Does Consumer Confidence Influence Macroeconomic Outcomes in Nigeria?

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Abstract

This paper examined the influence of three consumer confidence measures on key macroeconomic variables (output, consumption, investment and inflation), within a vector autoregression (VAR) framework, using quarterly data spanning 2009Q2 to 2016Q4. Our results showed that only the 'current quarter' consumer confidence index predicted output, although output predicted both the 'next quarter' and 'next 12 months' indices. The response of output, consumption, investment and inflation to innovations to the consumer confidence measures, though mixed, was more significant in the short than the long-term horizon. In addition, it accounted for a significant percentage of the forecast error variance of output growth, investment and inflation. Our findings reinforce the body of evidence that consumer sentiments convey useful information about changing economic fundamentals. Furthermore, the short-term horizon is particularly important as consumer decisions significantly impact on output and inflation in the 'current' and 'next quarters' depending on their perception of anticipated economic conditions. We therefore recommend, among others, that indicators from confidence surveys should be more closely monitored by the monetary and fiscal authorities, to factor in the consequences of their movements in economic management, especially in the Monetary Policy Committee decisions.

I.   Introduction

The studies of consumer attitudes is important in economics because of the belief that macroeconomic outcomes depend on consumers' expectations of future economic conditions (Cotsomitis & Kwan, 2006). This has led to increasing use of consumer attitude surveys to forecast economic performance in both developed and developing countries. Alluding to the importance of consumer confidence, Carroll et al. (1994) noted that the collapse of consumer confidence was often cited as a major, if not the leading, cause of economic slowdown in the 1990s. Similarly, Kelly (2009) indicated that declining consumer confidence after the stock market crash of 1929 was one of the five major causes of the Great Depression.

Studies have shown that changes in consumers' attitude affect their behaviour.

For example, Liken and Kotler (1983) and Kinsey and Collins (1994), noted that if changes in the attitudes precede changes in consumer behaviour, then knowledge of these attitudes could help explain consumer spending and savings patterns (as cited in Chopin & Darrat 2000). However, if the attitudes change at the same time with or after the changes in the macroeconomic variables, then they would be of little or no use in forecasting the direction of economic indicators.

Consumer attitude or expectation surveys culminate in the construction of consumer confidence indicators by whatever name. Barsky and Sims (2012) viewed the role of confidence indicators in macroeconomics from two perspectives. The first, which they called "animal spirits", suggests autonomous fluctuations in beliefs that in turn, have causal effects on economic activity. The second, called the "information" or "news" view, presupposes that a relationship between innovations in measures of consumer confidence, and subsequent macroeconomic activity arises because confidence measures contain fundamental information about the current and future states of the economy.

In the recent years, Nigeria has been faced with a myriad of economic challenges, which led to a deterioration of macroeconomic indicators and an eventual recession. The real GDP growth slowed steadily, from 6.54 per cent in 2014Q2 to 2.11 per cent in 2015Q4. By the first and second quarters in 2016, it contracted by 0.36 and 2.06 per cent, respectively, and remained in the negative territory until 2017Q2. During these periods, consumer and investment spending also exhibited declining trends, as they were severely affected.

In a similar manner, headline inflation rose from 8.0 per cent in May 2014 to double-digit figure of 11.38 per cent by February 2016. It rose further to a high of 18.72 per cent by January 2017, before moderating to 15.91 per cent in October 2017. This stagflationary situation—a high double-digit inflation and the contraction in the GDP, led to eroding purchasing power of consumers and the attendant reduction in their real incomes. The stagflationary condition was accentuated by the exchange rate crisis, as the exchange rate depreciated from an average of ₦196.13/USD in January 2015 to ₦336.93/USD in May 2016 at the Bureau-de-change (BDC) segment. It once depreciated to as low as ₦525/USD in September 2016, following the adoption of a more flexible regime.

These developments were attributed largely to the plunge in crude oil prices in the global market, insufficient fiscal buffers and increased capital outflow, occasioned by U.S. monetary policy normalisation. However, to the extent that

macroeconomic outcomes could also be heightened or lessened by consumers' expectations of future economic outcomes, it could be argued that consumers' optimism or pessimism (which can be captured by the consumer confidence indicators (CCI)) might have aggravated the recession or contributed to the worsening of these other macroeconomic indicators.

Given that the construction of CCI is new in Nigeria, the compilation of which began in 2009Q2 by the Central Bank of Nigeria (CBN), the need arises for sustained research to determine how effective it can predict fluctuations in macroeconomic variables in Nigeria.

To some extent, very few studies have been carried out on this subject in Nigeria, such as Olowofeso and Doguwa (2012) and Ibrahim et al. (2015). While Olowofeso and Doguwa (2012) looked at the impact of GDP and other financial market indicators on CCI, Ibrahim et al. (2015) considered the impact of CCI on selected macroeconomic variables. Whereas the former concluded that a unit rise in GDP increased confidence by 3.9 per cent, the latter found bidirectional causality between confidence indicators and GDP.

This study adds value to the existing literature in several ways. This study would be the first, to our knowledge since the recent economic recession, to examine its impact on GDP growth, given the postulation that CCI has impact on aggregate demand and hence GDP growth (Carroll et al., 1994; Kelly, 2009). Also, 2015 being a general election year in Nigeria, would have had fundamental implications for consumer confidence, as the new administration brought about policy reversals and new initiatives. Undoubtedly, these developments might have led to changes in consumer perceptions and confidence beyond those captured by the previous studies. Besides, this study also examines the predictive ability of CCI on households' consumption expenditure, investment spending and inflation, unlike the previous ones (Chopin & Darrat, 2000; Heim, 2010). Furthermore, we extended the period of analysis from 2015Q2 to 2016Q4, within a changing policy environment.

In view of the issues highlighted above, this study therefore, seeks to determine if consumer confidence indices predict macroeconomic outcomes in Nigeria.
The rest of the paper is structured as follows: section 2 focuses on the review of literature, while section 3 outlines the methodology. In section 4, the empirical results are presented and discussed. Section 5 provides the summary and conclusion of the paper.

II.   Literature Review
II.1   Theoretical Issues

Many economists have contributed theoretically and empirically to a growing body of literature on the relationship between consumer confidence and macroeconomic variables. An initial exposition of this relationship could be found in the works of Keynes 'General Theory' in which he emphasised the importance of the relationship between expectations and 'animal spirits' (Akerlof & Shiler, 2009).

Although it is widely accepted that some measures of confidence are positively correlated with the business cycles (Nowzohour & Stracca, 2017), existence of a correlation does not necessarily establish the presence of a causal impact. Notwithstanding, if changes in attitudes precede changes in consumer behaviour, it infers that knowledge of consumer attitudes could explain consumer behaviour, such as consumer spending and saving pattern that influence aggregate variables. By the same token, if changes in the macroeconomic variables precede or move simultaneously with changes in consumer attitudes, then such changes in consumer attitudes will have a little explanatory impact on changes in aggregate variables, especially using forecasting models (Chopin & Darrat, 2000).

In line with Nowzohour and Stracca (2017), and Basky and Sims (2012), recent literature on the role of consumer confidence in influencing macroeconomic variables can be grouped into two different schools of thought—The "animal spirits view" and "news view". The 'animal spirits' view, has two perspectives, that is, the 'irrational animal spirit' and 'self-fulfilling animal spirit'. The irrational animal spirit, propagated by Akerlof and Shiller (2010), sees the drivers of macroeconomic fluctuations as the outcome of animal spirit tendencies inherent in capitalism. These are driven by the psychological rounds of optimism and pessimism that influence business decisions. It postulates that if the effects of the attitudes are left unchecked, it would lead to a downturn in the business cycle. Also, the 'self-fulfilling animal spirits' posited by Acharaya, Benhabib, and Huo (2017) argued that the primary cause of macroeconomic fluctuations or business cycles is found in the psychological effects of animal spirit behaviours. However, unlike the irrational animal spirit argument, the effect of the psychological waves leads to changes in fundamentals. This makes the initial impact of confidence changes rational, so that the economy fluctuates constantly between booms and bursts.

The second school of thought about the underlying transmission mechanism of consumer behaviour to macroeconomic outcomes, the 'news' view opined that

mechanisms by which changes in imperfect information available to economic agents , due to the arrival of news, causes business cycle fluctuations driven by changes in expectations from content of news (Beudry & Portier, 2013). Hence, the economy is subject to recurrent booms if the signal from the news was correct and periodic bursts if the signal from the news content was wrong.

II.2   Related Empirical Literature

Empirically, several studies have analysed the role of consumer confidence in explaining macroeconomic fluctuations. While some focused on cross-country analysis, others have been country specific. These studies also used different methodologies, including the use of time series models to estimate the predictive ability of consumer confidence on household expenditures and the impact of changes in consumer confidence on aggregate economic activities.

Matsusaka and Shordone (1995) investigated the link between consumer confidence and economic fluctuations in the US, using vector autoregressions. Their findings indicated that consumer confidence granger causes variations in output by about 13 to 26 per cent, after controlling for economic fundamentals. These findings were corroborated in Afshar and Zomorrodian (2007), which used quarterly data from 1980 to 2005, and applied forecast variance decomposition on the logs of consumer confidence index, stock returns, seasonally adjusted GDP, purchasing manager's index (PMI) and consumer price index (CPI). The study discovered that confidence explains 8 per cent and 23 per cent of the one-quarter-ahead forecast variance of GDP. In addition to the fact that confidence granger causes GNP, consumer, business and investor confidence levels also play a significant role in explaining macroeconomic fluctuations.

Cotsomitis and Kwan (2006) examined the ability of consumer confidence to forecast household spending within a multi-country framework. They found much variability in the in-sample incremental performance for the confidence indices used, while the results of out-of-sample tests indicated that the confidence indices used did not explain the future path of household spending. However, within the in-sample, it was discovered that CCI alone is able to predict future household spending in only three out of nine countries examined: France, Spain, and the United Kingdom, as the coefficients on the lags of the confidence indicators were found to be statistically significant at least at the 10 per cent level.

For Turkey, Celik, Aslanoglu, and Deniz (2010), used weekly data for the global crisis period of January 2008 – October 2009 to examine the relationship

between consumer confidence and financial markets. The findings of the paper empirically validated the existence of cointegration between consumer confidence and the financial market variables of interest.

Sergeant, Lugay, and Dookie (2011) used the VAR methodology to examine the causal link between consumer confidence and GDP in Jamaica, and Trinidad and Tobago. They discovered that an index of consumer confidence is useful in economic forecasting, policy making and business planning in these countries. In Trinidad and Tobago, a negative shock to consumer confidence will result in a decline in real GDP, with the most severe impact expected during the third quarter ahead after which GDP begins to improve.

Kuzmanovic and Sanfey (2013) estimated the predictive ability of consumer confidence on real variables in Croatia, using monthly data. The study found that a change in consumer confidence helped to explain retail turnover and imports, and that a change in retail turnover was predicted by consumer expectations. Also, with the aid of a VAR model to investigate the role of confidence and economic sentiment indicator for business cycle fluctuations from 1987 to 2013 in the Portuguese economy, Mendicino and Punzi (2013) showed that an unexpected rise in consumer confidence leads to an increase in macroeconomic variables. They found that an increase in the balance of positive and negative responses regarding future economic and financial conditions by 1 percentage points, leads to industrial production rise by around 5 percentage-point after six months, and by 10 percentage points after ten months.

Islam and Mumtaz (2016), empirically evaluated the link between CCI and economic growth of selected European countries: the United Kingdom, Germany, France, Denmark and the Netherland. Using Panel co-integration procedures, the paper established the presence of a long-run relationship between the CCI and economic growth for the period of 1996-2012. In another study for Turkey, Isik, Sahin, and Aydinkaya (2016), analysed the relationship between consumer confidence Index, growth and inflation between 2004 and 2013 and found that there is a long-run causality among the variables, as well as, dual short-run causality between the growth and confidence index.

Nowzohour and Stracca (2017) employed monthly data for 27 countries, spanning 1985 to 2016, to investigate the relationship between confidence, uncertainty and macroeconomic fluctuations, and concluded that consumer confidence correlates positively with economic and financial variables. Most of the correlations are also forward-looking, thereby making economic sentiment an important driver of macroeconomic activity. Heim (2017) also studied the

impact of consumer confidence on consumption and investment spending in the US from 1967-2000 using consumer demand models and pairwise granger causality tests, and found that changes in consumer confidence have a major impact on consumer demand and investment spending.

In Nigeria, using panel data, Oluwofeso and Doguwa (2012) assessed the relationship between confidence and selected macroeconomic variables, including short-term interest rates. They found that sentiment is useful in forecasting some macroeconomic variables that are useful for monetary policy formulation, as a unit increase in GDP would lead to a 3.9 per cent rise in confidence. Oduh and Ekeocha (2012) also used panel data to evaluate the impact of consumer confidence and expectation on consumption in Nigeria. Their findings underscored that confidence, among other selected macro variables (current income, income expectations, and expected changes in prices of food and durables, as well as, exchange rates) determined consumption in Nigeria.

Similarly, Ibrahim, Bawa, Abdullahi, Didigu, and Mainasara (2015) evaluated the predictive ability of confidence indicators in forecasting economic fluctuations in Nigeria, using Granger causality tests, impulse response functions and forecast error variance decompositions. They observed that confidence indices strongly Granger cause GDP at levels below five per cent significance, while real GDP Granger causes confidence indices at 10 per cent levels of significance. These findings validate the causal relationship between confidence indicators and real GDP growth in Nigeria, implying that these indicators could explain the movement in economic activities in Nigeria.

This paper uses an updated dataset (from 2009Q2 to 2016Q4) and a more comprehensive set of macroeconomic variables (which includes households' consumption expenditure, investment spending and inflation) than those used in previous studies to investigate the relationship between consumer confidence indices and selected macroeconomic variables in Nigeria.

III.   Methodology

In this section, we briefly describe the data, especially the consumer confidence index measure, and the techniques for empirical analysis.

III.1   Data

The consumer confidence measure used in this paper is the composite index from the quarterly national consumer expectations survey by the Central Bank

of Nigeria (CBN). This covers three sub-measures, namely economic condition index (ECI), family financial situation index (FFSI) and family income index (FII). Specifically, the survey gauges consumer expectations over three different horizons—'Current Quarter,' 'Next Quarter,' and 'Next-12 months'. Other macroeconomic variables used include GDP growth, final consumption expenditure of households, price level (or the composite consumer price index, CPI) and investment expenditure, proxied with gross fixed capital formation, all of which were sourced from the National Bureau of Statistics (NBS). These variables capture the economic performance and well-being of consumers.

The data are quarterly and cover the period 2009Q2 - 2016Q4 because of the consumer confidence index (CCI), which compilation began in 2009Q2. The variables are defined as follows: Consumer Confidence Index Current Quarter (CCI1); Consumer Confidence Index Next Quarter (CCI2); Consumer Confidence Index Next 12 Months (CCI3); GDP Growth Rate (GDPGR); Household Consumption Expenditure (LNHCE); Investment Expenditure (Gross Fixed Capital Formation, LNGFCF); and price level (Composite Consumer Price Index, LNCPI).

As indicators of economic performance, we generally, expect a positive relationship between GDP growth, consumption, investment, and CCI. On the other hand, inflation is expected to be negatively related to CCI as it captures the impact of changes in cost of living on consumer attitudes.

III.2   Empirical Analysis

We conducted correlation analysis, Granger Causality tests, and then, the impulse response and variance decomposition analysis, within the VAR framework.

We began the analysis with checking for the contemporaneous correlations between the confidence indicators, and the macroeconomic variables of interest before empirically assessing their ability to predict the behaviour of same (Cotsomitis & Kwan, 2006; Nowzohour & Stracca, 2017). Next we test for unit root using the Augmented Dickey Fuller and Phillips Perron Tests. This is followed by Granger Causality tests and accompanying impulse response and variance decomposition analysis.

III.3   Vector Autoregressive (VAR) Model Specification

The general form of the VAR model used for the analysis of impulse responses and variance decomposition is given as:

$$y_t = c + \emptyset_1 y_{t-1} + \cdots + \emptyset_p y_{t-p} + \varepsilon_t \qquad (1)$$

Where:

y_t = k x 1 vector of variables each modelled as a function of p − lags of those variables

c = k x 1 vector of constant terms,

$\emptyset_t$ = k x k matrix of coefficients (for every i = 1, ... , p); and

ε_t = k x 1 vector of error terms

VI.   Empirical Results
VI.1   Correlation Analysis

The results of the contemporaneous correlation between consumer confidence indices and some macroeconomic variables are reported on Table 1. As can be observed, there is a significant positive correlation between Consumer Confidence Index Current Quarter (CCI1), as well as, Consumer Confidence Index Next Quarter (CCI2) and GDP growth, hence we cannot reject the null hypothesis of no contemporaneous correlation between the series at the 5 per cent level. On the other hand, these two indices show a stronger, but significant negative association with inflation. Interestingly, the Consumer Confidence Index Next 12 Months (CCI3) has no statistically significant correlation with any of the macroeconomic variables examined. These results point to the importance of short-term economic considerations by consumers and their impact on the economy.

It was, however, surprising to note that none of the three indices was significantly correlated with household consumption expenditure. Also, only the Next 12 Months index showed a positive, though insignificant, association with household consumption expenditure, contrary to expectations. Although the existence of significant correlation does not necessarily imply that the CCI can predict changes in GDP growth and inflation, they are suggestive of the fact that there could be a possibility. To assess this, we turn to the results in the following sections.

Table 1: Contemporaneous Correlation between Consumer Confidence Index and Some Macroeconomic Variables

Row	Variable	CCI1	CCI2	CCI3
1	GDPGR	0.422315*	0.386544*	-0.15258
		(0.0160)	(0.0289)	(0.4045)
2	LNCPI	-0.59178*	-0.49757*	-0.2202
		(0.0004)	(0.0038)	(0.2259)
3	LGDP	0.029148	-0.21116	0.304776
		(0.8742)	(0.2460)	(0.0899)
4	LNGFCF	-0.00244	-0.15747	0.201982
		(0.9894)	(0.3894)	(0.2676)
5	LNHCE	-0.00257	-0.22548	0.21414
		(0.9889)	(0.2147)	(0.2392)

The p -values are in parentheses; * = significance at least at 5 per cent level.

VI.2   Unit Root Tests

As is customary with multivariate time series analysis, the first step is to examine the stationarity, or otherwise, of the series. Table 2 reports the results from the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests. The hypothesis of the presence of a unit root could not be rejected at their levels for all the variables. However, all series are stationary in first differences, except LNHCE in the case of the ADF. We stick with the PP results as the test is considered more robust than the ADF. Accordingly, we tested for co-integration, since there is a possibility that some long-run equilibrium relationship may exist among the variables but could not validate the existence of a long-run relationship among the variable.

Table 2: Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) Unit Root Test Results

Variable	ADF			PP		
	Levels	First Difference	Order of Integration	Levels	First Difference	Order of Integration
CCI1	-1.1423	-3.8520**	I(1)	-1.4718	-3.8192**	I(1)
CCI2	-1.8994	-7.211**	I(1)	-1.8994	-7.0173**	I(1)
CCI3	-2.2536	-4.7943**	I(1)	-2.1228	-4.8190**	I(1)
GDPGR	-0.0559	-5.4145**	I(1)	-0.2567	-5.4531**	I(1)
LNCPI	-3.3388	-4.7834**	I(1)	-0.3388	-4.7969**	I(1)
LNGFCF	-1.1537	-5.6924**	I(1)	-3.9437	-20.6086**	I(1)
LNHCE	-3.2437	-2.6801	I(1)	-3.2437	-15.3592**	I(1)

(*) and (**) denote significance at 5 and 1 per cent levels, respectively.

VI.3   Granger Causality Test Results

The results of the pairwise Granger-causality tests between each of the consumer confidence indices and the respective macroeconomic variables are shown on Tables 3a to 3c. The Akaike Final Prediction Error (FPE) criterion provided the basis for the selection of the lag length for the variables used in the test.

From Table 3a, consumer confidence in the current quarter granger-causes GDP growth and in the same vein, GDP growth granger-cause consumer confidence. This result indicates that consumer confidence in the current quarter helped to predict GDP growth in Nigeria, and GDP growth, as well, predicted consumer confidence during the period. This finding is appealing and lends support to the belief that consumer pessimism about the future economic outlook may have contributed in fueling the continued decline in GDP growth which culminated in the last recession. This result underscores the fact that changes in the GDP growth reflects the performance of the economy and is linked to consumers' wealth. The bidirectional granger causality between CCI and GDP growth speaks to how declining/negative GDP growth dampened consumers' expectations of the economic conditions in the near future, leading to the weak demand that prevailed during the downturn. These results are unlike those obtained by Ibrahim et al. (2015) study which was conducted before the recession and reported unidirectional causality from CCI to GDP growth.

Also, the results show that household consumption expenditure granger-causes consumer confidence in the current quarter thus, reinforcing the relationship between consumer confidence and consumption, though consumer confidence in the current quarter did not predict movement of the consumption of household.

Table 3a: Pairwise Granger Causality Test Results: Consumer Confidence Index Current Quarter (CCI1)

Row	Null Hypothesis	F-statistic	Probability
1	CCI1 does not Granger Cause GDPGR	4.58667	0.0201*
2	GDPR does not Granger Cause CCI1	4.75940	0.0177*
3	CCI1 does not Granger Cause LNCPI	2.28734	0.1224
4	LNCPI does not Granger Cause CCI1	1.77205	0.1907
5	CCI1 does not Granger Cause LNGFCF	0.65722	0.5270
6	LNGFCF does not Granger Cause CCI1	1.77534	0.1901
7	CCI1 does not Granger Cause LNHCE	0.35522	0.7045
8	LNHCE does not Granger Cause CCI1	3.6219	0.0416*

The results on Table 3b show that GDP growth predicts consumer confidence in the next quarter. This is in line with the earlier results and further highlights the importance of GDP as an indicator of economic performance, which can increase or diminish consumer confidence. Furthermore, inflation was found to predict consumer confidence in the next quarter. This is a key finding in that changes in the consumer price index affect the cost of living, and the real value of financial assets which in turn affect the real incomes and wealth of consumers.

Table 3b: Pairwise Granger Causality Test Results Consumer Confidence Index Next Quarter CCI2

Row	Null Hypothesis	F-statistic	Probability
1	CCI2 does not Granger Cause GDPGR	0.64849	0.5314
2	GDPR does not GrangerCause CCI2	6.02170	0.0073*
3	CCI2 does not Granger Cause LNCPI	0.72052	0.4963
4	LNCPI does not Granger Cause CCI2	3.73559	0.0381*
5	CCI2 does not Granger Cause LNGFCF	1.10017	0.3484
6	LNGFCF does not Granger Cause CCI2	1.47863	0.2472
7	CCI1 does not Granger Cause LNHCE	0.29092	0.7501
8	LNHCE does not Granger Cause CCI2	0.78411	0.4674

Finally, results on Table 3c show that consumer confidence in the next 12 months predicts GDP growth as indicated by the other confidence indicators. Overall, the analysis has shown that of the three consumer confidence indicators, two predicted GDP growth, while GDP growth in turn predicted consumer confidence in one. Clearly, consumer confidence predicts future changes in GDP growth in Nigeria, while GDP growth, inflation and household consumption are in turn important predictors of consumer attitudes in terms of Granger causality.

Table 3c: Pairwise Granger Causality Test Results: "Consumer Confidence Index Next 12 Months" (CCI3)

Row	Null Hypothesis	F-statistic	Probability
1	CCI3 does not Granger Cause GDPGR	7.68433	0.0025*
2	GDPR does not Granger Cause CCI3	2.03258	0.1521
3	CCI3 does not Granger Cause LNCPI	1.24719	0.3046
4	LNCPI does not Granger Cause CCI3	0.43430	0.6525
5	CCI1 does not Granger Cause LNGFCF	1.14841	0.3333
6	LNGFCF does not Granger Cause CCI1	1.26830	0.2988
7	CCI3 does not Granger Cause LNHCE	0.10375	0.9018
8	LNHCE does not Granger Cause CCI3	0.85089	0.4390

VI.4   Impulse Response and Variance Decomposition Analysis

The results of the impulse responses and variance decomposition analysis from the estimated five-variable VAR, including the CCI measures and GDPGR, LNCPI, LNGFCF, and LNHCE, with the CCI measures ordered first (Barsky & Sims, 2012), are presented in Figure 1, 2 and 3.
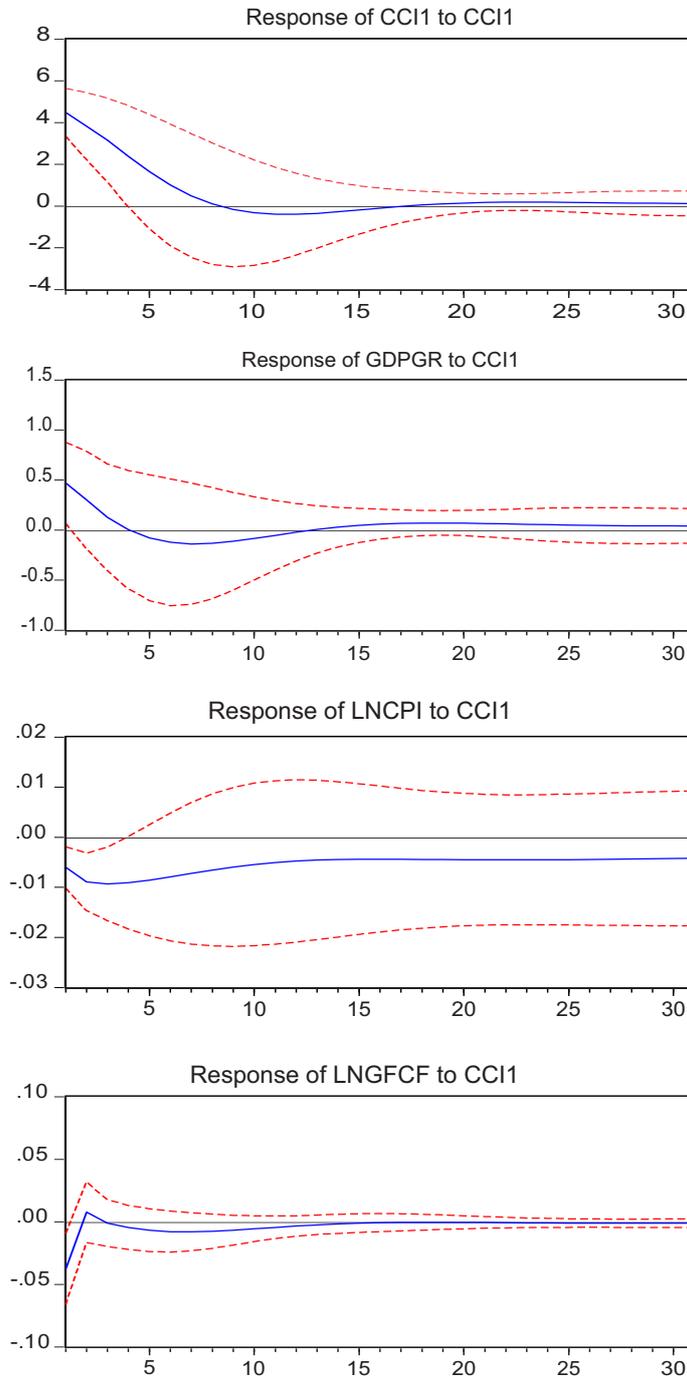
VI.4.1 Impulse Response

Figure 1 shows the relevant impulse response graphs for the first VAR equation involving the consumer confidence index Current Quarter (CCI1) and the other four variables mentioned earlier. From the graph, an innovation to CCI1 triggers a declining slow, but steady response of GDP growth which becomes negative in quarter five, displaying the familiar business cycle trough in the 7th quarter. Thereafter, it builds up slowly but significantly to a peak of about 0.05 in quarter 15 (circa three and half years) and tends to remain permanent at 0.04 per cent from the 27th quarter. Thus, a one-standard deviation shock to CCI1 predicts the level of GDP growth approximately 92 per cent lower, in 30 quarters later. Likewise, a shock to CCI1 causes consumption to respond in a similar manner. It declines less slowly than GDP from the initial level to its lowest level in quarter 4. The impulse from the innovation then builds up slowly and remains permanent at -0.01 per cent from quarter 14. Clearly, these results underscore the importance of the impact of consumer confidence on output growth and consumption and in addition, how consumption accounts for over 60 per cent of GDP particularly in advanced countries.

The response of investment (LNGFCF) to an innovation to CCI1 predicts a sharp build up which peaks at 0.08 per cent in quarter 2, declines slowly and tends to stay permanent from quarter 14. While the response of Investment is much faster than that of output and consumption, the magnitude of the response is smaller. Next we examine the impulse responses of the selected macro variables due to innovations on the other two measures of consumer confidence (that is CCI2 and CCI3).

In Figure 2, we notice that a shock to consumer confidence index Next quarter (CCI2) leads to a gradual increasing response of output growth from -0.27 in quarter 1, through a three-year period, peaking at -0.02 in quarter 13 then remains permanent hence. Similarly, a one standard deviation shock to CCI2 causes significant increases in consumption for 8 quarters, peaking in quarter 9 after which it dissipates from quarter 10. The impact of the shock dies off in about two and half years. Investment responds likewise to an innovation on CCI2; increasing significantly for 9 quarters peaking at -0.01 in quarter 1 before it decays.

Figure 1: Responses to CCI1 Innovations
Response to Cholesky One S.D. Innovations ± 2 S.E.

Response of CCI1 to CCI1

Response of GDPGR to CCI1

Response of LNCPI to CCI1

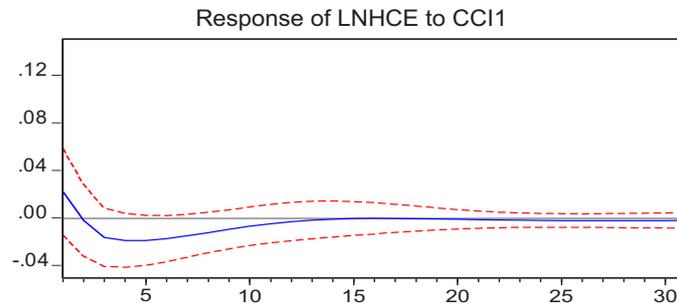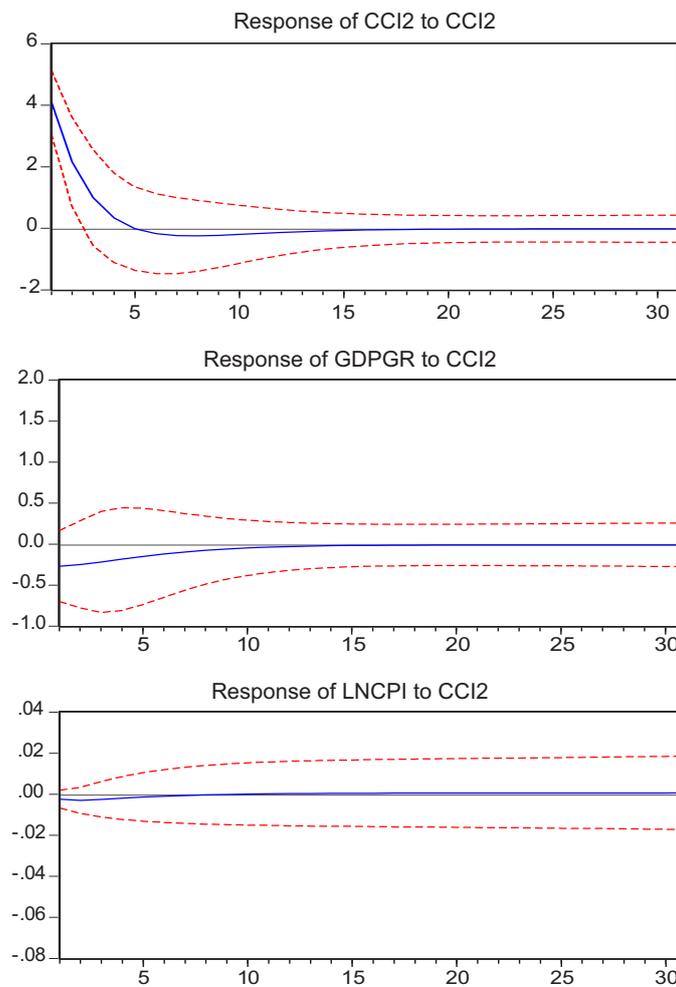Response of LNGFCF to CCI1

Response of LNHCE to CCI1

Figure 2 shows the relevant impulse response graphs involving the consumer confidence index Next Quarter (CCI2).

Figure 2: Responses to CCI2 Innovations
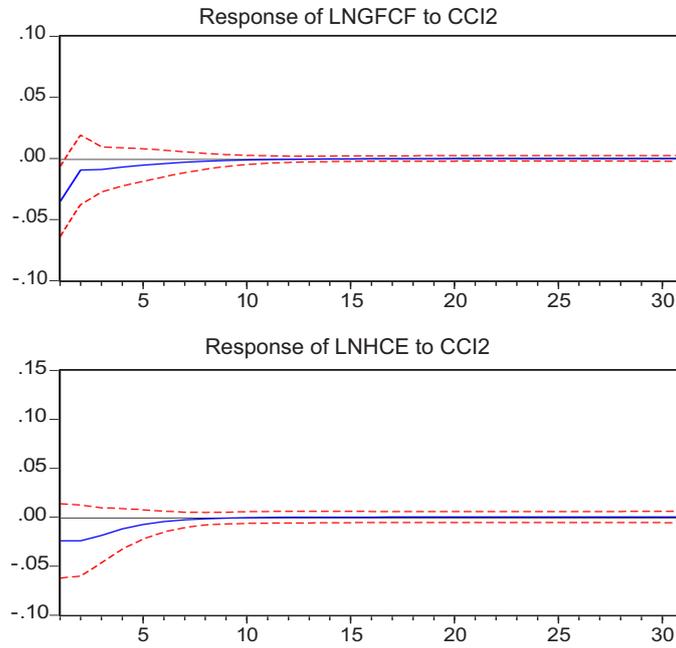Response to Cholesky One S.D. Innovations ± 2 S.E.

Response of CCI2 to CCI2

Response of GDPGR to CCI2

Response of LNCPI to CCI2

Response of LNGFCF to CCI2

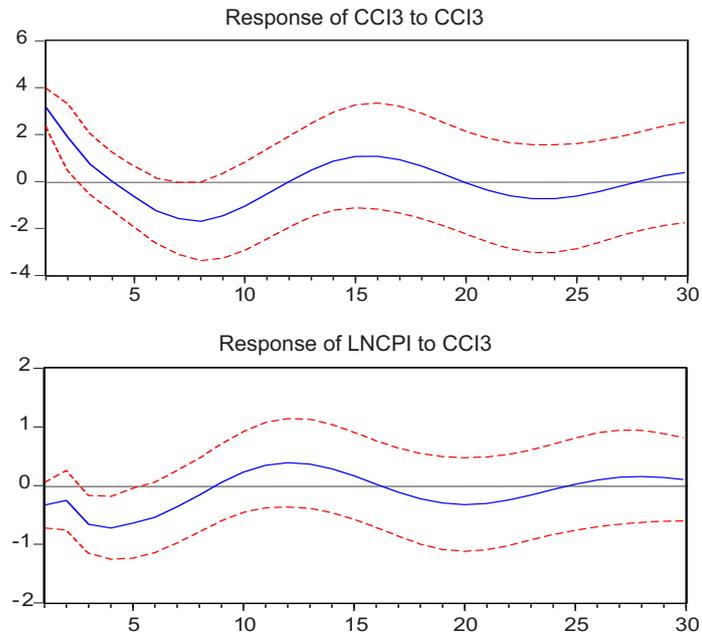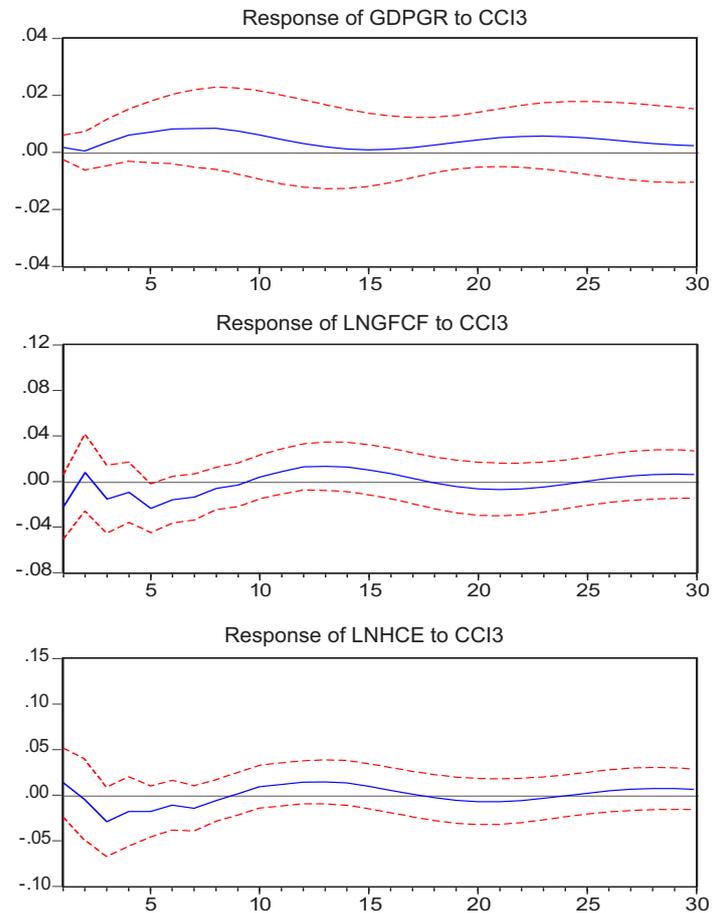

Response of LNHCE to CCI2

Figure 3 shows the relevant impulse response graphs involving the consumer confidence index Next 12 Months (CCI3).

Figure 3: Responses to CCI3 Innovations

Response to Cholesky One S.D. Innovations ± 2 S.E.

Response of CCI3 to CCI3

Response of LNCPI to CCI3

Response of GDPGR to CCI3

Response of LNGFCF to CCI3

Response of LNHCE to CCI3

Finally, in Figure 3, a one standard deviation shock to consumer confidence index Next 12 Months (CCI3) leads to an obvious significant fluctuation of output in bust and boom cycles. From -0.3 in quarter one, it gradually decreases before it rose and peaked at 0.4 after three years. Thereafter, it declines to -0.3 in five years and then increases to 0.2 at the second crest after seven years before gradually fading out. Consumption exhibits almost a similar response to an innovation in CCI3 except that it declines from positive territory in the first quarter, reaching the first trough at -0.029 in quarter 3 and highest positive peak of 0.014 in quarter 12. The response to the impact of the shock lived up to quarter 30. Finally, investment's response at best is fluctuating, with a sharp increase to 0.08 in quarter 2, followed by a decline which later peaked at 0.013 in quarter 11, showing a permanent response from quarter 28 hence.

VI.4.2 Variance Decomposition

Table 4a show the fraction of the variance of output, consumption, inflation and investment accounted for by current quarter consumer confidence index. CCI1 innovations account for 12.44 per cent of the forecast error variance of output in the second quarter which drops to 9.93 per cent 30 quarters (or seven and half years) ahead. This result is different from the 0.10 per cent reported by Ibrahim et al. (2015) for 2 quarters ahead of the forecast error variance of growth. This could be due to the impact of the negative sentiment that prevailed during the downturn which eventually resulted in the recession. Our results also show that the innovation to CCI1 accounted for more than 30 per cent of the 2 quarters, ahead of the forecast error variance of inflation which drops to about 16 per cent, 30 quarters ahead. This indicates how significantly consumer confidence affects inflation.

Furthermore, a shock to CCI1 explained circa 19 per cent of 2 quarters ahead of the forecast error variance of investment, which remains same at the long-horizon, 30 quarters ahead. However, the proportion of the forecast error variance in consumption accounted for by a CCI1 innovation was the least at 4.04 per cent, 2 quarters ahead and 14.2 per cent, 30 quarters hence.

In Table 5b, the proportion of the forecast error variance explained by an innovation to CCI2 is considerably lower in both the short and long horizons for output and inflation, whereas it mimics the results in Table 4a for investment and consumption.

Turning to Table 4c, we find that a shock to consumer confidence next 12 months (CCI3), accounts for about 11 per cent of the forecast error variance in output, 2 quarters ahead and over 42 per cent, 6 and 30 quarters hence. This clearly shows that changes in consumer confidence are important in explain output fluctuations. Moreover, the results on Table 4c indicate that the forecast error variance in investment and consumption accounted for by CCI3 increased at longer horizons.

Table 4a: Fraction of Variance of Selected Macroeconomic Variables Accounted for by Consumer Confidence Current Quarter (CCI1)

Quarter	CCI1	GDPGR	LNCPI	LNGFCF	LNHCE
Variance Decomposition of Growth (GDPGR)					
1	**16.18197**	83.81803	0.000000	0.000000	0.000000
2	**12.44028**	87.24740	0.076560	0.204103	0.031658
6	**7.993916**	90.62534	0.793242	0.477924	0.109575
12	**8.851746**	87.94834	2.437920	0.630986	0.131005
24	**9.283218**	85.29686	4.396779	0.758231	0.264913
30	**9.317634**	84.43418	5.131848	0.819807	0.296530
Variance Decomposition of Inflation (LNCPI)					
1	**24.40817**	4.302468	71.28937	0.000000	0.000000
2	**31.78189**	8.291757	56.37300	1.486995	2.066355
6	**28.37292**	28.38105	38.51180	2.441152	2.293079
12	**20.24963**	39.84523	35.22816	2.810957	1.866023
24	**16.19405**	41.02662	37.69218	3.198454	1.888703
30	**15.54093**	41.16452	38.12436	3.268448	1.901744
Variance Decomposition of Investment (LNGFCF)					
1	**20.59572**	0.823299	7.978597	70.60238	0.000000
2	**18.86689**	11.44543	7.143358	62.45822	0.086108
6	**17.99272**	20.26113	6.630231	54.79076	0.325150
12	**19.67995**	20.85288	6.573411	52.51716	0.376595
24	**19.32465**	22.02400	7.018062	51.24875	0.384545
30	**19.28909**	22.10411	7.239970	50.97055	0.396273
Variance Decomposition of Consumption (LNHCE)					
1	**4.611923**	0.545874	6.023399	0.972533	87.84627
2	**4.049608**	11.60338	5.438684	2.236335	76.67199
6	**12.53590**	15.11751	5.029087	1.914154	65.40335
12	**14.67984**	20.13594	5.006285	1.796808	58.38112
24	**14.20381**	21.73523	6.210446	1.866441	55.98407
30	**14.20392**	21.95828	6.692868	1.890569	55.25436

Table 4b: Fraction of Variance Decomposition of Selected Macroeconomic Variables Accounted for by Consumer Confidence Current Quarter (CCI2)
Variance Decomposition of Consumption (GDPGR)

Quarter	CCI2	GDPGR	LNCPI	LNGFCF	LNHCE
1	4.915749	95.08425	0.000000	0.000000	0.000000
2	5.225820	94.68656	0.055122	0.027763	0.004732
6	5.454821	93.64744	0.746092	0.106165	0.045484
12	4.829869	92.18958	2.533128	0.249271	0.198157
24	3.849981	89.04703	6.036230	0.516646	0.550108
30	3.466540	87.72931	7.479559	0.626467	0.698124

Variance Decomposition of Inflation (LNCPI)

Quarter	CCI2	GDPGR	LNCPI	LNGFCF	LNHCE
1	3.964617	18.16813	77.86725	0.000000	0.000000
2	4.183406	27.48232	63.82270	1.816486	2.695091
6	1.731139	51.82043	40.68734	2.356379	3.404717
12	0.666517	64.93983	29.64240	2.004432	2.746822
24	0.297346	71.47784	24.13297	1.770761	2.321081
30	0.238302	72.62476	23.16503	1.728235	2.243672

Variance Decomposition of Investment (LNGFCF)

Quarter	CCI2	GDPGR	LNCPI	LNGFCF	LNHCE
1	17.72322	2.790733	10.54101	68.94504	0.000000
2	16.59438	13.48058	9.350712	60.48794	0.086386
6	16.90588	19.80297	8.857438	54.26848	0.165235
12	17.01429	19.95523	8.983623	53.85114	0.195725
24	16.84779	20.46168	9.140954	53.32949	0.220082
30	16.74030	20.81636	9.213245	52.99841	0.231682

Variance Decomposition of Consumption (LNHCE)

Quarter	CCI2	GDPGR	LNCPI	LNGFCF	LNHCE
1	5.094493	3.477169	1.377831	4.592655	85.45785
2	8.776463	10.87327	1.278472	4.919604	74.15219
6	12.14851	12.07891	1.662847	4.630525	69.47921
12	11.99723	13.09881	2.069726	4.581451	68.25279
24	11.45317	15.98340	2.886628	4.444795	65.23200
30	11.17268	17.46268	3.315166	4.374740	63.67473

Table 4c: Fraction of Variance Decomposition of Selected Macroeconomic Variables Accounted for by Consumer Confidence Current Quarter (CCI3)

Variance Decomposition of Growth (GDPGR)

Quarter	CCI3	GDPGR	LNCPI	LNGFCF	LNHCE
1	**9.395904**	90.60410	0.000000	0.000000	0.000000
2	**10.80505**	88.85841	0.194865	0.123412	0.018265
6	**42.50080**	50.09124	2.075544	2.705612	2.626797
12	**41.30566**	47.48555	4.873560	4.063273	2.271961
24	**42.60657**	44.55436	6.089851	4.374862	2.374355
30	**42.33371**	43.92869	7.063811	4.370812	2.302975

Variance Decomposition of Inflation (LNCPI)

Quarter	CCI3	GDPGR	LNCPI	LNGFCF	LNHCE
1	**2.160144**	5.135541	92.70432	0.000000	0.000000
2	**1.084375**	13.58768	80.53264	2.293520	2.501781
6	**11.77847**	22.68758	58.51968	2.967263	4.047003
12	**14.02492**	15.49529	60.54140	5.997102	3.941292
24	**10.88878**	13.82647	65.31781	5.938387	4.028552
30	**10.30164**	12.59511	66.83389	6.269886	3.999477

Variance Decomposition of Investment (LNGFCF)

Quarter	CCI3	GDPGR	LNCPI	LNGFCF	LNHCE
1	**7.897297**	2.294988	20.28367	69.52405	0.000000
2	**8.141661**	3.800583	19.06678	65.90547	3.085504
6	**16.57754**	11.13006	14.71161	45.97586	11.60493
12	**18.92295**	15.36320	13.35209	41.48002	10.88173
24	**22.28247**	16.21907	13.52509	38.01434	9.959031
30	**22.71186**	17.05488	13.54152	36.91236	9.779373

Variance Decomposition of Consumption (LNHCE)

Quarter	CCI3	GDPGR	LNCPI	LNGFCF	LNHCE
1	**1.746621**	5.414093	6.356489	2.546632	83.93616
2	**1.838847**	9.971014	5.952987	2.414798	79.82235
6	**10.47981**	8.948125	6.956328	13.93818	59.67756
12	**12.91182**	12.79117	6.832654	12.99889	54.46547
24	**15.33485**	13.26625	8.152525	12.64915	50.59723
30	**15.89072**	13.92952	8.537239	12.39327	49.24925

V.   Summary and Conclusion

This paper examined the influence of consumer confidence on key macroeconomic variables (output, consumption, investment and inflation). First, the existence of contemporaneous correlation between the confidence indices and the variables of interest was investigated. This was followed by pairwise Granger-causality tests to determine the predictive ability of consumer confidence indicators. Finally, we estimated the impulse responses and forecast error variance due to innovations to the consumer confidence indicators. The results of the analysis were quite informative.

The strong positive correlation of current and next quarter consumer confidence indices with output growth, but negative correlation with inflation, underpins the importance of the short-run decisions of consumers, and the likely impact of such decisions on the economy. Also, although output was found to predict Next Quarter and Next 12 months consumer confidence index, only Current Quarter consumer confidence index was found to predict output in the granger-causality sense, thus highlighting the importance of the short horizon in analysing the impact of consumer confidence in the economy.

Innovations to Current Quarter consumer confidence index impact output, consumption and investment non-uniformly, but more remarkably in the short-term than the long-term horizon, and account for a significant percentage of the forecast error variance of output growth, investment and inflation.

To conclude, our findings suggest that the impact of Current Quarter consumer confidence index on macroeconomic variables is significantly stronger than what Ibrahim et al. (2015) indicated, thus expanding the body of evidence that consumer sentiments convey useful information about economic fundamentals. There is also sufficient evidence to suggest that the short-term horizon is particularly important, as consumer decisions could significantly impact on output and inflation in the current and next quarter depending on their perception of anticipated economic conditions.

As the study suggests, the consumer confidence index is potent in understanding the macroeconomic outcome, to an appreciable extent. We therefore recommend that indicators from confidence surveys should be more closely monitored by the monetary and fiscal authorities, and factor the developments when formulating policy decisions. Also, given that the compilation of Consumer Confidence Index is a recent phenomenon in Nigeria,

authorities are encouraged to invest more on the resources to deepen the quality and accuracy of the survey outcome. Furthermore, given the role of information and news factor to consumer confidence formulation, authorities are also urged to improve on policy credibility and transparency to douse any information asymmetry in order to sustain more reliable confidence measures.

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