
Cash-less policy and economic growth: evidence from Nigeria

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Abstract: The introduction of Central Bank of Nigeria (CBN) Cash-less policy is expected to stimulate economic growth through modernisation of the payment system, reduction in cost of credit as well as improving the effectiveness of monetary policy. Economic growth and cash-less policy are examined in a causal relationship, adopting longitudinal data for non-cash-based banking before the cash-less policy and its impact on economic growth and non-cash-based banking after cash-less policy and its impact on economic growth. Ordinary least-squares multiple regression models were adopted for the study. To test for the impact of CBN cash-less policy on economic growth, we used the Chow (1960) test of structural change. The study found that cheque, point of sale (POS), web and mobile payments as an alternative to cash payments contribute significantly to economic growth. However, their contribution is more evidenced before the introduction of CBN cash-less policy than after the introduction. This may be as a result of the slow rate of growth in the economy stemming from the depreciation of the Naira and falling oil prices.

Keywords: cash-less; cashless; economic growth; electronic banking; endogenous theory of growth; theory of reason; unified theory of acceptance and use of technology.

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1 Introduction

The payment system plays a very crucial role in any economy, being the channel through which financial resources flow from one segment of the economy to the other. Therefore, it represents the major foundation of the modern market economy, especially in globalised financial and new knowledge economy-driven system. The payment system must be monitored to ensure that it plays its essential roles of monetary policy, financial stability and economic development. Monitoring of the payment system in particular and the banking system in general in Nigeria is the majorly the prerogative of the Central

Bank of Nigeria (CBN). Carrying out its function of ensuring efficient and effective payment system and achieving a safe and sound banking practice as well as protecting the banking system against systemic risks initiated the National Payment Systems (NPS) in 2005. The NPS was aimed at migrating the payment system to cash-less system and ensuring payment system audit transparency and full transaction reporting as well as total quality delivery (Princewell and Anuforo, 2013). The NPS initiative became the ground breaking work needed for the introduction of the cash-less policy by the CBN in 2011.

In 2011, the CBN introduced Cash-less policy aimed at reducing cash-based transactions by charging fees on daily cash withdrawals or deposits in excess of N500,000 for individuals and N3,000,000 for corporate bodies. It is aimed at a reduction in the physical cash in circulation and also to encourage the use of electronic platform for payment of goods and services. The policy took effect in phases commencing with Lagos State on 1st January 2012 with cash-handling charge deferred to 30th March 2012 to give people time to migrate to electronic channels and experience the infrastructure that has been put in place (CBN, 2011). The policy was extended to five more states (Anambra, Ogun, Abia, Rivers and Kano) and Abuja (Federal Capital) in 2013 in the second phase of the project. The third and final phases, which cover the entire country were to commence in July 2014 but were postponed. The introduction of the policy is expected to stimulate economic growth through modernisation of the payment, system reduction in cost of credit as well as to improve the effectiveness of monetary policy (CBN, 2011; Hasan et al., 2012; Zandi et al., 2013).

Cash-less policy in itself cannot be isolated from electronic banking products and services. Transactions hitherto carried out in cash are henceforth to be carried out using cheques and electronic devices, and in place of cash, bank customers are to carry electronic cards or carry their cash in mobile phones. The CBN believes that the introduction of the cash-less policy will stimulate economic growth. Studies on the impact of ICT and cashless initiatives have been carried out by various researchers from developed to developing economies.

Notable studies in developed economies include Hasan et al. (2012) who examined the relationship between retail payments and overall economic growth across 27 markets in Europe and found that an efficient electronic retail payment stimulates overall economic growth, consumption and trade, with card payment recording the strongest relationship. A study conducted by Tee and Ong (2016) using data from five European countries Austria, Belgium, France, Germany and Portugal examined the impact of the adoption of cashless payments on their economy as well as to determine the short- and long-run causalities of each payment mode on the economy. The study found causality running among the various payment modes, and that a significant effect of the adoption of cashless payment on the economy of the five countries is evidenced in the long run.

A cross-country study conducted by Zandi et al. (2013) using data from 50 countries across the seven continents for the period 2009–2012 examined the impact of long-term shifts to credit and debit cards on economic growth. The study found electronic card payments have a meaningful impact on the world economy with the greatest impact recorded in emerging markets. In a similar study using data from 70 countries between 2011 and 2015 Zandi et al. (2016) found that increase use of card significantly contributes to economic growth, emerging markets also experienced the largest contribution. Studies conducted on the impact of cashless on economic growth have largely been in developed economies and across countries. The results from these studies may not be applicable to emerging markets and Nigeria specifically as fiscal policies,

stability of the banking sector and the financial infrastructure are dissimilar among countries (Zandi et al., 2016). Thus, the need to examine the impact of electronic payment in an emerging economy and specifically Nigerian economy, the biggest economy in Africa.

One of the first attempts to study the impact of the CBN cash-less policy on the Nigerian economy was conducted by the Lagos chamber of commerce and industry (LCCI). Using a survey methodology, LCCI (2012) attempts to find out the impact of cashless Lagos on business and the economy. The study found that the major impact on the economy includes reduction in the quantity of money in circulation, reduction in the risk of carrying huge cash, encouraging economic growth/stability as well as elimination of money laundering. Several other studies have also been carried out in Nigeria on the impact of CBN cash-less policy on the economy with similar results (Akhalumeh and Ohiokha, 2012; Omotunde et al., 2013; Mieseigha and Ogbodo, 2013; Okoye and Ezejiofor, 2013; Ejoh and Okpa, 2014; Okpala, 2015; Amire and Omoare, 2015). All the studies have concentrated on survey method basically relying on perceptions of respondents based on a specific location. Thus, the results from their studies cannot be replicated and cannot be generalised on the whole economy. This study is aimed at bridging this gap by assessing the impact of cash-less policy on the economy using secondary data relating to the economy generally. This methodology will make it possible for the study to be generalised as well as replicated.

2 Cash-less vs. cashless

The CBN in the introduction of the policy in 2011 used the term 'cashless', however, the term was later replaced with 'cash-less'. The term 'cashless' can be described as a total absence of cash in payment for goods and services, whereas 'cash-less' is the reduction in the usage of cash for transaction by adopting non-cash alternatives. Thus, the change of the term by CBN, from cashless to cash-less is to reflect the main thrust of the policy which is geared towards encouraging electronic-based transaction and not the total elimination of cash.

According to Osazevhabru and Yomere (2015), cash-less banking system is a system aimed at reducing the quantity of physical cash transactions in the economy by encouraging electronic-based transactions; thus, allowing non-cash-based payment options side-by-side cash. on the other hand, cashless refers to an economic setting whereby goods and services are transacted through cheque or other electronic payment options; there is a complete absence of cash (Akhalumeh and Ohiokha, 2012). The study will adopt the definition of Osazevhabru and Yomere (2015), as it best described the thrust of the CBN cash-less policy.

3 Theoretical framework and hypotheses development

Studies on the adoption of technology have relied on the some theories; notable are diffusion of innovation theory, theory of reasoned action (TRA), theory of planned behaviour (TPB), technology acceptance model (TAM/TAM2) and lately unified theory of acceptance and use of technology (UTAUT).

Unified theory of acceptance and use of technology are proposed by Venkatesh et al. (2003) who believe that the intention and usage of technology are determined by performance expectancy, effort expectancy, social influence and facilitating conditions. All these constructs are moderated by gender, age, experience and voluntariness of use. The theory was developed from eight dominant theories and models such as the TRA, the TAM, the motivational model, the TPB, a combined TBP/TAM, the model of PC utilisation, innovation diffusion theory and social cognitive theory.

The adoption of cash-less policy in Nigeria is expected to be based on performance expectancy, effort expectancy and social influence which are expected to be moderated by gender, age and experience of users. Thus, adoption and use of electronic banking products and services will be influenced on one hand by performance expectancy, effort expectancy and social influence as moderated by gender, age and experience. The use of non-cash media for payment for goods and services expected to contribute to the economy by creating avenues for foreign investors to move in their fund, reduce the cost of cash transactions, ease of doing business, reduced cash-related crime should ordinarily cause an increase in electronic payments. All these and some other benefits accruing to the economy should contribute positively in growing the economy. We therefore hypothesise that

H₁: Adoption of non-cash media of payment has a positive significant impact on economic growth in Nigeria.

TRA was developed by the works of Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980), and the theory is an improvement over information integration theory by Anderson (1971). TRA believes that actions are influenced by behaviours that are limited by situations (or factors). It uses two elements of attitudes and norms to predict behavioural intent and predicts that behavioural intent is created by our attitudes and our subjective norms. Our attitudes are defined by the evaluation and strength of belief, whereas behavioural intent is determined by normative beliefs (what I think others would want or expect me to do) and motivation to comply (how important it is for me to do what I think others expect) (Benoit, 2016). According to UTAUT facilitating conditions that also determine the intention and usage of technology, this determinant is, however, moderated by experience.

Thus, a person's attitude towards behaviour is influenced by the belief that the behaviour leads to certain outcomes, favourable or unfavourable. Adoption of cash-less policy by Nigerians is influenced by their belief that non-adoption will lead to unfavourable outcome of paying charges, and thus, they are forced to comply.

Economists relying on endogenous growth theory believe that in today's world, economic growth is not driven by capital accumulation but by innovative capacity propelled by knowledge and technology (Uchechukwu et al., 2014). Endogenous growth theory proposed by Romer (1986) argues that technological advancement responds to economic incentives in the market that can be influenced by the government or the private sector. Thus, government policy, especially in the financial sector, can stimulate economic growth.

The introduction of the cash-less policy by CBN is expected to reduce the cost of banking services (including cost of credit), drive financial including by providing more efficient transaction options and greater reach, improve the effectiveness of monetary policy in managing inflation and driving economic growth. From the underlying, it is clear that the policy will have significant impact on the growth of the Nigerian economy.

LCCI (2012) reported that cash-less policy will create employment, reduce inflation rate, open door to foreign investors, facilitate business transactions, increase tax collections and generate revenue for the government among others. These benefits accruable from the implementation of cash-less policy have been found to influence economic growth, especially in developing countries, reduced inflation rate (Barro, 1996), taxes (Nantob, 2014) and foreign direct investment (Borensztein et al., 1998). The implementation of CBN cash-less policy is expected to reduce inflation rate, increase tax collection and increase foreign direct investment which will stimulate economic growth. From the foregoing, we hypothesise that

H₂: The introduction of cash-less policy by CBN has a positive significant impact on economic growth in Nigeria.

4 Research design

An explanatory study to examine economic growth and cash-less policy in a causal relationship, adopting longitudinal data for non-cash-based banking before and after the cash-less policy and its impact on economic growth was adopted. The study will therefore assess whether the cash-less policy as mandated by CBN has increased the usage of non-cash-based payment, thus, impacting more on economic growth than before its introduction. The study will cover the period of four (4) years before the cash-less policy, i.e. 2008 to 2011 and four (4) years after the introduction, i.e. 2012 to 2015.

4.1 Variable description/measurement

The descriptions and measurements of the variables used in this study are presented in Table 1.

Table 1 Variables measurements

| <i>Variables</i> | <i>Description/measurement</i> |
|------------------------------|---|
| <i>Dependent</i> Real GDP | Defined as gross domestic product (GDP) divided by the consumer price index (CPI) (Tee and Ong, 2016; Apergis and Payne, 2010) obtained from the CBN Annual Financial and Economic Statistics |
| <i>Independent</i> | Measured by non-cash transactions in the Nigerian banking industry, which includes cheque payments, web payments, POS transactions, mobile money and inter-bank funds transfers |
| Cheque payments | Value of cheques processed in CBN cheque clearing houses, obtained from the CBN Annual Financial and Economic Statistics |
| Web payments | Value of transactions carried out on the internet either using a card issued by Nigerian bank or internet banking platform, obtained from the CBN Annual Financial and Economic Statistics |
| Point-of-sale payments | Value of transactions carried out at point of sale using a card issued by Nigerian bank, obtained from the CBN Annual Financial and Economic Statistics |
| Mobile money payments | Value of transactions carried out on mobile money platforms authorised by a Nigerian bank or internet banking platform, obtained from the CBN Annual Financial and Economic Statistics |

4.2 Model specification

Ordinary least-squares multiple regression models were adopted for the study. In assessing the impact of the adoption of non-cash-based means of payment on economic growth, the model is specified, thus,

$$RGDP = \beta_0 + \beta_1 CHQ + \beta_2 POS + \beta_3 WEB + \beta_4 MOB + \varepsilon \quad (1)$$

where

RGDP = real gross domestic product

CHQ = value of cheque transactions

POS = value of point of sale transactions

WEB = value of web transactions

MOB = value of mobile transactions.

To test the impact of CBN cash-less policy on economic growth, we used the Chow (1960) test of structural change:

$$RGDP_{pre} = \beta_0 + \beta_1 CHQ_{pre} + \beta_2 POS_{pre} + \beta_3 WEB_{pre} + \beta_4 MOB_{pre} + \varepsilon \quad (2)$$

$$RGDP_{post} = \beta_0 + \beta_1 CHQ_{post} + \beta_2 POS_{post} + \beta_3 WEB_{post} + \beta_4 MOB_{post} + \varepsilon \quad (3)$$

5 Results and discussion

The result of the OLS regression conducted to test hypothesis 1 is presented in Table 2.

Table 2 OLS regression results

| | <i>Expected sign</i> | <i>Pooled OLS</i> | <i>OLS pre cash-less</i> | <i>OLS post cash-less</i> |
|----------------|----------------------|-------------------|--------------------------|---------------------------|
| Constant | +/- | 13.594*** | 14.751*** | 12.841*** |
| CHQ | + | -0.051*** | -0.215*** | 0.064 |
| POS | + | -0.014** | 0.083*** | -0.031** |
| WEB | + | -0.020*** | -0.002 | 0.003 |
| MOB | + | 0.020*** | -0.016* | 0.031** |
| R | | 0.848 | 0.833 | 0.354 |
| R-squared | | 0.719 | 0.694 | 0.125 |
| Adj. R-squared | | 0.707 | 0.666 | 0.044 |
| p-value | | 0.000 | 0.000 | 0.208 |

*, ** and *** indicate statistical significance at 10%, 5% and 1%, respectively

From the table, the pooled OLS showed that the value of cheque, point of sale, web and mobile payment significantly impact on economic growth in Nigeria. This indicates that the adoption of non-cash-based payment options by bank customers in Nigeria contributes significantly to the growth of the economy. The result also indicates that mobile payment options contribute the most to economic growth whereas cheque

payment contributes the least. The result also showed that 72% variation in economic growth can be explained by the adoption of non-cash-based payment options. Thus, as expected, we accept our hypothesis 1, as the result indicates that adoption of non-cash-based media significantly impact on economic growth.

The OLS result before the introduction of the CBN cash-less policy is also similar to the pooled OLS results. As the result showed that non-cash-based payment options significantly impact on economic growth, however, POS options contributed the most to this variation whereas cheque contributed the least, with non-cash payment options accounting for about 70% variation in economic growth. This result, therefore, confirms that the adoption of non-cash-based options by bank customers can be explained by the UTAUT. On the contrary, the OLS results post-introduction of CBN cash-less policy showed that non-cash-based payment options contribute about 13% to the variation in economic growth and also showed that they cannot significantly predict economic growth.

5.1 Chow test for structural change

To test for the impact of cash-less policy on economic growth, the Chow (1960) test of equality between sets of coefficients in two linear regressions was run. With the H_1 , No structural change implies that the introduction of cash-less policy has no significant change on the relationship between non-cash-based payment options and economic growth.

Using the following formula,

$$F = \frac{RSS_{\text{pooled}} - (RSS_{\text{pre}} + RSS_{\text{post}}) / p}{(RSS_{\text{pre}} + RSS_{\text{post}}) / (n - 2p)}$$

RSS_{pooled} = residual sum of square from pooled OLS

RSS_{pre} = RSS from OLS pre CBN cash-less policy

RSS_{post} = RSS from OLS post CBN cash-less policy

p = parameters

n = number of observations.

From the result obtained from the OLS regressions conducted using SPSS 20, F was obtained as follows:

$$F = \frac{0.132 - (0.054 + 0.038) / 5}{(0.054 + 0.038) / (96 - 2(5))}$$

$$F = 7.2727$$

Critical F value ($\alpha = .05$, $df = 5, 86$) = 2.320529, because $F = 7.2727 > 2.320529$ we reject the hypothesis with no structural change. This implies that structural change existed in the data at the point of the introduction of the CBN cash-less policy. However,

the impact of the introduction does not have a positive significant impact on the economic growth as seen in the result of OLS post-introduction. Thus, the result does not support our hypothesis 2; therefore, we reject the hypothesis.

6 Conclusion

The study focused on the cheque, POS, web and mobile payments as an alternative to cash payments and found that they significantly contribute to economic growth. However, their contribution is more evidenced before the introduction of CBN cash-less policy than after the introduction. This may be as a result of the slow rate of growth in the economy stemming from the depreciation of the Naira and falling oil prices.

The findings also indicate that the adoption of cash-less is not necessarily as a result of the introduction of CBN policy as customers have adopted non-cash-based options before the policy was introduced and adoption has contributed to economic growth. It, therefore, means that customer adoption of non-cash-based payment options in Nigeria can be explained by the UTAUT whereas its impact on economic growth can be explained by the endogenous theory of growth. The adoption of non-cash payment options by customers in Nigeria will therefore contribute to a reduction in inflation rate, increase in foreign direct investment, reduction of unemployment and increased government revenue among other benefits, which will help in the growth of the economy.

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