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Corporate Profit Growth, Macroeconomic Expectations and Fiscal Policy Volatility

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Abstract

This study examines how specific macroeconomic conditions influence US Corporate Profit Growth in a dynamic trend framework. Using Autoregressive Distributed Lag (ARDL) co-integration approach, this study evaluates short and long-run dynamics of corporate profit growth in an environment characterized by specific macroeconomic conditions. Our results show that trends in corporate profit growth are not entirely immune to macroeconomic perturbations or constrained economic conditions as recent corporate profit growth conditions seem to suggest. We find that although modeled macroeconomic conditions (Note 1) have no statically significant impact on corporate profit growth in the short run; in the long run, conditions such as macroeconomic uncertainty, inflation expectation and fiscal policy volatility depresses or have significant constraining effect on corporate profit growth.

Keywords: corporate profit growth, macroeconomic conditions, ARDL co-integration

1. Introduction

Is corporate profits growth among US firms counter-cyclical? Have most US corporations evolved into resilient business entities significantly insulated from effects of macroeconomic perturbations and adverse economic expectations? These questions among others drive this study's analysis of recent US corporate profit growth dynamics; and form the basis for empirical inquiry made. A review of quarterly economic data provided by Federal Reserve Economic Data (FRED) a division of St Louis Fed, shows the US economy continue to make significant albeit constrained gains towards optimal GDP growth after economic decimation brought about by the recession of 2008. In the midst of this sub-par economic performance evidenced by recent GDP growth trend, reviewed data from Bureau of Economic Analysis (BEA) and FRED indicates most US corporations continue to post significant growth in profits seemingly against prevailing macroeconomic conditions. Recent time series data for instance, show that profitability trend characterizing most US corporations have been very impressive, often exceeding analysts' expectations. This significant growth in corporate profits in the midst of persistently depressed economic performance since the 2008 recession continues to generate significant interest on the need to understand underlying factors explaining the phenomenon. Unlike some existing studies on corporate profitability which focus on industry or firm specific factors as in Andreas Stierwald (2010); ongoing discussions on dynamics of recent corporate profit growth have focused predominantly on macroeconomic conditions occasioning such significant growth. To some financial analysts, recent corporate profit growth dynamics cannot be explained fully by prevailing macroeconomic conditions; or lack the necessary macroeconomic underpinnings needed to occasion such performance. In other words, to these analysts, recent US corporate profit growth trends can only be viewed as occasional bubble which should not inform any major policy measure among investors; because such the trend is destined to cool off ultimately, unless the economy experience significant upward adjustment.

Another key feature of recent corporate profit growth trend is the emerging view that the phenomenon seem to diverge from projections of traditional macroeconomic theory which deems corporate profitability as a product of conducive macroeconomic environment. This extensively verified macroeconomic theory projects that periods of significant economic growth enhances the likelihood of sustain growth in corporate profits and vice versa (Note 2). However, recent (post 2008 economic recession) US corporate performance dynamics (profitability

growth) seem to be at variance with this projection. For instance, available data on corporate profitability in the past two years appear to suggest that corporate profit growth is disconnected or insulated from prevailing macroeconomic conditions. Supporters of this diverging relationship argue that if this were not the case, recent corporate profit growth trend would have, to large extent, reflected prevailing constrained macroeconomic conditions. Unlike ongoing discussions in business and financial periodicals such as Forbes, Bloomberg Business week, etc. on corporate profit growth in recent times, this study does not seek to ascertain fundamental conditions or factors explaining recent growth trends; rather, this study verifies how corporate profit growth dynamics responds to specific macroeconomic conditions such as recession expectations, macroeconomic volatility, inflation expectations etc.

Additionally, in contrast to significant number of existing studies which focuses on how industry specific factors such as size, ownership structure, concentration, market share etc. impact corporate profitability, (Slade (2004), Yoon (2004), Goddard et al (2005)), this study concentrate on how factors external to firms and corporations influence profitability. The goal is to ascertain how economy-wide or anticipated economy-wide conditions instead of firm specific factors, influence corporate profit growth. Specifically, the approach adopted in this study seeks to determine how expectation of major macroeconomic condition, as well as specific macroeconomic conditions impact corporate behavior and ultimately profit growth. The focus on external factors or conditions (to be review in sub-sequent sections) has been informed largely by our belief that such factors or conditions might pose significant threat to corporate performance than industry or sector specific factors which could be mitigated in most instance through internal measures. This external focus is meant to ultimately answer the following questions: Do macroeconomic induced conditions such as inflation expectations, recession expectations etc. constrain or enhance US corporate profit growth? How significant are such conditions in corporate profit growth in the short and the long run? Answers to these questions will help in addressing growing perception that most US corporations have now evolve into highly adaptive institutions relatively insulated from macroeconomic perturbations.

The rest of this study is structured as follows: the first section examines structure and persistence of recent corporate profit growth phenomenon; this examination will seek to highlight trend dynamics of recent corporate profit growth. This will be followed by analytical assessments of how US corporate profit growth dynamics relates to modeled macroeconomic conditions or variables employed in this study. Section three reviews empirical literature relevant to relationships being examined in this study; as well as a sub-section stating the type and sources of data employed in our study. Section four develops econometric model to be used in verifying study projections. The section also performs pre-estimation diagnostic tests; estimates short and long run effects of modeled explanatory on corporate profit growth; and discusses empirical results. The final section captures post-estimation diagnostic tests performed and a summary of our findings.

2. The Corporate Profit Growth Phenomenon

Corporate profit growth data published by Bureau of Economic Analysis (BEA), St. Louis Fed (FRED) and US Department of Commerce have been at the center of recent discussions on corporate profitability. This data show that US corporate profits continue to witness appreciable growth in post-2008 recessionary macroeconomic environment despite persistently constrained GDP growth conditions. A review of the historical data spanning the period 1960 and 2011, suggest that significant growth in US corporate profits in post-recession macroeconomic environment, somehow deviates from macroeconomic models projecting positive correlation between corporate profitability and macroeconomic performance. In the following sub-section, we analyze the structure of recent US corporate profit growth and how such growth dynamics relates to GDP growth conditions over the same time period.

2.1 Structure of Recent US Corporate Profit Growth

US Bureau of Economic Analysis (BEA) provides annual review of US corporate profit growth through a series of releases on structural trends in corporate performance. These series of releases highlights growth in corporate profits with particular emphasis on how such dynamics varies from one quarter to another in the same year, and among quarters in different years. A review of 2011 release on such performance analysis show that corporate profits with inventory valuation and capital consumption adjustments grew from $19.0 billion in the first quarter of 2011, to $61.2 billion in the second quarter of the same year. This economic outlook release also indicate that current-production cash flow (net cash flow with inventory valuation adjustment) – that is, internal funds available to corporations for reinvestments also grew significantly from $21.1 billion in the first quarter of 2011, to $86.2 billion in the second quarter of the same year. The Bureau further documents that tax on corporate income within the same period decreased by $1.8 billion in the second quarter, in contrast to an increase of $17.6

billion in the first quarter of the same year. These conditions to some degree supports growing view that corporations in recent periods have had access to significant portion of operational revenues, leading to fairly sustain growth in profits in post-recession macroeconomic environment.

In a follow-up release documenting similar corporate profit performance conditions over the same period (2011), BEA's analysis further showed that profits from current production among corporations increased by $32.5 billion in the third quarter of the same but later dipped to $16.8 billion in the fourth quarter of 2011. Additionally, internal funds available to corporations for investment over the period is also shown to have increased by $44.8 billion in the fourth quarter of 2011, compared to an increase of $35.8 billion in the third of the same year. In the disaggregated section of the release on corporate profit growth, the data additionally show that over the same 2011 period, domestic profits among financial corporations alone increased by $29.9 billion in the fourth quarter, compared to an increase of $9.2 billion in the third of the same year. Domestic profits among nonfinancial corporations on the other hand also increased by $28.4 billion in the fourth quarter, compared to just an increase of $17.9 billion in the third of the same year. Available data further suggest that these growth conditions which characterized corporate profits in 2011, continued into 2012; with the period also witnessing significant corporate profit growth.

For instance, according to revised December 20th 2012 release by BEA, corporate profits before tax with inventory valuation adjustment (noted as the best measure of industry profits), increased by $86.2 billion in the third quarter, compared to a decrease of $16.3 billion in the second of 2012. Corporate Profit after tax with inventory valuation and capital consumption adjustments on the other hand, also increased by $36.7 billion in the third quarter, compared to an increase of $31.9 billion in the second quarter of 2012; showing relatively sustained growth over the period. The release further submitted that undistributed profits accruing from production over the same period increased by $23.8 billion, compared to an increase of $11.6 billion in prior quarter. Additionally, a breakdown of corporate profit trends in the same period in question with respect to industry type, further indicates profits among financial corporations alone increased by $68.1 billion in the third quarter of 2012, compared to a decrease of $39.7 billion in the second quarter of the same year. Corporate profits among nonfinancial corporations over the same period however, decreased by $14.1 billion in the third quarter, compared to an increase of $27.8 billion realized in the second of 2012.

The above analyses provide strong evidence in support of significant growth in corporate profits in recent years. However, macroeconomic performance data over the same period, suggests the economic environment often associated with such corporate performance was virtually nonexistent. For instance, economic performance (Note 3) encapsulated in recent US GDP growth and other macroeconomic indicators provide little or no evidence to support persistent growth in corporate profit being realized among corporation in recent quarters. Growth data over the period (Note 4) (2011 & 2012) for instance, show that growth conditions among key economic indicators have been considerably weak to occasion significant growth in corporate profits documented over the period in question. Despite the weak economic performance, corporate profit growth, as discussed earlier, soared from quarter to quarter in most part of the periods under consideration. In its September 29, 2011 press release, BEA report on real personal consumption expenditure growth (a significant component of GDP growth, accounting for over 70% of GDP) for instance, showed only 0.7 percent growth in the second quarter, compared to 2.1 percent growth in the first. An indication of significant decline in economic activity; however, within the same period, corporate profits grew significantly as reported earlier. Durable goods production in the same period (second quarter of 2011) also recorded substantial decline from 11.7 percent in the first quarter to 5.3 percent in the second quarter. Nondurable goods production on the other hand, grew by only 0.2 percent in the second quarter of 2011, compared to 1.6 percent growth in the first quarter of the same year. These trends to some extent show that fairly sustained growth in corporate profits over the periods in question had little or no correlation with prevailing macroeconomic conditions.

2.2 Corporate Profit Growth and US Economic Performance (GDP Growth)

This section provides data-driven analysis in support of the position that corporate profit growth in recent years, especially in post-recession periods, has out-perform underlying economic conditions normally required to occasion such performance. Comparative analysis of growth patterns characterizing US GDP and corporate profit growth between 2002 and the third quarter of 2012 are performed. Quarterly analysis captured in figures 1 and 2, show that over the past decade, US GDP and corporate profit growth have exhibited significant growth variability; with corporate profit growth out-performing US economic performance on average. Figures 1 and 2 illustrate linear trend analysis for the two economic indicators over the past decade with data sourced from BEA.

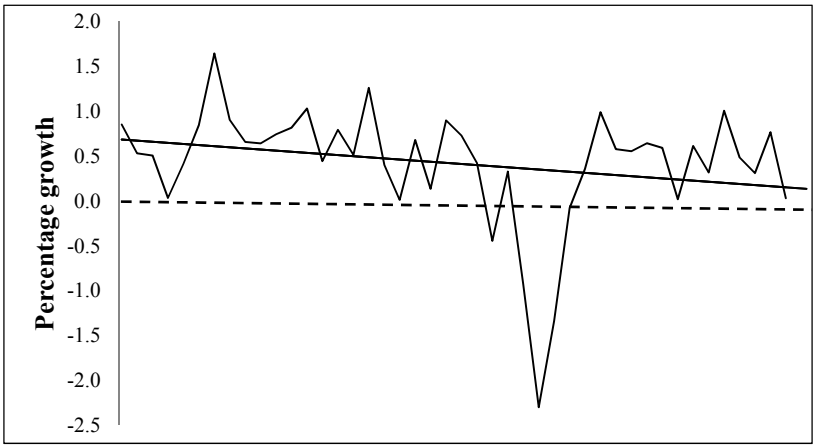

Figure 1. Quarterly US GDP growth (2002–2012)

Data Source: St. Louis FED (FRED).

Graphical trend analysis captured in figures 1 and 2 shows that on average, US corporate profit growth over the past decade has fared relatively better than GDP growth. A quick look at trend dynamics characterizing figures 1 and 2 suggest that on average, GDP growth over the past decade has been fairly weak; and exhibits relatively negative sloped trend-line (solid line). Comparatively, corporate profit growth trend over the same period exhibit a fairly stable trend, with a slightly positive trend-line (solid line) which suggests significant stability and growth potential. Apart from highlighting the diverging trend between the two variables, this trend analysis further provides evidence to the effect that corporate profit growth might not be counter-cyclical as recent conditions seem to project; in that, trend features associated with both figures 1 and 2 exhibits sharp declining trend consistent with reaction to the 2008 recession.

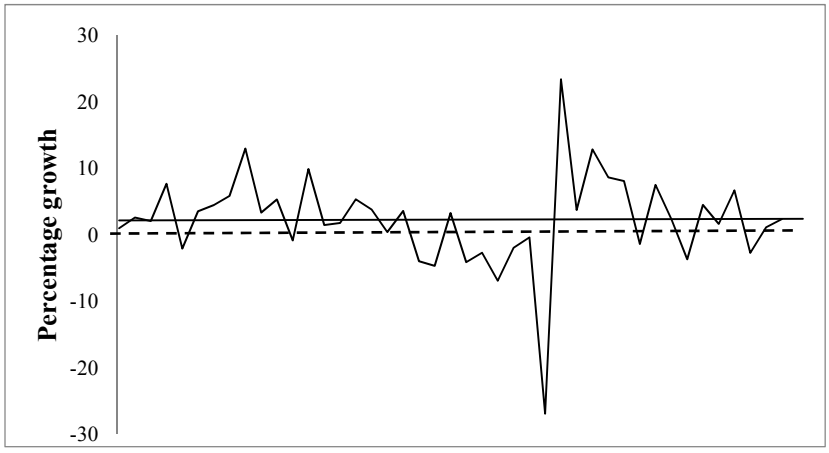

Figure 2. Quarterly US corporate profit growth (2002–2012)

Data Source: St. Louis FED (FRED).

Additionally, examination of the rate of adjustment associated with the variables after the 2008 economic shock, as illustrated by figures 1 and 2, indicates the rate of recovery or adjustment associated with corporate profit growth tend to be relatively faster than US economic performance (as measured by GDP growth). This condition to some extent could explain why post-recession US corporate profit growth has rebounded faster and significantly outperformed other macroeconomic indicators (consumption growth, GDP growth etc.). From figures 1 and 2, it could be observed that recovery trend associated with corporate profit growth is tighter, and almost a straight line, suggesting relatively faster adjustment compared to relatively positively sloped recovery trend associated with GDP growth in figure 1; which suggest significantly constrained recovery feature.

3. Modeled Macroeconomic Variables

To test the extent to which macroeconomic conditions influence corporate profits growth, conditions/factors modeled as key explanatory variables are stated. This study employs five macroeconomic conditions/factors external to corporations; namely: recession probability (expectations), fiscal policy uncertainty, inflation probability (expectations), consumer sentiments and macroeconomic uncertainty. Macroeconomic uncertainty in this study is modeled as a generalized autoregressive conditional hetroscedastic (GARCH) trend in US GDP growth. This variable is meant to capture the extent to which significant swings or uncertainty in US economic performance affects corporate profit growth. Fiscal policy uncertainty on the other hand will seek to determine how fiscal policy fluctuations influence rate of growth in investment and ultimately corporate profitability. Consumer sentiment variable further tracks how variability in consumer attitude (taste and preferences) impact consumption and ultimately, corporate profitability. Finally, recession and inflation expectations will address the extent to which potential for recession or persistent inflation, and not the actual conditions, influences corporate profit growth.

3.1 Corporate Profit Growth and Macroeconomic Conditions: The Hypothesis

This study revolves around fundamental assumption suggesting that adverse macroeconomic conditions or the potential for occurrence of such conditions could have significant negative impact on corporate profit growth. Subsequent empirical tests are thus meant to verify this assumption. Apart from this presumption that modeled macroeconomic conditions are more likely to constrain the rate of corporate profit growth, the study also seeks to identify macroeconomic conditions or variables which should be of great concern to US corporations given their impact on profitability. Such information could help corporate decision makers in targeting specific external threats to performance and profitability. Corporate profit growth, the regressand in this study's empirical analysis, is based on after-tax Corporate Profit growth data sourced from BEA and St. Louis FED (FRED) data base respectively. This variable is made up of quarterly time series data spanning the period 1960 and 2011; and constitutes aggregate US corporate profit growth regardless of the type and structure of such corporations.

4. Macroeconomic Conditions and Corporate Profit Growth: The Literature

A thorough review of existing literature suggests empirical examination of the link between corporate profits growth and specific macroeconomic conditions or factors such as those employed in this study, are few and far between. We find that unlike studies focusing on profitability of specific firms or industries such as banks etc. which abounds in existing literature (eg. Athanasoglou et al. (2008), Staikouras and Wood (2004)); studies focusing on dynamics of aggregate corporate profit growth as pursued in this study are limited. This condition may reflect the fact that critical assessments of recent corporate profit growth dynamics and how the trend relates to core macroeconomic variables is still evolving in the finance and economics literature. This condition notwithstanding, available evidence suggests both firm level features and macroeconomic conditions external to corporations such as those employed in this study, play significant role in profitability and economic growth, Kotha and Nair (1995). Apart from verifying the relationship between modeled variables and corporate profit growth, methodology adopted in this study also employs derived approach in analyzing how modeled explanatory variables influence corporate profit growth or otherwise. In such derived approach, effects of modeled explanatory variables on corporate profit growth are verified via how such variables impact core macroeconomic variables such as consumption and investment growth; which are critical in corporate profit growth. Empirical examination of the link between corporate profit growth and modeled macroeconomic conditions are classified into the following groups:

4.1 Fiscal Policy Volatility and Corporate Profitability

The macroeconomics literature provides theoretical foundation which explains how fiscal policy measures could depress or enhance corporate profit growth. This foundation suggests that fiscal policy mechanism in a macroeconomic framework could either bolster growth in corporate profits or depress them (Note 5). For instance, expansionary fiscal policy characterized by significant reduction in corporate taxes, increases the likelihood of significant growth in corporate profits all things being. Growth in profits among corporations in this case stems from excess revenue due to lower taxes on operational incomes and profits. However, contractionary fiscal policy characterized by increased taxes on corporate incomes and profits, decreases the likelihood of any measureable growth in corporate profit all things being equal. In order words, depending on the strand of fiscal policy measure in place, corporate profits growth could be constrained or enhanced holding corporate level specific factors constant. Following this theoretical foundation, this study projects that variability in fiscal policy have the potential to either constrain or enhance corporate profit growth all things being equal. Fiscal policy volatility variable in this study is modeled as a GARCH process. This GARCH process employs

quarterly time series tax revenue growth data. Effects of fiscal policy volatility on corporate profit growth are verified via the following prepositions:

Preposition 1: Fiscal Policy Volatility has significant effect on corporate profit growth.

Preposition 2: Fiscal Policy Volatility has no significant effect on corporate profit growth.

4.2 Recession Expectations and Corporate Profitability

Recession expectation variable defines macroeconomic environment characterized by potential for significant decline in economic activities; such macroeconomic environments are often characterized by adverse economic conditions known to precede or herald recessionary conditions. This study in its review of relevant literature, found no prior empirical study verifying how this macroeconomic condition influence corporate profitability. Nonetheless, sections of corporate performance and firm profitability literature focusing on how macroeconomic conditions influence such performance, suggests effects of recession expectation on corporate profitability might depend on other firm specific factors. For instance, empirical work exist to the effect that some firms or corporations experience significant growth or performs relatively well in pre-recessionary and recessionary environment against all odds, whereas others are negatively impacted by the same condition. Discount retailers for instance, are known to have prospered in periods prior to the 2008 recession and continued to do well during the recessionary period. In the first quarter of 2009 for instance, Forbes reported that despite significant decline in economic activities during the period (2008 recession) Wal-Mart's sales rose 5.1%, far exceeding analyst's projection of 2.4%. Apart from this counter-cyclical performance of most discount retailers, existing empirical enquiries into effect of business cycle on firm profitability also show that the phenomenon has significant impact on profitability. For instance, in a study of factors determining bank profitability, Sufian (2011), showed that business cycles significantly impact variability in profit growth. Prior to Sufian's conclusion, Athanasoglou et al (2008) had earlier also showed that business cycle (recession/booming economy) has positive, albeit asymmetric effect on bank profitability; researchers in this case, showed that business cycles have significant positive impact only in the upper phase of the cycle. Following these conclusions, this study projects that the likelihood of recession, an adverse macroeconomic condition (often characterized by sub-par macroeconomic conditions) will have significant impact on corporate profit growth all things being equal. Effects of recession expectations (probability) on corporate profit growth are verified using the following propositions:

Preposition 1. Recession Probability has significant effect on corporate profit growth

Preposition 2. Recession Probability has no significant effect on corporate profit growth

4.3 Inflation Expectations and Corporate Profitability

Empirical assessments of the extent to which inflation expectations impact profitability diverge significantly, and could aptly be describe as inconclusive. The general view suggests inflation expectation may influence corporate operational costs; gross revenue; and ultimately profit growth. Emerging trend in our review of existing literature suggests most conclusions on how inflation impact corporate profitability dynamics depends on whether inflation is anticipated or unanticipated. This view purports that, all things being equal, if a measure of inflation is fully anticipated (expected) by firms, corporations etc., such firms or corporations (assuming rational behavior) will implement or initiate measures aimed at ensuring that effects on operational costs are minimized. This behavior, holding all else constant, will ensure that operational costs does not outpace revenue, resulting in a positive impact on profitability. Unanticipated inflationary condition however, forces firms, corporations etc. to react or adjust to persistent rise in cost of operations. In such condition, the likelihood that corporate operational cost will outpace projected revenues increases (Note 6); which heighten the potential for constrained profit growth. Financial institutions such as banks etc. have for instance, been shown to exhibits these features; and studies such as Pasiouras and Kosmidou (2007); and Rasiah (2010) have all alluded to this condition in their assessments of the link between inflation and bank profitability.

In the finance and banking literature where most of such firm specific studies have been conducted, Flamini et al (2009) for instance, showed that inflationary condition that is fully anticipated tend to have positive impact on profits among banks; because such entities can appropriately adjust interest rates to compensate for the expected inflation. The study further showed that unexpected inflationary condition could raise costs due to imperfect interest rate adjustments; a condition which increases the potential for diminished profits. In a related literature still focusing on the banking sector, Rasiah (2010) also concluded that inflation may affect profitability by diminishing real value of firm or corporate assets. If these conclusions of industry specific studies accurately capture relative relationship between expected inflation and profitability in general, then, inflation expectations modeled in this study should have positive impact on corporate profit growth, all things being equal. However,

Athanasoglou et al., (2005) found that the relationship between expected inflation and long-term interest rate, which ultimately defines the relationship between inflation expectations and profitability, is at best vague. From these discussions, it is evident that this study's estimate could either support existing findings of positive impact, or diverge significantly from such conclusions. The following prepositions are consequently tested:

Preposition 1: Inflation Expectations has significant effect on corporate profit growth.

Preposition 2: Inflation Expectations has no significant effect on corporate profit growth.

4.4 Macroeconomic Uncertainty and Corporate Profitability

In the macroeconomics literature, uncertainty emanating from persistent variability in economic activity has been shown to significantly influence corporate performance, and for that matter profitability. For instance, evidence exist to the effect that uncertain macroeconomic conditions significantly distort demand/sales projections and forecasts, ultimately affecting performance. Although industry and corporate specific factors such as concentration, structure, size etc. have been shown to be significant determinants of profitability (Benjamin Maury (2006), Kaen, Fred R., and Hans Baumann, (2003)), this study is modeled on the assumption that effects of macroeconomic condition transcends such firm or industry specific factors. This position stem from our belief that unlike industry or corporate specific factors, macroeconomic conditions are systemic and in most instances beyond the control of individual firm or industry. In a study assessing the impact of such macroeconomic factors on profitability among companies listed on the Bucharest Stock Exchange, Triandafil, Brezeanu, Badea (2010) for instance, showed that macroeconomic-related variables to a large extent are the prime determinants of corporate profitability. Again, in an empirical estimation of how macroeconomic volatility (uncertainty) impact profitability among manufacturing firms in emerging markets, Demir (2009), also showed that increasing uncertainty has significant negative effect on manufacturing firm profitability. Following these conclusions, it is reasonable to project that macroeconomic uncertainty would have negative impact on corporate profit growth. However, if recent US corporate profit growth dynamics in the midst of lingering economic uncertainty is anything to go by, then such projection will be premature without empirical verification. Macroeconomic uncertainty in this study is modeled as a generalized arch function; GARCH (1, 1) on GDP growth which captures volatility associated with US economic performance. The following GARCH function is use in modeling macroeconomic uncertainty;

$$h_t = \omega + \alpha_1 \varepsilon^2_{t-1} + \beta_1 h_{t-1} \quad (1)$$

where, α_1. and β_1, are all nonnegative; and $\omega > 0$. Effect of macroeconomic uncertainty on corporate profit growth is verified using the following prepositions:

Preposition 1. Macroeconomic Uncertainty has significant effect on corporate profit growth

Preposition 2. Macroeconomic Uncertainty has no significant effect on corporate profit growth

4.5 Data Source and Model Specification

Empirical estimations conducted in this study are based on data from St. Louis Fed and Bureau of Economic Analysis. This data is made up of quarterly time series from 1960 and 2011. Key variables employed include, inflation expectations (*InfEx*), recession expectations (*RecEx*), corporate profit growth (*Corpg*), consumer sentiments (Cons), Macroeconomic Uncertainty (*MacUn*) and fiscal policy volatility (*Fispv*). To estimate potential effects of these modeled macroeconomic conditions on US corporate profit growth, this study employs augmented Autoregressive Distributed Lag (ARDL) model which allows for simultaneous short and long run effects analysis.

5. Effects of Macroeconomic Conditions on Corporate Profitability

5.1 Model Specification: ARDL-Bound Test

To model effects of specified macroeconomic variables on corporate profit growth, ARDL-bound test approach structured to ascertain potential short and long run effects of selected explanatory variables is employed. ARDL bound test technique propounded by (Pesaran et al., 2001) is first utilized to ascertain cointegrating relationships between corporate profit growth and modeled independent variables. ARDL-bound test framework has been adopted in this estimation because it has been shown to yield significant results irrespective of the order of integration of variables being tested; that is, whether study regressors are purely I(0), I(1), or mutually cointegrated; Pesaran et al., (2001). Further evidence provided by Alam & Quazi, (2003), also show that ARDL-bound testing approach is robust even when explanatory variables are endogenous. Although bound test framework propounded by Pesaran et al (2001) yields robust results in small sample data test, this study opt for bounds test critical values suggested by Narayan (2004). Critical bound values suggested by Narayan have been

shown to be more accurate for smaller sample data sets (< 500) compared to those propounded by Pasaran et al (2001) which dominates studies in the literature. Reviewed literature further suggest that critical bound values propounded by Pasaran et al (2001) might underestimate critical bound range values for relatively smaller sample data because of its orientation which favor's sample size data set between 500 and 1000 data points. Short and long run effects of modeled variables on US corporate profit growth via the ARDL-bound test technique are evaluated using ARDL-bound test estimation framework stated as follows:

$$\begin{aligned}\Delta(Corpg\ )_t &= \alpha_0 + \sum_{i=1}^{p}\phi_i\Delta(Corpg\ )_{t-i} + \sum_{i=0}^{p}\theta_i\Delta(\mathrm{Re}\ cEx\ )_{t-i} + \sum_{i-0}^{p}\varepsilon_i\Delta(InfEx\ )_{t-1} \\ &+ \sum_{i=0}^{p}\lambda_i\Delta(Fispv\ )_{t-i} + \sum_{i=0}^{p}\varphi_i\Delta(MacUn\ )_{t-i} + \sum_{i-0}^{p}\mu_i\Delta(Cons\ )_{t-1} \\ &+ \psi_1(Corpg\ )_{t-1} + \psi_2(\mathrm{Re}\ cEx\ )_{t-1} + \psi_3(InfEx\ )_{t-1} + \psi_4(Fispv\ )_{t-1} \\ &+ \psi_5(MacUn\ )_{t-1} + \psi_6(Cons\ )_{t-1} + \upsilon_t\end{aligned} \tag{2}$$

where the first two lines with the summation symbol ($\sum$) verifies short-run dynamic relationship between modeled macroeconomic variables and corporate profit growth. The second part, denoted by ψ_1 to ψ_6 on the other hand tests long-run effects of modeled variables on corporate profit growth. v_t captures the error term assumed to meet all classical assumptions; and Δ denotes first difference of the various variables in treatment. To investigate the presence of long-run relationship amongst the variables in Eq.(2), bounds test procedure propounded by Pesaran et al is employed. This bounds testing procedure is based on partial F-test estimation analysis. The procedure tests the joint significance of (null hypothesis) no cointegrating relationship between modeled explanatory variables and corporate profit growth against alternative hypothesis rejecting such condition as follows:

$$H_0: \psi_1 = \psi_2 = \psi_3 = \psi_4 = \psi_5 = \psi_6 = 0$$
$$H_1: \psi_1 \neq \psi_2 \neq \psi_3 \neq \psi_4 \neq \psi_5 \neq \psi_6 \neq 0$$

In this estimation method (F-test analysis), if computed F-test statistic is found to be greater than the adopted upper bound critical value, (i.e. critical values from Narayan (2004)) the null hypothesis of no cointegration between modeled independent variables and corporate profit growth, can be rejected irrespective of the order of integration of the variables in treatment. However, if computed F-test statistic value is less than the lower adopted critical value, then null hypothesis of no cointegration cannot be rejected. In an extreme case, the estimated F-test statistic could fall between the adopted lower and upper critical values; in such case, no conclusive submission could be made on the relationship between the dependent and independent variables. If cointegrated relationship between modeled macroeconomic variables and corporate profit growth is ultimately established, then a short run dynamic relationship between variables in treatment and study regresand could further be estimated via an error correction model (*ECM*) framework as follows:

$$\begin{aligned}\Delta(Corpg\ )_t &= \alpha_0 + \sum_{i=1}^{p}\phi_i\Delta(Corpg\ )_{t-i} + \sum_{i=0}^{p}\theta_i\Delta(\mathrm{Re}\ cEx\ )_{t-i} + \sum_{i-0}^{p}\varepsilon_i\Delta(InfEx\ )_{t-1} \\ &+ \sum_{i=0}^{p}\lambda_i\Delta(Fispv\ )_{t-i} + \sum_{i=0}^{p}\varphi_i\Delta(MacUn\ )_{t-i} + \sum\mu\Delta(Cons\ )_{t-1} + \pi ECM_{t-1} + \upsilon_t\end{aligned} \tag{3}$$

where, ECM_{t-1} the error correction term is defined as:

$$\begin{aligned}ECM_1 &= \Delta(Corpg\ ) - \alpha_0 + \sum_{i=1}^{p}\phi_i\Delta(Corpg\ )_{t-i} + \sum_{i=0}^{p}\theta_i\Delta(\mathrm{Re}\ cEx\ )_{t-i} + \sum_{i-0}^{p}\varepsilon_i\Delta(InfEx\ )_{t-1} \\ &+ \sum_{i=0}^{p}\lambda_i\Delta(Fispv\ )_{t-i} + \sum_{i=0}^{p}\varphi_i\Delta(MacUn\ )_{t-i} + \sum\mu\Delta(Cons\ )_{t-1} + \upsilon_t\end{aligned} \tag{4}$$

With π in Eq. (3) representing the rate of adjustment towards equilibrium following any distortions in the short run. This study finally verifies goodness of fit of modeled ARDL-Bound test framework, and performs diagnostic tests examining the presence of serial correlation among variables employed.

5.2 Empirical Results and Discussions: Unit Root Tests

As noted earlier, empirical framework adopted in this study yields significant results irrespective of the order of integration of variables in treatment; however, unit root tests are still performed to assess stationary condition of study variables in case computed F-test statistic is found to fall between adopted critical value bounds. To test for stationary conditions of study variables, an optimum lag order for the estimation is first determined. This is done using Akaike Information Criterion (AIC). Test result based on this procedure found lag order of 4; consequently an optimal lag order of 4 is employed in ensuing stationary condition tests. In table 1, we present results of unit root test for stationarity via Augmented Dickey-Fuller (1981) (ADF) and the Phillip-Perron (1988) (PP) unit root tests procedures. Results reported in table 1 show employed variables are stationary with the exception of consumer sentiments (*Cons*).

Table 1. Univariate stationary analysis

	ADF Test			**Philips Perron Test**		
Variables	Optimal Lag Order	Test Statistics	Results	Newey-West lag	Results	Z(t) tau Statistics
Corpg	4	-4.382***	I(0)	4	I(0)	-15.72***
RecEx	4	-6.933***	I(0)	4	I(0)	-17.01***
InfEx	4	-4.406***	I(0)	4	I(0)	-4.67***
Fispv	4	-3.085*	I(0)	4	I(0)	-3.84**
MacUn	4	-4.604***	I(0)	4	I(0)	-10.03***
Cons	4	-0.811	I(1)	4	I(1)	-1.47

*Indicate various levels of significance on stationarity of individual variables.

6. Dynamics of Corporate Profit Growth: Macroeconomic Impact Analysis

This section verifies dynamic interactions between modeled macroeconomic variables and corporate profit growth as modeled in in equations (2) and (3). Using equation (2) we first test for the presence of long run relationship between corporate profit growth and specified macroeconomic variables using bound test cointegraton procedure. Table 2 reports computed F-test statistic value testing the null hypothesis of no long-run relationship or cointegration between corporate profit growth and modeled macroeconomic variables. This cointegration analysis employs critical bound values propounded by Narayan (2004) for relatively small data sample as noted earlier. F-test statistic value reported in table 2 exceeds upper critical bound value at 1%, 5% and 10% significance level respectively; consequently, the null hypothesis of no cointegration between corporate profit growth and modeled explanatory variables is rejected in support of significant long run relationship between the variables.

Table 2. Bound test for cointegration

Test Statistics	Value	Alpha Level	Lower Bound Critical Value	Upper Bound Critical Value
F-Statistic	**21.55**		**I(0)**	**I(1)**
		1%	3.42	4.88
		5%	2.55	3.71
		10%	2.17	3.22

Critical values based on Bound Critical Values Propounded by Narayan (2004), Case II.

6.1 Short-Run Dynamic Model of Corporate Profit Growth: Error Correction Approach

With cointegrating relationship between corporate profit growth and modeled explanatory variables verified, this section estimate error correction model to assess short-run dynamics of corporate profit growth. Empirical results reported in table 3 which is based on equation 3 captures short run effects of modeled independent variables on

corporate profit growth. Reported coefficient estimates show that modeled macroeconomic conditions have no empirically significant influence on corporate profit growth in the short run. This outcome is inconsistent with traditional view suggesting that modeled conditions have significant influence on corporate performance. These results suggest modeled macroeconomic conditions might have little or no marked effects on corporate profit growth in the short run. A review of the literature in search for plausible explanation for these results, failed to unearth any similar empirically verifiable conclusion in support of these findings. Estimated error correction coefficient of -0.302 associated with the results is however, statistically significant with the correct sign; this illustrate the speed of adjustment back to equilibrium after short-run disturbance. The error correction (ECT_{t-1}) coefficient (-0.302) suggests corporate profit growth adjust relatively slow to shocks or disturbances in the short run.

Table 3. Error correction short run results

Variables	Corporate Profit Growth	Standard Error
LD.Corpg	0.168	-0.099
LD.RecEx	0.0305	-0.031
LD.InfEx	0.696	-0.799
LD.Fispv	-1.807	-0.927
LD.MacUn	-0.0495	-0.049
LD.Cons	-0.0011	-0.0016
ECT_{t-1}	-0.302*	-0.141
Const	2.174**	-0.765
R^2=0.58		

6.2 Long-Run Dynamics of US Corporate Profit Growth

With no empirically significant relationship found between modeled macroeconomic variables and US corporate profit growth in the short run, this section focuses on the mechanics of corporate profit growth in the long run, and the role of modeled macroeconomic variables. Table 4 reports empirical results of long run dynamics of corporate profit growth. The results point to significant relationships between corporate profit growth and modeled macroeconomic conditions in the long run. In the first scenario for instance, where all modeled macroeconomic conditions or factors are presume to occur concurrently, results show that among five explanatory variables tested, only inflation expectations, fiscal policy volatility and macroeconomic uncertainty are significant in explaining variability in US corporate profit growth. In this concurrent scenario, we find that inflation expectation, fiscal policy uncertainty and macroeconomic uncertainty have significant negative effects on corporate profit growth all things being equal. A percentage increase in inflation expectation for instance, is found to decrease corporate profit growth by 0.835% in the long run. Additionally, long run coefficient estimates also show that a percentage increase in fiscal policy uncertainty reduces corporate profit growth by 0.731% holding all other factors constant. Scenario (1) results reported in table 4 further confirms generally espoused view that macroeconomic uncertainty has constraining effects on corporate performance and profitability. Reported results suggest a percentage increase in macroeconomic uncertainty reduces corporate profit growth by 0.125%; a much lower rate than this study expected.

In a second scenario (2) which excludes effects of consumer sentiments in the estimation process, we find that the same macroeconomic conditions or variables are significant in explaining variability in corporate profit growth. Coefficient estimates for the second scenario (2) shows recession expectation is still insignificant in explaining variability in corporate profit growth in the long run. Results in this instance, also show that a percentage growth in inflation expectation, fiscal policy volatility and macroeconomic uncertainty still has depressing effect on corporate profit growth in the long run. A percentage increase in inflation expectation, fiscal policy volatility and macroeconomic uncertainty in this scenario is found to reduce corporate profit growth by 0.86%, 0.727% and 0.127% respectively. Results from this scenario further show that among macroeconomic conditions modeled, only three tend to have significant impact on corporate profit growth in the long run. In a third scenario captured in column 3 where effect of recession expectation has been suppressed, our results still

show that the same macroeconomic conditions found in the first two cases, are significant; and continue to exhibit similar effects on corporate profit growth. A percentage increase in inflation expectation, fiscal policy volatility and macroeconomic uncertainty in the absence of potential for recession, is still found to constrain corporate profit growth in a manner similar to the first two scenarios. Coefficient estimates in this third scenario are strikingly similar to those found in the first two scenarios; suggesting that the three macroeconomic conditions found significant in the first two scenarios have little or no interaction with consumer sentiments and/or recession expectation in how they influence corporate profit growth.

Table 4. ARDL-Bound model

	(1)	(2)	(3)	(4)	(5)
	Corporate Profit Growth	Corporate Profit Growth	Corporate Profit Growth	Corporate Profit Growth	Corporate Profit Growth
L.Corpg	-1.149***	-1.150***	-1.149***	-1.087***	-1.153***
	(0.088)	(0.087)	(0.088)	(0.075)	(0.089)
L.RecEx	0.0004	0.0017		0.0045	0.0052
	(0.046)	(0.045)		(0.036)	(0.046)
L.InfEx	-0.835*	-0.860*	-0.834*		-0.994*
	(0.479)	(0.460)	(0.472)		(0.477)
L.Fispv	-0.731*	-0.727*	-0.731*	-0.465*	-0.680*
	(0.379)	(0.377)	(0.376)	(0.271)	(0.382)
L.MacUn	-0.125*	-0.127*	-0.125*	-0.150*	
	(0.065)	(0.063)	(0.064)	(0.059)	
L.Cons	-0.0003		-0.00034	-0.0001	-0.0009
	(0.002)		(0.0017)	(0.0013)	(0.0017)
Const	12.70**	12.65**	12.70**	7.172**	12.67**
	(4.538)	(4.513)	(4.502)	(2.697)	(4.586)
N	134	134	134	177	134
R-sq	0.586	0.586	0.586	0.561	0.574
adj. R-sq	0.566	0.569	0.570	0.548	0.557

Standard errors in parentheses. *p<0.05, ** p<0.01, *** p<0.001.

The last two scenarios featured in columns (4) and (5) of table 4 are meant to test for mutual interactions among the three macroeconomic conditions found to be statistically significant in determining corporate profit growth in the first three scenarios. In column (4), we find that in the absence of inflation expectation, effects of fiscal policy volatility and macroeconomic uncertainty on corporate profit growth are altered significantly. Coefficient estimates in this case show that a percentage increase in fiscal policy uncertainty results in 0.456% decline in corporate profit growth; which is much lower than reported results in the first three scenarios. A percentage increase in macroeconomic uncertainty however, results in 0.15% decline in corporate profit growth, slightly higher than conditions found in the first three cases. Similar technique applied in the final column (5) where effects of macroeconomic uncertainty has been suppressed, further support significant interactions among the three macroeconomic conditions found to be significant in explaining corporate profit growth in the long run. In this scenario, we find that in the absence of macroeconomic uncertainty, effects of inflation expectation on corporate profit growth is magnified significantly where as that of fiscal policy volatility is reduced compared to the first three cases, although slightly higher than the fourth scenario captured in column (4). A percentage increase in inflation expectation and fiscal policy volatility in this instance reduces corporate profit growth by 0.994% and 0.680% respectively.

6.3 Post-Estimation Diagnostic Tests

Post-estimation diagnostic tests verified presence of serial correlation among modeled variables as well as the

stability of the empirical framework employed. Breusch–Godfrey test for higher-order serial correlation results found no serial correlation between corporate profit growth and modeled macroeconomic variables. Additionally, reverse estimation analysis further indicates empirical framework employed in this study is statistically stable.

6.4 Conclusions

This study examined short and long run dynamic relationship between US corporate profit growth and specific macroeconomic conditions. We find that macroeconomic conditions such as macroeconomic uncertainty, fiscal policy volatility and the likelihood of persistent inflation, could be inimical to corporate profit growth in the long run all things being equal; an outcome which disputes conclusions sited earlier suggesting that expected inflation tend to have positive impact on performance and profitability. Our results also show that recession expectations and variability in consumer sentiments has no statistically significant impact on corporate profit growth in the long run. Coefficient estimates further show that modeled macroeconomic conditions have no statistically significant impact on corporate profit growth in the short run. These results suggest that contrary to what recent trends seem to suggest, corporate profit growth dynamics among US firms are not invulnerable to adverse macroeconomic conditions.

References

Abaidoo, R. (2012). Corporate profit growth and variability in US unemployment rate. *International Journal of Economics and Finance, 4*(7), 3–14. http://dx.dohttp://dx.doi.org/10.5539/ijef.v4n7p3i.org/10.5539/ijef.v4n7p3

Alam, M. I., & Quazi, R. M. (2003). Determinant of capital flight: An econometric case study of Bangladesh. *International Review of Applied Economics, 17*, 85–103. http://dx.doi.org/10.1080/713673164

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2005). *Bank-specific industry specific and macroeconomics determinants of bank profitability.* Bank of Greece Working Paper 25, June.

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions, and Money, 18*(2), 121–136. http://dx.doi.org/10.1016/j.intfin.2006.07.001

Baum, C. F., Mustafa, C., & John, T. B. (2001). Exchange rate uncertainty and firm profitability. *Journal of Macroeconomics, 23*, 565–76. http://dx.doi.org/10.1016/S0164-0704(01)00178-1

Benjamin, M. (2006). Family ownership and firm performance: Empirical evidence from Western European corporations. *Journal of Corporate Finance, 12,* 321–341. http://dx.doi.org/10.1016/j.jcorpfin.2005.02.002

Bollerslev, T. P. (1986). Generalized autoregresive conditional heteroscedasticity. *Journal of Econometrics, 31*, 307–327. http://dx.doi.org/10.1016/0304-4076(86)90063-1

Bureau of Economic Analysis News Release National Income and Product Accounts Gross Domestic Product, 4th quarter 2011 and annual 2011 (third estimate), Corporate Profits, 4th quarter 2011 and annual 2011.

Bureau of Economic Analysis News Release. (2011, Sept.) *Corporate Profits*.

Bureau of Economic Analysis News Release, Gross Domestic Product: Third Quarter 2012 (third estimate); Corporate Profits, third quarter 2012 (Revised estimate). Dec. 20, 2012.

Demir, F. (2009) Financialization and manufacturing firm profitability under uncertainty and macroeconomic volatility: Evidence from an emerging market. *Review of Development Economics, 13*(4), 592–609. http://dx.doi.org/10.1111/j.1467-9361.2009.00522.x

Dickey, D., & Fuller, W. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica, 49*, 1057–1072. http://dx.doi.org/10.2307/1912517

Flamini, V. C., McDonald, & Schumacher, L. (2009). *The determinants of commercial bank profitability in Sub-Saharan Africa.* IMF Working Paper. Washington, D.C.

Goddard, J., Tavakoli, M., & lsonb, J. O. S. (2005). Determinants of profitability in European manufacturing and services: Evidence from a dynamic panel model. *Applied Financial Economics, 15*, 1269–1282. http://dx.doi.org/10.1080/09603100500387139

Grinyer, P. H., & Peter, M. (1991). The determinants of corporate profitability in the U.K. electrical engineering industry. *British Journal of Management, 2*, 17–32. http://dx.doi.org/10.1111/j.1467-8551.1991.tb00012.x

Guru, B. K., Staunton, J., & Shanmugam, B. (1999). *Determinants of commercial bank profitability in Malaysia.* Paper Presented at the 12th Annual Australian Finance and Banking Conference, Sydney, Australia, 16–17.

Ito, K., & Kyoji, F. (2006). Determinants of the profitability of the Japanese manufacturing affiliates in China and regions: Does localization of procurement, sales and management matters. *RIETE Discussion Paper Series*, 01-E–001.

Kaen, F. R., & Hans, B. (2003). Firm size, employees and profitability in U.S. manufacturing industries. Retrieved from http://ssrn.com/ sol./papers.cf? Abstract id=899615

Kotha, S., & Nair, A. (1995). Strategy and environment as determinants of performance: Evidence from the Japanese machine tool industry. *Strategic Management Journal, 16*, 497–518. http://dx.doi.org/10.1002/smj.4250160702

Market Scan Wal-Mart Scoffs At Recession. (World's largest retailer cites low costs, falling gas prices for its surprise success.). Retrieved from http://www.forbes.com/2009/03/05/walmart-aeropostale-abercrombie-markets-equity_retail.html

Narayan, P. K. (2004). *Reformulating critical values for the bounds F-statistics approach to cointegration: An application to the tourism demand model for Fiji.* Department of Economics Discussion Papers, No. 02/04, Monash University, Melbourne.

Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance, 21*(2), 222–237. http://dx.doi.org/10.1016/j.ribaf.2006.03.007

Payne, J. E., Loomis, D., & Wilson, R. (2011). Residential natural gas demand in Illinois: Evidence from the ARDL bounds testing approach. *Journal of Regional Analysis and Policy, 41*(2), 138–147.

Pesaran, M. H., Shin, Y., & Smith, R. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*, 289–326. http://dx.doi.org/10.1002/jae.616

Phillips, P. C. B. (1988). Regression theory for near-integrated time series. *Econometrica, 56*, 1021–1043. http://dx.doi.org/10.2307/1911357

Rasiah, D. (2010). Theoretical framework of profitability as applied to commercial banks in Malaysia. *European Journal of Economics, Finance and Administrative Sciences, 19*, 74–97.

Slade, M. (2004). Competing models of firm profitability. *International Journal of Industrial Organization*, *22*, 289–308. http://dx.doi.org/10.1016/j.ijindorg.2003.12.001

Staikouras, C., & Wood, G. (2004). The determinants of European bank profitability. *International Business and Economics Research Journal, 3*(6), 57–68.

Stierwald, A. (2010). *Determinants of profitability: An analysis of large Australian firms.* Melbourne Institute of Applied Economic and Social Research working paper No. 3/10.

Sufian, F. (2011). Profitability of the Korean banking sector: Panel evidence on bank-specific and macroeconomic determinants. *Journal of Economics and Management, 7*(1), 43–72.

Triandafil, M. C., Brezeanu, P., & Badea, L. (2010). Macroeconomic impact on CEE corporate profitability: Analysis at the level of companies listed on the Bucharest stock exchange. *Theoretical and Applied Economics, 10*(551), 5–14.

Yoon, S. (2004). A note on the market structure and performance in Korean manufacturing industries. *Journal of Policy Modeling, 26*(6), 733–746. Retrieved from http://www.forbes.com/sites/timworstall/2013/05/07/why-have-corporate-profits-been-rising-as-a-percentage-of-gdp-globalisation/

Notes

Note 1. Recession expectation, inflation expectation, fiscal policy volatility, macroeconomic uncertainty and consume sentiments.

Note 2. Periods characterized by sustain growth in consumption emanating from positive consumer sentiments, investments growth etc.

Note 3. Post-recession macroeconomic performance.

Note 4. That is the period within which above corporate profit conditions have been analyzed (2011 & 2012).

Note 5. Depending on the intent of the policy being implemented.

Note 6. Based on the assumption that prices for services and products of most corporations exhibit upward

stickiness.