobs but create new solutions through judicious use of government policy in conjunction with private sector influences (Nattrass, 2011). Therefore the overall gist of these policies is the creation of sustainable jobs for the poor and to make the economy to be more labour intensive and efficient. In particular, the NDP has set objectives of alleviating poverty and inequality by 2030 through the creation of 10 million jobs, and this objective has come under critical criticism for being unrealistic in nature. Nevertheless, from an academic point of view the success of these programmes in influencing the unemployment rate is dependent on the evolution process of the unemployment variable.

3. Theoretical and Empirical Literature Review

3.1. Theories Explaining the Behavior of Unemployment

From a theoretical perspective, there are four contemporary theories which compete at explaining the evolution or behaviour of unemployment. The first of these theories is the natural rate of unemployment (NRU) hypothesis which arose courtesy of Phelps (1967) and Friedman (1968) and advocates for the existence of a constant long-run equilibrium of unemployment rates. However, in the short-run there may be non-permanent change from the long-run equilibrium. Thus, this hypothesis proposes that the unemployment rate is a constant and stationary process which may exert short-term shocks. According to Phelps (1967) and Friedman (1968) there are certain factors that have an effect on the natural rate of unemployment. On the supply side of the labour market these factors include; differences in age, gender, and race of the labour force. On the demand side of the labour market, differential job creation and changes in industry technologies have an effect on natural rate of unemployment.

The second theory is the structuralist hypothesis as formalized by Phelps (1994), this theory shows that any changes in fundamentals may change the level of unemployment over a period of time. In line with this theory, unemployment rate is a consistent process subject to occasional but continuing structural changes. In structuralist models, movements in the rate of unemployment are regarded as movements around the NRU and the steady increase in unemployment is the result of a combination of constant shocks that increased the NRU (Raurich et al., 2006).

The third theory of unemployment found in the literature is the persistence theory mainly attributed to the works of Hall (1975) who argue for a slow speed of change in relation to the long run equilibrium unemployment rate after a shock. Thus,

according to the theory the unemployment rates are characterised by a constant long memory process (Ayala et al., 2006). The second definition explaining the persistent hypothesis is the insider-outsider theory. This theory is explaining the loss of the influence on setting wages. The inside workers have power in determining wages in the economy. This market power that the insiders have makes it expensive for firms to employ the outsiders (unemployed workers). Unions also have market power in determining wages (Neudorfer et al., 1990).

The final theory explaining the evolution of the unemployment process is the hysteresis hypothesis, as developed by Blanchard and Summers (1986) which describes unemployment as a nonstochastic variable that never returns to equilibrium after a shock. Thus, under this theory short-term shocks to unemployment exert permanent effects over the steady-state long-run, such that a sharp increase of unemployment, if left by itself, may continue to be a problem in the economy even in the long run (Song & Wu, 1998). Hence, from a policy perspective, hysteresis indicates that recessions are much more expensive to the government than the natural rate hypothesis of unemployment would suggest. The theoretical foundations for this theory can be traced to unemployment models built on the premise of existing labour unions, insiders' bargaining power, worker protection laws as well as the occurrence of human capital depreciation during unemployment periods (Guris et al., 2017).

3.2. The Empirical Literature for Advanced Economies

As mentioned in the introduction, a bulk majority of the existing literature are studies conducted for advanced countries. Having conducted an exhaustive review of the existing literature, we find that the studies of Brunello (1990) for Japan; Jaeger and Parkinson (1994) for Canada, Germany, US and UK; Roed (1996) for 16 OECD countries; Song and Wu (1997) for the US; Song and Wu (1998) for the 15 OECD countries; Leon-Ledesma (2002) for the US and 21 EU countries; Smyth (2003) for 8 Australian territories; Mitchell (2003) for 18 OECD countries; Camarero and Tamarit (2004) for 19 OECD countries; Camarero et al. (2006) for 19 industrialized countries; Gustavsson and Osterholm (2005) for 5 industrialized economies; Lee (2010) for 29 OECD countries; Lanzafame (2010) for Italy; Chang (2011) for 17 OECD countries; Huang (2011) for 14EU and 14 OECD countries; Fosten and Ghoshray (2011) for 6 OECD countries; Cheng et al. (2012) for the US; Liu et al. (2012) for Australia; Lee et al. (2013) for 12 OECD countries; Bakas and Papapetrou (2014) for Greece; Garcia-Cintado et al. (2015) for Spain; Ghoshray and Stamatogiannis (2015) for the UK and US; Klinger and Weber (2016) for the US and Germany; and Marques et al. (2017) for 28 OECD countries, suffices as an exhaustive list of relevant works.

We note that a majority of these studies are panel studies (i.e. Brunello (1990); Jaeger and Parkinson (1994); Roed (1996); Song and Wu (1998); Leon-Ledesma (2002); Mitchell (2003); Camarero and Tamarit (2004); Camarero et al. (2006); Gustavsson

and Osterholm (2005); Lee (2010); Chang (2011); Huang (2011); Fosten and Ghoshray (2011); Lee et al. (2013); Ghoshray and Stamatogiannis (2015); and Marques et al. (2017)) which utilize a wide range of individual and panel unit root testing procedures. Notably, all reviewed panel studies for industrialized economies confirm hysteresis in unemployment even though there are a handful exceptional case studies which find mixed evidences between hysteresis and the natural rate hypothesis (Camarero and Tamarit (2004); Camarero et al. (2006); Gustavsson and Osterholm (2005); Lee (2010); Lee et al. (2013)). However, concerning country specific studies (Brunello (1990); Song and Wu (1997); Smyth (2003); Lanzafame (2010); Cheng et al. (2012); Liu et al. (2012); Bakas and Papapetrou (2014); Garcia-Cintado et al. (2015)) the hysteresis appears to be more pronounced when researchers investigate the hypothesis for regions within specific countries (Song and Wu (1997); Smyth (2003); Liu et al. (2012); Bakas and Papapetrou (2014); Garcia-Cintado et al. (2015)). A summary of the reviewed studies for industrialized economies is provided in Table 2.

Table 2. Summary of reviewed literature (industrialized economies)

Author	Country/Countries	Time	Methodology	Results
Brunello (1990)	Japan	1955-1987	ADF unit root tests	Hysteresis in unemployment
Jaeger and Parkinson (1994)	Canada, Germany, US and UK	1961-1991	Unobserved components model	Hysteresis in unemployment for all countries except the US.
Roed (1996)	16 OECD countries	1970-1994	ADF unit root tests	Hysteresis in unemployment in all countries with the exception of the US.
Song and Wu (1997)	48 U.S. states	1962-1993	Univariate and panel based ADF, PP, ZA tests	Univariate tests find hysteresis in individual states whereas panel tests find no hysteresis.
Song and Wu (1998)	15 OECD countries	1960-1992	ADF and PP unit root tests	Hysteresis in unemployment in all countries.
Leon-Ledesma (2002)	51 US states and 21 EU countries	1985-1999	IPS panel unit root test	Hysteresis in unemployment in both US and EU countries.
Smyth (2003)	8 Australian territories/states	1982-2002	ADF, LLC and IPS panel unit root tests	Hysteresis in unemployment in all territories/states.

Mitchell (2003)	18 OECD countries	1960-1991	ADF and PP test with structural break	Hysteresis in unemployment
Camarero and Tamarit (2004)	19 OECD countries	1998-2001	MADF and SURADF	7 of the 19 OECD countries have hysteresis in unemployment.
Gustavsson and Osterholm (2006)	Australia, Canada, Finland, Sweden and the US	1960-2005	Kapetanois et al. (2003) nonlinear unit root tests	Unemployment is stationary in all countries except Australia
Camarero et al. (2006)	19 OECD countries	1956-2001	IPS, MW, KPPS, Hadri, CiS tests	Hysteresis hypothesis is rejected once structural breaks are accounted for
Lee (2010)	29 OECD countries	1960-2008	Linear and nonlinear panel unit root tests.	Linear unit root test show hysteresis in 23 of the 29 countries and nonlinear unit root tests show hysteresis in 6 of 29 countries.
Lanzafame (2010)	Italy	1977-2003	MP and BC structural break tests	No Hysteresis in Italian unemployment.
Chang (2011)	17 OECD countries	1960-2009	Unit root tests with Fourier function.	Hysteresis in 11 of 17 countries.
Huang (2011)	14EU and 14 OECD countries	1975-2009	IPS and NH panel unit root tests	Hysteresis in unemployment in both panels
Fosten and Ghoshray (2011)	6 OECD countries	1750-2005	LKT tests	Depending on timeframe regime unemployment can display hysteresis or not
Cuestas et al. (2011)	8 CEE countries	LS	LS and BBC tests	Unemployment is stationary but very persistent
Cheng et al. (2012)	US	1976-2010	Recursive mean adjustment (RMA)	US unemployment is stationary with long half lives
Liu et al. (2012)	8 Australian territories/states	1982-2010	ADF, PP, KPPS, LLC; IPS. MW, Hadri, CiS tests	Mixed results with univariate tests but hysteresis in panel unit root tests.
Lee et al. (2013)	12 OECD countries	1960-2010	Quantile covariate unit root tests	Unemployment is globally stationary although there is

				some evidence of hysteresis in upper quantiles.
Bakas and Papapetrou (2014)	13 regions in Greece	1998-2011	ADF, DF-GLS, LLC, IPS, MW, Hadri, MADF.	Hysteresis in all Greek regions
Garcia-Cintado et al. (2015)	17 Spanish regions	1976-2014	LP and LS unit root tests with structural breaks.	Hysteresis in Spanish unemployment.
Ghoshray and Stamatogiannis (2015)	UK and US	1750-2002	KPZ test	Switching dynamics from natural rate to hysteresis
Klinger and Weber (2016)	US and Germany	1960-2015	M-S unobserved components	Hysteresis in US data but not Germany
Marques et al. (2017)	28 OECD countries	2000-2014	DF-GLS and PR tests	Hysteresis in OECD unemployment rates after the global recession on 2009.

Note: ADF – augmented dickey fuller tests; PP – Phillips and Perron tests, DF-GLS – Elliot et al. (1996) test, NP – Ng and Perron tests; LS – Lee and Strazicich (2003) tests; BBC – Bec et al. tests; ZA – Zivot and Andrew structural break test; M-S – Markov Switching; KPZ – Kejriwal et al. (2013) tests; MW – Maddala and Wu (1998) tests; IPS – Im et al. (2003) tests; CiS – Carrion-i-Silvestre et al. (2005) test; LLC - Levin et al. (2002) tests; MP - Papell et al. (2000); BC – Breitung and Candelon (2005); MADF – Multivariate augmented Dickey-Fuller test; SURADF – seemingly unrelated regressions augmented Dickey-Fuller test; LKT – Leybourne et al. (2007) test; PR – Perron and Rodriguez (2003) test.

3.3. The Empirical Literature for Advanced Economies

The literature concerning developing countries is not as extensive as is the case for industrialized economies and be summarized through the works of Leon-Ledesma and McAdam (2002) for 12 CEE countries; Chang et al. (2007) for Taiwan; Camarero et al. (2008) for 8 CEE countries; Gomes and da Silva (2008) for Brazil and Chile; Mednik et al. (2010) for 13 Latin American countries; Cuestas et. al. (2011) for 8 CEE countries; Ayala (2012) for 18 Latin American countries; Furuoka (2012) for 12 East-Asian-Pacific countries; Chang and Su (2014) for Taiwan; Furuoka (2015) for 5 Estonian regions; and Olanipekun et al. (2017) for South Africa and Nigeria. One again we note that a majority of the available literature are panel studies (Camarero et al. (2008); Gomes and da Silva (2008); Mednik et al. (2010); Cuestas et. al. (2011); Ayala (2012); Furuoka (2012); Furuoka (2015) and Olanipekun et al. (2017)) which tends to argue for at least a very persistent unemployment process although exceptional cases exist for countries like Nigeria

which has established to have stationary unemployment rates. Similarly, for the country-specific studies, Chang et al. (2007) for Taiwan; Chang and Su (2014) for Taiwan; Furuoka (2015) for 5 Estonian regions; the natural rate hypothesis tends to be reject in favour of either a very persistent or non-stochastic unemployment process. The review of studies for non-industrialized economies has been conveniently summarized in Table 3.

Table 3. Summary of reviewed literature (non-industrialized economies)

Author	Country/Countries	Time	Methodology	Results
Leon-Ledesma and McAdam (2004)	12 Central and Eastern European countries	1991-2001	ADF, KPSS, DF-GLS individual unit root tests and IPS, Chang and Taylor-Sarno panel unit root tests.	Reject hysteresis hypothesis after controlling for structural breaks.
Chang et al. (2007)	Taiwan	1993-2001	ADF, PP, DF-GLS, LLC, IPS and MADF	ADF, PP and DF-GLS find hysteresis whereas LLC, IPS and MADF tests reject hysteresis.
Camarero et al. (2008)	8 CEE economies	1991-2003	IPS, MW, KPPS, Hadri, CiS tests	Hysteresis in unemployment in all countries
Gomes and daSila (2008)	Brazil and Chile	1982-2004	LS	Unemployment is highly persistent on both countries although hysteresis accounts to small portion of unemployment evolution
Mednik et al. (2010)	13 Latin American countries	1980-2005	ADF, KPPS, IPS and CiS tests	Hysteresis in most countries
Cuestas et al. (2011)	8 CEE countries	LS	LS and BBC tests	Unemployment is stationary but very persistent
Ayala et al. (2012)	18 Latin America countries	1970-2009	ADF, LS (2004) one structural and LS (2003) two-structural breaks.	For ADF, unemployment in 17 of 18 countries have unit root, for LS (2004) hysteresis in 9 of 18 countries, LS (2003) hysteresis in 2 of 18 countries.

Furuoka (2012)	12 East-Asia-Pacific countries	1980-2009	MADF and SURADF tests	Hysteresis in unemployment.
Chang et al. (2014)	Taiwan	1978-2012	LLC, IMPS, MW, Peseran, Moon and Perron, Bai and Ng and Choi	All unemployment series contain hysteresis with the exception of college degree holders.
Furuoka (2015)	5 Estonian regions	1993-2011	IPS	No hysteresis in unemployment rates.
Olanipekun et al. (2017)	South Africa and Nigeria	1991-2015	ZA	Hysteresis in South Africa unemployment but not Nigeria

Note: ADF – augmented dickey fuller tests; PP – Phillips and Perron tests, DF-GLS – Elliot et al. (1996) test, NP – Ng and Perron tests; LS – Lee and Strazicich (2003) tests; BBC – Bec et al. tests; ZA – Zivot and Andrew structural break test; M-S – Markov Switching; KPZ – Kejriwal et al. (2013) tests; MW – Maddala and Wu (1998) tests; IPS – Im et al. (2003) tests; CiS – Carrion-i-Silvestre et al. (2005) test; LLC - Levin et al. (2002) tests; MP - Papell et al. (2000); BC – Breitung and Candelon (2005); MADF – Multivariate augmented Dickey-Fuller test; SURADF – seemingly unrelated regressions augmented Dickey-Fuller test; LKT – Leybourne et al. (2007) test; PR – Perron and Rodriguez (2003) test.

4. Methodology

As should be clear to the reader by now, unit root tests are the norm for investigating the hysteresis hypothesis within the unemployment rates. In order to assume robustness of empirical results, researchers tend to investigate the intergration properties of the unemployment process using a batter of unit root tests. In our study, we follow in pursuit by applying a combination of individual unit root tests and panel unit root tests to conduct our empirical analysis. In particular, we shall be using the individual unit root tests of ADF, PP, KPPS, DF-GLS and Ng-Perron procedures as our sample of individual unit root tests. On the other hand, our panel tests will consist of the tests of Levin et al (2000) (LLC) test; Hadri's (2000) unit root test; Im et al. (2003) (IPS) test, Breitung's (2000) test and Fischer type-tests (Maddala & Wu, 1999). The testing procedures are discussed in the following sub-sections of the paper.

4.1. Individual Unit Root Tests

The augmented Dicey Fuller (ADF) test is the most used method for testing the integration properties of a time series. Given an unemployment time series, $unemp_t$, and denoting Δ as the first difference operator, the ADF test regression assumes the following form:

$\Delta unemp_t = \beta' T_t + \alpha_i unemp_{t-1} + \sum_{i=1}^{p} \psi \Delta unemp_{t-p} + e_t$ (1)

Where D_t contains deterministic components (constant or constant plus time trend) and e_t is a well-behaved error term. The unit root null hypothesis of the time series is tested as $\alpha_i = 0$ and this is tested against the alternative hypothesis of a stationary process (i.e. $\alpha_i < 0$). However the ADF test has been criticized for it's determination of lag length p in the regression, of which not suitably chosen will results in biased results. Therefore, the PP unit root test can be used as an alternative to eliminate the asymptotic basis found in the ADF test, by relying on the following test regression:

$unemp_t = B'D_t + \alpha_i unemp_{t-1} + e_t$ (2)

Where in similarity to the ADF test, the nonstationary null hypothesis is tested as $\alpha_i = 0$ against the stationary alternative of $\alpha_i < 0$. Nevertheless, both ADF and PP unit root test produce low testing power when attempting to distinguish between near-stationary and pure nonstationary processes. The DF-GLS test of Elliot et al. (1996) proposes the de-trending of the time series before applying the unit root testing procedures. Denoting the de-trended unemployment time series as unemp*, the DF-GLS test regression can written as:

$\Delta unemp^*_t = B'D_t + \alpha_i unemp^*_{t-1} + \sum_{i=1}^{p} \alpha \Delta unemp^*_{t-1} + u_t$ (3)

And the unit root null hypothesis is once again tested as $\alpha_i = 0$ against the stationary alternative (i.e. $\alpha_i < 0$). Note that when the DF-GLS tests is performed with an intercept, the t value is the same as the t value of the ADF test. These two tests will have the same critical value. When DF-GLS test has both trend and intercept, the distribution is different from the ADF test and the critical value will be the same as of the ERS test. Perron and Ng (1996, 2001) take from Elliot et al. (1996) by de-trending the time series and creating four different statistics corresponding via Monte Carlo simulations, to produce efficient versions of both PP and ADF test statistics. The resulting tests statistics are denoted as MZ, MZt, MSB and MPT.

Whilst the aforementioned tests (i.e. ADF, PP, DF-GLS and Perron-Ng tests) are built on the notion of testing the unit root null hypothesis, Kwiatkowski et al. (1992) present a test of the null hypothesis of stationarity against the alternative hypothesis of nonstationary. The so-called stationary test takes the following functional form:

$unemp_t = \beta' D_t + \mu_t + u_t,$ (4)

$u_t = \mu_{t-1} + \varepsilon_t,\ N(0,\ \sigma_e^2)$ (5)

Where the null hypothesis of a stationary process is tested as $\sigma_e^2 = 0$ and this is tested against the alternative of a unit root process in the time series.

4.2. Panel Unit Root Tests

Panel-based unit root test has become a very popular since the use of panel time series increase the explanatory power of the tests given that more observations are generally observed in these types of tests. In our study employ five panel based unit root testing procedures, Levin et al (2000) (LLC) test; Hadri's (2000) unit root test; Im et al. (2003) (IPS) test, Breitung's (2000) test and Fischer type-tests (Maddala and Wu, 1999). Whilst the first two tests assume a common unit root process in the test regression, on the other hand, the Im et al. (2003), Breitung's (2000) test and Fisher type tests are panel test with individual unit root process. Begining with the LLC test which is basically a panel extension of the ADF test and tests the following regression:

$$\Delta unemp_t = \beta' T_t + \alpha_i\, unemp_{t-1} + \sum_{i=1}^{p} \phi\ \Delta srunemp_{t-1} + X'_{it}\delta + u_t \quad (6)$$

Where we assume a common α_i, but allow the lag order for the difference terms, p_i, to vary across cross-sections. As with the case of the ADF test, the unit root null hypothesis is tested as $\psi_i = 0$ against the stationary alternative of $\psi_i < 0$. Conversely, Hadri's (2000) tests is a panel extension of the KPSS tests in the sense of testing the null hypothesis of a stationary process against the nonstationary alternative. The test regression can specified as:

$$unemp_{it} = \delta_i + \eta_i t + e_{it} \quad (7)$$

Where the null hypothesis of a stationary process can be tested as $\sigma_\mu = 0$. In differing from the LLC and Hadri tests, The IPS test assumes heterogeneity in each dynamic panel and thus corrects for and observed autocorrelation in the test regression. The test can be represented in the following regression:

$$\Delta unemp_{it} = \alpha_i\, unemp_{i,t-1} + z_{it}\, \lambda_t + e_{it} \quad (8)$$

Where α_i is panel specific. Thereafter the null hypothesis of a unit root existing in each individual series is tested as $\alpha_i = 0\ \forall_i$, which is tested against the alternative of an otherwise stationary process. Breitung (2000) built upon the IPS test by constructing a pooled panel unit root test that does not require bias correction of the variables by suggesting the transformation of the test regression regressions by forward orthogonalization (i.e. e^*_{it}), then the following regression is run:

$$e^*_{it} = \alpha\, v_{i,t-1} + u_{it} \quad (9)$$

Where the unit root null is tested as $\alpha = 0$ against the stationary alternative. Finally, the Fisher type tests employ the p-values from each unit root tests for each cross section. In particular, Madala and Wu (1999) propose that by defining pi as the p-values from the individual ADF tests regressions, then the asymptotic results derivation is as follows:

$$p = -2 \sum_{i=1}^{N} \ln pi \quad (10)$$

While maintaining the proposition that the null hypothesis of a unit root process is tested against the alternative of stationary process.

5. Data and Empirical Results

5.1. Data Description

The time series data used in our study consists of seven different demographic categories of unemployment for South Africa, namely; males, females, ages 15 and above, ages 15 to 24, ages 15 to 64, ages 25 to 54 and ages 55 to 64, and has been collected been the first quarter of 2008 up to the l first quarter of 2017. The specific details of the collected series are reported in Table 2. The specific details of the collected series are reported in Table 2. Furthermore, Table 3 presents the summary statistics of the time series variables and reveals a number of noteworthy preliminaries. For instance, we note that the mean values are higher for females at 27.18 when compared to male unemployment rates which are averaged at 22.86. For the case of age groups, persons aged between 15 to 24 years old exert the highest mean values at 54 percent in the post-recession period. This particular finding places emphasis/reflects the severity of youth unemployment in the country which is reputable for being amongst the highest globally. Unsurprisingly, the lowest unemployment averages are established for persons aged between 55 and 64 years.

Table 2. Data collection and source

Series	Symbol	Frequency	Time period	Source
Unemployment rate: Age 15 and over for males	Males	Quarterly, seasonally adjusted	2008:q1 – 2017:q2	FRED database
Unemployment rate: Age 15 and over for females	Females	Quarterly, seasonally adjusted	2008:q1 – 2017:q2	FRED database
Unemployment rate: Aged 15 and above	15 and above	Quarterly, seasonally adjusted	2008:q1 – 2017:q2	FRED database
Unemployment rate: Aged 15-24	15-24	Quarterly, seasonally adjusted	2008:q1 – 2017:q2	FRED database
Unemployment rate: Aged 15-64	15-64	Quarterly, seasonally adjusted	2008:q1 – 2017:q2	FRED database
Unemployed rate: Aged 25-54	25-54	Quarterly, seasonally adjusted	2008:q1 – 2017:q2	FRED database

Unemployed rate: 55-64 Aged 55-64	Quarterly, seasonally adjusted	2008:q1 2017:q2	– FRED database

Table 3. Summary statistics of time series

	males	females	15 and above	15-24	15-64	25-54	55-64
Mean	22.86	27.18	24.81	50.46	24.82	21.91	7.51
Median	23.10	27.20	24.90	50.90	25.00	21.90	7.60
Maximum	25.40	29.50	27.30	54.00	27.70	25.10	10.50
Minimum	19.50	25.20	22.40	44.40	21.50	18.80	5.20
Std.dev.	1.43	1.07	1.20	2.32	1.30	1.48	1.22
JB	4.76	0.68	0.58	4.26	0.32	0.36	1.38
p-value	0.09	0.71	0.75	0.12	0.85	0.84	0.50

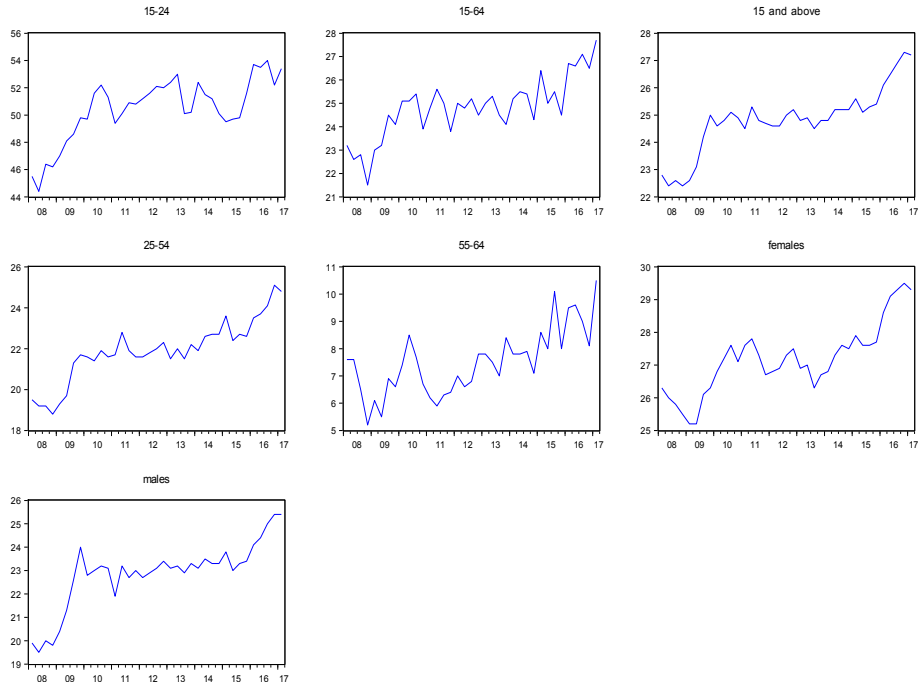

Figure 1. Time series plots of unemployment rates (2008-2017)

5.2. Empirical Estimates

Table 2 below reports the results of the individual unit root test, as performed with i) an intercept and ii) a trend on the levels for each of the six categories of unemployment in South Africa. In quickly scrutinizing through the time series we find that each of the time series generally fails to accept the notion of stationarity

within the time series. In particular, when all unit root tests are performed with only an intercept then the unit root hypothesis is rejected across all the time series variables at all critical levels; that is with the sole exception of the KPSS test which fails to reject the stationary null hypothesis for persons aged 25 to 54 and 55-64 years old. However, when the test are performed with a trend, then the results become more ambiguous more prominently so for the KPPS test. Note that the test statistics produced for the KPPS test when performed with a trend fail to reject the stationarity process for all examined time series except for person aged 15-24, 25-54 and 55-64. Other notable results include the rejecting of the unit root null hypothesis for persons aged 55-64 years for the ADF, PP, DF-GLS, Ng-Perron tests when performed with a trend. Furthermore, the findings of a unit root process in unemployment for persons gaged 15 to 64, when both PP and Ng-Perron tests are performed with a trend are rather ambiguous findings since they do not confirm to majority of the results obtained from the other unit root tests.

Table 4. Individual unit root tests (levels)

		males	females	15 and above	15-24	15-64	25-54	55-64
ADF	intercept	-1.88	-0.38	-0.69	-2.10	-1.23	-2.10	-1.02
	trend	-2.43	-1.90	-1.78	-2.46	-1.86	-2.46	-4.35***
PP	intercept	-1.48	-0.50	-0.69	-2.00	-1.71	-2.00	-1.67
	trend	-2.28	-2.06	-1.94	-2.39	-4.10**	-2.39	-4.26***
KPSS	intercept	0.68**	0.63**	0.69**	0.57**	0.68**	0.57	0.65
	trend	0.10	0.09	0.10	0.14**	0.10	0.14*	0.16**
DF-GLS	intercept	-0.48	-0.24	0.09	-1.04	-0.37	-1.05	-1.17
	trend	-2.08	-1.92	-1.86	-2.29	-2.75	-2.30	-4.03***
Ng-Perron (intercept)	MZa	0.11	-0.33	0.87	-1.78	1.90	-1.78	-2.58
	MZt	0.05	-0.14	0.43	-0.71	1.08	-0.71	-0.78
	MSB	0.47	0.42	0.50	0.40	0.57	0.40	0.30
	MPT	18.17	14.50	22.26	10.74	30.93	10.74	8.10
Ng-Perron (trend)	MZa	-6.29	6.21	-6.13	-7.52	-60.21***	-7.52	-14.97*
	MZt	-1.76	-1.69	-1.70	-1.94	-5.45***	-1.94	-2.60
	MSB	0.28	0.27	0.28	0.26	0.09***	0.26	0.17*
	MPT	14.49	14.63	14.82	12.12	1.68***	12.12	6.85

Note: * denotes 10% significance level, ** denotes 5% significance level, *** denotes 1% significance level

In now turning to the results of the individual unit root tests as performed on the first differences of the time series, we find a complete reversal of the empirical results in the sense that a majority of the time series confirm stationarity within the differenced time series. As can be easily observed the ADF, PP, DF-GLS and Ng-Perron test all reject the unit root null hypothesis at all levels of significance whereas the results from the KPSS and Ng-Perron tests are not so conclusive for all the time series variables. In particular, we note that when the KPSS is performed with a trend and

the Ng-Perron is performed with an intercept on unemployment rates for persons aged 15 to 64 years old, the unit root hypothesis cannot be rejected at all levels of significance. Other exceptional cases arise concerning unemployment for persons aged 55 to 64 years old, when the KPSS tests are performed with either an interceptor a trend as well as for the MZt and MPT statistics of the Ng-Perron tests performed with a trend, as the aforementioned tests cannot reject the unit root null hypothesis at all critical levels. However, in collectively taking into consideration that fact that a majority of the reported tests statistics point to stationarity in all observed time series in their first differences. We are thus obliged to conclude that the individual unit root test statistics point to all unemployment series being I(1) variables.

Table 5. Individual unit root tests (first differences)

		males	females	15 and above	15-24	15-64	25-54	55-64
ADF	intercept	-7.10***	-5.16***	-5.95***	-6.21***	-6.95***	-7.61***	-8.74***
	trend	-7.03***	-5.11***	-5.84***	-6.27***	-6.83***	-7.48***	-8.82***
PP	intercept	-7.10***	-5.12***	-5.95***	-6.27***	-22.10***	-7.78***	-9.56***
	trend	-7.03***	-5.06***	-5.84***	-6.42***	-22.07***	-7.63***	-9.86***
KPSS	intercept	0.10	0.11	0.09	0.14	0.19	0.12	0.43*
	trend	0.09	0.06	0.08	0.10	0.16**	0.11	0.50***
DF-GLS	intercept	-6.23***	-4.59***	-4.76***	-5.50***	-1.79*	-6.72***	-8.53***
	trend	-6.91***	-5.19***	-5.66	-5.83***	-5.03***	-7.54***	-8.55***
Ng-Perron (intercept)	MZa	-17.28***	-16.37***	-16.48***	-17.16***	-0.66	-17.06***	-14.16***
	MZt	-2.94***	-2.86***	-2.87***	-2.87***	-0.38	-2.91***	-2.44**
	MSB	0.17***	0.17**	0.17**	0.16***	0.57	0.17***	0.17***
	MPT	1.42***	1.15***	1.49***	1.63***	20.03	1.46***	2.54**
Ng-Perron (trend)	MZa	-16.81*	-17.15***	-17.10*	-17.18***	-59.25***	-16.21*	-14.51*
	MZt	-2.89*	-2.89***	-2.90*	-2.91***	-13.40***	-2.82*	-2.55
	MSB	0.17*	0.17*	0.17*	0.17*	0.03***	0.17*	0.17*
	MPT	5.45**	5.53*	5.45**	5.41**	0.26***	5.79*	7.10

Note: * denotes 10% significance level, ** denotes 5% significance level, *** denotes 1% significance level

Table 6 presents the panel unit root tests as performed on the levels and first differences of our observed time series. Starting with the results obtained from the tests performed on the levels of the variables, we find results similar to those obtained from the individual unit root tests in the sense of a majority of test statistics

failing to reject the unit root hypothesis at all critical levels for all panel unit root tests. In particular, the results from the common root unit root tests (i.e. the LLC and Breitung's tests) manage to reject the unit root null hypothesis at all levels of significance regardless of whether the tests are performed with an intercept a trend. However, the results associated with the individual root unit root tests (i.e. IPS, ADF-Fisher, PP-Fisher and Hadri tests) are less conclusive, as when the ADF-Fisher and PP-Fisher tests performed with a trend, the test statistics reject the unit root hypothesis, at 10 and 5 percent critical levels respectively, in favour of stationarity within the time series. On the other end of the spectrum, when the panel unit root tests are performed on the first differences of the variables, our produced test statistics mutually reject the unit root hypothesis at all significance levels with the sole exception of the Hadri test performed with a trend in which we find that the stationarity null is rejected at all critical levels. Nevertheless, given the overriding evidence of unit roots in the levels and stationary series in the first differences, we are compelled to accept the hysteresis hypothesis for South African unemployment rates.

Table 6. Panel unit root tests on time series

		levels	first difference
COMMON ROOT TESTS			
LLC	intercept	0.22	-15.75***
	trend	-1.02	-14.48***
Breitung	Intercept and trend	-0.88	-7.01***
INDIVIDUAL ROOT TESTS			
IPS	intercept	1.06	-15.78***
	trend	-1.63	-14.76***
ADF-Fisher	intercept	7.41	184.16***
	trend	22.49*	166.97***
PP-Fisher	intercept	8.13	179.04***
	trend	26.08**	425.31***
Hadri	intercept	8.43***	-0.08
z-stat	trend	3.71***	2.97***

Note: * denotes 10% significance level, ** denotes 5% significance level, *** denotes 1% significance level

6. Conclusion

Since the democratic elections of 1994, unemployment remains the most problematic economic issue faced by South African policymakers and hence is considered an overriding priority within the design of large scale government expenditure programmes. In this regards, an important empirical question that can be posed towards policymakers is whether unemployment contains hysteresis or conforms to the natural rate hypothesis. Primarily motivated by the increase trend in domestic

unemployment rates as experienced subsequent to the global recession period of 2009, this current study has been concerned with investigating the hysteresis phenomenon for 8 different categories of unemployment data for South Africa collected between 2008:q1 and 2017:q2. To this end, we apply a battery of individual and panel unit root testing procedures to investigate the integration properties of the unemployment process.

Our obtained empirical results indicate that there are slight discrepancies concerning the results obtained from the individual unit root tests, with unemployment being predominantly nonstationary for all sexes and age groups with the exception of unemployment associated with persons aged between 55 to 64 years old. On the other end, the panel results more convincingly confirmed hysteresis in South African unemployment rates for South Africa for periods subsequent to the 2009 recession period. All-in-all, there are some important policy implications which can be derived from our empirical study. For starters, the general confirmation of hysteresis in the unemployment process for South African data implies that shocks to the unemployment rate will not revert to an existing natural rate equilibrium. To recall, the hysteresis hypothesis implies that government intervention is necessary to reduce unemployment. Therefore the current NGP and NDP policy programmes are applauded but yet it can be questioned as to whether government intervention is continuously required to keep unemployment at a manageable level. The fact of the matter is that it is possible that unemployment evolves as an asymmetric process, being stationary between certain levels and turning nonstationary at other levels. The empirical confirmation of such possibility of such asymmetric can be left for future endeavour.

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Work Environment and Employees' Performance: Empirical Evidence of Nigerian Beverage Firm

Obamiro John Kolade[71], Kumolu-Johnson Babatunde Oladipupo[72]

Abstract: The study focused on the relationship between work environment and employee performance in Intercontinental Distiller Limited. The objective of the study is to examine the relationship that exists between physical workplace setting and job satisfaction of employee. Also, examine the effect of work system on employee effectiveness.. Survey research design was adopted in this study. 132 copies of questionnaire were returned and valid for the analysis of stated hypotheses. Pearson Product Moment Correlation (PPMC) and Simple Regression analysis were adopted to test the relationship among variables. The physical workplace setting correlate with job satisfaction at a value of r = 0.813 while work system significantly affects employees' effectiveness at value of r^2 =0.870. The results showed a strong relationship of physical workplace setting and job satisfaction in beverage firm in Ado-Odo. Work system significantly affects employee effectiveness. The study recommends that management should place more importance to employees' safety by providing necessary facilities conducive for work environment.

Keywords: Physical work setting; Work System; Job satisfaction.

JEL Classification: M10

1. Introduction

The environment is man's immediate surrounding which they manipulate for his existence. Wrongful manipulation introduces hazards that makes the environment unsafe and impede human existence. The workplace entails an environment in which the employee performs his work assignments while an effective workplace is an environment where results can be achieved as expected by management (Mike, 2010, p. 250). Physical environment affects how employees in an organization interact,

[71] Associate Professor, PhD, Department of Business Administration, Faculty of Management Sciences, Lagos State University, Nigeria, Address: Ojo, Nigeria, Tel: +234 (0)8061544978, E-mail: johnobamiro@gmail.com.

[72] Lecturer, Department of Business Administration, Faculty of Management Sciences, Lagos State University, Nigeria, Address: Ojo, Nigeria, Tel: +234(0)8034279657, Corresponding author: ola_breakthrough@yahoo.com.

perform tasks, and are led. Physical environment as an aspect of the work environment has directly affected the human sense and subtly changed interpersonal interactions and thus employees‟ commitment (Ajala, 2012, p. 141). This is so because the characteristics of a room or a place of meeting for a group have consequences regarding employee's commitment and satisfaction level.

The workplace environment is the most critical factor in keeping an employee satisfied in today's business world. Today's workplace is different, diverse, and constantly changing. Workers are living in a growing economy and have almost limitless job opportunities. This combination of factors has created an environment where the business needs its employees more than the employees need the business (Smith, 2011). Every organization wants to have employees with the necessary skills for achieving its organizational needs, employees who are committed to organization and have high performance. Therefore any organization competing for the best employees, need to do something to attract potential employees. One of the things that can be done to attract potential employees is to establish a pleasant working environment. According to Jain and Kaur (2014, p. 1), workplace environment involves all the aspects which act and react on the body and mind of an employee. A rested mind is a catalyst for employee performance. Work system policies form part of the work environment that can motivate employee on the job, help to tackle the low morale and high degrees of stress that can lead to underperformance since the employees get tired of juggling work and life responsibilities (Cynthia, 2015; Dae & Myungweon, p. 328). According to Nadler and Gerstein (1992, p. 195), a work system is characterized as a way of thinking. It can play an important role in strategic human resource management by helping to achieve a fit between information, technology, people and work. Also, provide the means for creating a performance culture. A congenial work environment minimizes fatigue, monotony and boredom as well as maximizes work performance. Workplace environment is one of the comprehensive concepts because it includes aspects of physical, psychological and social working conditions which beverage industry exist. According to National Bureau of Statistics (2017), the beverage industry in Nigeria is dominated by the bottlers for some of the key global brands. This industry grew by 8.74% in the third quarter of 2017 with 0.86% of the real GDP which was significant.

The beverage firm of focus is Intercontinental Distillers Limited. This firm seeks many experienced and qualified employees from rival firms, with an offer of a better salary and compensation package. Although compensation package is one of the extrinsic motivation tool (Smith, 2011) it has a limited short term effect on employees commitment and morale. A widely accepted assumption is that better workplace environment motivates employees and produces better results. Ajala (2012) indicates that environmental conditions affect employee safety perceptions which impact upon employee commitment. As suggested by Cynthia (2015), in the

twenty-first century, businesses are taking a more strategic approach to environmental management to enhance their performance through improving the performance level of the employees. It is against this backdrop that a study of this kind is imperative in the beverage firm in Ogun State, Nigeria.

In the past couple of decades, a number of empirical studies have investigated the work environment (Mike, 2010, p. 250; Ajala, 2012, p. 141; Smith, 2011; Al-Hamdan, Manojlovich & Tanima, p. 103), and its relationship with retention outcomes (Salau, 2017; Asigele, 2012), organizational performance (Chandrasekar, 2011, p. 20; Alam, Sameena, & Puja, 2012, p. 32).

Empirical research on work environment has examined at least two major issues; Firstly, a number of empirical studies on work environment factors (Cynthia, 2015; El-Zeiny, 2013, p. 12). These studies have primarily examined the different factors and detailed process of work environment. The second group of studies focused on direct effect of work environment components on performance (Dixit & Bhati, 2012, p. 34; Hafiza, Shah, Jamsheed & Zaman, 2011, p. 198; Hope, Obianuju & Chibuzoh, 2017, p. 111).

Despite the growing empirical studies on work environment and employees' performance, it is worth noting that besides the employees' productivity in terms of output measure, other aspects of employee performance such as job satisfaction, employee's effectiveness, employee's commitment and morale are not equally treated as important variables. Hence, very limited studies have paid attention to these measures. Thus, a significant part of work environment literature has strongly emphasized the contributions of work environment (Smith, 2011; Salau, 2017). Therefore, this study will fill the gap identified above by investigating the effects of work environment on employees' performance in the beverage industry within Nigerian context.

The main objective of the study is to examine the effects of work environment on employees' performance in Intercontinental Distiller Limited. The specific objectives are to: (i)- examine the relationship that exists between physical workplace setting and job satisfaction of employee. (ii)- examine the effect of work system on employee effectiveness.

In order to achieve the objectives of this research study, the research study attempts to provide answers to the following research questions:

- What is the relationship between physical workplace setting and job satisfaction of employee.
- To what extent have work system influenced employee effectiveness.

1.1 Research Hypotheses

H_{O1}: Physical workplace setting does not play any significant relationship in enhancing job satisfaction of employee.

H_{O2}: Work system has no significant effect on employee effectiveness.

2. Literature Review

2.1.1 Work Environment

Work environment consciously involves the process of ensuring quality of life, improving the degree of satisfaction derived from the work itself, providing opportunities for growth, creating safe and healthy workplaces, increasing creative and critical use of work system initiatives leading to workers effectiveness (Salau. 2017). Kohun (2012) defined work environments as the forces that are currently and continually influencing performance, motivation and employment relationship. Work environment comprises a total network of inter-relationship existing among the stakeholders and the environment in which they operate. Hope et al., (2017) posited that work environments impact not only the commitment, satisfaction, aptitude, and performance but also have long-term effect on employees' health and employment continuity. Interestingly, work environment focuses on working hours, working space, equipment and facilities which are components of physical work environment (Salau, 2017) compensation packages, training, job security, job enrichment, organisational culture and change, staffing functions aliening with work system, promotion, among others (Kohun, 2012; Al-Hamdan, Manojlovich & Tanima, p. 103). All of these serve as basis for attaining maximum productivity.

Work environment significantly contribute to increased staff performance (Hafiza et al., 2011, p. 198). Over the last decades, physical work environment and work system have become complex due to the changes in several factors such as the social environment, information technology and work processes (Hashim & Mahmood, 2011, p.15; Hope et al., 2017, p. 111). According to Cynthia (2015), where workers are mentally and ardently fit, their passion to work will be enhanced and their performance outcomes will ultimately be amplified. Kohun (2012) also stated that a proper workplace environment reduces absenteeism and as a result strengthens employees' satisfaction. Research indicated positive reactions to an enabling work environment strategies such as the work processes, job designs, environment and facilities design (Jain & Kaur, 2014, p. 8).

2.1.2 Classification of Work Environment

Work environment are grouped into two; Internal environment and External environment. According to Jain and Kaur (2014) viewed external work environment as a result of factors such as custom and laws of the community within which the

business operates. It includes the weather condition and policies outside the work environment. Mbah and Ikemefuna (2012) argued that external work environment are factors such as political awareness, socio-economic issues, technology, and legal context which have direct and indirect influence on the organisation and environment at large.

The Internal work environment is seen as the environment that focuses largely on the operations of the organisation. Mohsan (2012) asserted that the internal work environment consists of the work system, buildings, furniture, layout, as well as the physical conditions under which employees operate. The internal work environment largely focused on the determination of specific goals and objectives aimed at fulfilling the mission. Objectives are normally focused on performance and could specify desired achievements. Importantly, organisations continually evaluate the changes that are needed to achieve the objectives and goals. Some strategies relate to areas such as improving the physical workplace setting, procedures for work overtime which contribute to employee retention, creating and developing workable system in enhancing effective workforce (Salau, 2017). The Physical work setting and work system are key components of work environment that leads to employee performance.

2.1.3 Physical Work Setting

A physical work environment can result a person to fit or misfit to the environment of the workplace and it is also known as an ergonomic workplace. There are some factors of physical work environment which help employees to perform their job more effectively and which leads to enhance their job satisfaction, such as lightings, the floor configuration, office layout and also the furniture layout (Lankeshwara, 2016, p. 47; Al-Hamdan, Manojlovich & Tanima, p. 103).

According to the Vischer (2007), physical work environment is one of the most important factor which influences on work performance. Evidence accumulated that the physical work environment in which people work affects both job performance and job satisfaction. Okiki (2013) explained that if employees dissatisfy with their working environment and once the employees become stressors at the work place, the employees tend to do thei2.3 r work very slowly. This will directly affects for the employees performance and as well as for the overall productivity of the organization. According to Lankeshwara, (2016), employees affect by the environment of the place they are working and by having a good environment, the employees could apply their energy and their full attention to perform work. Thus, to ensure employees' satisfaction and workplace performance, organisations must provide a suitable environment that is noise free (Hope et al, 2011, p. 113), adequate office spaces (Salau, 2017), appropriate work tools and furniture (Odunlade, 2012). Organisations are expected to identify areas where there is poor ergonomics workstation that contribute to stress outcome such as employees' dissatisfaction,

poor performance, complaints and perhaps, intention to quit the organisation as a result of stress (Okiki, 2013, p. 8).

2.1.4 Work System

Armitage and Keble-Allen, (2007) stated that work systems facilitate employee involvement, skill enhancement and motivation. Work System is generally associated with work practices that raise the levels of trust within workplaces and increase workers' intrinsic reward from work, and thereby enhance organizational commitment. They define work system as a way of organizing work so that front-line workers participate in decisions that have a real impact on their jobs and the wider organization. Godard (2004) suggested that work systems are based on both alternative work practices and high-commitment employment practices. Armitage and Keble-Allen (2007) indicated that people management basics formed the foundation of working system and they identified three themes underpinning the Work System concept. Firstly, an open and creative culture that is people-centered and inclusive, where decision taking is communicated and shared through the organization. Secondly, investment in people through education, training, loyalty, and flexible working. Lastly, measurable performance outcomes such as benchmarking and setting targets, as well as innovation through processes and best practice. A work system is described as an internally consistent and coherent management system that is focused on solving operational problems and implementing the firm's competitive strategy (Godard, 2004; Min, Ying & Mary, 2019, p. 28). They suggested that such a system is the key to the acquisition, motivation and development of the underlying intellectual assets that can be a source of sustained competitive advantage.

2.1.5 Employee Performance

Employee performance is an assessment of the efficiency and effectiveness of a worker or group of workers (Jalal, 2016, p. 61). In actual terms, employee performance is a component which directly affects the company's profits (Obdulio, 2014, p. 17). Performance may be evaluated in terms of job satisfaction an employee had on specific job role over a period of time. The performance of a given worker will be assessed relative to job description set out for employees doing the same work. It can also be assessed according to the amount of units of a product or service that an employee handles in a defined time frame (Jalal, 2016, p. 61). As the success of an organization relies mainly on the performance of its employees, therefore, employee performance has become an important objective for businesses (Sharma & Sharma, 2014, p. 595). Studies have focused on one or two ways to measure employees' performance and since many different approaches are taken, it can be challenging to compare the results (Nollman, 2013). Overall, there is a lack of an effective and standardized way to assess this performance. According to Sharma and Sharma (2014), employee performance is based on the amount of time that an

employee is physically present at his/ her job, besides the extent to which he/ she is "mentally present" or efficiently working during the presence at the job. Companies should address such issues in order to ensure high worker performance. Obdulio (2014) indicated that employees' performance can be evaluated in terms of effectiveness of an employee in executing the job he or she was hired to do, in order to produce the desired outcomes expected from an employee's job description.

According to Sharma and Sharma (2014), higher performance results in economic growth, higher profitability, and social progress. It is only by increasing performance, employees can obtain better wages/ salaries, working conditions and larger employment opportunities. Jalal (2016) also demonstrated that the alignment of functioning work system to employee productivity is a key contributor to the success of an organization. This alignment as a result would motivate and inspire employees to be more creative, and this ultimately can improve their performance effectiveness to accomplish organizational goals and objectives (Obdulio, 2014, p. 14).

The above discussion has clearly discussed the concept of employee performance as it relates to job satisfaction and employees' effectiveness which are key determinants of overall organizational success.

2.1.6 Job Satisfaction

According to Dixit and Bhati (2012), job satisfaction is an affective and emotional response to various facets of one's job. Hafiza el al., (2011) describes it as being an emotional response that results from the employee's perceived fulfillment of their needs and what they believe the company to have offered. Even though in recent times researchers have tried to replicate current theoretical footings of job satisfaction, Jain and Kaur (2014) definition which happens to be one of the initial definitions of this model is still the most cited. They defined job satisfaction as any combination of psychological, physiological, and environmental circumstances that causes a person truthfully to say, I am satisfied with my job (Jain & Kaur, 2014). In general, most definitions cover the emotional feeling an employee has concerning their job. This could be the job in general or their attitudes towards specific features in the physical work setting, such as: their colleagues, salary or working conditions (Hope et al., 2017, p. 15).

2.1.7 Work Environment and Employee Performance

Studies have been carried out on work environment as a factor that determines employee performance **(**Lankeshwara, 2016, p. 47**).** In their studies, Jain and Kaur (2014) analyzed the extent to which employees perceive their workplace environment as fulfilling their intrinsic, extrinsic, social needs and their need to stay in the organization. They also analyzed the impact of perception of work

environments on employee commitment and turnover in the organization. They concluded that if the employees are provided with enabling work environmental support, they will be highly satisfied and show high level of commitment towards their organization and hence low turnover rate. Ajala (2012) indicated that workplace environmental elements such as sufficient light, absence of noise, proper ventilation and layout arrangement substantially increase employees' productivity. Mohsan (2012) investigated the impact of workplace environment and infrastructure on employees' performance from the education in Pakistan and concluded that incentives at workplace had a positive impact on employees' performance. Hafiza et al. (2011) in a survey of 31 bank branches showed that comfortable and ergonomic office design motivates the employees and increased their performance substantially. According to Mbah and Ikemefuna (2012), in their study "effects of working ability, working condition, motivation and incentive on employees multi-dimensional performance" found that the variables incentives, motivation and working conditions have a significant effect on employee performance in an Indonesian university. It is evident from these studies that a good workplace environment plays a very vital towards increasing performance of employees in general.

2.2 Theoretical Framework

This study is anchored on Theory of Work Adjustment (TWA) developed by Dawes and Lofquist at the University of Minnesota, 1984. The theory describes the relationship that exists among individuals at work and their work environment. Work is therefore perceived and conceptualized as an interaction between an individual and a work environment. The environment requires that certain tasks are performed, and the individual brings up the needed skills to perform the tasks. As an exchange relationship (between the individual and the workplace environment), the individual also requires certain compensation or rewards for work performance and certain preferred conditions, such as a safe and comfortable place to work. For the interaction to be maintained and job to continue, the workplace environment and the individual must continue to meet each other's requirements (Dawes & Lofquist, 1984). The degree to which the requirements of both are met is called correspondence. This is why TWA is also known as Person–Environment Correspondence Theory. The forgoing has implication for this study. Where employees perceive some factors in the physical workplace environment as unconducive, then such environment may be construed as being unhealthy and unsafe. Hence, for an environment to be perceived as conducive, the Person-Environment relationship must be corresponding (i.e. the requirement of person and environment must be met). Where there is a lack of correspondence means that commitment may be affected. These further shows the need for empirical probing into the various gaps identified in this review.

3. Methodology

The study employed survey research design. This design was used because it gives greater room to study the subject matter and ensures that inferences can be made about some characteristic attitude or behavior of the population in the study. To achieve this research objective, this study focused on the employees of Intercontinental Distiller Limited in Ota, Ogun State which comprise of the managerial and non managerial staff. The managerial staff comprise of the heads of various department, while the non managerial staff comprise of employees of the operations and marketing departments.

The population of this study was 178 employees of Intercontinental Distiller Limited in Ota, Ogun State and a convenient sample size of 178 was chosen. The questionnaire comprised of two sections, the demographics of the participants and the section regarding the antecedents of work environments and employees' performance. Work Environment was measured using items adapted from studies of Mowday and Porter (1979). The study adopted items from previous study (Adeniji, 2011) who successfully used survey questionnaire to measure job satisfaction levels while employee effectiveness was measured by 5 items adapted from the works of Agarwala (1978).

The study used a 5–point Likert Scale, weighted 1-5: Strongly Disagree (SD), Disagree (D), Undecided (UD) Agree (A) and Strongly Agree (SA). The research instrument was subjected to face validity. Senior university academics specializing in business environment and organizational behavior validated the instrument. Relevant research literature was used for the content validity of the study. Cronbach's coefficient alpha was used to determine the internal consistency and reliability of the multiple item scales. The alpha value for the construct indicates that the items that formed them had reasonable internal consistency reliability of 0.967. Hence the instrument is considered appropriate for the study (George & Mallery, 2003). The data for the study was analysed using the Statistical Packages for Social Sciences (SPSS). The hypotheses were tested with simple regression and Pearson's Product Moment Correlation Coefficient analysis.

4. Results and Discussion

A total number of 132 questionnaire copies were filled, returned, and usable for the study which represents a return rate of 73.8% while 47 were rejected due to large unfilled parts.

H_{01}: Physical workplace setting does not play any significant relationship in enhancing job satisfaction of employee.

Table 1.1 Result for the relationship between Physical workplace setting and Job satisfaction

		Physical Work Setting	Job satisfaction
Physical Work Setting	Pearson Correlation Sig. (2-tailed) N	1 132	.813 (**) .000 132
Job satisfaction	Pearson Correlation Sig. (2-tailed) N	.813 (**) .000 132	

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

Source: Field Survey, 2018

Interpretation of Results

From the hypothesis test table 1.1, physical workplace setting was shown to have a significant positive relationship with job satisfaction with the correlation coefficient of 0.813 which is very high and probability value of 0.000 (p-value < 0.01) which is less than the significant level at 0.01, 2-tailed test. Based on this result, the research hypothesis which states that, Physical workplace setting does not play any significant relationship in enhancing job satisfaction in Intercontinental Distiller Limited is therefore rejected.

The findings of this study revealed that there exist a strong positive correlation between physical workplace setting and job satisfaction. The implication of this is that, any improvement in the physical workplace environment of the organization will lead to improvement in job satisfaction. That is, as management improves the conditions of office environment, workplace designs, noise free environment communication network, the employee will have the feeling that the organization is not only concern over profit making but also on the health and safety of its employee and this will increase employee satisfaction, eventually improve employee performance and ultimately organizational performance. This result is consistent with the previous findings of Ajala (2012) which stated that workplace features and good communication network at workplace have effect on worker's welfare, health, efficiency, and productivity. Similarly, Asigele (2012) found that, the working environment elements have a significant effect on the performance of health providers in the Reproductive and Child Health unit.

H_{02}: Work system has no significant effect on employee effectiveness.

Table 1.2 Result for the relationship between Work system and Employee effectiveness

	Model One	R^2	Adjusted R^2	D.W	Sig. value
Dependent variable: Employee effectiveness	$y_1 = \alpha_0 + \beta_1 x_1 + \mu$	0.870	0.861	1.810	0.000
Independent variable: Work system	There is a direct, positive and high impact of work system on employee effectiveness therefore we fail to accept the null hypothesis since our estimates are statistically significant.				

Source: Field Survey, 2018

Interpretation of Results

The result from Table 1.2 reveals the extent to which a change in employees effectiveness can be explained by work system which is 87%. From the table, R square = 0.870 at 0.000 significance level which denotes a high predictive ability of the model. This implies that work system significantly affects employee effectiveness of Intercontinental Distiller Limited. It is evident from the table that work system affects employee effectiveness. This finding is similar to the outcome of Srilekha (2010). Muchiti & Gachunga, (2015) asserted that performance loss, absenteeism and high turnover rate are the organizational results of work system. Therefore, organizations that truly support work system policies will reduce job related stress, encourages vacations and reduces family work conflict. The implication of this is that it promotes job effectiveness which will reflect in their daily work-life activities.

5. Conclusion and Recommendations

The researcher concludes that, work environment plays pertinent role in improving employee performance in organizations. Since money is a short term motivator in encouraging job satisfaction required in today's competitive business environment (Ajala. 2012, p. 141).

Based on the findings, these recommendations are made; Management of organizations should place more importance to employee health and safety by providing necessary facilities that are conducive for work environment, and take actions for employee welfare. This will encourage employees' job satisfaction and create personal goals that align with organizational goals thus drive the organization to peak performance. Managers and supervisors of organizations should periodically evaluate the work environment which includes the physical work environment. An intense review of existing relevant policies should be undertaken in order to clarify

meanings and remove ambiguities where needed; a more inclusive notion of work system for all organizations should be promoted and the scope of policies should be extended where appropriate. In order to achieve a successful work system, policy formulators must ensure that formal work system policies are consistent with employees' actual experience. Furthermore, the unsupportive work-life cultures such as long working hours that exist in Intercontinental Distiller Limited Ado-Odo Ota, Ogun State should be discouraged. For successful work system initiatives, there must be full management support therefore management should provide a working environment for employees' that supports high performance work system.

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Sectoral Application of Asset Pricing Models on the Nigerian Stock Exchange: A Comparative Approach

Agbatogun Taofeek O.[73], Olowe Ayodeji R.[74]

Abstract: The study applied both Capital Asset Pricing Model and Arbitrage Pricing Model on the valuation of stocks returns in the Nigerian stock exchange to make portfolio decision using both time series and cross sectional data form. Step by steps are followed with the aid of regression analysis to obtain the necessary value needed for informed decision making from the listed firms on the stock market from January 2007 to January 2017. Contrary to the theoretical expectation, results show over valuation using both models despite statistically significant at 1% in aggregate level and differential on the sectoral overview. Hence, it was concluded that most stocks are over-valued with the more accurate method of APT method because it has higher accuracy rate than CAPM and such asset should not be retained for long period of time to avoid waste of fund and investors and traders of investment in Nigerian Stock Exchange are advised to take utmost interest in sectoral performance when policy prescriptions concerning portfolio decision are looked into.

Keywords: Stock returns; Capital Asset Pricing Model; Arbitrage Pricing Theory; Portfolio Management; and Investment

JEL Classifications: G12

1. Introduction

The use of asset pricing models especially the one developed by Sharpe-Lintner (1965) Capital Asset Pricing Model (CAPM) is to estimate the firm cost of capital which had been invalidated with Farma and French, 1992; Fama and French 2004 which most of the study have not been able to produce solution to the panacea. However, finance expects need a better method to estimate the expected returns that inform viable portfolio decision. Markowitz (1952) suggests diversified portfolio is exposed only to systematic risk since unsystematic, or idiosyncratic risks are theoretically eliminated through constructing sufficiently diversified portfolios.

[73] PhD Student, Department of Finance, Faculty of Management Sciences, University of Lagos, Nigeria, Address: Akoka, Lagos State, Nigeria, Corresponding author: agbatogunto@funaab.edu.ng.
[74] Department of Finance, Faculty of Management Sciences, University of Lagos, Nigeria, Address: Akoka, Lagos State, Nigeria, E-mail: raolowe@yahoo.co.uk.

Oke (2013), Adedokun and Olakojo (2012), Olakojo and Ajide (2010) and many other scholars studied the application of CAPM only on the NSE without no consensus on the empirical validity of CAPM which call for introduction of Arbitrage Pricing theory in this study that give rooms for many factors apart from the single factor. This is necessitated to give accurate asset pricing by adding risking factors that affect investment within the economy and capital market. To the best of my study, only Claus and Thomas (2001) and Ohlson and Juettner-Nauroth (2005) focused on current value and predicted value using asset pricing models to make significance difference in the identification of "cheap" and "expensive" assets.

Though the theoretical justification had assisted such that reward beta in most cases have the same value when avoided the use of wrong model. Every investors that want to earn much enough at a given risk level undertaken. In other words, a higher level of risk incurred must be awarded with a higher rate of return. In most testing carried out by scholars, both the use of CAPM and Arbitrage Pricing Theory (APT) models of the expected returns are important for portfolio decision with CAPM results tend to be in poor conditions when compare to the APT, (Bornholt (2015); Muzir, Bulut and Sengul (2010), Yunita (2018)). APT provide strong evidence as many factors are incorporated into reward beta estimates, Akpo, Hassan and Esuike (2015). Consideration needs to be given to the two models so as to establish estimated expected returns and determine the best in the Nigerian context.

Both CAPM and APT measures risk and returns which are financial information needed by investors from time to time and such component of systematic risk allow the prediction of securities of portfolios. A need for cross-sectional view of different sectors in a particular capital market is necessary and an unprecedented surge in returns on investment which has resulted in a continuous downturn in market capitalization and thus many investors are not only interested for investment appraisal but eager to know what becomes of their investment.

Following this introductory section, we structure the rest of the paper as follows. Section 2 explains the literature review stating the relationship between CAPM and APT. Section 3 methodology for our analysis and describes the data. Section 4 discusses the empirical results including preliminary analyses. In Section 5, we discuss policy implications and conclude the study.

2. Literature Review

Muzir, Bulut and Sengul (2010) tested the abilities of asset pricing models in capturing the effect of economic crises. The two models tested are the single factor models represented by the Capital Asset Pricing Model (CAPM) and the multifactor asset pricing model represented by the Arbitrage Pricing Model (APM). The data evaluated under these two models were the monthly data on returns generated from

the Istanbul Stock Market for the period 1996-2004. The finding of the research showed that the Arbitrage Pricing Model better explains stock returns changes than the Capital Asset Pricing model. Also, it was established that the APT is better at capturing the effects of economics crisis on stock price changes.

Theriou, Aggelidis, and Maditinos (2006) investigated the relationship between risk and returns using the CAPM and APT models. The data for analysis were the monthly data generated from the Athens Stock Exchange (ASE) for the period 1987-2001. The result made an overall suggestion that the relationship between risk and returns is weak in the ASE during the period under consideration. However, it was established that the CAPM has a poorer performance that the APT model. This was however argued to be due to market "Irrationality" of investors which undermines the assumptions upon which the CAPM is established. Also, the APT model allowed for the consideration of other systematic factors rather than just the market portfolio, which is considered an important element in explaining the behavior of stock returns. Furthermore, the study highlighted the importance of the "factor analysis" technique as it is considered to be an effective tool to replace the arbitrary and controversial search for factors by "trial and error".

Yunita (2018) analyzed and compared the accuracy level of the CAPM and APT model in determining the expected return. The Mean Absolute Deviation (MAD) was used to determine the eligible stocks to be selected for analysis under the two models. For the CAPM model, eighteen (18) eligible stocks were selected while sixteen (16) stocks were selected for APT model, and these companies are listed on the Jakarta Islamic Index. The data for analysis were generated from through the website www.yahoofinance.com and www.bi.go.id for the period 2014-2018. The factors utilized under the APT model are Inflation, Exchange rate, Composite Stock Exchange Price Index and BI Rate. The result of the comparison between the two models suggested that there is no significant difference between the accuracy of the CAPM and APT model in estimating the stock return of the companies selected. However, the APT model is suggested to be a more accurate model as it is said to have high accuracy rate than CAPM.

Pettway and Jordan (1987) estimated the return generating function parameters for regulated public utilities using the APT model and CAPM. Weekly returns data were generated from companies which are listed either on the NYSE or AMEX. The study period was from 1969- 1979 which is then divided into two periods, the base period being 1969-1973 and the test period being 1975-1979. Five public utility portfolios were established for estimation which are 58 Electric Services companies, 26 Electric and other services companies, 6 Natural Gas Transmission Companies, 6 Natural Gas Transmission and Distribution Companies and 8 Natural Gas Distribution Companies. The result suggested that the APT model has better

performance in representing the return generating process of the five utility portfolios.

Musharbash (2016) compared the CAPM and the APT model. The data for analysis were extracted from the Frankfurt Stock Exchange, the stocks used being taken from the Deutscher Aktienindex (DAX) for 29 out of 30 listed stocks. The study period was from March, 2001 to December, 2015 which was then broken down to three period which are the pre-crisis period (march,2001 – December 2006), the crisis period (January, 2007 – December, 2010) and the post-crisis period (January,2011 – December, 2015). The result showed that for the entire period, the APT model performed better than the CAPM. However, it was observed that when considering the sub-periods independently, the CAPM performed better than the APT model. Hence, it was concluded that the APT model is best fit for Long-term periods while the CAPM is best fit for short-term periods. The latter conclusion is explained to be due to the higher and quicker propensity of stocks rate of return to respond to changes in the returns of market portfolio and prevailing market conditions, while the former is justified by the entrance of other factors into the scenario in the long-run.

Cagnetti (2002) had an empirical study of the Italian Stock Market using the CAPM and APT theory model. The data for analysis were the monthly returns of 30 shares listed on the Italian Stock market and the considered period was from January 1990 to June 2001. The result showed that the relationship between risk and returns in the Italian stock market was weak and that the CAPM performed poorly in explaining the relationship. However the study favored the APT model as it is said to allow for other factors that are different from the market portfolio, and that since shares and portfolio are significantly affected by numerous systematic forces, it is then rational to use a model that accommodate such factors.

Nguyen, Stalin, Diagne, and Aukea (2017) reviewed the basic ideas of the CAPM and APT model. It was established that the APT model has an advantage over the CAPM due to it accommodation for other factors different from market portfolio. However, the APM has an application difficulty as the factors to be used are not easy to identify. It is also established that while the CAPM places emphasis on efficient diversification and neglects unsystematic risk, the APT model neglects essential risks which is a part of systematic risk due its utilization of naïve diversification based on the law of large number. It is also stated that despite the unrealistic assumptions of the models in the real world, the models actually provides us an accommodating valuation to some extent.

Akpo, Hassan and Esuike (2015) examined the CAPM and APT model, their assumptions and possible reconciliation of the two models. The CAPM model is stated to be attractive based on its powerful and intuitive predictions of the relationship between expected return and risk. However, risk do not remain stable overtime hence a limitation to the model. The APT model is known for its

accommodation for not only expected returns but also uncertain returns in arriving at the total return of an asset. Though the two models are known to be conflicting in assumptions, there are apparent agreements. The two models agree that investors can borrow and lend at risk free rate and that are no transaction costs, taxes or restrictions on short selling. However, the research appears to be in favor of the APT model as it recommended that investors and other investment companies should embrace a multifactor model as stock returns are affected numerous factors such as expectation about future levels of real GNP, expectations about future interest rate and expectation about future level of inflation.

Zhang and Li (2012) analyzed the Chinese Stock Market by comparison of the CAPM and APT models. The study focused rather on the SME board and the ChiNext board of the Chinese Stock Market. 160 companies where selected and the daily prices were extracted for the period 1st September 2009 to 31st August 2010. The systematic risk was the only factor considered under the CAPM while three factors were considered under the APT model which are the systematic risk, daily exchange volume and volatility. The findings showed that the APT model does not perform better than the CAPM. Also, there was no evidence that the APT model forecast better than the CAPM for the SME board and the ChiNext Board.

3. Methodology and Data

The required data are not accessible for all the firms listed in the Nigerian Stock Exchange, only a sample of 99 firms with full monthly data was selected from 184 firms. The monthly actual rates of return data relating the stocks of the companies in the sample for the period from January 2007 to January, 2017 (11,979 observations for all) downloaded from the official website of the Nigerian Stock Exchange which was later converted into monthly data and the predetermined macroeconomic indicators for the same time interval were collected from the official website of the Central Bank of Nigeria and Bureau of Statistics.

It forced us to make some adjustments on the data that many of the macroeconomic indicators are index values computed based on a quarterly of each year. We had to convert such index values to chain index values in order to be able to see the monthly changes in the indices.

3.1. Measurement of Variables

Stock returns as pricing of stock would be calculated by using the following equation.

$$Stock\ \mathrm{Re}turn R_t^i(Y) = \frac{1}{Days_t^i} X \sum_{d=1}^{Days_t^i} \frac{P_t^i - P_{t-1}^i}{P_{t-1}^i} \quad \text{.....(1)}$$

Where P_t^i is daily stock price at end of the day while P_{t-1}^i is the daily stock price at the last day.

The market return (Rm_t) would be calculated by using the following equation.

$$Market\ \mathrm{Re}turn(Rm_t) = \frac{1}{Days_t^i} X \sum_{d=1}^{Days_t^i} \frac{\mathrm{Im}_t^i - \mathrm{Im}_{t-1}^i}{\mathrm{Im}_{t-1}^i} \quad \text{.....(2)}$$

Where Im_t^i daily market index at the end and Im_{t-1}^i is the market index at the last day of operation.

However asset returns to be used for this study so as avoid the problem of serial correlation and the unit truth problem is shown below:

$$r_i = \log(\frac{P_t}{P_{t-1}}) \quad \text{.....(3)}$$

Where r_i is the asset returns, P_t is the stock price at the end of the day and P_{t-1} is the stock price at the end last trading day.

As with previous empirical studies that tested asset pricing models using returns on market index as a proxy for returns on market portfolio, this study will also use returns on market index as a proxy for returns on market portfolio with the use of this formula:

$$R_t = \log(\frac{ASI_t}{ASI_{t-1}}) \quad \text{.....(4)}$$

Where R_t = asset market returns, ASI_t is the share market index for day of transaction and ASI_{t-1} is the share market index at the last day of transaction.

The expected returns of stock will be determined using:

$$Er_i = \sum_{t=1}^{t} \frac{r_i}{T} \quad \text{.....(5)}$$

Where Er_i is the expected returns of stocks, r_i is the daily asset returns as disclosed in (6) above and T is the period involved.

The Capital Asset Pricing Model returns to be constructed for the study shall be:

$$(r_i - r_{ft}) = \alpha_i + \beta(R_t - r_{ft}) \quad \text{.....(6)}$$

Where r_i is determined from equation (3) above, r_{ft} is the treasury bill rate (3 months), R_t is the stock market return determined in equation (4). The above equation (6) shall be examined on selected stocks listed on the NSE and β shall be generated for consideration.

The Arbitrage Pricing Model constructed for the study shall be:

$$(r_i - r_{ft}) = \alpha_i + \beta(R_t - r_{ft}) + \log(cpl) + \log(Intro) \ldots\ldots\ldots\ldots\ldots\ldots\ldots(7)$$

Where r_i is determined from equation (3) above, r_{ft} is the treasury bill rate (3 months), R_t is the stock market return determined in equation (4), *cpl*- is the consumer price index under period of consideration and intro - Since the impact of returns is needed, it was then made cpl and intro to be constant value as only β would be needed here.

3.2. Model Specification

To compare the performance of asset pricing models on the stocks listed in the Nigerian Stock Exchange, the procedure shall involve the time serials model (see equation 10 & 11) which is first level estimation to determine the (β) sign for all the asset under consideration and cross sectional model that is second level estimation to determine λ_1. These two estimations shall be done using ordinary least square measurements and the applicable formula are:

$$(r_i - r_{ft}) = \alpha_i + \beta(R_t - r_{ft}) + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(10)$$

$$(r_i - r_{ft}) = \alpha_i + \beta(R_t - r_{ft}) + \log(cpl_t) + \log(Intro_t) + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(11)$$

NB. Equation (10) for CAPM and Equation (11) for APT

To be able to make comparism among different sectors in the market, compilation of mean return (average of each firm for the period under consideration), (β) from equation (10) & (11) for each firm and then run a cross sections regression model on these sectors shall be examined using model below:

$$Er_i - r_{rf} = \gamma_0 + \gamma\hat{\beta}_{CAPM} + \upsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(12)$$

$$Er_i - r_{rf} = \gamma_0 + \gamma\hat{\beta}_{APT} + \upsilon_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(13)$$

Where Er_i is the expected returns as disclosed in the equation (8) above, r_{ft} is the Treasury bill rate and while β is the derived value from equation (10) and (11). The equation would give us the opportunity to obtain λ for both CAPM and APT.

However, to be able to make interpretation the study will compare the average actual return derived against the average expected return to each sector which is determined using this Average excess stock returns:

$$\alpha_i = \bar{r}_i - (r_{rf} + \lambda_i \hat{\gamma}_{CAPM\,i}) \ldots\ldots\ldots\ldots\ldots\ldots (14)$$

$$\alpha_i = \bar{r}_i - (r_{rf} + \lambda_i \hat{\gamma}_{APT}) \ldots\ldots\ldots\ldots\ldots\ldots (15)$$

Where α_i is the average actual mean returns for each sector, $\bar{r}_i$ is the mean return for each sector, r_{ft} is the Treasury bill rate, $\hat{\gamma}_{CAPM\,i}$ derived from equation (12) and (13) in the above step. The equation would give us the opportunity to obtain α_i for both CAPM and APT.

Decision is taken when $\propto$ is greater than zero, this implies that actual average returns is greater than the predicted average return and hence, the stock is undervalued and on the other hand, when the $\propto$ is lesser than zero, this implies that actual average returns is less than the predicted average returns, this implies that the stock is overvalued. However, in order to take portfolio decision, when $\propto$ is greater than zero, investor buy more of stocks and retain as part of portfolio for long period of time and when it is negative, investor sell stocks and retain the stock for short period of time.

4. Analysis and Results

4.1. Descriptive Statistics of the Variables

This sub-section discusses the statistical properties of the variables which were reported on average per each sector. Thus, the univariate statistics of the variables, which include the mean, median, standard deviation, skewness, Jarque-Bera, Kurtosis, among others are reported. The results of the descriptive statistics for selected variables are presented in table 4.1. It is evident from Table 4.1 that both the mean (first moment) and skewness (third moment) for each of the variables are less than unity (approximately equal to zero for all the variables).

Furthermore, the results shows the kurtosis (fourth moment) which measures the tail shape of a histogram. Variables with values of kurtosis less than three are called platykurtic (fat or short-tailed), with discount rate differential falling under this category. On the other hand, variables whose kurtosis value is greater than three are called leptokurtic (slim or long-tailed). None of the variables is mesokurtic i.e.

having kurtosis value around three. Juxtaposed against these are the probability values and the Jarque-Bera test of normality distributed, as the probability values for all the variables very low, and close to zero.

Table 4.1. Summary Statistics for Selected Sectors on Average of Monthly data

Sector	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.
Conglomerate	0.00123	0.0002	0.011353	0.04518	0.51735	215.433	0.0000
Consumer Goods	0.00029	0.000142	0.010149	1.19255	13.8174	1375.427	0.00005
Financial Services	0.000629	0.00013	0.02022	0.5208	21.198	5170.016	0.000014
Health & Agriculture	0.00154	0.00106	0.011863	0.4400	56849	56.4974	0.000003
Industrial Goods	0.00093	0.00051	0.0167	0.333	15.419	1785.613	0.00003
Natural Resources and Oil and Natural Gas	0.00029	0.0003	0.01016	0.26696	11.4491	850.128	0.00020
Services	0.00118	0.000452	0.01201	0.11385	9.1028	302.298	0.0000

Source: Author's Calculations, (2017)

For instance, the average mean returns of each sector are below zero with the conglomerate has the highest figure while both Consumer goods and natural resources and oil and natural gas had lowest figure however the skewness has differential view. The skewness is a measure of the symmetry of the histogram. The rule of thumb for any standardized normal variable is that, both its mean value and skewness should be zero. Meanwhile, only Consumer goods that had a skewness that is greater than zero. Based on this criterion, it can be inferred that all the variables in the model have standard normal distribution as all the sectors are positively skewed.

In summary, the descriptive statistics revealed that the data sets are normally distributed. This is so because most of the probability values are less than unity, while their means nearly equals the corresponding medians.

4.2. Stationarity Tests

Time series properties of all variables used in estimation were examined in order to obtain reliable results. Thus, this exercise was carried out through Dickey Fuller Generalized Least Square (DFGLS) test. This development arises from the prevalence of substantial co-movements among most economic time series data, which has been argued in the literature as undermining the policy implications that could be inferred from such modelling constructs (Engel & Granger, 1987). Most empirical work extensively applies the Augmented Dickey-Fuller (ADF) to find the order of integration on variable. However, due to their poor power properties, both tests are not reliable for small sample data set. While the newly proposed test such

as the Dickey-Fuller Generalized Least Square (DF-GLS) de-trend test developed by Elliot et al (1996).

The returns series was examined per firm under each sector in order to show what order of integration the variable belongs to, Market Returns, Treasury Bill Rate and Consumer Price Index were equally accounted for. This was done through Augmented Dickey Fuller Unit Root Test type and the Ng-Perron Unit Root Test type.

For the ADF test type, Returns was established to be of the integrated order of zero for all firms under the service sector. This means that returns is stationary at level under this sector, thereby rejecting the null hypothesis that the returns series has unit root. The hypothesis that the Returns series has unit root was also rejected for all firms under the Conglomerate Sector, showing that the returns series is also stationary at level under this sector.

Under the consumer goods sector, the null hypothesis that the returns series has unit root was also rejected, while it is being established that the returns series are stationary at level. For each of the Health Sector firms, the null hypothesis that the return series has unit root was rejected likewise, precisely signifying that the return series is also stationary at level. Similar result was obtained for the most of the firms under the Industrial Goods and Construction Sector except for one firm (DNM) for which it was established that while the returns series was stationary, it was only at first difference.

For each firm under the Natural Resources and oil and Gas sector, the null hypothesis that the returns series has unit root was rejected and it was established that the variable is of the integrated order of zero, that is, stationary at level. While the result showed that the returns series is stationary at level under most of the firms in the Financial Service sector, an exception was found to one firm (MBE) which indicated that the variable is only stationary at first difference. Market Returns was also established to be stationary at zero while Consumer Price index was shown to be stationary at first difference. Overall, these variables as examined under the ADF test type are shown to be reliable for estimation.

Table 4.2: Augemented Dickey-Fuller Test with GLS Detrending (ADFGLS) unit root test results

SECTORS	Assets	Variables	Constant (Model 1)		Constant and Linear Trend (Model 2)		Order of Integration
			Levels	First Diff.	Levels	First Diff.	
SERVICE	ABC	returns	-9.400817*	-9.373144*	-9.415106*	-9.37477*	I(0)
	ACA	returns	-11.1925*	-11.46198*	-11.28809*	-11.44706*	I(0)
	CIL	returns	-7.5449*	-10.7076*	-7.523225*	-10.68854*	I(0)
	LEA	returns	-8.212032*	-9.299385*	-8.181996*	-9.276101*	I(0)
	NAH	returns	-10.1544*	-8.408212*	-10.09951*	-8.375235*	I(0)
	RTBR	returns	-12.10349*	-9.13395*	-12.05257*	-9.117967*	I(0)
	TRA	returns	-8.016636*	-12.00398*	-3.563148*	-11.97051*	I(0)
	UPL	returns	-8.688105*	-9.839142*	-8.688094*	-9.872501*	I(0)
	NCR	returns	-10.31848*	-13.47545*	-10.36452*	-13.4145*	I(0)
	TRI	returns	-11.10144*	-7.385835*	-11.16683*	-7.354899*	I(0)
CONGLOMENR	AGL	returns	-8.934647*	-8.895791*	-8.961877*	-8.877026*	I(0)
	CHE	returns	-8.356565*	-12.87555*	-8.364114*	-12.81941*	I(0)
	JOHN	returns	-10.32133*	-10.70518*	-10.51188*	-10.68924*	I(0)
	SCO	returns	-5.485878*	-7.473995*	-5.48278*	-7.434959*	I(0)
	TRS	returns	-9.745714*	-10.11317*	-9.768451*	-10.0625*	I(0)
	UAC	returns	-9.202218*	-12.76884*	-9.338034*	-12.72669*	I(0)
CONSUMER GOODS	CAD	returns	-9.438804*	-10.85062*	-9.402858*	-10.80416*	I(0)
	CHA	returns	-11.58643*	-11.72069*	-11.55339*	-11.66901*	I(0)
	DAN	returns	-8.65183*	-9.366853*	-8.662912*	-9.342086*	I(0)
	DUN	returns	-3.805165*	-7.916784*	-4.939726*	-7.871048*	I(0)
	FLOUR	returns	-9.28523*	-10.00254*	-9.280891*	-9.95905*	I(0)
	GUINESS	returns	-10.88062*	-9.791348*	-9.629468*	-9.747617*	I(0)
	INTB	returns	-6.662554*	-7.876667*	-6.67192*	-7.839324*	I(0)
	JOS	returns	-9.54527*	-11.82756*	-8.502976*	-11.7768*	I(0)
	NAS	returns	-7.646049*	-9.581534*	-7.697645*	-9.621812*	I(0)
	NB	returns	-11.10829*	-9.271073*	-11.07213*	-9.227991*	I(0)
	NES	returns	-10.74236*	-14.35291*	-10.69637*	-14.29624*	I(0)
	NNFM	returns	-4.058598*	-10.52208*	-7.273528*	-10.47717*	I(0)
	PREM	returns	-9.405467*	-8.854494*	-9.398497*	-8.807995*	I(0)
	PZ	returns	-10.17938*	-13.16187*	-10.5207*	-13.1011*	I(0)
	UNI	returns	-9.850279*	-12.81978*	-9.908068*	-12.77047*	I(0)
	VITA	returns	-9.770967*	-9.420238*	-9.870461*	-9.389482*	I(0)
	UTC	returns	-8.370235*	-9.698779*	-8.329683*	-9.664854*	I(0)
	SEV	returns	-10.46391*	-12.81986*	-10.45034*	-12.76746*	I(0)
HEALTH	EVA	returns	-9.823369*	-10.34296*	-9.827975*	-10.30221*	I(0)
	GLAX	returns	-10.04732*	-8.324969*	-10.11038*	-8.286935*	I(0)
	MAY	returns	-10.09538*	-8.161772*	-10.09993*	-8.116907*	I(0)
	MOR	returns	-9.498098*	-10.73736*	-9.664689*	-10.70336*	I(0)
	NEI	returns	-9.984204*	-7.808476*	-9.942355*	-7.765662*	I(0)
	NIG	returns	-9.346885	-18.68785	-9.395713	-18.58866	I(0)
	PHAR	returns	-9.358978	-10.23741	-9.333514	-10.2052	I(0)
	PSCO	returns	-11.28902	-8.153905	-11.26718	-8.112637	I(0)
INDUSTRIAL GOODS AND CONSTRUCTION	ASH	returns	-8.262131	-10.21978	-8.363277	-10.17157	I(0)
	BER	returns	-9.041747	-7.900814	-9.005779	-7.865594	I(0)
	BET	returns	-9.86662	-10.62285	-9.837304	-10.56998	I(0)
	CAP	returns	-11.30466	-10.54343	-11.27554	-10.49531	I(0)
	CCN	returns	-9.346885*	-18.68785*	-9.395713*	-18.58866*	I(0)
	CUT	returns	-9.358978*	-10.23741*	-9.333514*	-10.2052*	I(0)
	DNM	returns	-11.28902*	-8.153905*	-11.26718*	-8.112637*	I(1)
	FIRST	returns	-8.262131*	-10.21978*	-8.363277*	-10.17157*	I(0)
	WAPC	returns	-9.041747*	-7.900814*	-9.005779*	-7.865594*	I(0)
	JBER	returns	-9.86662*	-10.62285*	-9.837304*	-10.56998*	I(0)
	UAP	returns	-11.30466*	-10.54343*	-11.27554*	-10.49531*	I(0)
	PMPAI	returns	-8.380268*	-9.575189*	-8.361393*	-9.529986*	I(0)

SECTORS	Assets	Variables	Constant (Model 1)		Constant and Linear Trend (Model 2)		Order of Integration
			Levels	First Diff.	Levels	First Diff.	
NATURAL RESOURCES AND OIL AND GAS	ALE	returns	-9.292322*	-8.369293*	-9.730005*	-	I(0)
	BOC	returns	-15.84491*	-8.744684*	-10.46162*	-	I(0)
	CON	returns	-11.37072*	-10.18272*	-11.32504*	-	I(0)
	JAP	returns	-8.092627*	-9.762840*	-8.057828*	-	I(0)
	MOB	returns	-9.799096*	-10.09642*	-9.776526*	-	I(0)
	OAN	returns	-9.905508*	-11.20598*	-9.930770*	-	I(0)
	OKOM	returns	-10.14247*	-12.68957*	-10.13233*	-	I(0)
	TOT	returns	-11.22634*	-9.046071*	-11.25483*	-	I(0)
FINANCIAL SERVICES	ACC	returns	-8.723019*	-8.267302*	-8.689956*	-	I(0)
	AII	returns	-10.58167*	-9.555062*	-10.54270*	-	I(0)
	COT	returns	-7.363755*	-10.03135*	-7.501913*	-	I(0)
	COR	returns	-10.12229*	-8.944118*	-10.08191*	-	I(0)
	CUS	returns	-11.24531*	-10.92872*	-11.21117*	-	I(0)
	DEA	returns	-8.199305*	-12.50155*	-8.377563*	-	I(0)
	DIA	returns	-9.766471*	-9.079202*	-9.722049*	-	I(0)
	ETI	returns	-9.396673*	-7.829660*	-9.594959*	-	I(0)
	FBN	returns	-9.044125*	-10.29620*	-9.129912*	-	I(0)
	FCM	returns	-8.359336*	-8.460247*	-10.65245*	-	I(0)
	GNI	returns	-12.62325*	-10.67844*	-12.99516*	-	I(0)
	GUAR	returns	-9.759542*	-12.19966*	-9.752221*	-	I(0)
	GUIAINS	returns	-11.13522*	-10.16814*	-6.885159*	-	I(0)
	LAS	returns	-5.484468*	-10.79280*	-5.838959*	-	I(0)
	LAW	returns	-10.94636*	-8.329517*	-11.00734*	-	I(0)
	LIN	returns	-5.319157*	-3.731974*	-6.873112*	-	I(0)
	MBE	returns	-2.00258	-6.672198*	-2.730347	-	I(1)
	NEM	returns	-7.172133*	-9.164634*	-7.311123*	-	I(0)
	NGR	returns	-10.46815*	-7.985135*	-7.469736*	-	I(0)
	SOV	returns	-13.21305*	-10.57648*	-7.984774*	-	I(0)
	STA	returns	-4.473156*	-7.992236*	-4.407810*	-	I(0)
	STN	returns	-10.49069*	-9.239708*	-10.44329*	-	I(0)
	STD	returns	-8.870293*	-7.782909*	-7.272609*	-	I(0)
	STE	returns	-9.860904*	-14.13176*	-9.852018*	-	I(0)
	UBA	returns	-9.612273*	-10.91817*	-9.582805*	-	I(0)
	UBN	returns	-10.93986*	-11.67353*	-10.89430*	-	I(0)
	UNH	returns	-6.485191*	-10.81308*	-6.496983*	-	I(0)
	UNIL	returns	-9.850279*	-12.81978*	-9.908068*	-	I(0)
	FID	returns	-9.069466*	-9.132318*	-9.113547*	-	I(0)
	INTEN	returns	-10.84603*	-10.02869*	-10.81832*	-	I(0)
	PREST	returns	-8.543594*	-13.44884*	-8.506656*	-	I(0)
	ROY	returns	-7.574619*	-8.284593*	-7.642449*	-	I(0)
	SKY	returns	-8.175549*	-10.44707*	-8.350076*	-	I(0)
	UNIT	returns	-11.32604*	-9.565821*	-11.36111*	-	I(0)
	WAPI	returns	-11.05030*	-8.929008*	-11.00465*	-	I(0)
	WEMA	returns	-8.030257*	-10.97673*	-7.986918*	-	I(0)
	ZEN	returns	-11.31167*	-9.621381*	-11.26355*	-	I(0)
Market Returns			-10.01448*	-14.29641*	-9.965046*	-	I(0)
Treasury bill rates			-7.145233	-10.09642*	-5.838959*	-	I(0)
Consumer Price index			2.429191	-4.433164*	0.728043	-	I(1)

Source: Author's Calculations, (2017)

Note: The Null Hypothesis is the presence of unit root. Model 1 includes a constant, Model 2 includes a constant and a linear time trend . *,**,***, significant at 1%, 5%, and 10% respectively. Lag length selected based on Schwarz information criterion (SIC). The Elliott-Rothenberg-Stock DF-GLS test statistics are reported.

4.3.1. Comparative Behaviour of Sectoral Asset Pricing

Table 4.3. Comparative Behaviors of Asset pricing

Sectors	No. of Firms	CAPM		APT	
		α	γ	α	γ
All	99	-181.1447***	180.7122***	-182.5840***	182.1254***
Conglomerate	6	-24.20833*	23.63700*	-23.02226	22.44648
Consumer Goods	18	-4.804471	4.216763	-3.743532	3.154416
Financial Services	37	5.767346	-6.364970	5.933089	5.933089
Health and Agriculture	8	-1.041233	0.448956	-0.978095	0.385704
Industrial Goods	12	9.573319**	-10.17341**	9.125378	-9.723703
Natural Resources and Oil and Natural Gas	8	1.920733	-2.514408	1.410840	-2.003745
Services and ICT	10	-5.845894	5.258308	-5.503271	4.914642

Source: Computed by the Author (2017)

*, ** And *** indicate significant at 10%, 5% and 1% respectively. The p value- values are in the parentheses.

From table 4.3 above, of all 99 firms considered for the study there are 181.1% over valuation of stocks from the market at 1% level of significance under CAPM while 182.5% over valuation of stocks from the market also at 1% level of significance under APT. The same performance to Conglomerate sector of 24.2%, Consumer goods sector of 4.8%, Health and Agriculture sector of 0.9% and Service and ICT sectors of 5.8% over valuation respectively under CAPM while Conglomerate sector of 23.0%, Consumer goods sector of 3.7%, Health and Agriculture sector of 1% and Service and ICT sectors of 5.5% over valuation respectively under APT. In other way, Financial Service sector of 5.7%, Industrial Goods sector of 9.5% and Natural Resources and Oil and Natural Gas sectors of 1.9 under CAPM while Financial Service sector of 5.9%, Industrial Goods sector of 9.1% and Natural Resources and Oil and Natural Gas sectors of 1.4 under APT showing slight difference under both theories.

Meanwhile, the predicted value (γ) from the study there are 180.7% over valuation of stocks from the market at 1% level of significance under CAPM while 182.1% over valuation of stocks from the market also at 1% level of significance under APT. The same performance to Conglomerate sector of 23.6%, Consumer goods sector of 4.2%, Health and Agriculture sector of 0.4% and Service and ICT sectors of 5.2% over valuation respectively under CAPM while Conglomerate sector of 22%,

Consumer goods sector of 3.1%, Health and Agriculture sector of 0.3% and Service and ICT sectors of 4.9% over valuation respectively under APT. In other way, Financial Service sector of 6.3%, Industrial Goods sector of 10.1% and Natural Resources and Oil and Natural Gas sectors of 2.5 under CAPM while Financial Service sector of 5.9%, Industrial Goods sector of 9.7% and Natural Resources and Oil and Natural Gas sectors of 2.0 under APT showing slight difference under both theories.

5. Conclusion

The study empirically examined the application of capital asset pricing model and arbitrage pricing model in Nigerian Stock Exchange for valuation purpose. The overall performance of all stocks under consideration show that they are all overvalued with the magnitude of their over-valuations varies under both models as using APT showed higher over valuation compare to CAPM with the predicted average returns showed vice versa for all. The same performance applies to Conglomerate sector, Consumer goods, Health and Agriculture and Service and ICT except the fact that contrary opinions resulted under CAPM and APT. However, Financial Services, Industrial goods, Natural Resources and Oil and Natural Gas stocks were undervalued since average returns is greater than the predicted average return with differential performance under CAPM and APT. the implication of this is that both has no critical stand point that could best judge valuation of stocks despite the both have linear relationship between stock returns and the risk premiums.

Meanwhile, the portfolio decision would be good when α is greater than zero which stocks should be considered for longer period of time and otherwise when is lower to zero. From the table above, the aggregate α (-181.1447-CAPM & -182.5840 – APT) value is lower to zero and investment should be retained for only short period of time. The same performance applies to Conglomerate sector, Consumer goods, Health and Agriculture and Service and ICT. However, Financial Services, Industrial goods, Natural Resources and Oil and Natural Gas stocks should be retained for long period as the value is greater than the zero under CAPM and APT. Successful investors indeed has a potential in comprehending features of each sector not accounted for an aggregate level.

Finally, albeit the unrealistic assumptions of the real world on the application of asset pricing, the statistical analysis produced meaning that stocks from Nigerian Stock Exchange are either undervalued or overvalued that give us an accommodating differential valuation in some sense. It is worth mentioning that no theory is perfect and it is worthwhile to learn from theory object to the criticism. Hence, most stocks are over-valued and such should not be retained more than short period of time. However, the more accurate method referring to this research is APT method

because it has higher accuracy rate than CAPM, this result is supported by some prior empirical works, Yinuta (2018), Cagnetti (2008), Zhang and Li, (2012).

Following from the outcome of the study, investors and traders of investment in Nigerian Stock Exchange are advised to take utmost interest in sectoral performance when policy prescriptions concerning portfolio decision are looked into. Further, macroeconomic factors, such as Consumer Price Index, Treasury bill rates and Total Market index from each sector are important for assessment of stock returns.

For future line of study, panel data approach should be introduced to pool for substantive result and the study time frame will likely produce a more robust result and policy prescriptions.

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Effect of Commercial Banks' Credit on Agricultural Productivity in Nigeria

Primus E. Emenuga[75]

Abstract: The study investigated the effect of commercial bank on real sector development in Nigeria over a period of 37 years (1981-2017). Data on commercial bank credit to Agricultural sector, interest rate, Agricultural credit guarantee scheme and Agricultural productivity were sourced from Central Bank of Nigeria Statistical Bulletin. ADF unit root test, Johansen cointegration test and error correction model techniques where employed as analytical tools. The result showed that there exists a long-run relationship between the bank credit and Agricultural development in Nigeria. The study found that the ECM is negative and statistically significant at 5% level of significance. The study also found that commercial banks' credit to Agriculture and Agricultural credit guarantee scheme are positively related to Agricultural development while interest rate was found to be negatively related to Agricultural development in Nigeria. The study concluded that commercial bank significantly affect Agricultural development in Nigeria and suggested that delay and stringent conditions in assessing commercial bank credit and facility should be completely eliminated.

Keywords: Commercial Bank; Credit; Agricultural Productivity

JEL Classification: O4; Q1

1. Introduction

Commercial bank is described as a financial institution owned privately for receiving deposit from bank customers, keeping them and transforming it into loan for the borrower of fund (Solanke, 2007). Banks have number of functions which are not limited to providing investment advisory services, foreign exchange services, issuing of traveler's cheque to customers and standing as guarantor for its customer. This services provided by the banks goes a long way to influence income levels and citizens standards of living (Zhufany, 2014). Globally, banking sector has been acknowledged as the catalyst of growth and development of a nation. The intermediation role of a bank is incomplete until the resources mobilized from the surplus unit are made available to the deficit unit for productive investment activities. The commercial bank through its credit policy act as an engine that promotes growth

[75] M. Phil Student, Department of Finance, Ekiti State University, Nigeria, Address: Ado-Ekiti, Nigeria, Corresponding author: obaladeadefemi@yahoo.com.

in various sectors of the economy by channeling resources to real sector (Akpansung & Gidigbi, 2014).

Bank loans and advances are essential instrument for the advancement of any country. This implies that the duration and amount of loan facilities to the real sector determine the extent of growth and advancement of a nation. Banks operationally aimed at advancing credit to the real sector but irrespective of the loan disbursed to the real sector the returns from these sectors have been discouraging considering the amount of fund channeled and supplied (Akinleye, Akanji & Oladoja, 2013 cited in Sogules & Nkoro, 2016). Udih (2014) noted that bank loans and advance is expected to influence the Agricultural sector through Agricultural produce. He elucidates further that when agricultural project is solely funded by banks, it will in turn result to surplus food supply and also attract new investors into the system. Hence, if sufficient loan facilities is put place by banks and government, bulky and weighty agricultural productivity that can promote welfare of the citizen can be assured. Hitherto, the limitation facing the banks financial sector in Nigeria is how to adequately channel resources to the real sector. Since Nigeria is not only blessed with oil mineral resources but also with agriculture produce, proper funding of Agriculture and Manufacturing sectors should be prioritised in an effort to add up to the revenue generated through oil sector (Salami & Arawomo, 2013).

Obilor (2013) noted that deposit money banks favour credit and advances to other sector other than Agricultural sector, as a result, banks charges farmers with high interest rate knowing full well that farmers will not be able to meet up. However, federal government through Agricultural Credit Guarantee Scheme (ACGS) aimed at closing the gap by preparing warrant versus risk in Agricultural financing. Nevertheless the aim of the scheme was unaccomplished. Consequently, Itodo, Apeh and Adeshima (2012) argued that Nigeria relies heavily on weighty and heavy importation of fundamental food items and raw material which simultaneously result to increase in poverty rate coupled with increasing unemployment rate. However effort by government at all levels to support and empower the Agricultural sector is yet to fully manifest (Udensi, Orebiyi, Ohajianya & Eze, 2012). Therefore, the study examined the short and long run relationship between commercial bank credit and agricultural productivity. The remaining sections of the study were sectionalized into literature review, research method, result and discussion, conclusion and recommendations.

2. Literature Review

A theoretical literature exploring the interrelationship between banking sector and economic growth relays that banking system has tendency of impacting the real sector (Agricultural and Manufacturing) development by influencing the

composition of savings and allocation of same as loans and advances to the productive sector (Bencivenga & Smith, 1991). King and Levine (1993), Beck and Levine (1998), Driscoll (2004), Bayoumi and Melander (2008), and Akpansung and Babalola (2010) affirmed the essential role of banking sector to the real sector development by mobilizing resources from the savers and allocating of such savings as loans to credit worthy customers in an attempt to promote growth and sustainability of the economy. Udih (2014) opined that if financial resources were adequately made available to the Agricultural sector by banks it will not only cure food scarcity but also attract new and existing investors into the economy thereby creating room for employment.

According to Ijaiya and Abdulraheem (2000), credit is a financial resource that is obtainable from financial institution within a specified period of time based on agreed terms with the promising of paying back as and when due. Osuntogun and Adewunmi (2003) viewed agricultural credit as the aggregation of agreement where cash and kind contributions are visibly made available to farmers with the obligation of paying back with interest at a later date in future. Kolapo, Ayeni and Oke (2012) and Mohammed (2012) disclosed that the intermediation role played by bank sector can be said to be a catalyst for economic growth and development based on the premise that banks collect savings and resources from individual, entities, government and corporate bodies as investment funds and channel the savings to the users of resources for investment activities. This implies that the rate at which banks advance financial resources to the real sector determines the pace of a nation's economic growth.

Makinde (2016) examined the impact of deposit money banks' loan and advances on the growth of mining and quarrying, manufacturing and the building and constructions sectors, service sector and agriculture sectors from 1986 to 2014. By employing regression analysis, the study found that unlike mining and quarrying, manufacturing and the building and constructions sectors and service sector which have benefited in a little way from the deposit money banks credit, it has significant positive effect on agricultural sector, implying that agricultural sector has benefited from the funds thereby driving economic growth of Nigeria. Oleka, Sabina and Onyeze (2014) explored the impact of intermediation roles of banks on the performance of the manufacturing sector in Nigeria for the period of 8 year covering 2005-2013. Descriptive and inferential statistics results showed that the intermediation process of commercial bank positively contributed to real sector. The study concluded that there is competitiveness in the intermediation role of banks. Ajibola, Ishola and Samuel (2014) discussed the effect of commercial bank lending on Nigeria's aggregate economic growth for the period 1970-2011. The study concluded through regression analysis that previous term's credit to service sector positively influenced the growth of Nigeria whereas lagged and current loan and advances to other sectors related negatively with growth of Nigerian economy.

Nnamocha and Charles (2015) employed error correction mechanism to study the influence that bank loan and advances have on agricultural production in Nigeria between 1970 and 2013. Revelation from the study indicated that there existed presence of longrun relationship among the variables. The study revealed that bank loans and advances and industrial output positively contributed to agricultural output in Nigeria on the long run while industrial output was only found to affect agricultural production in the short-run. Adewole, Adekanmi and Gabriel (2015) investigated sectoral distribution of commercial banks' loans and advances to agricultural sector, liquidity ratio, cash reserve ratios and money market minimum rediscount rates from for the period of 2002-2014 in Nigeria. The study applied multiple regression of ordinary least square and discovered that cash reserve requirement, liquidity ratio and discount rate have no significant effect in financing agricultural sector. Hence, the study concluded that discount rate, liquidity ratio and cash reserve lower the degree of agricultural credit in Nigeria. Agunwa, Iyanya, and Proso (2015) evaluated the effect of deposit money banks on agricultural output in Nigeria, using least square regression estimation technique. They found that commercial banks credit and government expenditure have positive and significant influence on agricultural productivity while interest rate has negative effect on agricultural output.

Sogules and Nkoro (2016) used Johansen cointegration technique to analyze the long run relationship between bank loan and advances and performance of manufacturing sector from 1970-2013 in Nigeria. Evidence from the study showed that long run relationship existed in the model. The short run ECM showed negative significant relationship between bank loan and advances and performance of manufacturing sector. Bada (2017) employed ADF Unit root test; Co-integration test; Vector error correction test and Causality test to assess the relationship between banks' credit and real sectors for the period of 31 years covering 1984-2014. Data on manufacturing, and agricultural outputs, commercial banks' credits to private sector, interest rate, prime lending rate, M2, exchange rate, prime lending rate and agriculture credit guarantee scheme fund were sourced secondarily from CBN annual report. The study empirically disclosed that banks' credits have significant impact on Agricultural and Manufacturing sector in Nigeria.

3. Research Method

3.1. Data

The time series data used in the study were sourced from Central Bank of Nigeria Statistical Bulletin, 2017 version. The annual time series data covered a period of 37 years ranging from 1981 to 2017. Explanatory variables used are the commercial banks' credit to the agricultural sector (CBCA); interest rate on commercial banks'

credit to agriculture (INT) and agricultural credit guarantee scheme fund (ACGS) while the dependent variable is the agricultural productivity (AGP).

3.2. Model Specification

The study modified the Agunwa, Iyanya, and Proso (2015) model, stated as:

$$AGP_t = \beta_0 + \beta_1 CBCA_t + \beta_2 GEX_t + \beta_3 INTR_t + \mu_t \quad 1$$

Where: AGP_t = Agricultural Productivity; $CBCA_t$ = Commercial banks' credit to the Agricultural sector; GEX_t= Government expenditure, $INTR_t$= Interest rate. The study replaced government expenditure with Agricultural credit guarantee scheme fund to examine the extent at which agricultural output has been impacted by the scheme. Hence, the effective model used in this study is specified as follows:

$$AGP_t = \beta_0 + \beta_1 CBCA_t + \beta_2 INTR_t + \beta_3 ACGSF_t + \mu_t \quad 2$$

AGP_t = natural logarithm of Agricultural Productivity at time t

$CBCA_t$ = natural logarithm of time t Commercial banks' credit to Agriculture

$INTR_t$ = natural logarithm of time t Interest on banks' credit to Agriculture

$ACGSF_t$ = natural logarithm of Agricultural credit guarantee scheme fund at time t

μ_t = Stochastic error term

β_0 = constant and $\beta_1 - \beta_3$ = coefficients of independent variables; t = time series

On *a priori*, it is expected that Commercial banks' credit to the Agricultural sector; Interest rate on Commercial banks' credit to Agriculture and Agricultural credit guarantee scheme fund will positively affect Agricultural productivity.

3.3. Estimation Technique

3.3.1. Unit Root and Cointegration tests

Time series data are mostly non-stationary and to solve this problem, the study employed Augmented Dickey Fuller (ADF) unit root test and Johansen co-integration econometric tools to determine the order of integration and the longrun relationship among the variables. The Augmented Dickey Fuller (ADF) unit root test is traceable to Dickey and Fuller (1979) and it is useful to ascertain the time-series property of the variables and level of integration. It is written as:

$$\Delta Y_t = \delta_0 + \lambda Y_{t-1} + \beta_i \Delta Y_{t-1} + \varepsilon_{t1}(for\ intercept) \quad 3$$

$$\Delta Y_t = \delta_0 + \lambda Y_{t-1} + \delta_{it} + \beta_i \Delta Y_{t-1} + \varepsilon_{t2}(for\ trend) \quad 4$$

Y_t = Variable tested for unit root, Δ = first difference operator, n = Lag no, t = time trend, ε_t = stationary disturbance error term. The t-statistics was used to test the null hypothesis of $\lambda_1 = 0$ which implies no stationarity against the alternative that $\lambda_1 < 0$.

If the series are not stationary at level i.e. 1(0), it would be differenced *d* times for it to be stationary. If it is stationary without differencing, after differencing once or twice, it is integrated of order zero 1(0), one 1(1), two 1(2) respectively. The Johansen co-integration test was used to establish the existence of cointegration can be written as:

$LR_{trace}(r) = -(TIn\ (1-\lambda)$ the trace statistics

$LR_{trace}(r) = -(TIn\ (1-\lambda) = LR_{trace}(r+1)$the maximum eigen

Computed values are compared to the critical values to determine the exact number of co-integrating equations. There are 4 variables in this study, there can be at most 9 linearly co-integrating vectors, i.e. r ≤ 9. Where r is the number of co-integrating vectors under the null hypothesis, and λ is the estimated value for the i^{th} Eigen value from the II matrix. The rule of thumb in the statistics was that: should the t-stat be higher than the critical value, the null hypothesis will be forced to be rejected and vice-versa.

3.3.2. Error Correction Estimate

The test was administered to check the short run estimate among the variables AGP, CBCA, INT and ACGS. The significance of error correction model lies in its ability to correct spurious regression results on time series data. Hence from equation (1), the ECM was specified as:

$$AGP_t = \beta_0 + \beta_1 CBCA_{t-1} + \beta_2 INTR_{t-1} + \beta_3 ACGSF_{t-1} + \mu_t + ECM_{t-1} + \Sigma_t \quad 5$$

ECM_{t-1} represents the error correction term while $t-1$ shows that the variables were lagged by one period and Σ_t is white noise residual.

4. Results and Discussion

4.1. Descriptive Statistics

Table 1 showed that Agricultural development (AGR), commercial bank credit to Agricultural sector (CBCA), Interest rate (INT) and Agricultural credit guarantee scheme (ACGS) have mean of 2.947218, 1.330336, 1.308649 and 5.710412 respectively, with minimum of 1.231780, -0.228707, 1.000000 and 4.391903 to a maximum of 4.293074, 2.680256, 1.557387 and 7.095387 respectively. The variables also possessed a standard deviation of 1.036363, 0.863946, 0.131502 and 0.924397 with probability value of 0.203219, 0.363988, 0.210856 and 0.167138 respectively. More so, Agricultural development, commercial bank credit to Agricultural sector and interest rate variables were negatively skewed while Agricultural credit guarantee scheme was positively skewed.

Table 1. Descriptive Result

	AGR	CBCA	INT	ACGS
Mean	2.947218	1.330336	1.308649	5.710412
Median	3.127442	1.492001	1.329144	5.383526
Maximum	4.293074	2.680256	1.557387	7.095387
Minimum	1.231780	-0.228707	1.000000	4.391903
Std. Dev.	1.036363	0.863946	0.131502	0.924397
Skewness	-0.266766	-0.247396	-0.729222	0.279470
Probability	0.203219	0.363988	0.210856	0.167138

Source: Author's estimation (2019)

4.2. Unit Root Test

The result in Table 2 revealed that all the variables were stationary at 5% level and integrated of the order I(I). The confirmation of the presence of non-stationary variables in the series brought to book the possibility of spurious relationship in the short run due to the presence of random walk, and the fact that they are integrated of the same order after differencing, suggested that long run association test was imperative. Hence, co-integration test was done using Johansen maximum likelihood ratio approach.

Table 2. ADF Unit Root Test Results at First difference

Variables	ADF t-stat	Critical value	Integration	Remarks
LnAGR	-3.773122	-2.954021	I(1) **	Stationary
LnCBCA	-6.660715	-2.954021	I(1) **	Stationary
LnINT	-5.856472	-2.954021	I(1) **	Stationary
LnACGS	-5.823228	-2.954021	I(1) **	Stationary

Source: Author's estimation (2019)

Note: *(**) denotes acceptance at 1&5 percent level of significant

4.3. Johansen Co-Integration Test

Table 3a and Table 3b revealed the Trace Statistics test as well as Max-Eigen Statistics test. Meanwhile, Trace test and Max-Eigen value test revealed 1 cointegrating equation each at 5% and 1% level of significance respectively.

Table 3a. Trace Statistics Result

Hypothesized No. of CE(s)	Eigen value	Trace Statistics	5% Critical Value	Significance Level
None *	0.877509	111.6721	88.80380	0.0004
At most 1	0.676653	57.07937	63.87610	0.1634
At most 2	0.389577	27.72462	42.91525	0.6385
At most 3	0.192622	5.563057	12.51798	0.5177

Source: Author's estimation (2019)

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Table 3b. Max-Eigen Value Statistics Result

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistics	5% Critical Value	Significance Level
None *	0.839088	47.49932	33.87687	0.0007
At most 1	0.513511	18.73409	27.58434	0.4353
At most 2	0.315065	9.839222	21.13162	0.7596
At most 3	0.108781	2.994280	3.841466	0.0836

Source: Author's estimation (2019)

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Evidence from Table 4 indicated that there existed a long run cointegration in the model. Evidently, the dependent variable (i.e. Agricultural development-AGR) depicted positive long-run equilibrium alongside with commercial bank credit to Agricultural sector (CBCA) and Agricultural guarantee credit scheme (AGCS). Contrarily, interest rate was negatively related with Agricultural development in the long-run.

Table 4. Normalized Cointegrating Coefficients

1 Cointegrating Equation(s): Log likelihood 98.95650			
	LNCBCA	LNINT	LNAGCS
LNAGR	3.872892	-4.153217	4.991641
1.000000	(2.44244)	(2.46562)	(2.50387)

Source: Author's estimation (2019)

The estimated long-run model revealed that direct relationship flows among commercial bank credit to Agricultural sector, Agricultural guarantee credit scheme and Agricultural development while inverse relationship flows between interest rate and Agricultural development respectively. This implied that 1% change in the level of Commercial bank credit to Agricultural sector and Agricultural guarantee credit scheme brought about an increase of 38% and 49% respectively to output of Agricultural development. However, 1% change in interest rate (INT) brought about 41% reduction to Agricultural development within the study period.

4.4. Error Correction Results

Evidence from the error correction model depicted that the model is correctly signed and statistically significant thereby validated the presence of long run relationship in the model and that 22% of the short run inconsistencies are corrected and incorporated into the long run dynamics, annually. Furthermore, it was indicated that

GDP, CBCA,2), and AGCS,2) were positive and significant at 5%. The commercial bank credit to Agricultural sector (CBCA) indicated that a percent change in CBCA increased Agricultural development by 12%. Also, Agricultural guarantee credit scheme (AGCS) pronounced significant positive effect on Agricultural development which implied 22% increase in Agricultural development. Conversely, interest rate (INT,2) depicted an insignificant negative effect on Agricultural development by 3% decrease. More so, it was shown that the overall model is significant. The F-statistics (34.25352) is significant (*p*-value 0.000<0.05). R-square value of 0.9236 shows that about 92% of changes in Agricultural development can be explained by commercial bank credit to Agricultural sector, Agricultural guarantee credit scheme and interest rate. Based on the Durbin Watson Statistics, it was revealed that 2.188750 fell in the region of no serial auto-correlation which symbolized that the model is free from the presence of serial autocorrelation.

Table 5. Error Correction Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.804838	2.681577	6.716439	0.0000
GDP(-1)	5.119907	8.106108	6.310934	0.0000
D(CBCA,2)	1.207125	0.483980	2.494162	0.0232
D(INT,2)	-0.030192	0.061894	-0.487796	0.6319
D(AGCS,2)	0.215237	0.085447	2.518942	0.0221
ECM(-1)	-2.268753	0.228203	-9.941840	0.0000

Source: Author's estimation (2019)

R-squared = 0.923603; Adjusted R-squared = 0.896639; F-statistic = 34.25352

Prob(F-statistic) = 0.000000; Durbin-Watson stat = 2.188750

5. Discussion and Recommendations

The study examined the impact of bank credit on real sector economy in Nigeria for the period of 37 years which spanned from 1981 through 2017. The study employed Johansen cointegration technique to found long run relationship in the model. Evidence from the Error correction mechanism showed that CBCA and AGCS have greater influence in determining the level of credit in the Agricultural productivity. The implication from the study is that if commercial banks facilitate credit to Agricultural sector for strictly agricultural produce it will yield a significant effect which will enable the borrower to pay back the principal plus interest as and when due. More so, it will aid the bank to trust the borrower against next occurrences. The economic implication of this is that if Agricultural sector can access commercial bank credit as and when due for productive use, sooner than later it will help to improve the Agricultural produce and help the economy to diversify from the

dwindling crude oil. Conversely, the negative and insignificant nexus between interest rate and Agricultural productivity connote that there is need for government to foster economic policy aimed at maximally reducing interest rate charged by deposit money banks on farmers, that is, if interest rate s lowered it will enhance farmers to assess more resources strictly for Agricultural investment which on the long run will certainly yield to Agricultural productivity (Udoka, Mbat & Duke, 2016).

The major conclusion of the study was that there existed long run relationship between commercial bank loans and the real sector (Agricultural) in Nigeria. This was on the basis that an upward shift in commercial banks loans and advances to the Agricultural sector boost the Agricultural sector to enlarge its business activities leading to increase in Agricultural produce. The study further proved that lack of access to credit facility of Commercial banks could be linked to high unemployment rate in the country. The study concluded that bank credit significantly impact Agricultural productivity of Nigeria under the period reviewed. The result of the study is in consonance with Ogar, Nkamare and Effiong (2014), Rahman, Hussain and Taqi (2014), and Udoka, Mbat and Duke (2016) who concluded that commercial bank significantly affect Agricultural productivity in Nigeria.

The following recommendations were proffered based on the outcome of the study; the delay and stringent conditions in assessing commercial bank credit and facility should be overhaul; Commercial banks should set up panel investigating committee that will ensure that the funds disbursed are strictly used for its purpose without any possible diversion; the government should allocate funds to Agricultural sector as well as other sectors like Manufacturing sector to have large revenue base aside the oil sector.

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Perceptions of Poverty between Food Secure and Food Insecure Households in Malawi

Hannah M. Dunga[76], **Chengedzai Mafini**[77]

Abstract: Poverty remains a global challenge, and the feasibility of achieving the first goal of the Sustainable Development Goals (SDGs) which aims at eradicating poverty by 2030 may become farfetched if better approaches to dealing with this problem are not developed. Continued research on poverty is central to discovering more effective approaches of reducing and eradicating poverty. One approach to understanding poverty and dealing with it is to understand the underlying causes and even the subjective perceptions of households, especially those in poverty. This study addresses poverty perceptions from the eyes of food secure and food insecure households in Malawi. It follows the framework developed by Feagin (1975) also known as the Feagin scale which classifies perceptions into three factors, namely individual, structural and fatalistic domains. The research uses data collected from 501 households drawn from the eastern district of the city of Zomba in Malawi. The results of the regression analysis reveals that different categories of households perceive that poverty is linked to diverse causes. The main determinants of the perceptions of poverty that were statistically significant in the regression model were household size, food security status and the location (rural or urban) of the household. The results are important for approaching the compositions of intervention programs that should include civic education to develop a better understanding of the actual causes of poverty.

Keywords: Poverty, Perceptions; fatalistic; Structural, Individualistic

JEL Classification: I32

1. Introduction

Poverty remains a global challenge, which renders the likelihood of attaining Goal one of the Sustainable Development Goals (SDGs) of eradicating poverty by 2030 very improbable unless more effective initiatives of dealing with economic deprivation are developed. The World Bank (2018) report entitled "Piecing the Poverty Puzzle Together", indicates that poverty remains high in sub-Saharan Africa, and the trend is not changing despite increases in the income of the poorest countries in the world. The efforts that have been put together in the past half-century

[76] PhD, Vaal University of Technology, South Africa, Address: P/Bag X201 Vanderbijlpark, South Africa, Corresponding author: hannahd@vut.ac.za.
[77] Professor, PhD, Vaal University of Technology, South Africa, Address: P/Bag X201 Vanderbijlpark, South Africa, E-mail: chengedzaim@vut.ac.za.

to deal with poverty have yielded results in other areas and have failed in others. This brings to the fore the realisation that the experiences of poor people are not comparable, and hence their circumstances differ immensely leading to the need for a contextualised approach in dealing with poverty in different regions of the world. Continued research on poverty is essential then to discover better approaches to reducing and eradicating poverty.

One outcome of poverty that has dire negative consequences is food insecurity. Having access to food should be considered a human right, and extreme levels of poverty are associated with hunger, malnutrition and numerous diseases (Sen, 1981; Drimie & Casale, 2009; Daudi, 2010). However, poverty and food security are both complex concepts that are known to be multidimensional in nature. The World Bank (2000) defines poverty as deprivation from wellbeing. Wellbeing itself is a broad term, and hence the definition of the World bank in considering poverty as a deprivation of wellbeing encompasses deprivation of food, good health, housing and the ability to afford or access sources of income or incapability (Sen, 1981).

Developmental organisations overtime have observed that successful projects are those that are owned by the intended beneficiaries of such programs. The ownership of programs and projects results from a well-consulted process in the conception phase. Poverty programs that do not take into account what the poor consider to be important are a recipe for failure. Hence, understanding what most households consider as the causes of poverty becomes paramount to any successful undertaking in dealing with this phenomenon (Bradshaw, 2006).

Theoretically, perceptions of the causes of poverty are linked to the theories of poverty. The main categorisations of the theories of poverty are the conservative and liberal theories (Blank, 2003; Bradshaw, 2006). On the one hand, conservative theories such as the culture of poverty propagated by the likes of Oscar Lewis, view the poor as unredeemable (Lewis, 1963; 1966). On the other hand, liberal theories of poverty postulate that there are a myriad of reasons that do not entirely point to the poor themselves but rather other factors including the distribution and access to opportunities in society that place others at an advantage at the expense of others (Rowlingson, 2011; Dahl & Lochner, 2012; The International Bank for Reconstruction and Development 2016; The World Bank, 2018).

2. Literature Review on the Perceptions of Poverty

In establishing the importance of the perceptions of poverty, it is conceptually easier to show the linkage between perceptions and the theories of poverty themselves. In literature, the theories of poverty, which are a succinct attempt to explain the causes of poverty, are viewed from two main angles. First, there is a group of perspectives traditionally referred to as Conservative Theories of Poverty which attribute this

condition to individual deficiencies (Ryan, 1976; Schiller, 1989; Bradshaw, 2006). The second group takes cognisance beyond the individual and attributes poverty to broader social phenomena (liberal or progressive) (Bradshaw, 2006). Accordingly, while the Conservative approach attempts to explain the causes of poverty in an individualistic dimension, the liberal approach focuses on structural dimensions in society and how those interactions may explain the existence of poverty (Davids, 2010). However, there are other emerging explanations in addition to the traditional understanding of poverty. For instance, in a study by Clery, Lee and Kunz (2013) on the perceptions of poverty in the United Kingdom, although the usual themes of conservative and liberal thought were present, participants questioned the very definition of poverty and whether poverty as a concept in its current form applies to that country. As a result, there have been various attempts in literature involving studies conducted in Europe and Africa (e.g. Hall, Leary & Greevy, 2014; Koczan, 2016) intended to develop the understanding of the public perceptions of poverty and how best to deal with it in modern societies.

It is important to understand the intricate parts of the poverty conundrum, for its answers are beyond the traditional prescriptions of the last half-century. The World Bank (2018) recognises these complications and advocates that poverty has to be understood beyond the income threshold of the international poverty line of USD1.90 or any other figure that may be conceived (The World Bank, 2018). The report argues that there are many people living above the USD1.90 threshold who are still very poor by the standards of the society in which they live. Therefore, the definition of poverty to these people would be completely different from the international poverty datum line.

Another prevailing view is that the same criteria of dealing with poverty in its worse forms that work elsewhere are not working in other parts of the world. For instance, while sub-Saharan Africa is experiencing increased numbers of poor people even by the USD1.90 poverty datum line, other parts of the world including Asia have experienced a great reduction in the number of poor people (The World Bank, 2018). The definition of poverty is therefore fast becoming a contextual concept than it is a quantifiable income issue, hence understanding people's subjective perceptions of poverty and what they perceive to be the causes of the same, is principal in achieving the first sustainable development goal. However, if current trends are anything to go by, the 2030 target of the SDG 1 is likely going to be an unattainable target (United Nations, 2015).

The next section presents a review of some of the perceptions of poverty that have been used in the data analysis sections based on the data collected in Malawi.

2.1. Perceptions of Poverty

Advances in the understanding of poverty have continuously considered what those experiencing poverty and even those in proximity to poverty conceive it to be and

what they perceive to be its main causes or deprivation as is understood in other contexts. Based on the literature there are a number of perceptions on the causes of poverty. Most literature identifies four subjective perceptions of poverty namely individualistic, structural and fatalistic causes of poverty (Blank, 2003; Bradshaw, 2006; Davids, 2010; Grobler & Dunga, 2014). These are mostly considered in the light of the scale provided by Feagin (1975) in what is popularly known as the Feagin scoring scale.

2.1.1. Fatalistic Perceptions of Causes of Poverty

Fate which by definition entails occurrences that are beyond the control of an individual is considered as one of the main causes of poverty. People especially children who grow up to be adults that encountered fate in terms of the death of their parents or guardians while they were young may perceive that their situation is due to fate (Niemelä, 2008; Davids & Gows, 2013). The fatalistic perception, therefore, considers poverty as something that is beyond the control of an individual or society.

2.1.2. Individualistic Perceptions of Causes of Poverty

Emanating from the thought process that is characteristic of the conservative school of thought, the individualistic perception of causes of poverty points the finger to the poor themselves as responsible for their situation (Davids, 2010). Lewis (1963) argues that poor people are entrenched in a certain way of life that they don't really seem to desire an improvement in their life that would change that way of life. Lewis (1966) further argues that the poor fail to realise the cause of their problems and are always blaming society. It is commonly acknowledged that factors such as drug abuse, laziness and poor choices including teenage pregnancies/parenthood and pregnancies out of wedlock may contribute to lower educational achievements, leading to poverty (Shaw, Egan & Gillespie, 2007; Samarasinghe, 2009). There is adequate literature that shows a link between drug abuse especially alcohol abuse and poverty (Samarasinghe, 2009). In this way, the individualistic perception of poverty considers the poor as sufferers who should take some of the blame for their situation.

2.1.3. Structural Perceptions of Causes of Poverty

The structural perception of poverty looks at poverty as a consequence of social injustices that are promoted by social structures. The society is in this case blamed for having structures and processes that include others and excludes others in the distribution of resources (Larsson, Sjöborg & Institutionen, 2010; Rowlingson, 2011; Koczan, 2016). Inequality in access to education and any human capital processes is also associated with inequality in the ownership of factors of production, which leads to highly skewed income distribution and both absolute and relative poverty (Meyer & Sullivan, 2012; House, 2017).

3. Research Methodology

The study employed primary data collected from 501 households based in the eastern district of the city of Zomba, Malawi in the year 2017. A household questionnaire was developed and piloted, and subsequently used to collect the data from household heads in the study area. For measuring the three perceptions of poverty the study adopted Feagin's (1975) scale presented in Table 3.1. Questions relating to perceptions of poverty were incorporated into the questionnaire.

Initially, 550 questionnaires were distributed in the study area, and 550 were returned. From this number, 49 questionnaires had errors and were discarded in the data cleaning process, culminating in 501 questionnaires that were used in the final data analysis. To determine the sample size, the study followed the recommendation by Gujarati (2004) that for statistical purposes, especially when one applies the central limit theorem, any sample of 30 and above is considered large enough to perform basic statistical procedures. Some studies related to the current research (Sekhampu, 2013; Dunga & Grobler, 2017) employed similar sample sizes of 350 and 580, respectively and produced good results.

Households were selected randomly whereby a supervisor walked around the research area and selected every fourth house in the already designated Enumerator Areas (EAs) specified by the National Statistics of Malawi. This procedure was repeated until the required population was achieved. The survey was conducted by experienced enumerators who first received training on the relevant matters of interest. The respondents included households selected from both rural and urban areas, and data were collected either from the household heads.

3.1. Model Specification

The main aim of the study was to analyse the perceptions of poverty from food secure and food insecure households in Malawi. To achieve this aim, the study employed descriptive analyses, cross-tabulations and regression analysis. The expectation was that since Malawi has a high level of poverty rates as indicated by the International Monetary Fund [IMF](2017) most of the households included in the sample were assumed to either be in poverty themselves or lived in proximity to impoverished households. Hence the responses would be informed by experience as opposed to speculation. Three indices were calculated based on the responses as regards to the perceptions of the causes of poverty. The perceptions were adopted from the existing scale (Feagin, 1975) that contains questions on individualistic perceptions, structural perceptions and fatalistic perceptions as the causes of poverty as presented in Table 1.

Table 1. Perceptions of poverty

Index	Reason for poverty
Individualistic	They lack the ability to manage money They waste their money on inappropriate items They do not seek to improve their lives
Structuralist	The society lacks social justice Distribution of wealth in the society is uneven They lack opportunities because they live in poor families They live in places where there are not many opportunities
Fatalistic	They have bad fate They lack luck They have encountered bad misfortunes They are not motivated because of welfare

Cross-tabulations were employed to compare the differences in poverty perceptions between food secure and food insecure households. A linear regression model was then applied to determine the perceptions of poverty from food secure and food insecure households. The study follows the approach similar to the one adopted in studies by Davids and Gouws (2013) as well as Dunga (2016) in which three regression models were run for each perception of poverty. The linear regression model was formulated as follows:

$$Index_i = \beta_0 + \beta_1 (H/H\ SIZE) + \beta_2 (FOOD\ SECURITY\ STATUS) + \beta_3 (NUMBER\ YRS\ SCHL) + \beta_4 (LOCATION) + \beta_5 (GENDER)$$

The Indexes were: Structural for Regression 1, Individualistic for Regression 2 and Fatalistic for Regression 3. All three regression models employed the same independent variables defined as follows:

- HH size was the size of the head of household measured as the number of people per household;
- Food security status of household measured using the Household Food Security Scale (HFIAS) which is a categorical variable hence a dummy variable was created distinguished as 1 for food insecure and 0 for food secure;
- HH years of School was the household head's years of schooling, which was used as a measure of education level;
- Location was also a categorical variable, hence a dummy variable was created defined as 0- rural and 1- urban areas;
- Gender was another categorical variable, hence another dummy variable was created defined as 1 female 0 male;
- The parameter β_0 is the constant or intercept;

- $\beta_{1\text{-}5}$ are the coefficients for the independent variables.

4. Results and Interpretation

Table 2 presents results for the descriptive analysis of categorical variables employed in the study. The first variable was the gender of household head, and the results show that males headed 64 per cent of the households in the study area while the remaining 36 per cent were female-headed. In the study, the place of residence is indicated as the location. The distribution of location indicates that 49 per cent of respondents lived in rural areas and 51 per cent in the urban areas during the time the survey was conducted. In terms of marital status, the results indicate that there were more married people (73%) as compared to the unmarried respondents (27%). These results indicated are consistent with the demographics of the whole country in terms of the stated variables as presented by National Statistics office Malawi (2018) in the fourth Household Integrated Survey (IHS4).

Table 2. Descriptive Analysis of Categorical variables

Factor	Categories	Frequency	Percentage
Gender household head	Male	321	64%
	Female	180	36%
Location	Urban	246	49%
	Rural	255	51%
Marital status	Married	366	73%
	not married	135	27%

Table 3 presents the results of the descriptive statistics for non-categorical variables in the study, some of which were later used as independent variables in the regression models. The results indicate that on average, the household heads had received seven years of education, which implies that most of them only had primary education. In terms of household size, the highest number of household size was 17 and the lowest.

Table 3. Descriptive statistics of the sampled households

Household variable	N	Min	Max	Mean	Standard deviation
Number yrs. school head	501	0	15	7	3.807
Household size	501	1	17	5.13	2.14
Age H/H	501	18	83	41	7.424
HFIAS Score	501	0	27	12	7.4

The food security status of households was another factor considered important to include in the descriptive analysis of the data, as it may also assist in explaining why certain households hold particular perceptions about the causes of poverty. The results are presented in Figure 1.

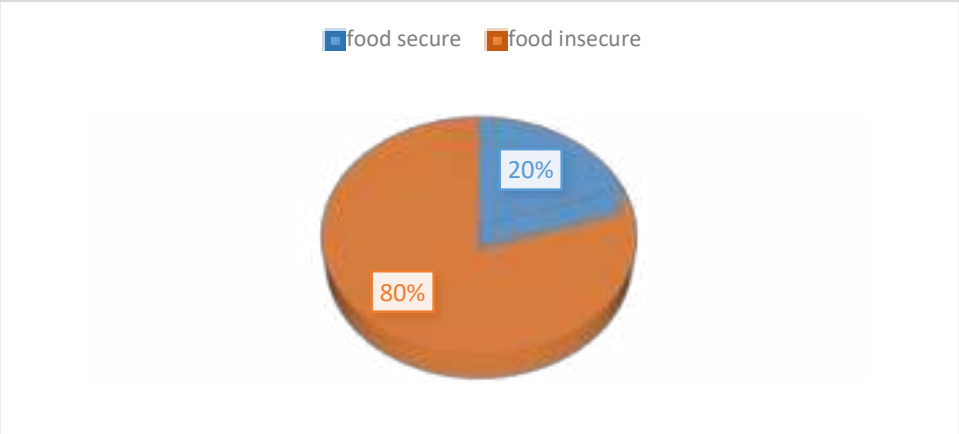

Figure 1. Distribution of household food security status

Figure 1 indicates the results of the food security status of households in the sampled area. It shows that 80 per cent of the households were food insecure while 20 per cent were food secure. The number of food-insecure households presented is very high by all standards, which prompted further analyses of how these households perceive the causes of poverty. These results are presented in the results of the regression analysis.

Table 4 presents the cross-tabulation results of the three perceptions of poverty and the food security status of households (food secure and food insecure households). The Chi-square test shows that there exist statistically significant differences between the food secure and food insecure households with regard to their perceptions of individual and structural causes of poverty. However, with regard to fatalistic perceptions, there were two areas (bad fate and bad luck) that were statistically insignificant. As shown under individualistic perceptions, a higher percentage of the food insecure respondents disagreed with the individualistic perception of poverty whereas most food-secure respondents concurred with it. Perhaps this result emanates from the view that since food insecure households are in poverty, they are unwilling to attribute their poverty to their own failures.

Further analyses of Table 4 reveal that there is a small difference under the food secure respondents between those who agreed and those who disagreed with the structuralist perception. Conversely, most of the food insecure respondents perceived that economic structures around their society are the leading cause of poverty amongst them. This result could be linked to the perception by the food insecure people that their poverty is not due to individual problems. Instead, they prefer to blame the government and the economic climate. Last of all, most of the food insecure respondents under the fatalistic perception, upheld that bad fate was another cause of poverty amongst them.

Table 4. Perceptions of poverty between food secure and food insecure households

Poverty Perception	Food Secure		Food Insecure		Chi-square test
	Disagree	Agree	Disagree	Agree	
Individualistic perception					
They lack the ability to manage money	19%	81%	75%	25%	.016*
They waste their money on inappropriate items	21%	79%	67.%	33%	.000*
They do not actively seek to improve their lives	41%	59%	74.%	26%	.008
They are exploited by rich people	42%	58%	68.%	32%	.009*
Structuralist perceptions					
The society lacks social justice	46%	54%	31%	69%	.000*
Distribution of wealth in the society is uneven	46%	54%	30%	70%	.000*
They lack opportunities because they live in poor families	46%	54%	40%	60%	.001*
They live in places where there are not many opportunities	45%	55%	43%	57%	.002*
Fatalistic perception					
They have bad fate	76%	24%	24%	76.%	.018**
They lack luck	67%	33%	28%	72%	.057***
They have encountered misfortunes	66%	34%	30%	70%	179
They are not motivated because of welfare	45%	55%	40%	60%	.000*
They are born inferior	84%	16%	15%	85%	.265

Table 5 presents the results for the Ordinary Least Squares regression model in which three different types of regressions were employed to analyse the perceptions of poverty from food secure and insecure households. The regressions were conducted based on the three main perceptions of the causes of poverty, as advocated by Feagin (1975). An ordinary least squares regression was used since the perceptions were constructed into an index measured on a scale of measure as a continuous variable, where a lower score indicated “strongly disagree”, and a higher score “strongly agree”.

Table 5. Regression results on perceptions of poverty

Variable	Regression 1 Individualistic			Regression2 Structural			Regression 3 Fatalistic		
	β	T	Sig	β	T	Sig	β	t	Sig
Constant		15.032	.000*		15.081	.000*		8.14	.000*
Household size	-0.092	-2.064	.040**	0.152	3.394	.001*	0.125	2.663	.008*
Food security	-0.152	-3.171	.002*	0.05	1.014	0.001*	-0.092	-1.723	.086***
Educational level	0.87	1.67	.096***	0.091	2.039	.042**	0.103	1.95	.525
Location(urban)	0.169	3.208	.001*	-0.071	-0.345	0.73	0.035	0.635	0.526
Gender female	-.079	-1.760	.079***	-.016	-.349	.727	.033	.721	.471

Household Size

Household size is the first independent variable in the three regressions. Using the individualistic index where high responses indicate the agreement with the perception that individuals are to blame for their circumstances, the regression results reported in Table5, show that household size had a negative coefficient (-0.092) and a significant p-value (0.04). This result depicts that larger households disagreed with the individualistic perceptions that place them in the blame for being poor. Using the same independent variable, on the structuralist perception of poverty the results show that household size had a positive coefficient (0.152) and significant p-value (0.001). This result illustrates that larger households ascribed their poverty to the economic structures that exist in society. This line of reasoning may stem from the view that large low-income families may have the best justification of getting more from the government because of their status. The regression for fatalistic perceptions was also significant (p=0.08) and had a positive coefficient of 0.125, which demonstrates that larger households also believed that fate could be another reason behind their poverty.

Food Security Status

Food security status was the second independent variable in the three regression models presenting results for food insecure households (dummy defined as 1 food insecure 0 food secure). Under individualistic perceptions, the variable was significant (p=0.02) at the five per cent level with a negative coefficient of -0.152. This result implies that food insecure households disagreed with the individualistic perception of poverty. This can be expected since in most cases food insecure households are most likely to be poor, hence they do not want to blame themselves for their poverty. The second regression of structuralist perceptions of poverty has a positive coefficient of 1.014 significant at the one per cent level (p=0.02). This result depicts that food insecure households are more inclined to structuralist rather than individualistic perceptions. This, in turn, portrays that they too, perceive that poverty is a result of the economic structures surrounding their society. The third regression of fatalistic perception of poverty shows a negative coefficient of -0.092 and a p-

value of 0.086, which signifies that food insecure households disagreed with the fatalistic perception of poverty.

Educational Level

Educational level was the third independent variable in the three regression models. The variable was described as the number of years of schooling. Under the individualistic perception, the variable shows a positive coefficient of 0.86 and p-value of 0.096, denoting that the factor was significant at the 10 per cent level. The positive coefficient indicates that households with more levels of education agreed with the individualistic perception of poverty. This disposition could be linked to their high levels of education and the benefits they have enjoyed from it, which lead them to perceive that poor and uneducated people deserve the blame. The structuralist perception also shows a positive coefficient of 2.039 and p-value of 0.042, which suggests that educated people also subscribed to it. This serves as evidence of the probability that the structures surrounding the poor may not be conducive enough for everyone to get the right education. Thus, escaping the poverty trap may be challenging for many in developing countries such as Malawi where educational infrastructure and facilities are inadequate. Under fatalistic perceptions, education level was statistically insignificant.

Location

Location was the third independent variable in the three regression models. Since the variable was categorical, a dummy was then created indicated as 0 for rural and 1 for urban dwellers. Individualistic perception indicates a positive coefficient of 0.169 and p-value of 0.001, which expresses that the location was significant at the one per cent level. The positive coefficient indicates that respondents in the urban areas agreed with the individualistic perception, which entails that the poor are to blame for their poverty. However, those in the rural areas disagreed with the perception. This train of thought could be connected to the view that most of the people in rural areas are poor, hence they avoid blaming themselves for their poverty. Location was an insignificant determinant in the other two regression models (structuralist and fatalistic).

Gender

Gender of household head was the last independent variable in the three regression models. Since the variable was categorical, a dummy was created indicated as 0 male and 1 female. In the first regression model under individualistic perception, the variable of female-headed households had a negative coefficient of -0.79 and a p-value of 0.079 which was significant at the ten per cent level. The negative coefficient shows that female-headed households disagreed with the individualistic perception of poverty. This line of thought could be linked to the view that female-headed households have in most cases been found to be poor (Dunga 2017) as

compared to their male counterparts. Hence, in this regard, they avoid ascribing their poverty to their own failures. Gender was not a significant determinant in the other two regression models (structuralist and fatalistic).

5. Conclusion

The study analysed the perceptions of poverty from food secure and food insecure households in Malawi. To achieve the main objective the paper adopted Feagin's (1975) scale which classified the perceptions into three different types, namely individualistic perceptions, structuralist perceptions and fatalistic perceptions. The study was conducted in the Southeastern region of Malawi and employed cross tabulations, descriptive analyses and linear regression models to classify the study populations' perceptions of poverty.

The results indicated that the majority of households in Eastern Malawi were food insecure. Cross-tabulations on the perceptions of poverty amongst the food secure and food secure indicated that according to the three perceptions, most people dispensed with the individualistic perception of poverty, as they felt that they were not to blame for their own poverty. The Cross tabulations also revealed that most households subscribed to the structuralist perception since they considered that unfavourable economic circumstances in their environments were the leading contributing factor to poverty. With regards to fatalistic perceptions, most food insecure households also attributed their poverty to bad fate.

The regression results indicated that gender, education level, household size and location of households contributed to the perceptions of poverty. The results indicated that most female-headed households, households with lower education levels, larger households and households from rural areas were more inclined to the structuralist perception than to the individualistic perceptions of poverty.

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