# Do Investors Listen to Fiscal Policy? – Study case Bucharest Stock Exchange

Stoian, Andreea and Iorgulescu, Filip

Department of Finance and CEFIMO, Bucharest University of Economic Studies, partment of Finance and CEFIMO, Bucharest University of Economic Studies

6 June 2016

***Preliminary draft***
***Please, do not quote!***

# Do Investors Listen to Fiscal Policy? Study Case – Bucharest Stock Exchange

Andreea Stoian[♠]
*Departament of Finance and CEFIMO, Bucharest University of Economic Studies*

Filip Iorgulescu
*Departament of Finance and CEFIMO, Bucharest University of Economic Studies*

**Abstract**

The aim of this paper is to examine whether information on fiscal policy includes in the stock prices in a way which is consistent with the Efficiency Market Hypothesis. We conduct our investigation for the Bucharest Stock Exchange which is one emerging stock market from Central and Eastern Europe. For the purpose of our study, we employ the methodology suggested by Darrat (1988). We analyse the influence of past fiscal policy on current stock market return using two distinct datasets comprising of quarterly and monthly data. The results indicate that when we do not control for the anticipated and unanticipated effects of fiscal policy, past lags of changes in the overall budget balance and in public debt-to-GDP ratio have a significant impact on stock market return and, thus, we fail in accepting the semi-strong form of the efficiency market hypothesis.

**Keywords:** fiscal policy, stock return, budget balance, public debt, Efficiency Market Hypothesis
**JEL Codes:** E44, E62, G14, H6

[♠] Corresponding author: andreea.stoian@fin.ase.ro

## 1.Introduction

Over the last decades, there has been an increased focus in investigating the impact of fiscal policy on economy, particularly on economic growth, business cycle, redistribution and welfare etc. The interactions between fiscal policy and financial markets has also raised many of the economists' interest, particularly since the financial crisis in 2007-2008 and the sovereign debt crisis in Europe in 2010, when changes in investors' behaviour have been observed. In this sense, De Grauwe and Ji (2012) showed that after the crisis investors have had an increased tendency in overpricing the sovereign risk which has been not essentially correlated with the underlying fundamentals. These findings suggest an increase in the aversion towards risk, but also they can raise questions on investors' rationality and on Efficiency Market Hypothesis (EMH).

It was documented that since the mid-90s up to the financial crisis, the differential between the interest rate on public debt and economic growth rate was unusually low especially for the countries in the European Monetary Union because of lower inflation rate volatility and low policy and interest rates on short term (Turner and Spinelli, 2011). This context made investors confident enough and produced expectations of a sustainable fiscal policy in the long run even if the data showed high and increasing government debt ratio for many of the advanced economies. Governments, as well, took the opportunity of low differential and chose to roll-over public debt instead of smoothly adjusting the fiscal policy. Thus, there were created vicious interactions between financial markets and governments: investor's optimism and enthusiasm stimulated governments to borrow more money to finance the budget deficits and to procrastinate the fiscal consolidation. In 2010, Aizenman and Pasricha showed that the uncertainty, in the future, about the differential between the interest rate on public debt and the growth rate can highly rise the debt burden. This suggests that sudden increase in the interest rate and/or sharp decrease in the growth rate can unexpectedly turn fiscal policy from sustainability to unsustainability and, consequently, the financial markets can become reluctant in providing more money to the governments. This was also the case with most of the European Union countries.

Taking into account the above mentioned context, the question which naturally arises is whether the information about fiscal policy has become much more relevant for investors and for their trading decisions. Thus, the aim of this study is to investigate empirically the interactions between fiscal policy and stock market in the Bucharest Stock Exchange (BSE).

The Bucharest Stock Exchange was officially opened in December 1st, 1882, but its activity stopped in 1948 when the Communist regime established in Romania. It was re-opened 50 years later in 1995. The increase in the market capitalisation as GDP ratio in 2015 compared to 1995 was of 5866.7 percentage from 0.3 to 17.9 percent of GDP. The number of listed companies has increased more than 9 times over the last two decades from 9 companies listed and traded in 2009 to 84 companies in 2015[1]. The data reported by the Federation of European Securities Exchanges (FESE) indicates that the share of the BSE in total market capitalisation as of January 2015 is of 0.2 percentage which is comparable with the shares of other Eastern European stock markets such of Hungary,

[1] Own calculations based on general statistics provided by Bucharest Stock Exchange, www.bvb.ro, and by the Romanian Institute of Statistics, www.insse.ro.

Bulgaria, Slovenia, and the Czech Republic[2]. In 2013, the Bucharest Stock Exchange was ranked 15th among the best performing stock exchanges globally having an increase in the market index of 22.5%[3]. Thus, one can conclude that the Romanian stock market is still emerging, but it represents a great investment opportunity. One recent study (Dragotă and Țilică, 2014) also suggests that the former communist East European stock markets are considered highly speculative and that the market efficiency is questionable.

Considering the above mentioned aspects, conducting a study on the interactions between fiscal policy and stock market for the Bucharest Stock Exchange might shed more light on investors' behaviour in connection with governments and also on informational efficiency.

Much of the literature investigating this relationship has relied on the seminal work of Darrat (1988a, 1990). Darrat examined the efficiency market hypothesis in its semi-strong form by testing whether prices on the Montreal Stock Exchange fully reflected information on monetary and fiscal policy. He found that Canadian stock prices fully reflected available information on monetary policy moves and the presence of a significant lagged relationship between fiscal policy variables and current stock market return. Taken together, Darrat suggested that these findings do not support the efficiency market hypothesis.

The recent body of research within this topic has been indicating various results. Jansen, Li, Wang and Yang (2008) examined the impact of fiscal policy on US stock and Treasury bonds markets. The findings showed that fiscal policy was not a direct information variable for the financial markets and that the impact of monetary policy on assets markets varied with the state of fiscal deficit or surplus. Laopodis (2009) found that past budget deficits negatively affected US stock return thus indicating no informational efficiency of the stock market. He also suggested that investors did not place much faith on news about budget deficit, considering more important the news about monetary policy. Chatziantoniou, Duffy and Filis (2013) also revealed that the interactions between the monetary and fiscal policy are more important in explaining the developments in the stock market rather than considering the isolated effect of one of the policies. Ardagna (2009) examined financial markets' behaviour around episodes of fiscal adjustments for a panel comprising OECD countries. She indicated that stock prices increased around times of fiscal tightening and decreased in periods of loose fiscal policy. Ardagna also found that fiscal consolidation leading to a decrease in government debt was associated with an increase in the stock market prices. Agnello and Sousa (2010) showed for a panel of ten industrialized countries that positive shocks on fiscal policy led to an immediate adjustment of stock prices, but that the effect was merely temporarily in comparison with the housing prices which exhibited a stronger persistence and remain depressed for longer time.

For the purpose of this study, we follow Darrat (1988a) to investigate the interactions between the fiscal policy and the Romanian stock market. In this sense, we use two distinct datasets: one comprising quarterly data ranging from 2002:q4 to 2014:q4, and one comprising monthly data extracted from 2008:02 to 2015:10. The reason of conducting the analysis on distinct frequency data is to examine how quick the information on fiscal policy is included by the stocks prices. We also use

[2] FESE Monthly Statistics, January 2015, http://www.fese.eu/statistics-market-research/historical-data.
[3] Ziarul Financiar, http://www.zf.ro/zf-24/topul-cresterilor-de-pe-burse-la-nivel-mondial-in-2013-romania-este-pe-locul-15-11792069.

two variables of fiscal policy: the budget balance and the public debt. We plan in exploring how Romanian stock market reacts to distinct information about fiscal policy. The budget balance is a flow variable and shows the government transactions within the budget year, while the public debt is a stock variable which also includes information about the past fiscal policy actions.

The reminder of the paper is organized as follows: Section 2 presents the methodology of this study. Section 3 describes the dataset and discusses the results of the investigation. Section 4 draws the main concluding remarks.

**2.Methodology**

In order to examine how the Romanian stock market includes the information about fiscal policy, we follow Darrat (1988a). Firstly, we investigate the impact of past fiscal policy information on stock return. For this purpose, we estimate the model described by equation (1). For robustness reasons, we also include a set of control variables and also monetary policy variables, considering the interactions between fiscal and monetary policies:

$$SR_t = \alpha + \beta_1 Z_t + \sum_{i=1}^{t_1} \beta_{2t} M_{t-i} + \sum_{i=1}^{t_1} \beta_{3t} F_{t-i} + \varepsilon_t \quad (1)$$

where:

$SR_t$ is the stock market return; $Z_t$ is the set of control variables; $M_{t-i}$ is the monetary policy variable; $F_{t-i}$ is the fiscal policy variable; $a$, $\beta_{1,2,3}$ are coefficient to be estimated; $t_{t-i}$ are the lags for monetary and fiscal policy variables; $t_t$ is the number of observations; $\varepsilon_t$ is the error term.

In the *semi-strong form* of the efficiency market hypothesis (SME), the stock prices should at any time 'fully reflect' publicly available information (Fama, 1969). Thus we believe that in order to accept SME hypothesis, the impact of fiscal policy information on stock return should be contemporaneous. Equation (1) tests the SME and if the presence of significant lagged correlations between fiscal policy variables and the stock return is proved, the results could be viewed as a possible rejection of this hypothesis.

Secondly, as Darrat (1988a) indicated based on Barro's (1977, 1978) original work for the monetary policy, only the unanticipated changes in fiscal policy could have a more dramatic effect on stock market than do the anticipated ones. Therefore, we predict the Romanian fiscal policy using the model described by equation (2):

$$F_t = \alpha_0 + \alpha_1^n F_t + \alpha_2^m W_t + u_t \quad (2)$$

where:

$F_t$ is fiscal policy variable; $W_t$ is the set of predictors; $a_{1,2}$ the coefficients to be estimated; $n,m$ the length of the lag of the relevant predictors; $u_t$ is the error term.

Thirdly, we test the effects of anticipated and unanticipated fiscal policy on the stock return. They are represented by the predicted values and the residuals from equation (2). The model employed is described by equation (3):

$$SR_t = \alpha + \beta_1 Z_t + \sum_{j=1}^{k_1} \beta_{2j} M_{t-j} + \sum_{j=0}^{k_2} \beta_{3j} AF_{t-j} + \sum_{j=0}^{k_3} \beta_{4j} UF_{t-j} + e_t \quad (3)$$

where:

$SR_t$ is the stock market return; $Z_t$ is the set of control variables; $M_t$ are the monetary policy variables; $AF_t$ is the anticipated fiscal policy; $UF_t$ is the unanticipated fiscal policy; $a$, $\beta_{1,2,3,4}$ are coefficient to be estimated; $k_{1,2,3}$ represent the lag length; $e_t$ is the error term.

**3.Dataset and results**

We use a dataset comprising of monthly data spanned on 2008:02-2015:10 and also of quarterly data extracted from 2000:2-2014:4. We use the percentage change of BET Index as a proxy for the stock market return. We consider the money aggregate M2 as monetary policy variable. We also include the 90-days and 30-days interest rates in the money market to control for the expected return on capital. We test equations (1), (2) and (3) using two distinct fiscal policy variables: the overall budget balance and the public debt both as GDP ratios. The reason of running tests on two fiscal variables instead only on the budget deficit as in Darrat's (1988) original paper resides in the fact that one is a flow variable and the other is a stock variable which also includes information on past deficit and past fiscal policy. We believe that the results could reveal interesting insights on how participants in the Romanian stock market assess distinct information about fiscal policy. For predicting the Romanian fiscal policy we use the trade balance and the unemployment rate. We seasonally adjusted the data and use the first difference for situations when the data is not stationary. Table 1 and 2 in the Appendix present the variables used in the models. Additionally, descriptive statistics for the monthly and quarterly dataset are reported in Table 3 and 4 in the Appendix.

One examination of the correlation between the fiscal policy variables and stock return as showed in Figure 1 and Figure 2 below indicates some mixed results. On monthly data, we can observe a slightly negative relationship between the budget balance and stock return, and a positive correlation between public debt and stock return. On quarterly data, we can note a positive relation between overall balance and market return, and almost no correlation between public debt and capital markets. These mixed results can suggest some inconsistency on how information on fiscal policy is included in the stock prices by the participants in the capital market.

**Figure 1 Fiscal policy variables vs. stock market return on quarterly data**

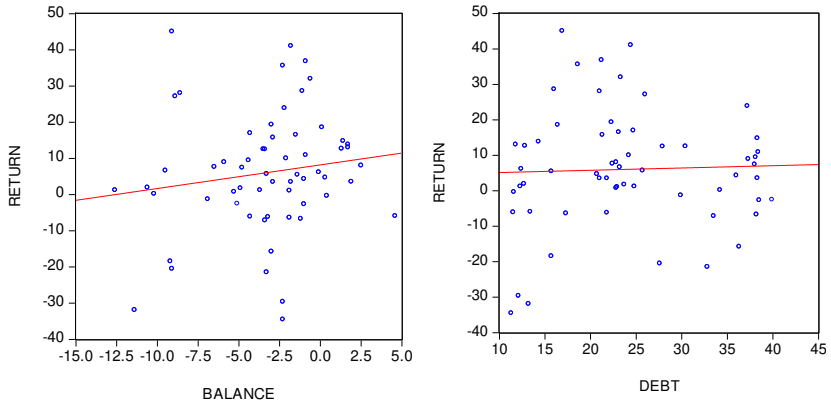
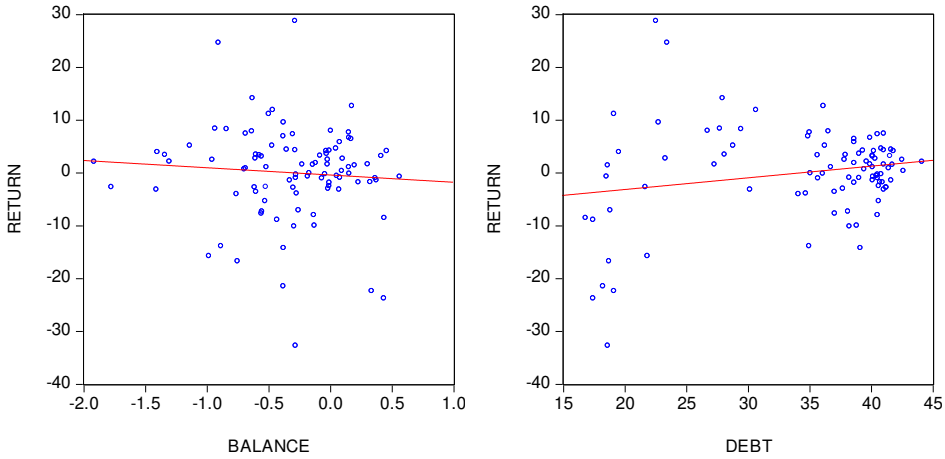


**Figure 2 Fiscal policy variables vs. stock market return on monthly data**




An additional analysis of the distribution of the stock market returns as illustrated in Figure 3 and Figure 4 also sheds some light on the EMH at the BSE. The quarterly stock market returns tend to be more normally distributed than the monthly returns as indicated by Jarque-Berra statistics and the p-value. Thus, one can conclude that: capital markets participants need more time to incorporate the information in their trading decisions and that it is more likely to reject the EMH on short term than in longer run. As for the aim of this study, we might expect that the investors to adjust more rapidly to information about fiscal policy on quarterly data.

**Figure 3 Stock return distribution for quarterly data**

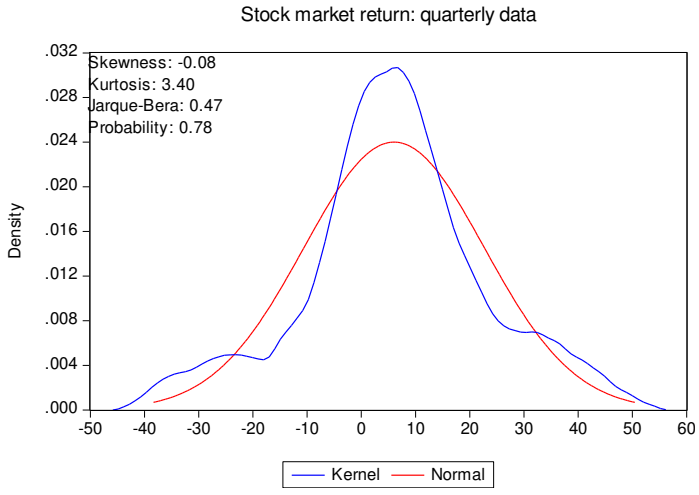
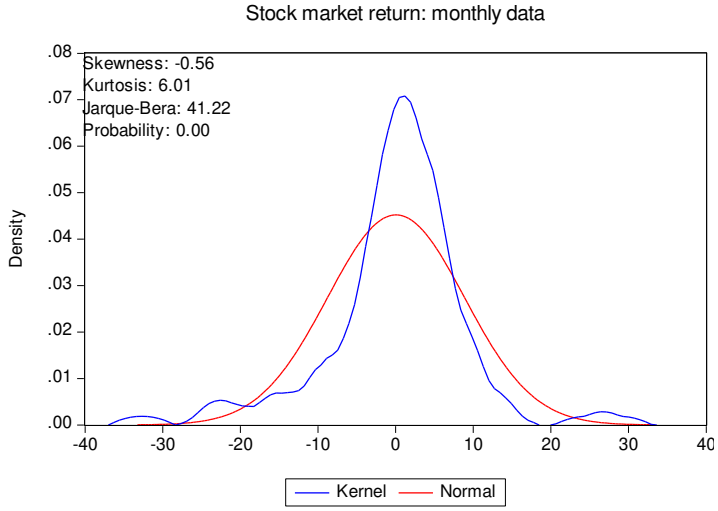


**Figure 4 Stock return distribution for monthly data**

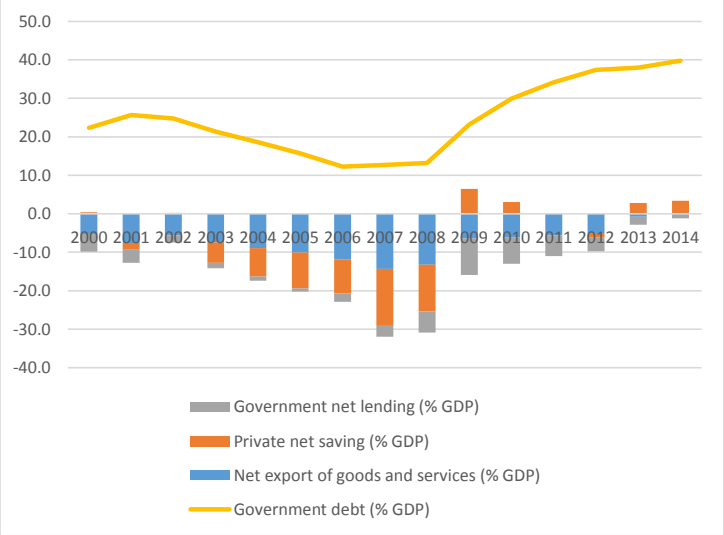



The equation (1) estimates reported in Table 5 in the Appendix for quarterly data and using the overall budget balance as a fiscal variable show the significant positive impact of the fiscal policy the 8th quarter on stock market return. The results should be explained carefully considering that due to stationarity reasons we used the changes in the overall budget as GDP ratio to proxy the fiscal policy. From this perspective, we might state that Romanian stock market positively reacts to an increase in the speed of fiscal adjustment. If the speed of fiscal adjustment increases by 1 percentage point, then the stock returns will increase by 6.579 percentage points. The delay of stock market response is of two years. However, this is the only impact of past fiscal policy which we found, and jointly tested the lagged fiscal policy terms are not significant different from zero at 5% (the summed impact is of 28.543, and t-statistic is 1.167). Additionally, we found no joint influence of lagged inflation (just for the 4th quarter), nor of the lagged GDP growth rates. Regarding the monetary policy, the results show a significant joint influence of the money growth which is not consistent with the SME hypothesis. The residuals in equation (1) were tested for normality, serial correlation and for heteroskedasticity. The Breusch-Godfrey serial correlation LM test indicates some mixed results. The p-value corresponding to $\chi^2$-statistic is 0.0000 and p-value corresponding to F-statistic is 11.24%. But, according to Schmidt (1974) Theil's criterion can hold even when residuals are autocorrelated. White test for indicates no heteroskedasticity for residuals (F-statistic=2.515, p-value=0.0714). Jarque-Berra statistic of 1.325 and the p-value of 0.515 suggest a normal distribution of the residuals. Thus, we might accept these results as unbiased and state that we cannot reject the SME for the Bucharest Stock Exchange.

In order to predict the Romanian fiscal policy as in equation (2), we used as explanatory lagged changes in the overall budget balance, in the unemployment rate and in the foreign trade balance. The lagged variables of fiscal policy are used to capture some inertia in fiscal policy implying that current

fiscal policy actions base on past ones. The nexus between the foreign trade balance and the budget balance is much debated in the literature and is well known as 'the twin deficit hypothesis' (TDH) or as 'Feldstein chain' (for more discussions see Feldstein and Horioka (1980), Niskanen (1988), Enders and Lee (1990)). Based on the national income accounting identity and under the Ricardian equivalence approach, the TDH states that the budget deficits or negative public savings generates the foreign trade deficits. This effect can also be explained by the fact that the budget deficit increases the domestic real interest rate, hence attracting more foreign capital which causes the real exchange rate to appreciate, and consequently the foreign trade balance to deteriorate. However, there are studies which brought into attention that budget deficits were not necessarily the primary cause of the trade deficits and suggested a reverse TDH implying that the foreign trade deficit could also generate the budget deficit (Darrat, 1988b; Summers, 1988). Reisen (1998) documented that this might be the case of the emerging economies which adopted market-oriented reforms, hence enhancing their attractiveness for the international investment. This is also true in the case of Romania which ran large deficits in foreign trade, private savings and government budget balance within the period 2000-2014 as represented in Figure 5. It can be noticed that the government deficit was not so big to generate deficit in the foreign trade balance. In 2009 an thereafter, the positive net private savings and the decreasing foreign trade deficit were mainly driven by the economic recession which caused investments and international trade to fall, while the reduction in the government deficit is a consequence of severe austerity fiscal measures. This evidence of the 'triple deficits hypothesis' as in Şen and Kaya (2016) indicates that Romania could become more indebted in the future as suggested by the growth in the government debt to GDP ratio since 2009.

**Figure 5 Net exports, private savings and government net lending in Romania, 2000-2014**



We used the unemployment rate as a proxy for the business cycle effect on the fiscal policy. It is documented that many major areas of government spending are countercyclical and that large portions of the total government expenditure tend to rise when economic growth slows down and it is accompanied by a sharp rise in the unemployment (Roubini and Sachs, 1989).

The estimates of equation (2) employing Theil's criterion for lag selection is reported in Table 6 in the Appendix. We can observe that only lagged changes in the overall budget balance are significant for the prediction of the current fiscal policy. The Breusch-Godfrey test indicates no correlation for the residuals (p-value corresponding to $\chi^2$-statistic is 0.737 and p-value corresponding to F-statistic is 0.790) and Chow test indicates no breakpoint for 2007:q3 (p-value for the corresponding F-statistic is 0.530).

Using the predicted values and the residuals from equation (2), we estimate equation (3) in order to capture the unanticipated and the anticipated effects of fiscal policy on stock market returns. The estimations are reported in Table 7 in the Appendix. The results indicate a significant impact of the contemporaneous unanticipated fiscal policy on stock market return and several lagged of the anticipated fiscal policy terms. However, the joint hypothesis for the past anticipated fiscal policy suggests no significant influence on stock market return (the corresponding t-statistic for 5% is 1.706). We also found no significant impact of past monetary policy. When accounting for the effects of the unanticipated and anticipated fiscal policy, we also found significant impact of the past and contemporaneous inflation and of the contemporaneous interest rate on stock market return. Although the negative relationship between inflation and stock market return may be absonant to the long-held beliefs, such correlation was revealed by the empirical evidence (Feldstein, 1978; Pindyck, 1983) and it was substantiated twofold: (i) on one hand, it was considered that a higher rate of inflation contributes to the decrease in the depreciation allowances, thus increasing the effective tax rate on corporate income which reduces the real net return to equity as Feldstein (1983) documented; (ii) on the other hand it was believed as a consequence of the inefficiency of the stock market as Fama and Schwert (1977) suggested based on the empirical evidence. The negative interaction between the contemporaneous interest rate and the stock market return even if it is counter-intuitive it is supported by Giovannini and Jorion (1987) who showed that the expected returns for the US stock market are negatively correlated with the nominal interest rates. This relationship can be explained considering the effect of leverage on the performance of the company. Weill (2008) explains that, on one hand, firms with higher leverage should improve their performance due to the increase in the debt financing which pressures the managers to perform to reduce the moral hazard, and, on other hand, a higher leverage could also imply higher agency costs because of the diverging interests between stakeholders and thus it would be negatively associated with firm's performance. Recent evidence has supported the negative correlation between debt and performance for companies in Eastern European countries (Chandrapala and Knápková, 2013; Močnik and Sĭrec, 2015) which was justified by the increase in the financial distress costs which lower firm's profitability. Similar results are also documented for the Romanian companies listed at BSE (Miloş and Miloş, 2015).

When using the public debt-to-GDP ratio as fiscal policy variable for the quarterly dataset (Table 8 in the Appendix), we found significant impact of the changes in the public debt to GDP ratio from the previous quarter to current stock market return which suggests the rejections of the SME

hypothesis. The estimates for equation (1) indicate no impact of the monetary policy at any of the lags selected according to Theil's criterion which is consistent with the SME hypothesis. The 90-days interest rate and the inflation rate has no significant effect on stock market return. The past GDP growth rates strongly influences the stock return. Additional tests indicate no correlation of residuals, no heteroskedasticity and normally distributed errors.

The prediction of fiscal policy when using the changes in the public debt-to-GDP ratio is better than using the changes in the budget balance as confirmed by R-squared of 81%. Table 9 in the Appendix reports the results in this sense. Using the predicted values as proxy for the anticipated fiscal policy and residuals as proxy for the unanticipated fiscal policy, we estimate equation (3) and report the results in Table 10 in the Appendix. We show that the unanticipated fiscal policy has more significant effects on stock market return than the anticipated one, but testing the joint influence of past unanticipated fiscal policy, we found no relevant impact which is consistent with the SME. The results also reveal that the interest and inflation rates have no relevant effect on stock market return when using the public debt as fiscal policy variable compared to the situation when fiscal policy was proxied by the changes in the overall budget balance which can give insights about investors' preference.

Summing up the results for the quarterly dataset, we may state that traders at the BSE include the information on fiscal policy in a way which is consistent with the SME and thus we cannot reject this hypothesis.

Running the same tests for the monthly dataset, and using the changes in the overall budget balance as fiscal policy variable, we observe the significant influence of the past fiscal policy and no relevant impact of past monetary policy (Table 11 in the Appendix). Additionally, the contemporaneous 30-days money market interest rate has a negative effect on returns and the past inflation, while past industrial production has a positive influence on stock return. Controlling for the effects of the contemporaneous and past anticipated and unanticipated fiscal policy, we found no significant impact on stock market return (Table 12 and 13 in the Appendix). The results show only significant impact of the contemporaneous anticipated fiscal policy and of monetary policy. These results are consistent with the SME hypothesis. The negative effect of the contemporaneous nterest rate still remains.

Using the changes in the public debt-to-GDP ratio to proxy the fiscal policy, we found significant impact of past fiscal and monetary policy. Hence, we can reject the SME hypothesis in this case The results also show relevant and negative impact of past inflation and of the contemporaneous 30-days interest rate on money market (Table 14 in the Appendix). When decomposing the effects of fiscal policy into anticipated and unanticipated ones, the only significant influence comes from the contemporaneous interest rate and it is negative. The joint impact of past fiscal policy and of monetary policy is not relevant, implying the impossibility of rejecting the efficient market hypothesis in its semi-strong form.

## 4.Concluding remarks

The aim of this study was to investigate how the information about fiscal policy is included in the stock prices at the Bucharest Stock Exchange Taking into consideration recent developments, there has been observed a change in the behaviour if the participants in the financial markets. The main change is represented by an increase in the risk aversion which led to an overpricing of the sovereign risks uncorrelated with the underlying fiscal fundamentals. Thus, traders' rationality and the efficiency market hypothesis can be put into question.

Having in mind that the Bucharest Stock Exchange has been reopened since 1995 and can be considered as an emerging one, we were interested in examine how traders incorporate the information on fiscal policy and if this is consistent with the stock market efficiency hypothesis in its semi-strong from. For this purpose, we employed Darrat's (1988) methodology and estimated several equations in order to clearly identify how fiscal policy impact the stock market returns. The contribution of our paper consists in the use of two distinct variable of fiscal policy, the overall budget balance and the public debt, and of two different datasets consisting of quarterly and monthly data. The relevancy of our approach is given by the fact that we test how different information about fiscal policy could be included in the stock prices and the speed of this incorporation.

The results showed that when we do not control for the anticipated and unanticipated effects of fiscal policy, past lags of changes in the overall budget balance and in public debt-to-GDP ratio influence the current stock market return for both quarterly and monthly dataset. Based on these findings, we failed in accepting the efficiency market hypothesis in its semi-strong form. Past monetary policy becomes relevant and has impact on stock market returns when the prediction of fiscal policy is poor as indicated by the R-squared. When we decomposed fiscal policy and examine the impact of both effects, we found that both past anticipated and unanticipated fiscal policy have no significant influence on stock market returns, which is consistent with the SME hypothesis. This finding should be considered carefully, taking into account that the estimations could be subject to misspecification of the model used to predict the fiscal policy. Among the control variables used in the regressions, the interest rate on money market has a negative impact on stock market return and this effect is robust. We cannot state whether traders on BSE rely more on information provided by the budget balance or public debt or if the information on fiscal policy includes distinctively in the stock market return depending on the time horizon.

## References


Agnello, Luca; Sousa, Ricardo, (2010), Fiscal Policy and Asset Prices, NIPE WP 25/2010.

Aizenman, Joshua.; Pasricha, Gurnaian, (2010) Fiscal fragility: what the past may say about the future, NBER Working Paper No. 16478

Ardagna, Silvia, (2009), Financial markets' behaviour around episodes of large changes in the fiscal stance, European Economic Review, 53(2009), pp.37-55.

Barro, Robert, (1978), Unanticipated Money, Output, and the Price Level in the United States, Journal of Political Economy, Vol.86, No.4, pp.549-580.

Barro, Robert, (1977), Unanticipated Money Growth and the Unemployment in the United States, The American Economic Review, Vol.67, No.2, pp.101-11.

Chandrapala, Pathirawasam; Knápková, Adriana, (2013), Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, Vol.LXI, No.7, pp.2183-2190.

Chatzantoniou, Ioannis; Duffy, David; Filis, George, (2013), Stock market response to monetary ad fiscal policy shocks: Multi-country evidence, Economic Modelling, 30(2013), pp.754-769.

Darrat, Ali, (1990), Stock Returns, Money and Fiscal Deficit, The Journal of Financial and Quantitative Analysis, Vol.25, No.3, pp.387-398.

Darrat, Ali, (1988a), On Fiscal Policy and Stock Market, Journal of Money, Credit and Banking, Vol.20, No.3, pp.353-363.

Darrat, Ali, (1988b), Have Large Budget Deficits Caused Rising Trade Deficits?, Southern Economic Journal, Vol.54, No.4, pp.879-887.

De Grauwe, Paul; Ji, Yuemei, (2012), Mispricing of Sovereign Risk and Macroeconomic Stability in the Eurozone, Journal of Common Market Studies, Volume 50, Number 6, pp.866-880.

Dragotă, Victor; Ţilică, Elena (2014), Market efficiency of the Post Communist East European stock markets, Central European Journal of Operations Research, Volume 22, Number 2, pp.307-337.

Enders, Walter; Lee Bong-Soo, (1990), Current Account and Budget Deficits: Twins or Distant Cousins?, The Review of Economics and Statistics, Vol.72, No.3, pp.373-381.

Fama, Eugene; Schwert, William, (1977), Asset Returns and Inflation, Journal of Financial Economics, Vol.5, pp.115-146.

Fama, Eugene, (1969), Efficient Capital Markets: A Review of Theory and Empirical Work, The Journal of Finance, Vol.25, No.2, pp.383-417.

Feldstein, Martin, (1983), A Summary of the Theoretical Models, in Inflation, Tax Rules and Capital Formaion, ed. Martin Feldstein, University of Chicago Press

Feldstein, Martin (1978), Inflation and the Stock Market, The American Economic Review, Vol.70, No.5, pp.839-847.

Feldstein, Martin; Horioka, Charles, (1980), Domestic Savings and Internaional Capital Flows, The Economic Journal, Vol.90, No.358, pp.314-329.

Giovannini, Alberto; Jorion, Philippe, (1987), Interest rates and risk premia in the stock market and in the foreign exchange market, Journal of International Money and Finance, Vol.6, Issue 1, pp.107-123.

Jansen, Dennis; Li, Qi; Wang, Zijun; Yang, Jian, (2008), Fiscal policy and asset markets: A semiparametric analysis, Journal of Econometrics, 147(2008), pp.141-150.

Laopodis, Nikiforos, (2009), Fiscal policy and stock market efficiency: evidence for the United States, The Quarterly Review of Economics and Finance, 49(2009), pp.633-650.

Miloş, Laura; Miloş, Marius, (2015), Annals of the „Constantin Brâncuşi" Univeristy of Târgu-Jiu, Economy Series, Special Issue ECO-TREND 2015 – Performance, Competitiveness, Creativity, pp.228-233.

Močnik, Diana; Sĭrec, Karin, (2015), Determinants of a fast-growing firm's profits: Empirical evidence for Slovenia, Scientific Annals of "Alexandru Ioan Cuza" University of Iaşi Economic Sciences, Vol.62, No.1, pp.37-54.

Niskanen, William, (1988), The uneasy relation between the budget deficit and trade deficits, Cato Journal, Vol.8, No.2, pp.507-532.

Pindyck, Robert, (1983), Risk, Inflation, and the Stock Market, The American Economic Review, Vol.74, No.3, pp.335-351.

Reisen, Helmut, (1998), Sustainable and excesive current account deficits, OECD Development Center, Working Paper No.132.

Roubini, Nouriel; Sachs, Jeffrey, (1989), Political and Economic Determinants of Budget Deficits in the Industrial Democracies, European Economic Review, Vol.33, Issue 5, pp.903-938.

Schmidt, Peter, (1974), A Note on Theil's Minimum Standard Error Criterion when the Distrubances are Autocorrelated, The Review of Economics and Statistics, Vol.56, No.1, pp.122-123.

Summers, Lawrence, (1988), Tax Policy and International Competitiveness, in International Aspects of Fiscal Policy, ed. Jacob A. Frankel, University of Chicago Press.

Şen Hüseyin; Kaya, Ayşe, (2016), Are the twin or triple deficits hypotheses applicable to the post-communist countries?, BOFIT Discussion Papers 3/2016, Bank of Finland.

Turner, David; Spinelli, Francesca, (2011), Explaining the Interest Rate-Growth Differential Underlying Government Debt Dynamics, OECD Economics Department Working Papers, No. 919, OECD Publishing.

Weill, Laurent, (2008), Leverage and Corporate Performance: Does Institutional Environment Matter?, Small Business Economics, Vol.3, No.3, pp.251-265.

**Appendix**

**Table 1 Description of the dataset for quarterly data**

| Variable (Variable name in the model) | Seasonally adjusted | Stationary | Variable used in equations | Source |
|---|---|---|---|---|
| Stock market return (SR) | No | In level | The percentage change in the BET Index | Reuters |
| Interest rate (R) | No | In difference | The change in the 90-days interest rate in the money market | Ameco |
| Money growth (MG) | Yes | In difference | The change in the money aggregate M2 as GDP ratio | National Bank of Romania |
| Inflation rate (INF) | No | In level | Harmonised Index of Consumer Prices (HICP) used for quarterly data | Ameco |
| GDP growth rate (GDP) | Yes | In level | The percentage change in the GDP at market prices | Ameco |
| Budget balance (BAL) | Yes | In difference | The change in the overall budget balance as GDP ratio | Ameco |
| Public debt (DEBT) | No | In difference | The change in the public debt to GDP ratio | Ameco |
| Foreign trade balance (FTB) | No | In difference | The change in the foreign trade balance as GDP ratio calculated as the difference between the volume of exports and imports as GDP ratio | Ameco |
| Unemployment rate (UN) | No | In difference | The change in the unemployment rate | National Bank of Romania |

**Table 2 Description of the dataset for monthly data**

| Variable (Variable name in the model) | Seasonally adjusted | Stationary | Variable used in equations | Source |
|---|---|---|---|---|
| Stock market return (SR) | No | In level | The percentage change in the BET Index at the Bucharest Stock Exchange | Reuters |
| Interest rate (R) | No | In difference | The change in the one month interest rate in the money market | Ameco |
| Money aggregate(MG) | No | In level | The change in the money aggregate M2 as GDP ratio | National Bank of Romania |
| Inflation rate (INF) | No | In level | Monthly Harmonised Index of Consumer Prices (HICP) | Ameco |
| Industrial production growth rate (GDP) | No | In level | The percentage change in industrial production | National Bank of Romania |
| Budget balance (BAL) | No | In difference | The change in the overall budget balance as GDP ratio | Romanian Ministry |

| | | | | |
|---|---|---|---|---|
| | | | | of Public Finance |
| Public debt (DEBT) | No | In difference | The change in the public debt to GDP ratio | Romanian Ministry of Public Finance |
| Foreign trade balance (FTB) | No | In level | The change in the foreign trade balance as GDP ratio calculated as the difference between the volume of exports and imports as GDP ratio | National Bank of Romania |
| Unemployment rate (UN) | No | In level | The unemployment rate | National Bank of Romania |

**Table 3 Descriptive statistics for quarterly data**

| Variable | Average | St.dev. | Min | Max |
|---|---|---|---|---|
| SR | 5.82 | 16.67 | -34.52 | 45.07 |
| DEBT | 0.30 | 1.38 | -2.60 | 4.10 |
| BAL | 0.03 | 3.05 | -9.06 | 8.80 |
| GDP | 0.91 | 1.39 | -5.90 | 3.30 |
| R | -1.11 | 3.67 | -21.20 | 6.87 |
| INF | 1.35 | 1.43 | -0.50 | 5.74 |
| MG | 0.38 | 2.60 | -6.58 | 5.18 |
| FTB | 0.01 | 1.53 | -2.52 | 5.69 |
| UN | -0.12 | 1.01 | -3.50 | 4.80 |
| Total number of observations: 59 | | | | |

**Table 4 Descriptive statistics for the monthly data**

| Variable | Average | St.dev. | Min | Max |
|---|---|---|---|---|
| SR | 0.34 | 8.56 | -32.68 | 28.78 |
| DEBT | 0.00 | 0.70 | -1.59 | 2.48 |
| BAL | 0.26 | 1.41 | -3.97 | 4.65 |
| GDP | 3.02 | 6.43 | -16.40 | 19.90 |
| R | 0.29 | 0.55 | -2.53 | 2.59 |
| INF | -0.08 | 1.03 | -3.18 | 5.45 |
| MG | 35.67 | 1.89 | 29.08 | 39.18 |
| FTB | -0.33 | 0.39 | -1.70 | 0.35 |
| UN | 0.01 | 0.23 | -0.67 | 0.67 |
| Total number of observations: 93 | | | | |

**Table 5 Equation (1) estimates for quarterly data and overall budget balance as fiscal policy variable**

| Fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $BAL_t$ | 1.758 | [0.969] | | | | $GDP_t$ | -1.753 | [-0.448] | $R_t$ | -2.040 | [-0.617] | $INF_t$ | -20.356 | [-1882] |
| $BAL_{t-1}$ | 4.214 | [1.425] | $MG_{t-1}$ | 1.054 | [0.315] | $GDP_{t-1}$ | 0.317 | [0.104] | | | | $INF_{t-1}$ | 16.068 | [1.367] |
| $BAL_{t-2}$ | 1.701 | [0.469] | $MG_{t-2}$ | 2.206 | [0.464] | $GDP_{t-2}$ | 0.368 | [0.064] | | | | $INF_{t-2}$ | -6.883 | [-0.894] |
| $BAL_{t-3}$ | -0.497 | [-0.112] | $MG_{t-3}$ | -2.924 | [-0.674] | $GDP_{t-3}$ | -3.040 | [-0.862] | | | | $INF_{t-3}$ | 10.521 | [2.099] |
| $BAL_{t-4}$ | -0.667 | [-0.123] | $MG_{t-4}$ | -0.667 | [-0.123] | $GDP_{t-4}$ | -0.730 | [-0.196] | | | | $INF_{t-4}$ | 12.338 | [2.268] |
| $BAL_{t-5}$ | 0.969 | [0.167] | $MG_{t-5}$ | -3.597 | [-0.867] | $GDP_{t-5}$ | 1.739 | [0.589] | | | | $INF_{t-5}$ | -4.306 | [0.704] |
| $BAL_{t-6}$ | 3.416 | [0.702] | $MG_{t-6}$ | 3.748 | [0.566] | $GDP_{t-6}$ | -4.278 | [-1.049] | | | | $INF_{t-6}$ | -7.638 | [-1.154] |
| $BAL_{t-7}$ | 5.595 | [1.839] | $MG_{t-7}$ | 7.494 | [1.423] | $GDP_{t-7}$ | 3.618 | [1.055] | | | | $INF_{t-7}$ | 7.731 | [1.016] |
| $BAL_{t-8}$ | 6.579 | [3.229] | $MG_{t-8}$ | 8.404 | [2.339] | $GDP_{t-8}$ | -5.607 | [-1.092] | | | | $INF_{t-8}$ | 13.181 | [2.085] |
| $BAL_{t-9}$ | 5.354 | [2.065] | $MG_{t-9}$ | 6.197 | [1.765] | $GDP_{t-9}$ | 5.986 | [1.226] | | | | $INF_{t-9}$ | -0..675 | [-0.056] |
| $BAL_{t-10}$ | 0.119 | [0.040] | $MG_{t-10}$ | -1.820 | [-0.065] | $GDP_{t-10}$ | 3.768 | [1.431] | | | | $INF_{t-10}$ | 9.032 | [0.879] |
| | | | | | | | | | | | | $INF_{t-11}$ | -19.400 | [-1.773] |
| *Sum* | 28.543 | [1.167] | *Sum* | 2.009 | (0.000) | *Sum* | 0.388 | (0.235) | | | | *Sum* | 9.611 | [0.889] |
| Constant | -0.123 | [-1.236] | | | | | | | | | | | | |
| $R^2$ | 0.91 | | | | | | | | | | | | | |
| *SE* | 0.115 | | | | | | | | | | | | | |
| *D-W* | 2.780 | | | | | | | | | | | | | |

*Note:* The numbers in squared parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. *T-statistic* calculated at 5% and for 9 degrees of freedom is 2.2622.

**Table 6 Equation (2) estimates for quarterly data and overall budget balance as fiscal policy variable**

| Fiscal policy | | | Foreign trade balance | | | Unemployment | | |
|---|---|---|---|---|---|---|---|---|
| $BAL_{t-1}$ | -0.540 | [-4.068] | $FTB_{t-1}$ | 0.179 | [0.720] | $UN_{t-1}$ | -0.260 | [-0.707] |
| $BAL_{t-2}$ | -0.423 | [-2.988] | | | | | | |
| $BAL_{t-3}$ | -0.315 | [-2.311] | | | | | | |
| Constant | 0.009 | [0.255] | | | | | | |
| $R^2$ | 0.30 | | | | | | | |
| *SE* | 0.027 | | | | | | | |
| *D-W* | 2.067 | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. The Breusch-Godfrey F-statistic is 0.3704.

**Table 7 Equation (3) estimates for quarterly data and overall budget balance as fiscal policy variable**

Commented [A1]:

| Unanticipated fiscal policy | | | Anticipated fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $UF_t$ | 2.908 | [2.520] | $AF_t$ | -0.943 | [-0.426] | | | | $GDP_t$ | -0.963 | [-0.447] | $R_t$ | -3.954 | [-2.436] | $INF_t$ | -29.624 | [-3.194] |
| | | | $AF_{t-1}$ | 6.880 | [4.218] | $MG_{t-1}$ | -2.424 | [-1.780] | $GDP_{t-1}$ | 0.103 | [0.067] | | | | $INF_{t-1}$ | 7.816 | [1.286] |
| | | | $AF_{t-2}$ | 4.719 | [1.571] | | | | $GDP_{t-2}$ | -2.788 | [-1.045] | | | | $INF_{t-2}$ | -13.485 | [-2.035] |
| | | | $AF_{t-3}$ | 4.960 | [1.486] | | | | $GDP_{t-3}$ | -1.419 | [-0.848] | | | | $INF_{t-3}$ | 10.846 | [3.553] |
| | | | $AF_{t-4}$ | 6.680 | [2.611] | | | | $GDP_{t-4}$ | 2.580 | [1.100] | | | | $INF_{t-4}$ | 1.397 | [ 0.414] |
| | | | $AF_{t-5}$ | 4.547 | [2.338] | | | | $GDP_{t-5}$ | 1.937 | [0.758] | | | | $INF_{t-5}$ | -14.638 | [-3.997] |
| | | | $AF_{t-6}$ | -2.280 | [-1.280] | | | | $GDP_{t-6}$ | -0.078 | [-0.028] | | | | $INF_{t-6}$ | -5.091 | [-2.533] |
| | | | $AF_{t-7}$ | -1.252 | [-0.588] | | | | $GDP_{t-7}$ | 3.143 | [1.304] | | | | $INF_{t-7}$ | 7.801 | [3.196] |
| | | | | | | | | | $GDP_{t-8}$ | -8.762 | [-2.985] | | | | $INF_{t-8}$ | -0.424 | [-0.158] |
| | | | | | | | | | $GDP_{t-9}$ | 0.139 | [0.0531] | | | | $INF_{t-9}$ | -4.433 | [-1.873] |
| | | | | | | | | | $GDP_{t-10}$ | 2.535 | [0.844] | | | | $INF_{t-10}$ | 13.742 | [2.785] |
| | | | | | | | | | $GDP_{t-11}$ | -1.779 | [-0.699] | | | | $INF_{t-11}$ | -24.147 | [-3.271] |
| | | | | | | | | | $GDP_{t-12}$ | -5.035 | [-1.946] | | | | $INF_{t-12}$ | 34.696 | [4.549] |
| | | | *Sum* | 23.312 | [1.706] | | | | *Sum* | -10.38 | (0.040) | | | | *Sum* | -15.546 | [-2.178] |
| Constant | 0.076 | | | | | | | | | | | | | | | | |
| $R^2$ | 0.88 | | | | | | | | | | | | | | | | |
| *SE* | 0.103 | | | | | | | | | | | | | | | | |
| *D-W* | 2.808 | | | | | | | | | | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. *T-statistic* calculated at 5% and for 14 degrees of freedom is 2.1448.

**Table 8 Equation (1) estimates for quarterly data and public debt as fiscal policy variable**

| Fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $GDP_t$ | 0.239 | [0.187] | $R_t$ | -0.808 | [1.728] | $INF_t$ | -2.143 | [-0.448] |
| $DEBT_{t-1}$ | -6.317 | [-2.195] | $MG_{t-1}$ | 1.729 | [0.847] | $GDP_{t-1}$ | -1.844 | [-2.145] | | | | $INF_{t-1}$ | 6.009 | [ 1.243] |
| | | | $MG_{t-2}$ | -1.294 | [-0.566] | $GDP_{t-2}$ | -2.985 | [-2.952] | | | | $INF_{t-2}$ | -2.728 | [-0.816] |
| | | | $MG_{t-3}$ | -0.971 | [-0.480] | $GDP_{t-3}$ | -3.170 | [-2.975] | | | | $INF_{t-3}$ | -8.061 | [-1.662] |
| | | | $MG_{t-4}$ | -1.312 | [-0.689] | $GDP_{t-4}$ | -2.405 | [-2.787] | | | | $INF_{t-4}$ | 10.306 | [1.835] |
| | | | $MG_{t-5}$ | -3.674 | [-1.794] | $GDP_{t-5}$ | -0.688 | [0.187] | | | | | | |
| | | | $MG_{t-6}$ | 3.101 | [1.417] | $GDP_{t-6}$ | 1.980 | [-2.145] | | | | | | |
| | | | $MG_{t-7}$ | 1.430 | [0.798] | | | | | | | | | |
| | | | $MG_{t-8}$ | 0.896 | [0.480] | | | | | | | | | |
| | | | $MG_{t-9}$ | 1.272 | [0.725] | | | | | | | | | |
| | | | $MG_{t-10}$ | -2.928 | [-1.756] | | | | | | | | | |
| | | | *Sum* | 1.177 | (0.2868) | *Sum* | -8.877 | [-2.119] | | | | *Sum* | 3.382 | [0.926] |
| Constant | 0.102 | [0.094] | | | | | | | | | | | | |
| $R^2$ | 0.51 | | | | | | | | | | | | | |
| *SE* | 0.150 | | | | | | | | | | | | | |
| *D-W* | 2.151 | | | | | | | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. *T-statistic* calculated at 5% and for 9 degrees of freedom is 2.0452. The Breusch-Godfrey F-statistic is 0.3704. The White test F-statistic is 0.9720. The Jarque-Berra statistic is 0.7738 and the p-value is 0.6791.

**Table 9 Equation (2) estimates for quarterly data and public debt as fiscal policy variable**

| Fiscal policy | | | Foreign trade balance | | | Unemployment | | |
|---|---|---|---|---|---|---|---|---|
| $DEBT_{t-1}$ | -0.230 | [-0.888] | $FTB_{t-1}$ | 0.031 | [0.140] | $UN_{t-1}$ | 0.499 | [0.695] |
| $DEBT_{t-2}$ | -0.120 | [-0.481] | $FTB_{t-2}$ | 0.044 | [0.207] | $UN_{t-2}$ | 0.120 | [0.166] |
| $DEBT_{t-3}$ | 0.349 | [1.729] | $FTB_{t-3}$ | 0.098 | [0.406] | $UN_{t-3}$ | -0.448 | [-0.568] |
| $DEBT_{t-4}$ | 0.252 | [1.289] | $FTB_{t-4}$ | 0.173 | [0.709] | $UN_{t-4}$ | 0.521 | [1.140] |
| $DEBT_{t-5}$ | 0.415 | [2.096] | $FTB_{t-5}$ | -0.220 | [-0.902] | $UN_{t-5}$ | 0.455 | [1.453] |
| $DEBT_{t-6}$ | 0.078 | [0.390] | $FTB_{t-6}$ | -0.086 | [-0.318] | $UN_{t-6}$ | 0.068 | [0.208] |
| $DEBT_{t-7}$ | 0.210 | [1.180] | $FTB_{t-7}$ | -0.417801 | [-1.517] | $UN_{t-7}$ | 0.583 | [1.814] |
| $DEBT_{t-8}$ | -0.206 | [-1.068] | $FTB_{t-8}$ | -0.872915 | [-2.699] | $UN_{t-8}$ | 0.204 | [0.583] |
| | | | $FTB_{t-9}$ | -0.819818 | [-2.052] | $UN_{t-9}$ | 0.422 | [1.454] |
| | | | $FTB_{t-10}$ | -0.808270 | [-2.007] | $UN_{t-10}$ | 0.450 | [1.521] |
| | | | $FTB_{t-11}$ | -0.410099 | [-1.153] | $UN_{t-11}$ | 0.413 | [1.551] |
| | | | $FTB_{t-12}$ | -0.205221 | [-0.736] | $UN_{t-12}$ | -0.281 | [-1.018] |
| Constant | 0.004 | [1.235] | | | | | | |
| $R^2$ | 0.81 | | | | | | | |
| *SE* | 0.010 | | | | | | | |
| *D-W* | 1.896 | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. The Breusch-Godfrey F-statistic is 0.348 p-value corresponding to $\chi^2$-statistic is 0.0034.

**Table 10 Equation (3) estimates for quarterly data and public debt as fiscal policy variable**

| Unanticipated fiscal policy | | | Anticipated fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $UF_t$ | 2.736 | [1.352] | $AF_t$ | 8.617 | [1.911] | | | | $GDP_t$ | -1.557 | [-0.964] | $R_t$ | -0.837 | [-0.319] | $INF_t$ | 2.790 | [0.515] |
| $UF_{t-1}$ | -13.653 | [-5.524] | $AF_{t-1}$ | 2.045 | [0.578] | $MG_{t-1}$ | 2.271 | [1.282] | $GDP_{t-1}$ | -3.833 | [-1.430] | | | | | | |
| $UF_{t-2}$ | -3.846 | [-1.433] | | | | $MG_{t-2}$ | 0.300 | [0.122] | $GDP_{t-2}$ | 0.088 | [0.035] | | | | | | |
| $UF_{t-3}$ | -11.585 | [-1.607] | | | | $MG_{t-3}$ | 0.479 | [0.251] | $GDP_{t-3}$ | 3.986 | [1.354] | | | | | | |
| $UF_{t-4}$ | -24.138 | [-2.463] | | | | $MG_{t-4}$ | 0.556 | [0.278] | $GDP_{t-4}$ | -5.341 | [-2.004] | | | | | | |
| $UF_{t-5}$ | -25.778 | [-3.352] | | | | $MG_{t-5}$ | -5.196 | [-2.085] | $GDP_{t-5}$ | 1.386 | [0.654] | | | | | | |
| $UF_{t-6}$ | -17.047 | [-3.224] | | | | $MG_{t-6}$ | -0.808 | [-0.421] | $GDP_{t-6}$ | -4.799 | [-4.262] | | | | | | |
| $UF_{t-7}$ | -7.828 | [-2.189] | | | | | | | $GDP_{t-7}$ | 2.973 | [3.245] | | | | | | |
| $UF_{t-8}$ | -3.383 | [-1.539] | | | | | | | $GDP_{t-8}$ | -2.708 | [-2.964] | | | | | | |
| $UF_{t-9}$ | -1.162 | [-0.394] | | | | | | | $GDP_{t-9}$ | 2.770 | [-0.964] | | | | | | |
| $UF_{t-10}$ | -2.281 | [-0.471] | | | | | | | | | | | | | | | |
| $UF_{t-11}$ | -15.118 | [-3.911] | | | | | | | | | | | | | | | |
| $UF_{t-12}$ | 10.478 | [2.238] | | | | | | | | | | | | | | | |
| *Sum* | -112.6 | [-2.275] | *Sum* | 10.662 | (0.246) | *Sum* | -2.470 | (0.156) | *Sum* | -7.035 | (0.303) | | | | | | |
| Constant | 0.008 | [0.105] | | | | | | | | | | | | | | | |
| $R^2$ | 0.98 | | | | | | | | | | | | | | | | |
| *SE* | 0.063 | | | | | | | | | | | | | | | | |
| *D-W* | 2.856 | | | | | | | | | | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. *T-statistic* calculated at 5% and for 4 degrees of freedom is 2.7764. The Breusch_Godfrey F-statistic is 0.093 and p-value corresponding to $\chi^2$-statistic is 0.0000. The White test F-statistic is 0.207. The Jarque-Berra statistic is 0.088 and the p-value is 0.956.

**Table 11 Equation (1) estimates for monthly data and overall budget balance as fiscal policy variable**

| Fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $MG_t$ | -2.199 | [-1.875] | $GDP_t$ | 0.023 | [0.169] | $R_t$ | -3.810 | [-4.419] | $INF_t$ | -0.140 | [-0.101] |
| $BAL_{t-1}$ | 0.452 | [0.214] | $MG_{t-1}$ | -3.560 | [-2.763] | $GDP_{t-1}$ | -0.267 | [-1.909] | | | | $INF_{t-1}$ | -3.546 | [-2.562] |
| $BAL_{t-2}$ | 7.033 | [2.744] | $MG_{t-2}$ | 3.402 | [3.460] | $GDP_{t-2}$ | 0.163 | [1.132] | | | | $INF_{t-2}$ | 4.423 | [3.445] |
| $BAL_{t-3}$ | 7.917 | [3.012] | $MG_{t-3}$ | 3.869 | [4.210] | $GDP_{t-3}$ | 0.189 | [1.248] | | | | $INF_{t-3}$ | -1.370 | [-1.060] |
| $BAL_{t-4}$ | 1.706 | [0.680] | $MG_{t-4}$ | 1.297 | [1.617] | $GDP_{t-4}$ | -0.222 | [-1.567] | | | | | | |
| $BAL_{t-5}$ | -0.409 | [-0.168] | $MG_{t-5}$ | 0.606 | [0.801] | $GDP_{t-5}$ | -0.101 | [-0.700] | | | | | | |
| $BAL_{t-6}$ | 0.964 | [0.401] | $MG_{t-6}$ | 1.203 | [1.549] | $GDP_{t-6}$ | -0.086 | [-0.599] | | | | | | |
| $BAL_{t-7}$ | 2.464 | [1.048] | $MG_{t-7}$ | 0.954 | [1.296] | $GDP_{t-7}$ | 0.420 | [3.029] | | | | | | |
| $BAL_{t-8}$ | -1.403 | [-0.679] | $MG_{t-8}$ | 0.402 | [0.536] | $GDP_{t-8}$ | -0.201 | [-1.474] | | | | | | |
| $BAL_{t-9}$ | 0.182 | [0.117] | $MG_{t-9}$ | 1.003 | [1.163] | $GDP_{t-9}$ | 0.258 | [-1.983] | | | | | | |
| | | | $MG_{t-10}$ | 1.203 | [1.438] | $GDP_{t-10}$ | 0.135 | [1.028] | | | | | | |
| | | | $MG_{t-11}$ | -0.968 | [-1.093] | | | | | | | | | |
| | | | $MG_{t-112}$ | -1.109 | [-1.066] | | | | | | | | | |
| *Sum* | 18.906 | (0.022) | *Sum* | 6.105 | [1.088] | *Sum* | 0.311 | (0.0685) | | | | *Sum* | -0.633 | (0.004) |
| Constant | 0.011 | [1.036] | | | | | | | | | | | | |
| $R^2$ | 0.79 | | | | | | | | | | | | | |
| *SE* | 0.040 | | | | | | | | | | | | | |
| *D-W* | 1.818 | | | | | | | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. *T-statistic* calculated at 5% is 2.0167. The Breusch-Godfrey F-statistic is 0.858. The White test F-statistic is 0.930. The Jarque-Berra statistic is 1.798 and the p-value is 0.406.

**Table 12 Equation (2) estimates for monthly data and overall budget balance as fiscal policy variable**

| Fiscal policy | | | Foreign trade balance | | | Unemployment | | |
|---|---|---|---|---|---|---|---|---|
| $BAL_{t-1}$ | -1.186 | [2.402] | $FTB_{t-1}$ | 0.031 | [0.140] | $UN_{t-1}$ | -0.095 | [-0.407] |
| $BAL_{t-2}$ | -1.385 | [-8.702] | $FTB_{t-2}$ | 0.044 | [0.207] | $UN_{t-2}$ | -0.248 | [-0.858] |
| $BAL_{t-3}$ | -1.427 | [-7.219] | $FTB_{t-3}$ | 0.098 | [0.406] | $UN_{t-3}$ | 0.244 | [0.845] |
| $BAL_{t-4}$ | -1.360 | [-6.409] | $FTB_{t-4}$ | 0.173 | [0.709] | $UN_{t-4}$ | -0.465 | [-1.546] |
| $BAL_{t-5}$ | -1.211 | [-6.017] | $FTB_{t-5}$ | -0.220 | [-0.902] | $UN_{t-5}$ | -0.266 | [-0.852] |
| $BAL_{t-6}$ | -1.080 | [-5.308] | $FTB_{t-6}$ | -0.086 | [-0.318] | $UN_{t-6}$ | -0.362 | [-1.134] |
| $BAL_{t-7}$ | -1.023 | [-4.799] | $FTB_{t-7}$ | -0.417801 | [-1.517] | $UN_{t-7}$ | 0.206 | [0.722] |
| $BAL_{t-8}$ | -0.858 | [-4.658] | $FTB_{t-8}$ | -0.872915 | [-2.699] | $UN_{t-8}$ | 0.154 | [0.556] |
| $BAL_{t-9}$ | -0.632 | [-3.870] | $FTB_{t-9}$ | -0.819818 | [-2.052] | $UN_{t-9}$ | 0.532 | [2.237] |
| $BAL_{t-10}$ | -0.357 | [-2.893] | $FTB_{t-10}$ | -0.808270 | [-2.007] | | | |
| $BAL_{t-11}$ | -0.382 | [-1.792] | $FTB_{t-11}$ | -0.410099 | [-1.153] | | | |
| $BAL_{t-12}$ | 0.104 | [-2.477] | $FTB_{t-12}$ | -0.205221 | [-0.736] | | | |
| Constant | 0.000 | [2.402] | | | | | | |
| $R^2$ | 0.85 | | | | | | | |
| *SE* | 0.003 | | | | | | | |
| *D-W* | 1.985 | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. The Breusch-Godfrey F-statistic is 0.045 and p-value corresponding to $\chi^2$-statistic is 0.005.

**Table 13 Equation (3) estimates for monthly data and overall budget balance as fiscal policy variable**

| Unanticipated fiscal policy | | | Anticipated fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $UF_t$ | -1.009 | [-0.411] | $AF_t$ | -3.518 | [-2.382] | $MG_t$ | -3.181 | [-3.064] | $GDP_t$ | -0.127 | [-1.099] | $R_t$ | -1.884 | [-2.436] | $INF_t$ | 0.673 | [0.661] |
| $UF_{t-1}$ | -2.200 | [-1.202] | $AF_{t-1}$ | -2.956 | [-1.476] | $MG_{t-1}$ | -2.197 | [-3.091] | | | | | | | $INF_{t-1}$ | -0.895 | [-0.789] |
| $UF_{t-2}$ | -2.346 | [-0.965] | $AF_{t-2}$ | -0.632 | [-0.244] | $MG_{t-2}$ | -1.299 | [-1.879] | | | | | | | $INF_{t-2}$ | 1.608 | [1.482] |
| $UF_{t-3}$ | -1.447 | [-0.497] | $AF_{t-3}$ | 1.507 | [0.529] | $MG_{t-3}$ | -0.486 | [-0.678] | | | | | | | $INF_{t-3}$ | -2.293 | [-2.158] |
| $UF_{t-4}$ | 0.496 | [0.165] | $AF_{t-4}$ | 2.774 | [0.991] | $MG_{t-4}$ | 0.241 | [0.365] | | | | | | | | | |
| $UF_{t-5}$ | 3.486 | [1.190] | $AF_{t-5}$ | 5.198 | [2.000] | $MG_{t-5}$ | 0.884 | [1.403] | | | | | | | | | |
| $UF_{t-6}$ | 7.521 | [2.213] | $AF_{t-6}$ | 6.046 | [2.816] | $MG_{t-6}$ | 1.442 | [1.568] | | | | | | | | | |
| | | | $AF_{t-7}$ | 1.506 | [0.972] | | | | | | | | | | | | |
| | | | $AF_{t-8}$ | -2.344 | [-1.630] | | | | | | | | | | | | |
| | | | $AF_{t-9}$ | 0.824 | [0.759] | | | | | | | | | | | | |
| *Sum* | 4.499 | 0.343 | *Sum* | 8.405 | [0.579] | *Sum* | -4.594 | [-1.255] | | | | | | | *Sum* | -0.907 | (0.124) |
| Constant | 0.012 | [1.513] | | | | | | | | | | | | | | | |
| $R^2$ | 0.61 | | | | | | | | | | | | | | | | |
| *SE* | 0.038 | | | | | | | | | | | | | | | | |
| *D-W* | 1.978 | | | | | | | | | | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. *T-statistic* calculated at 5% is 2.0096. The Breusch_Godfrey F-statistic is 0.883 and p-value corresponding to $\chi^2$-statistic is 0.584. The White test F-statistic is 0.934. The Jarque-Berra statistic is 1.336 and the p-value is 0.512.

**Table 14 Equation (1) estimates for monthly data and public debt as fiscal policy variable**

| Fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $MG_t$ | -1.540 | [-1.311] | $GDP_t$ | -0.096 | [-0.687] | $R_t$ | -3.288 | [-4.087] | $INF_t$ | -0.140 | [-0.101] |
| $DEBT_{t-1}$ | -0.441 | [-0.641] | $MG_{t-1}$ | -0.159 | [-0.117] | $GDP_{t-1}$ | -0.164 | [-1.159] | | | | $INF_{t-1}$ | -3.546 | [-2.562] |
| $DEBT_{t-2}$ | -2.005 | [-3.241] | $MG_{t-2}$ | 4.137 | [3.710] | $GDP_{t-2}$ | 0.113 | [0.812] | | | | $INF_{t-2}$ | 4.423 | [3.445] |
| $DEBT_{t-3}$ | -2.198 | [-3.539] | $MG_{t-3}$ | 5.594 | [5.071] | $GDP_{t-3}$ | 0.174 | [1.390] | | | | $INF_{t-3}$ | -1.370 | [-1.060] |
| $DEBT_{t-4}$ | 0.675 | [1.106] | $MG_{t-4}$ | 1.904 | [1.823] | $GDP_{t-4}$ | -0.037 | [-0.303] | | | | | | |
| $DEBT_{t-5}$ | 0.176 | [0.264] | $MG_{t-5}$ | 1.858 | [1.862] | $GDP_{t-5}$ | -0.118 | [-1.004] | | | | | | |
| $DEBT_{t-6}$ | -1.348 | [-1.988] | $MG_{t-6}$ | 3.668 | [3.673] | $GDP_{t-6}$ | 0.152 | [1.290] | | | | | | |
| $DEBT_{t-7}$ | -1.062 | [-1.565] | $MG_{t-7}$ | 2.462 | [2.699] | $GDP_{t-7}$ | 0.342 | [2.728] | | | | | | |
| $DEBT_{t-8}$ | -0.483 | [-0.737] | $MG_{t-8}$ | 0.941 | [1.089] | $GDP_{t-8}$ | -0.223 | [-1.796] | | | | | | |
| $DEBT_{t-9}$ | -1.343 | [-2.239] | $MG_{t-9}$ | 2.175 | [2.402] | $GDP_{t-9}$ | -0.411 | [-3.212] | | | | | | |
| | | | $MG_{t-10}$ | 0.517 | [0.628] | | | | | | | | | |
| | | | $MG_{t-11}$ | -2.146 | [-2.659] | | | | | | | | | |
| | | | $MG_{t-12}$ | 0.213 | [0.201] | | | | | | | | | |
| *Sum* | -8.029 | (0.000) | *Sum* | 19.624 | [2.693] | *Sum* | 0.268 | [-1.498] | | | | *Sum* | -0.633 | (0.004) |
| Constant | 0.002 | [0.181] | | | | | | | | | | | | |
| $R^2$ | 0.79 | | | | | | | | | | | | | |
| *SE* | 0.040 | | | | | | | | | | | | | |
| *D-W* | 1.854 | | | | | | | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. *T-statistic* calculated at 5% is 2.0167. The Breusch-Godfrey F-statistic is 0.966 and p-value corresponding to $\chi^2$-statistic is 0.648. The White test F-statistic is 0.783. The Jarque-Berra statistic is 2.249 and the p-value is 0.324.

**Table 15 Equation (2) estimates for monthly data and public debt as fiscal policy variable**

| Fiscal policy | | | Foreign trade balance | | | Unemployment | | |
|---|---|---|---|---|---|---|---|---|
| $DEBT_{t-1}$ | -0.097 | [-0.851] | $FTB_{t-1}$ | 1.0106 | [1.301] | $UN_{t-1}$ | -0.002 | [-0.003] |
| $DEBT_{t-2}$ | -0.229 | [-1.951] | $FTB_{t-2}$ | 0.365 | [0.395] | | | |
| $DEBT_{t-3}$ | -0.205 | [-1.709] | $FTB_{t-3}$ | -0.083 | [-0.099] | | | |
| $DEBT_{t-4}$ | -0.006 | [-0.055] | $FTB_{t-4}$ | 1.475 | [1.952] | | | |
| $DEBT_{t-5}$ | -0.019 | [-0.157] | $FTB_{t-5}$ | 0.384 | [0.533] | | | |
| $DEBT_{t-6}$ | 0.035 | [0.298] | $FTB_{t-6}$ | -0.378 | [-0.512] | | | |
| $DEBT_{t-7}$ | 0.100 | [0.838] | $FTB_{t-7}$ | 0.727 | [1.040] | | | |
| $DEBT_{t-8}$ | 0.094 | [0.832] | $FTB_{t-8}$ | 1.023 | [1.486] | | | |
| $DEBT_{t-9}$ | 0.226 | [2.010] | $FTB_{t-9}$ | 0.940 | [1.342] | | | |
| $DEBT_{t-10}$ | 0.038 | [0.321] | $FTB_{t-10}$ | 0.516 | [0.662] | | | |
| $DEBT_{t-11}$ | 0.011 | [0.095] | $FTB_{t-11}$ | 1.969 | [2.969] | | | |
| $DEBT_{t-12}$ | 0.264 | [2.256] | | | | | | |
| Constant | 0.000 | [0.323] | | | | | | |
| $R^2$ | 0.49 | | | | | | | |
| *SE* | 0.008 | | | | | | | |
| *D-W* | 1.952 | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. The Breusch-Godfrey F-statistic is 0.345 and p-value corresponding to $\chi^2$-statistic is 0.077.

**Table 16 Equation (3) estimates for monthly data and public debt as fiscal policy variable**

| Unanticipated fiscal policy | | | Anticipated fiscal policy | | | Monetary policy | | | GDP | | | Short term interest rate | | | Inflation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $UF_t$ | -0.882 | [-1.053] | $AF_t$ | -0.283 | [-0.275] | $MG_t$ | -0.507 | [-0.549] | $GDP_t$ | -0.086 | [-0.656] | $R_t$ | -1.841 | [-3.386] | $INF_t$ | 1.165 | [0.978] |
| $UF_{t-1}$ | -1.441 | [-2.402] | $AF_{t-1}$ | 0.092 | [0.119] | $MG_{t-1}$ | -0.294 | [-0.358] | $GDP_{t-1}$ | -0.123 | [-0.965] | | | | $INF_{t-1}$ | -1.830 | [-1.582] |
| $UF_{t-2}$ | -1.007 | [-1.534] | $AF_{t-2}$ | 0.469 | [0.803] | $MG_{t-2}$ | -0.081 | [-0.112] | $GDP_{t-2}$ | 0.144 | [1.211] | | | | $INF_{t-2}$ | 1.795 | [1.564] |
| $UF_{t-3}$ | 0.905 | [1.402] | $AF_{t-3}$ | 0.845 | [1.577] | $MG_{t-3}$ | 0.131 | [0.201] | $GDP_{t-3}$ | 0.075 | [0.653] | | | | $INF_{t-3}$ | 0.161 | [0.214] |
| $UF_{t-4}$ | 2.148 | [4.408] | $AF_{t-4}$ | 1.222 | [1.845] | $MG_{t-4}$ | 0.344 | [0.579] | $GDP_{t-4}$ | -0.093 | [-0.818] | | | | $INF_{t-4}$ | -1.489 | [-1.498] |
| $UF_{t-5}$ | 0.474 | [0.798] | | | | $MG_{t-5}$ | 0.557 | [0.987] | $GDP_{t-5}$ | -0.056 | [-0.532] | | | | $INF_{t-5}$ | -2.610 | [-2.323] |
| $UF_{t-6}$ | -0.850 | [-1.404] | | | | $MG_{t-6}$ | 0.770 | [1.360] | $GDP_{t-6}$ | 0.165 | [1.703] | | | | | | |
| $UF_{t-7}$ | 0.067 | [0.129] | | | | $MG_{t-7}$ | 0.983 | [1.641] | $GDP_{t-7}$ | 0.228 | [1.508] | | | | | | |
| $UF_{t-8}$ | 0.642 | [1.506] | | | | | | | $GDP_{t-8}$ | -0.137 | [-0.899] | | | | | | |
| $UF_{t-9}$ | 0.163 | [0.224] | | | | | | | $GDP_{t-9}$ | -0.320 | [-2.490] | | | | | | |
| $UF_{t-10}$ | 1.463 | [2.551] | | | | | | | | | | | | | | | |
| $UF_{t-11}$ | -1.840 | [-2.573] | | | | | | | | | | | | | | | |
| $UF_{t-12}$ | -0.490 | [-1.013] | | | | | | | | | | | | | | | |
| *Sum* | -0.647 | [-0.156] | *Sum* | 2.346 | [0.803] | *Sum* | 1.901 | [0.383] | *Sum* | -0.202 | [-0.910] | | | | *Sum* | -2.808 | (0.108) |
| Constant | 0.016 | [1.294] | | | | | | | | | | | | | | | |
| $R^2$ | 73 | | | | | | | | | | | | | | | | |
| *SE* | 0.035 | | | | | | | | | | | | | | | | |
| *D-W* | 1.889 | | | | | | | | | | | | | | | | |

*Note:* The numbers in parentheses reported after the coefficient estimates are the absolute values of the corresponding *t-statistic*. To conserve on degrees of freedom considering number of observations available for the quarterly dataset, we employed the Almon polynomial technique. The degree of the polynomials and the lag length were determined by Theil's residual-variance criterion. The numbers in round parentheses are the p-values corresponding to F-statistic for Wald test. The shadowed area indicates the significant results at 5%. The Breusch_Godfrey F-statistic is 0.370 and p-value corresponding to $\chi^2$-statistic is 0.023. The White test F-statistic is 0.972. The Jarque-Berra statistic is 0.773 and the p-value is 0.679.