

# Understanding the Predictors of Consumer Sentiments: Lessons for Inflation Targeting Prospects in Nigeria

Oduh, Moses Onyema<sup>1\*</sup> Oduh, Maryann Ogechi<sup>2</sup> Onyia, Mathew Arinze<sup>3</sup>

1. Debt Management Office, The Presidency, Abuja
2. Department of Economics, University of Nigeria, Nsukka
3. Department of Economics, University of Nigeria, Nsukka

\* E-mail of the corresponding author: [oduhmoses@yahoo.com](mailto:oduhmoses@yahoo.com); [oduhmoses@gmail.com](mailto:oduhmoses@gmail.com)

## Abstract

Given the positive link between consumption and consumer confidence, the study attempted to ascertain factors that predict consumer confidence using quarterly data spanning 2009Q2 to 2012Q1. This is with the objective of providing a policy instrument that will fundamentally link consumer confidence and aggregate demand policies on one hand, and private consumption on the other hand; as well as serve as input into the effort by the Monetary Authorities to transit from intermediate to direct (inflation) targeting regime. A panel model was used for the estimation. We found that a non-volatile exchange rate appreciation and announced exchange rate depreciation, actual and income expectation are positively linked with consumer confidence; while actual and inflation expectation and unemployment have dampening effects. Model of inflation targeting in Nigeria will require that expectation be incorporated in a manner that will attach higher weight to food than durables and actual inflation.

**Keywords:** Nigeria, consumer sentiments, macroeconomic predictors, inflation targeting, panel model

## 1. Introduction

The works of (Bernoulli, 1738); and (Keynes, 1936) provided insights into what is today called subjective economy or psychology that drives consumer behaviour. This subjective economy commonly referred to as consumer confidence or degree of optimism which defines the willingness- sentiments in favour or against the amount to be expended on goods and services is measured by consumer confidence or Diffusion Index. It is usually based on periodic survey of consumers and businesses that gives information and details about consumers' attitudes and buying intentions within the economy. Several factors such as unemployment, inflation, political uncertainty, monetary and fiscal policy directions, and financial market variables among other things, are responsible for changes in consumer confidence (Ferguson, 2011); (Mendonça, 2009); (Ludvigson, 2004); (Boef & Kellstedt, 2004); and (Brockie, 1953).

The Central Bank of Nigeria officially started consumer outlook survey in the second quarter of 2009 in order to help the apex bank achieve its monetary policy objective of output growth, and price stability; in particular to have proper insight into consumer behaviour for effective macroeconomic framework, as well as facilitate a smooth transition to a probable inflation targeting from the current intermediate regime. The sample size was a predetermined 1 800 households, drawn from the National Bureau of Statistics (NBS) master sample list of households, which is considered a representative sample of households nationwide. It is a composite of outlook on macroeconomic conditions, family financial situation and family income. Specifically it addresses the following: (1) overall confidence index of consumers and outlook for the next quarter and the next 12 months; (2) outlook of all income bracket on economic condition; (3) consumers outlook to purchase consumer durables and motor vehicle; (4) respondents' views about the economic condition, family financial situation and family income of the country; and (5) consumers perception on unemployment.

Previous work by (O.Oduh, Oduh, & C.Ekeocha, 2012) had already provided an empirical evidence of the positive relationship between consumer confidence and private spending in Nigeria. The conclusion is that, it does not only have a positive correlates with consumption, but the second most important determinant of household spending, next to exchange rate. This conclusion supports previous studies by (Brockie, 1953); (Lachmann, 1956); (Mueller, 1959); (Muth, 1961) and host of other writers on the relationship between consumer confidence and consumption.

Given this informative and instructive relationship, it is very inevitable to ask a question about the factors that determine consumer confidence as a way of providing a complete tripartite link between consumer confidence and private consumption; aggregate demand policy and consumer confidence; and between private consumption and domestic absorption. The ability to identify, link and predict these factors provides policy makers the opportunity to gauge the direction and pattern of consumption in future spending, as well as take a proactive

measure to direct the future time path of the economy. It is against this background that this paper seeks to examine the macroeconomic factors that predict consumer sentiments in Nigeria.

## 2. Review of recent policies and economic trends that are potentially sentiment drives in Nigeria

After the banking sector consolidation in 2005 the banking system yet experienced another crisis in 2009, triggered by global events. And between the periods 2008-2009 the contagion moved to the capital market and stock market collapsed by 70%; again many Nigerian banks had to be rescued. In order to stabilize the system and return confidence to the markets and investors, the CBN injected ₦620 billion into the banking sector and replaced the leadership at 8 Nigerian banks. Since then, the sector has considerably stabilized (Central Bank of Nigeria, 2010). Nonetheless, the banking sector liquidity conditions is characterized by persistent volatile and rising short term interest rates, low Deposit Money Banks (DMBs) balances with the CBN, low level of other reserves of the banking system and increased activity at the CBN lending facility window, and wide interest rate spread. All these are according to (Central Bank of Nigeria, 2010) are indications of failing consumer and business confidence. Consequently, the Bank introduced series of quantitative easing measures to support existing policy measures. Quantitative easing is an unconventional monetary policy which seeks to stimulate the economy via an increase in the total amount of eligible securities (quantitative easing) and via a decrease in the loan rate (qualitative easing). It is usually applied when the transmission mechanism of monetary policy (in Nigeria's case, interest rate) is weak rendering monetary policy impotent. The weak link between the monetary and the real sector is a revelation of a passive market rate interest and the need for alternative transmission mechanism.

The foregoing also had its toll on exchange rate management. After several attempts to preserve the value of naira, the monetary authority in 2011 officially devalued the naira by about 3.33%; from ₦150 to ₦155 to \$1. This will have some varying degrees of price effects on capital and consumer goods, especially consumer goods. Being that Nigeria's economy is import dependent with consumer goods accounting for more than 43% of total imports.

Again Nigeria is almost a cash-based economy with the growing size of the informal sector put in the neighbourhood of about 65%. To control the incidence of huge cash transactions and possibly reduce the inflationary trend posed by uncontrollable cash in circulation, the CBN in 2011 introduced a cashless economy. However, there are snags that have the potentials of short-circuiting the policy and consumers' confidence. In a market driven economy, cashless economy is not achieved by administrative fiat, but a combination of fiat and market system. Administratively, the monetary authority is to provide the enabling macroeconomic environment for the price mechanism to allocate financial resources efficiently. To realize this, there are questions about a functional credit system which also depends on trust, confidence, and acceptance by the banking public; infrastructural development (including ICT); secured transaction to minimize fraud; public enlightenment and literate level of the banking public etc. Where these are lacking public confidence could be in doubt and realization of the policy objectives will be put to question. In Nigeria, a lot has happened to consumers in Nigeria, ranging from government inconsistent policies, non-inclusive growth and income inequality, removal of petroleum subsidy by 70%, exchange rate devaluation, corruption, and poor power supply and the intended increase in electricity tariff.

There is also the incidence of fiscal off-shooting and lack of fiscal straightjacketing which culminated into fiscal dominance; which also constitutes serious threat to monetary policy management in Nigeria. As part of its fiscal re-strategizing, government created the Sovereign Wealth Fund, (SWF) otherwise called the Nigeria Sovereign Investment Authority (NSIA) in 2011. This was consequently followed by the removal of fuel subsidy in January 2012 which attracted swift opposition by Nigerians. Government later removed about 70% of fuel subsidy with fuel being sold at ₦97 per litre. How these moves have captured the confidence of the foremost economic agents – consumers, crystallizes with time and subject to empirical examination.

The political economy of Nigeria is bane to its socioeconomic development. Unlike the developed economies and advance democracies were the economy and politics drive each other; a major cause of the decline in Nigeria's economic fortunes has been political instability and bad governance. The important link between the economy and polity is highlighted in (Boef & Kellstedt, 2004). The study showed how the bi-directional relationship between the economy and polity ultimately alters aggregate movements in optimistic and pessimistic direction over time - the dynamics of consumer confidence. In Nigeria, like most developing countries of Africa it is somewhat difficult to imagine how the economy will drive politics and political ideals. For one, politics and elections are not driven by economic ideals of the populace, but by "economic ideas" of the ruling class. This has resulted in a persistent conflict between political expediency and economic rationality that brought in several

policy inconsistencies and in some cases the discontinuation of these policies, and high economic cost of political transition.

Between 1997 and 2012 three economic policy regimes have evolved: Nigerian Economic Empowerment and Development Strategy (NEEDS) I & II; Seven Point Agenda (SPA) & the Four Point Agenda (FPA); and the on-going Vision 20: 2020 economic blue print. Each of these regimes at one time or the other had a conflict with political expediencies that either led to their ineffectiveness or discontinuity. Even there are doubts about the realization of vision 20:2020, at least not within the projected time; at best Nigeria has been advised to look forward to 2025 for the actualization of the vision, if realizable at all (Joseph, 2009). These conflicts will also have some negative consequences on major macroeconomic variables like current and expected interest rate, price movements, unemployment rate and future job security, changes in tax rate, value of assets (financial and non-financial), household wealth and property, and exchange rate which in turn affected consumer confidence and sentiments.

The climax of these is the continued rising profile of poverty. The 2010 official statistics from the Federal Bureau of Statistics NBS stated that about 112.6 million Nigerians out of the estimated population of 163 million live in relative poverty, a staggering 69% which is 15% higher than the 2004 relative poverty. In addition the country's absolute poverty rate was put at 99.3 million or 61%, an increase from 55% in 2004; this also translates to about 61% of the population living below a dollar per day or 9% increase from 52% in 2004; and subjective poverty rate of 94%, 18% increase compared to 2004 figure. The survey further suggests rising income inequality in the country as measured by the Gini-coefficient. Income inequality rose from 0.43 in 2004 to 0.45 in 2010, indicating greater income inequality during the period. Using the relative, absolute and dollar-per-day poverty measures, poverty may have further risen slightly to 71.5%, 61.9% and 62.8% respectively (NBS, 2011). Instructively, all the four methods used in measuring poverty by the NBS pointed to the fact that there was disconnect between the country's growth rate of 7.8% and the high poverty rate – a non-inclusive economic growth.

### 3. Research gap in perspective

Generally, whenever there is a change in economic policy, the outlook of economic agents is affected, positively or negatively, and so do the aggregate economy. For example (Brockie, 1953) demonstrated that in a situation where a country is undergoing economic stress, such economy is affected by uncertain "expectational vistas" which in turn creates problems to both fiscal and monetary policy management. From the reviewed trend it is clear that a lot has happen to both the objective (economy structure) and the subjective (consumer confidence and expectation) economy which could affect the realization of all-inclusive growth as well as the stabilization role of the Monetary Authorities who are already battling with both domestic and imported inflation. In such situation, the proper comprehension of factors that drive consumer sentiment is a key to achieving a robust (fiscal and monetary) stabilization policy, particularly in an inflation targeting intending economy like Nigeria. Moreover monetary policy according to (Svein Gjedrem Gausdal, 2001) is only credible when there is confidence in low and stable inflation which also contributes to greater stability in exchange rate than would otherwise be the case.

Despite the relevance attached to consumer confidence, policy makers in Nigeria are yet to understand the policy instrument required to stimulate it so as to be able to drive the future path of the economy. And because there is no proper understanding of the relation between it and macroeconomic policy variables, economic policies are founded in a vacuum without proper conceptualization of the possible implications of such policies on the psychology of household. The Central Bank of Nigeria, which hopes to adopt inflation targeting in future is equally does not have a firm grasp of the sensitive policy variables to effect changes in consumer confidence which is described as one of the pre-conditions for successful implementation inflation targeting IT, aside the survey. The survey in itself does not reveal any empirical evidence of the relationship between the objective (consumer sentiment) and the instrument (macroeconomic) variables, which is what the authorities so desire. Identification of such variables will further provide first-hand information on the direction of consumers' expected or planned expenditure – expectation is very vital in inflation targeting which also extends to exchange rate management.

It is therefore imperative to ensure that macroeconomic policy formulation is in tandem with the subjective mind of consumers by examining the relative importance of these macroeconomic variables (in the case of Nigeria) documented in literature. This study therefore is an attempt to evaluate the sensitivity of macroeconomic variables in driving consumer confidence – knowing that what affects consumer confidence consumption and savings decision, hence domestic absorption and macroeconomic stability. To realize this, the study addresses

questions which bother on the macroeconomic factors that drive the sentiment of the Nigerian household to expend or otherwise on goods and services.

#### 4. Methodology

The methodology is panel (without fixed effects) model pooled from the six geopolitical zones in Nigeria, namely North-central, North-east, North-west, South-east, South-south, and South-west. The reason for this regional disaggregation is to account for variations in regional demand pattern in different parts of the country. The model assumes a constant and common intercept across the (cross section) zones. That is the model assumes no significant country differences (variables are homogenous) in the selected economic variables used for analysis.

##### 4.1 Model Specification and Choice of Variables

As mentioned earlier on, literature identified several possible factors that may likely affect consumer confidence. We draw from this pool of variables guided by Nigeria country-specific peculiarity to generate variables to link consumer confidence in Nigeria. The model is specified in its general form as:

$$CCI_{it} = \beta + \alpha_i x_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (1)$$

Where CCI measures consumer confidence index across all the cross-section (six zones) members of the pool;  $i = 1, 2, \dots, 6$  cross-section units of the six geopolitical zones in Nigeria and periods  $t = 2009Q2$  to  $2012Q1$ , while  $\varepsilon_{it}$  is the one-way error term. The explanatory variables ( $x$ ) contain sets of cross-section coefficient specific such as current income (INC0), expected income (INC3), expectation of increase in the prices of durables (CPID) and on non-durable (CPIF), planned savings (SVR), exchange rate expectation (EXRE), nominal official exchange rate (EXRO), exchange rate volatility (EXRV), actual inflation (INF), and expected unemployment index (UNR). The error component disturbances is ( $\varepsilon_i$ ), while  $\mu$  and  $\delta$  are cross-section (fixed or random) effects. But if we assume no cross-section effects, the effects normalizes to zero as in case (2) so that the estimated regression will be of general form as in case (3)

$$\mu_i + \delta_t = 0 \quad (2)$$

$$CCI_{it} = \beta + \alpha_i x_{it} + \varepsilon_{it} \quad (3)$$

##### 4.1.1 Identification of variables and Data handling

The (Central Bank of Nigeria, 2012) defined confidence index (CI) or diffusion index (DI) as the percentage share of respondents that answered in the affirmative less the percentage share of respondents that answered negative in a given indicator. A positive CI indicates that respondents with a favourable view outnumber those with an unfavourable view, except for unemployment, change in prices and interest rate for borrowing money, where a positive CI indicates the opposite. Economic Condition refers to the perception of the respondent regarding the general economic condition of the country. Family financial Situation refers to the level of savings, investments, other assets including cash at hand and outstanding debts; while family income includes primary income and receipts from other sources received by all family members as participants in any economic activity or as recipients of transfers, pensions, grants, and the like.

The data is a quarterly data spanning 2009Q2 to 2012Q1. The reason for the choice of these periods, most significantly is that survey on consumer confidence started in the second-quarter of 2009. For cross identification of the variables in the pool, the following identifiers across the regions are used: \_NC (North-central identifier); \_NE (North-east identifier); \_NW (North-west identifier); \_SE (South-east identifier); \_SS (South-south identifier); and \_SW (South-west identifier).

#### 5. Analysis of results

First we estimated the equation allowing for fixed effects, table 1 (appendix A); and in table 2 (appendix A) tested for fixed panel effect. The hypothesis was not rejected showing that the regions do not exhibit differences in the variables selected for analysis. As a result the model was re-estimated without cross-section effects and the result shows that all the variables, but savings have significant impact on consumer confidence. We tested savings for redundancy and the hypothesis equally confirmed that it does not significantly affect consumer confidence as in table 3 (appendix A). The problems associated with the weak link between savings and deposit rate and spending in Nigeria was enumerated in (O.Oduh, Oduh, & C.Ekeocha, 2012) and the same affects also played-out in the

current result. The parsimonious common effect panel model in table 4 (appendix A) shows that about 89% (weighted cross-section), and 86% (unweighted cross-section) of the variation in consumer confidence is explained by changes in expenditure on durables, expenditure on non-durables (food and domestic need), current and expected income, actual inflation, expected exchange rate, nominal official exchange rate, exchange rate volatility, and expected unemployment. The Durbin-Watson statistics is approximately 1.9 (weighted and unweighted), showing high probability of the absence of spurious regression.

### 5.1 Consumer durables

Buying intention refers to the assessment of consumers as to whether it is good time, neither good nor bad or bad time to buy assets. Though the survey is silent on the factors used by consumers for the valuation of bad and good times, but economic theory suggests that ability (income) and price will most likely be the outstanding factors for such evaluation. If this holds, what it means is that economic condition that increases prices of durables will lead to a fall in real income and reduce consumer purchase of durables by having a dampening effect on consumer confidence – increase in unfavourable disposition of economic conditions on durables by 10% reduces consumer confidence to expend on such goods by 1.3% at 5% level of significance as shown in table 4 (appendix A).

### 5.2 Exchange rate

Exchange rate is disaggregated into actual exchange rate, exchange rate expectation, and exchange rate volatility. Actual exchange rate is the official nominal exchange rate; expected exchange rate is the index of consumers' perception about change in exchange rate in the next 12 months, while exchange rate volatility is generated with GARCH (1,1) as the conditional variance of nominal official exchange rate.

Contrary to the perception of the need for the developing economies like Nigeria to devalue or ensure that exchange rate does not appreciate, our result did not support such opinion; rather we found that what matters is not only exchange rate appreciation or depreciation, but also exchange rate volatility. Increase in exchange rate (depreciation) by 10% decreases consumer confidence by 24.2%, while increase in exchange rate volatility by same margin decreases consumer sentiments by 1.0%. In addition, consumers' pre knowledge of a future rise in exchange boosts their confidence by 1.6%. This is instructive and reinforcing – (1) they will prefer exchange rate appreciation since substantial amount of consumer goods are imported (2) although they are desirous of appreciated exchange rate, the inability to predict such change negatively affects their economic conditions (3) perfect knowledge about depreciation in future exchange rate boost their confidence (table 4 appendix A). The last point needs further explanation. It shows that unannounced depreciation of exchange rate has a dampening effect because consumers are taken by surprise.

### 5.3 Income

In line with the economic importance of income, two levels of income were used in the regression: current and expected income. Increase in current income and consumers expectation of improvement in future income by 10% positively boost their confidence by 3.2% and 3.4% respectively, table 4 (appendix A). It further revealed that expected increase in income marginally have more influence, parametrically on consumer confidence than the current income. Currently, the Federal and National monthly minimum wage is about ₦18 000 (\$116), an increase from ₦11 132 (Federal minim wage) and ₦9 950 (National minimum wage) in 2010; with labour union agitating for further increase as a result of persistent decline in real wage.

### 5.4 Actual and expected food inflation

Expectedly, as shown in (O.Oduh, Oduh, & C.Ekeocha, 2012), there is a genuine concern (more than prices of durables) on the expected rise in the prices of food items at 1% level of significance. This has implications for the proposition of inflation targeting by the Central Bank of Nigeria. It seems that though consumers are forward-looking, price of food items and lots are more constraining (statistically) factor than change in the prices of durable. This is linked to the level of poverty (69% in 2010 and 71.5% in 2011) as shown in (Oduh *et al* 2012) that as level of poverty rises, the demand for food and lots also rises, hence the positive relationship between poverty and expenditure on non-durables, particularly food items. One can infer that in inflation targeting regime in Nigeria, expectation should be incorporated in a manner as to attach more weight to food prices. Consumers perception about increase in food prices by 10% decrease their confidence by about 1.3%, while the actual inflation have dampening effect by about 8.9%. Statistically, non-durable inflation expectation (1% level of significance) has more weight than actual inflation (5% level of significance level), but in terms of policy (parameters) coefficient, actual inflation (0.89) is higher than inflation expectation – durables and non-durables (0.13).

### 5.5 Unemployment index

The consumers' perceptions on unemployment index – expectation of further increase in unemployment dampen their confidence in the economy, supporting the work of (Mueller, 1966). The current unemployment rate is about 21% and if household perceives a further rise in unemployment by 10% their confidence will be decrease by 0.11%.

## 6. Conclusion and Policy implications

### 6.1 Conclusion

The study examined the predictors of consumer confidence across the six geopolitical zones and its implications for the prospects of inflation targeting (IT) in Nigeria. The macroeconomic variables used in the analysis include expectations about change in the prices of consumer durables and non-durables, actual inflation rate, expected and actual exchange rate, exchange rate volatility, current and expected income, expenditure on savings and expected change in unemployment rate. The data are from the CBN quarterly survey of consumer confidence and expectation across the six (North-central, North-east, North-west, South-east, South-south, and South-west) zones spanning 2009 quarter two to 2012 quarter one. After testing for variations across the zones using the selected variables, there was no evidence of fixed effect, as a result panel model with no cross-section effects was estimated.

Of the pool of variables selected for analysis, expenditure on saving was dropped from the model because the redundant variable test confirms that it does not add value to explaining variations in consumer confidence. Result of the other variables shows that actual and expected income, and knowledge about future rise in exchange rate are positively related with consumer sentiments; while expected increase in the prices of durables and non-durables, increase in the actual general price level, exchange rate depreciation and volatility, and expected increase in unemployment rate have dampening effects.

### 6.2 Policy implications

The weak link between interest rate and the real economy cannot be overemphasized given that it is the transmission mechanism of monetary policy. An inflation minded monetary authority should re-examine the actual determinants of interest because as it is, it seems that interest rate is over-identified, hence the consistent weak link revealed by several researches between interest rate and savings, which also discourages savings among households. In the eventual adoption of inflation targeting framework, incorporating expectation in the IT model will require that food prices be attached higher weight since more of what drives household sentiments is food prices. Finally, as much as consumers are desirous of an appreciated exchange rate it should not be volatile as to create high uncertainty to dampen animal spirit which drives spending behaviour. On the side of government, policy to improve household income or stabilize (purchasing power) the current income is paramount to achieving a balance between consumer sentiments and expectation and private spending in the economy.

## References

- Bernoulli, D. (1738). *Specimen Theoriae Novae de Mensura Sortis*, 1738, *Commentarii Academiae Scientiarum Imperialis Petropolitanae*. (trans. in 1954, *Econometrica*). Retrieved from The Newschool: <http://www.newschool.edu/nssr/het/profiles/bernoulli.htm>
- Boef, S. D., & Kellstedt, P. M. (2004). The Political (And Economic) Origins of Consumer Confidence. *American Journal of Political Science*, Vol. 48, No. 4, pp. 633-649.
- Brockie, M. D. (1953). Expectations and Economic Stability. *Springer; Weltwirtschaftliches Archiv*, Bd. 70, 95-109.
- Central Bank of Nigeria. (2010, February 26). *Central Bank of Nigeria Stability Report*. Abuja: Central Bank of Nigeria.
- Ferguson, N. (2011, January 2). *Does Consumer Confidence Influence Consumer Spending?* Retrieved from <http://www.planbeconomics.com/2011/01/02/consumer-con%EF%AC%81dence-and-consumer-spending/>
- Joseph, R. (2009). *Economic Transformation and Development Governnace in Nigeria: The Promise of the Obama Era*.
- Keynes, J. M. (1936). *The general theory of employment, interest , and money: The classic work of modern-day economics*. Rendered into HTML on Wednesday April 16 09:46:33 CST 2003, by Steve Thomas for the University of Adelaide Library.

- Lachmann, L. M. (1956). *Capital and its Structure*. Kansas City, 1977: Sheed, Andrews, and McNeel, Inc., Subsidiary of Universal Press Syndicate .
- Ludvigson, S. C. (2004). Consumer Confidence and Consumer Spending. *Journal of Economic Perspectives, Volume 18, Number 2—Spring*, 29-50.
- Mendonça, H. F. (2009, December). Brazil: how macroeconomic variables affect consumer confidence. *CEPAL Review*, pp. 81-94.
- Mueller, E. (1959). Consumer Reactions to Inflation. *The Quarterly Journal of Economics, Vol. 73, No. 2*, 246-262.
- Muth, F. (1961). Rational Expectations and the Theory of Price Movements. *Econometrica* 29 (3), 315-335.
- NBS. (2011). *Press briefing by the Statistician-General of the Federation/Chief Executive Officer, National Bureau of Statistics on the Nigerian Poverty Profile.2010 and 2011*. Abuja Nigeria: National Bureau of Statistics.
- O.Oduh, M., Oduh, M. O., & C.Ekeocha, P. (2012). The Impact of Consumer Confidence and Expectation on Consumption in Nigeria:Evidence from Panel Data. *European Journal of Business and Management*, 86-100; Vol 4, No.9, 2012.
- Svein Gjedrem Gausdal. (2001). *Monetary policy: the importance of credibility and confidence*. Norges bank.

### Appendix A: Results of Regression used for analysis

Table 1: Macroeconomic predictors of consumer confidence with Panel fixed effects

Dependent Variable: CCI?

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	388.9494	56.84079	6.842787	0.0000**
CPID?	-0.114638	0.084748	-1.352690	0.1831
CPIF?	-0.125843	0.031242	-4.027968	0.0002**
SVR?	0.013948	0.051281	0.272000	0.7869
EXRE?	0.147870	0.041691	3.546843	0.0009**
EXRO(-1)	-2.327094	0.342927	-6.785970	0.0000**
D(EXRV)	-0.092569	0.014028	-6.598830	0.0000**
INF(-2)	-1.046713	0.348675	-3.001976	0.0044**
INC0?	0.357000	0.065544	5.446684	0.0000**
INC3?	0.335615	0.045047	7.450307	0.0000**
UNR?	-0.101104	0.037340	-2.707654	0.0096*
Fixed Effects (Cross)				
_NC--C	0.256441			
_NE--C	0.024961			
_NW--C	-0.351757			
_SE--C	1.828691			
_SS--C	-0.928449			
_SW--C	-0.829887			

#### Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics			
R-squared	0.894864	Mean dependent var	36.71132
Adjusted R-squared	0.859023	S.D. dependent var	15.11531
S.E. of regression	4.788783	Sum squared resid	1009.027
F-statistic	24.96712	Durbin-Watson stat	1.942079
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.863522	Mean dependent var	33.86167
Sum squared resid	1144.347	Durbin-Watson stat	1.931009

Method: Pooled EGLS (Cross-section weights); Method: Pooled EGLS (Cross-section weights); Sample (adjusted): 2009Q4 2012Q1; Cross-sections included: 6; Total pool (balanced) observations: 60; Linear estimation after one-step weighting matrix; Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)

Table 2: Redundant Fixed Effects Test for macroeconomic predictors of Consumer Confidence

Cross-section fixed effects test equation:

Dependent Variable: CCI?

	Coefficient	Std. Error	t-Statistic	Prob.
C	421.6855	57.88508	7.284874	0.0000**
CPID?	-0.155801	0.075918	-2.052220	0.0455*
CPIF?	-0.127218	0.030299	-4.198689	0.0001**
SVR?	0.038103	0.052957	0.719505	0.4752
EXRE?	0.154828	0.034512	4.486278	0.0000**
EXRO(-1)	-2.539354	0.360194	-7.049953	0.0000**
D(EXRV)	-0.103704	0.010628	-9.757177	0.0000**
INF(-2)	-1.043240	0.328615	-3.174657	0.0026**
INC0?	0.316289	0.050745	6.232909	0.0000**
INC3?	0.338482	0.037748	8.966762	0.0000**
UNR?	-0.108728	0.035204	-3.088543	0.0033**

Weighted Statistics

R-squared	0.889178	Mean dependent var	36.71132
Adjusted R-squared	0.866561	S.D. dependent var	15.11531
S.E. of regression	4.658992	Akaike info criterion	21.17802
Sum squared resid	1063.604	Schwarz criterion	21.56198
Log likelihood	-624.3405	Hannan-Quinn criter.	21.32821
F-statistic	39.31493	Durbin-Watson stat	1.907739
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.857946	Mean dependent var	33.86167
Sum squared resid	1191.103	Durbin-Watson stat	1.928705

Method: Pooled EGLS (Cross-section weights); Method: Pooled EGLS (Cross-section weights); Sample (adjusted): 2009Q4 2012Q1; Cross-sections included: 6; Total pool (balanced) observations: 60; Linear estimation after one-step weighting matrix; Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)

Table 3: Macroeconomic predictors of consumer confidence with no effects  
 Dependent Variable: CCI?

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	404.6371	57.96056	6.981249	0.0000**
CPID?	-0.149573	0.074674	-2.003004	0.0507
CPIF?	-0.126275	0.030852	-4.092887	0.0002**
SVR?	0.031983	0.051824	0.617148	0.5400
EXRE?	0.155254	0.033888	4.581442	0.0000**
EXRO(-1)	-2.433865	0.359201	-6.775770	0.0000**
D(EXRV)	-0.100350	0.010995	-9.126761	0.0000**
INF(-2)	-0.963478	0.331792	-2.903861	0.0055*
INC0?	0.318046	0.051214	6.210177	0.0000**
INC3?	0.337133	0.037354	9.025294	0.0000**
UNR?	-0.106504	0.036474	-2.920014	0.0053*

Weighted Statistics

R-squared	0.890276	Mean dependent var	36.36493
Adjusted R-squared	0.867883	S.D. dependent var	14.77320
S.E. of regression	4.648104	Sum squared resid	1058.639
F-statistic	39.75744	Durbin-Watson stat	1.899306
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.859011	Mean dependent var	33.86167
Sum squared resid	1182.170	Durbin-Watson stat	1.917533

Method: Pooled EGLS (Cross-section weights); Method: Pooled EGLS (Cross-section weights); Sample (adjusted): 2009Q4 2012Q1; Cross-sections included: 6; Total pool (balanced) observations: 60; Linear estimation after one-step weighting matrix; Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)

Table 4: Parsimonious model of Predictors of Consumer confidence with no effects  
 Redundant Variables: SVR?

F-statistic	0.422198	Prob. F(1,49)	0.5189	
Test Equation: Dependent Variable: CCI?				
	Coefficient	Std. Error	t-Statistic	Prob.
C	401.4522	65.17494	6.159610	0.0000**
CPID?	-0.125039	0.049868	-2.507395	0.0155*
CPIF?	-0.126821	0.030743	-4.125226	0.0001**
EXRE?	0.162800	0.034631	4.700947	0.0000**
EXRO(-1)	-2.418399	0.407942	-5.928288	0.0000**
D(EXRV)	-0.101500	0.012101	-8.387926	0.0000**
INF(-2)	-0.885725	0.331037	-2.675606	0.0101*
INC0?	0.321810	0.052732	6.102753	0.0000**
INC3?	0.335446	0.037058	9.051912	0.0000**
UNR?	-0.106071	0.037516	-2.827356	0.0067*
Weighted Statistics				
R-squared	0.889330	Mean dependent var	36.36493	
Adjusted R-squared	0.869410	S.D. dependent var	14.77320	
S.E. of regression	4.621169	Akaike info criterion	21.86627	
Sum squared resid	1067.760	Schwarz criterion	22.21533	
Log likelihood	-645.9880	Hannan-Quinn criter.	22.00280	
F-statistic	44.64393	Durbin-Watson stat	1.888175	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.860729	Mean dependent var	33.86167	
Sum squared resid	1167.764	Durbin-Watson stat	1.885733	

Legend: \*\*1%;\*5% level of significance

Method: Panel EGLS (Cross-section weights); Sample: 2009Q4 2012Q1;Included observations: 10;Cross-sections included: 6; Total pool (balanced) observations: 60; Use pre-specified GLS weights; White cross-section standard errors & covariance (d.f. corrected)