Available online at www.worldscientificnews.com

World Scientific News

WSN 37 (2016) 153-167 EISSN 2392-2192

The Impact of Government Spending on Inflation through the Inflationary Environment, STR approach

Mohsen Mehrara[a], Mohsen Behzadi Soufiani[b], Sadeq Rezaei[c]

Faculty of Economics, University of Tehran, Kargar-e-shomali,
Po Box 14166-6445, Tehran, Iran

[a-c]E-mail address: mmehrara@ut.ac.ir , m.behzadi71@ut.ac.ir , sadeqrezaie@ut.ac.ir

ABSTRACT

This paper examines the nonlinear relationship between inflation and government spending using quarterly data over the period of 1990-2013, by using Smooth Transition Regression Model. Results suggested a two regime model by using inflation, government expenditure growth, GDP growth and liquidity growth. Lag of liquidity was recognized as transition variable. This study showed that in regime of tight money or low growth of liquidity, government expenditure is not inflationary. In regime of low growth of liquidity, this variable has low inflationary impact and probably stimulates economic growth. Inflationary expectations in first regime are more effective in causing short run inflation. In expansionary regime, increase of money supply has more effects on inflation rather than production. So monetary and fiscal policies could be used to control inflation and stimulate aggregate demand in low regime. Also in easy money regime, monetary and fiscal discipline can be useful for inflation decrease.

***Keywords*:** inflationary regimes; STR model; nonlinear model; smooth transition regression

JEL classifications: E31, H5, C01

1. INTRODUCTION

The literature about inflation indicates that the economists have spent plenty of time to understand the reasons that cause inflation. The economists have succeeded to give details about the sources of the inflation. But, until now the relation of the inflation and the other macroeconomic variables such as the government expenditures has remained debatable. Government expenditures according to the economic situation are changing. According to the Keynesian view, the government needs to spend in order to achieve stability in the economy, stimulate or increase productivity or investment.

The government, along with the cost of economic stabilization, incurs distribution and allocation costs. However, increase in government spending in form of intervention, going by the neo-Classical economists could result to high inflation outcomes given the full-employment assumption (Olayungbo, 2013: 238). In general, fiscal policy in many countries is faced with many problems which includes, Tax collection difficulties, institutional inadequacy, problems related to access to foreign capital, Money issuing to finance public expenditures which in turn causes inflation. Therefore, government expenditures in addition to the impact on production can have an impact on inflation (Georgantopoulos & Tsamis, 2010).

Inflation has been issue of Iran's economy during the past three decades. Statistics indicate that inflation in Iran has always been high, since inflation has significant effect on the life of individuals and other economic variables. In this context, understanding the roots of inflation can assist authorities in designing proper policies. On the other hand, government needs to spend in order to ensure stability of the economy, stimulate or enhance productivity or investment through direct public spending and investment according to the Keynesian view. Government also spends in order to redistribute income between the rich and the poor. Several theories have been advanced to explain this problem in different countries. Using a variety of instruments such as government spending, although in both theoretical and practical experiences of countries have been proven that increases in government spending causes inflation, it's one of the significant issues in the possibility of achieving economic growth.

After several decades that most economists focus on monetary policy, by the financial global crisis in 2008, again fiscal policy as a tool of economic stabilization was considered by economists. In fact, the effects of fiscal policy on economic activity in countries with emerging markets and developing countries are not clear in the short and long term. Since the economies of developing countries compared to developed countries in the business cycles are facing with more volatility and this factor makes them more vulnerable to shocks of the financial crisis. But, appropriate fiscal policy can play an important role to palliate shocks when financial crisis is occurring (Rafiq & Zeufack, 2012). The main objective of this study is to empirically explore the present relationship between inflation and government expenditures in Iran by non-linear approach based on annual data over the period 1959-2004. The relevant regime was extracted by using STR model to investigate how the government spending impact on Inflation will be discussed.

The remainder of this paper is organized as follows: Section 2 and 3 reviews the theoretical and empirical literature on inflation and government spending respectively. Section 4 discusses the methodology and data used to obtain the empirical findings reported in this paper. Finally, section 5 presents a summary of the main conclusions.

2. EMPIRICAL EVIDENCE

It is commonly supposed in public and academic discourse that inflation and big government are related. Both in the context of developed and developing countries, there have been extensive theoretical and empirical research to date that attempt to focus on the relationship between inflation and government spending. This section presents a brief review.

Han & Mulligan (2002) investigated the relationship between inflation and the size of government. They found that inflation is significantly and positively related to the size of government mainly when periods of war and peace are compared. Also they show a weak positive peacetime time series correlation between inflation and the size of government and a negative cross-country correlation of inflation with non-defense spending.

Ezirim et al (2008) studies the relationship between public expenditure growth and inflation in the U.S using the co integration analysis and Granger Causality Model applied to time series annual data from 1970 – 2002. The results indicate that public expenditure and inflation have a long-run equilibrium relation between them. Inflation significantly influences public expenditure decisions in the U.S. Public expenditure growth aggravated inflationary pressures in the country, where reduction in public expenditure tends to reduce inflation.

Mohammad et al (2009) try to find out long run relationship among M_2, inflation, government expenditure impact and economic growth in case of Pakistan. For this purpose they have used Johnson co integration and Granger causality test to find out long run association and causality. They found a negative relation between public expenditure and inflation. They attempted to explain that most of public expenditure is non-development and inflation is due to adverse supply shock (cost push inflation) in case of Pakistan.

Pekarski (2010) analyzes budget deficits and inflation in inflationary economies. The main finding is that recurrent outbursts of extreme inflation in these economies can be explicitly explained by the hysteresis effect associated with the action of two mechanisms: the arithmetic of the wrong side of the ITLC and the Patinkin effect. Another finding is that changes in different items of the budget balance sheet may have very different effects on inflation (apart from their different effects on the real economy).

Magazzino (2011) examines the nexus between public expenditure and inflation for the Mediterranean countries during the period 1970-2009, using a time-series approach. He found a long-run relationship between the growth of public expenditure and inflation for some countries. Furthermore, Granger causality tests results show a short-run evidence of a directional and bidirectional relationship from expenditure to inflation for all countries.

Trupkin (2011) also use a PSTR model with fixed effects to investigate the non-linearities in the inflation–growth nexus among 120 countries for the period 1950–2007. Their results depict a threshold level of 19.1% for non-industrialized countries and a high speed of transition from low to high inflation regimes.

Token, Mignon and Villavicencio (2011) also rely on a PSTR model to investigate the non-linearities in the inflation–growth relationship among 44 countries covering the period 1961–2007. Results declared a threshold level of 19.6% for lower–middle and low-income countries. Surjaningsih et al (2012) examine the impact of fiscal policy on output and inflation in Indonesia. VECM[1] was applied over quarterly data, covering the period 1990 to 2009. Empirical results showed that government spending is more effective to stimulate

[1] Vector Error Correction Model

economic growth especially in times of recession, compared to taxation policies. While the increase in government spending causes a decrease in inflation, tax increases lead to higher inflation.

Musa & Asare (2013) investigated and measured the long and short run relationship of monetary and fiscal policies on economic growth in Nigeria. A VECM technique was employed to analyze and draw policy inferences. They showed it is clear that monetary policy exacted greater impact on the economic growth but the effects of fiscal policy had lower magnitude more specifically when there is decrease in the inflation rate.

Olayungbo (2013) examines asymmetry causal relationship between government spending and inflation in Nigeria from the period of 1970 to 2010. The asymmetry causality test shows that a unidirectional causality exists from negative government expenditure changes (low or contractionary government spending) to positive inflation changes (high inflation) in the VAR[2] model. The finding implies that inflationary pressure in Nigeria is state dependent, that is high inflation is caused by low or contractionary government spending.

Seleteng et al (2013) used panel data for the period 1980–2008 to examine the inflation–growth nexus in the Southern African Development Community (SADC) region and to endogenously determine the threshold level of inflation. To deal with problems of endogeneity and heterogeneity, they used the Panel Smooth Transition Regression (PSTR) method developed by González et al (2005). To examine the non-linearities in the inflation–growth nexus. This technique further estimates the smoothness of the transition from a low inflation to a high inflation regime. The findings revealed a threshold level of 18.9%, above which inflation is detrimental to economic growth in the SADC region.

3. LITERATURE REVIEW

If it is true that inflation is a "social evil", it is true that inflation reduces the costs of the public sector, since certain groups in society cannot defend. Moreover, the fiscal drag – the crop that inflation gives policy-makers in countries with progressive tax systems of type – is disappearing in many states, since the awareness of citizens in this respect has increased in recent years.

According to Alseina and Tabelleini (1987), Barro and Gordon (1983), inflation is a document which proves that the government failed to fulfill its credit obligations. So these governments use inflation to benefit from the price spike. Depending on the circumstances of the sudden inflation governments can temporarily gain profit. In this case, inflation becomes a regular instrument for government in the absence of financial commitments.

Brescian Turroni was the first economist who studied the relationship between budget deficits and inflation. He came to the conclusion that the relationship between deficits and inflation could be negative. Patinkin in 1993 showed how the pressure, including political interests, can be a helpful to decrease the differences in nominal spending of revenues by using inflation. In other words, he believes that when government expenditure is larger than revenues, borrowing from the central bank to finance can be requested. This action increases the rate of inflation and thus reduces the real expenditure of government. The negative effect of inflation on the real costs of government, known as Patinkin effect.

[2] Vector Autoregression

About the role and effect of inflation on tax revenues, Tanzi discussed for the first time that inflation reduces the real value of tax revenues (Tanzi, 1987). He believes that inflation may reduce the real tax revenues due to the delay in taxes payment which is a common phenomenon in developing countries. This process may lead to a greater deficit which is known in economic literature as a Tanzi effect.

Tanzi and Patinkin effect showed themselves in countries with inflation experience. Depending on economic conditions, intensity will be different. The Tanzi effect from income and Patinkin effect from the expenditure impress the deficit.

Friedman (1981) points out that if government expenditure provided by the increase of taxes or selling bonds to the public, inflation would take effect from government expenditure in this case. Both methods of financing, would replace government spending rather than private sector spending. The effect of such financing is that interest rate increases and incentives for private sector investment and saving will be reduced.

Based on a dynamic system analysis, the relationship between current spending, deficit, money supply and inflation can be explained. If government expenditure increases, this increase makes the budget situation worse and leads to deficit. On the other hand, increasing government debt to central bank (as a source of monetary base) will bring increase in monetary base, and will lead to increase money supply. However, with regard to the positive relationship between the general level of prices and liquidity, increasing the money supply will lead to an increase in inflation. However, the inflation led to a decrease in the real value of government spending in the next period. So this decrease forces the government to compensate for its cost value, by increasing nominal expenditure the next period. But increase in expenditure will increase the budget deficit and repeat the above process. So the increase in government expenditure (deficit) and the general level of prices, a cause and effect relationship is established (Piontkivsky, 2001).

4. METHODOLOGY AND DATA

From recent studies of univariate models, we learn that there is much to be gained by allowing nonlinear specification. Additionally, economic variables are frequently subject to switching regimes. The notion of the regime switch implies a sudden abrupt change. However, most economic variables change regimes in a smooth manner, with transition from one regime to another taking some time. To handle this, Smooth Transition Regression (STR) models have recently been developed.

In contrast to discrete switching models (e.g. Hansen, 1999), smooth transition regression (STR) models transition as a continuous process dependent on the transition variable. This allows for incorporating regime switching behavior both when the exact time of the regime change is not known with certainty and when there is a short transition period to a new regime. Therefore, STR models provide additional information on the dynamics of variables that show their value even during the transition period.

A standard STR model with transition logistic function introduced like:

$$INF_t = \phi' z_t + (\theta' z_t) G(s_t, \gamma, c) + u_t \quad (1)$$

Table below shows the variables and parameters used in this model:

Table 1. Definition of variables and parameters.

Variable or parameters	Definition
INF	inflation
EXP	Government expenditure growth
GDP	GDP growth
LIQ	Liquidity growth
ω_t	Vector consisting of INF, EXP, LIQ, GDP and their lags
s_t	Transition variable
γ	Speed of transition
c	Threshold value
G	Logistic Transition function
u	Error term
$\phi' = (\phi_0, \phi_1, \dots, \phi_p)$	Linear coefficient vector
$\theta' = (\theta_0, \theta_1, \dots, \theta_p)$	nonlinear coefficient vector

The data are quarterly over the 1990 – 2013 periods. Variables including in this model are inflation, government expenditure growth, GDP growth and liquidity growth. The source of data is the Central Bank of Iran. Before conducting any econometric analysis, the time series properties of the data must be investigated.

We used Phillips Perron (1988), (PP) test to assess the order of integration of the variables. In Table 2, results of the unit root tests on relevant variables have been reported. The findings of unit root tests suggest that all the variables are integrated of order zero.

Table 2. Unit-root test.

Variable	PP	Critical value	Decision
INF	-3.96	-3.49	I(0)
EXP	-30.39	-3.49	I(0)
LIQ	-15.36	-3.49	I(0)
GDP	-18.58	-3.49	I(0)

The choice of transition variable is not straightforward, since the underlying economic theory often gives no clues as to which variable should be taken for the transition variable under the alternative. Teräsvirta (1998) suggests testing the null hypothesis of linearity for each of the possible transition variables in turn.

The candidates for the transition variable are usually the explanatory variables and the time trend. If the null is rejected for more than one variable, the variable with the strongest rejection of linearity (i.e., with the lowest p-value) is chosen for the transition variable. This intuitive and heuristic procedure can be justified by observing that the test is most powerful when the alternative hypothesis is correctly specified, and this is achieved for the "right" transition variable. It has to be emphasized that one cannot control the overall significance level of the linearity test for this heuristic procedure, since several individual tests have to be performed.

Table 3. Model type and transition variable.

Transition variable	F P-value	F_4 P-value	F_3 P-value	F_2 P-value	Suggested model
$\mathbf{INF_{t-1}}$	0.00063	0.182	0.012	0.0024	LSTR1
$\mathbf{INF_{t-2}}$	0.0069	0.058	0.063	0.0022	LSTR1
$\mathbf{LIQ_t}$	0.00011	0.102	0.0002	0.046	LSTR2
$\mathbf{EXP_t}$	0.00035	0.055	0.0031	0.0022	LSTR1
$\mathbf{GDP_t}$	0.0008	0.059	0.0091	0.011	LSTR1
$\mathbf{LIQ_{t-1}}$*	0.000065	0.59	0.0014	0.00008	LSTR1
$\mathbf{EXP_{t-1}}$	0.034	0.24	0.296	0.0135	LSTR1
$\mathbf{GDP_{t-1}}$	NAN	NAN	0.0052	0.005	Linear
$\mathbf{LIQ_{t-2}}$	0.0025	0.02	0.0088	0.387	LSTR2
$\mathbf{EXP_{t-2}}$	0.0004	0.0007	0.067	0.208`	LSTR1
$\mathbf{GDP_{t-2}}$	0.0012	0.064	0.0052	0.0061	LSTR2

Lag of liquidity recognized as transition variable due to results. If the transition variable has already been decided upon, the next step in the modelling process consists of choosing the transition function. Result suggested LSTR1 function, which includes of two regimes.

5. EMPIRICAL RESULTS

According to the results reported in the above table, the proposed model for transition variable (the first lag of liquidity, LIQ_{t-1}) is Smooth Transition Regression with Single regime logistic transfer function. In the next step model parameters are estimated using the Newton-Raphson algorithm that the results in Table 3 are presented. Note that only the variables in the linear or non-linear terms have been considered have statistically significant coefficients at the appropriate confidence level.

Estimated ultimate values for transfer rate parameter, γ and threshold value (c), are 7.33 and 5% (20% in year) respectively.

$$G\left(LIQ_{t-1}, 7.33,5\right) = \left\{1 + exp\left[-7.33\prod_{j=1}^{J}(\log(LIQ)_{t-1}) - (5)\right]\right\}^{-1}, \gamma > 0 \quad (2)$$

The results of the estimation model in Table 4 given below.

Table 4. The results of the estimation.

Variable	Coefficient (θ)	Coefficient(ϕ)
CONST	***0.08	***0.07
INF_{t-1}	-	*0.23
INF_{t-2}	**-0.10	**0.12
LIQ_t	*-0.04	**0.16
EXP_t	***0.14	***-0.09
GDP_t	-	*0.07
LIQ_{t-1}	*0.30	-
EXP_{t-1}	***0.19	***-0.11
GDP_{t-1}	**0.11	-
LIQ_{t-2}	**-0.17	**0.21
EXP_{t-2}	*-0.06	*0.03
GDP_{t-2}	***0.03	**-0.03
HQ= -7.54 , SC= -7.20	R^2adjusted: 88%	AIC= -7.77

*** Significance at 99 percent ** Significance at 95 percent,* Significance at 90 percent.

According to selection of the liquidity growth as transition variable, two separate regime model includes of high liquidity and low liquidity growth are identified. The threshold for regime change is liquidity growth 5% (20% in year). With regard to the points mentioned in the methodology (section 3), in first regime and second regime is G = 0, G = 1 respectively.

Therefore for first regime we have:

$$INF_t = 0.07 + 0.23(INF)_{t-1} + 0.12(INF)_{t-2} + 0.16(LIQ)_t - 0.09(\mathrm{EXP})_t + 0.07(\mathrm{GDP}_t) - 0.11(\mathrm{EXP})_{t-1} + 0.21(\mathrm{LIQ})_{t-2} + 0.03(EXP)_{t-2} - 0.03(GDP)_{t-2} \quad (3)$$

For second regime, high liquidity growth is:

$$INF_t = -0.01 + 0.23(INF)_{t-1} + 0.02(INF)_{t-2} + 0.12(LIQ)_t + 0.05(\mathrm{EXP})_t + 0.07(\mathrm{GDP}_t) + 0.30(LIQ)_{t-1} + 0.08(\mathrm{EXP})_{t-1} + 0.11(GDP)_{t-1} + 0.04(\mathrm{LIQ})_{t-2} - 0.03(EXP)_{t-2} \quad (4)$$

Due to the variables are in terms of growth rates, the coefficients show short-term effects. Variation of variables coefficients in two regimes obviously indicate that effect of the liquidity growth, the GDP growth and the government current expenditure growth on the inflation are different in each regime. In first regime (low liquidity growth) sum of coefficients of current government expenditure and its lag is -0.17. In other word, in first regime, 10% increases in government consumption expenditure lead to 1.7% decreases in inflation or in the worst condition has no undesirable effect on inflation. In second regime, sum of coefficients of current government expenditure and its lag is 0.10.

Therefor government expenditure is inflationary, so that the 10% increases in government expenditure lead to 1% increases in in prices. So government expenditure has an inflationary effect. In the low liquidity growth regime, dependence of government expenditure on borrowing from the central bank and budget deficit is lower and government can covers expenditures by tax and oil revenues. In this case it can have deflationary effects. In each regime increases in output increases the inflation that it can represent shocks or pressures of demand side. But this effect in the first regime (with total impact 0.04) is lower than second regime (0.18). It seems that inflation expectations has more important role in short-run inflation on the low liquidity growth.

Results indicate that sum of current liquidity growth and its lag in first and second regime is 0.37 and 0.46, respectively. Obviously, on the either regime the liquidity growth is main factor to the inflation in short-run such that the inflationary effect on second regime is higher than first. Probably the major effect of the liquidity growth in the first regime is transmitted to economic growth, while this effect in the second regime is transmitted to inflation.

When economy experience the second regime, government expenditure growth, liquidity growth and economic growth leads to inflation. These results can be references to the oil boom periods or periods of high budget deficit. Government is the owner of the oil revenue in Iran then increases in oil revenues increases the government spending. Oil revenues raise Central bank's reserves and subsequently increases monetary base and liquidity. When the aggregate demand is stimulated, especially accompanied by expansionary fiscal policy, higher GDP growth could be experienced. Results show that in second regime majority of this inflation in short-run related to the liquidity growth and minority share related

to government expenditure growth and demand side. In any case, the government spending growth in all regimes has a limited impact on the inflation and the main source of inflation is the increase in the liquidity as a result of increased government debt or the oil revenues. In the first regime which government spending is not financed by resourcing to central bank, it can be possible to use fiscal policy effectively to stimulate the economic growth and simultaneously have control on inflation. Diagram (1) shows the growth of liquidity and the threshold value. Obviously, Iran economy has been located mostly in high liquidity growth regime. Low liquidity growth regimes limited to seasons that Iran economy benefited from more monetary and fiscal discipline due to end of war and economic reforms, foreign borrowing or changes in international oil prices.

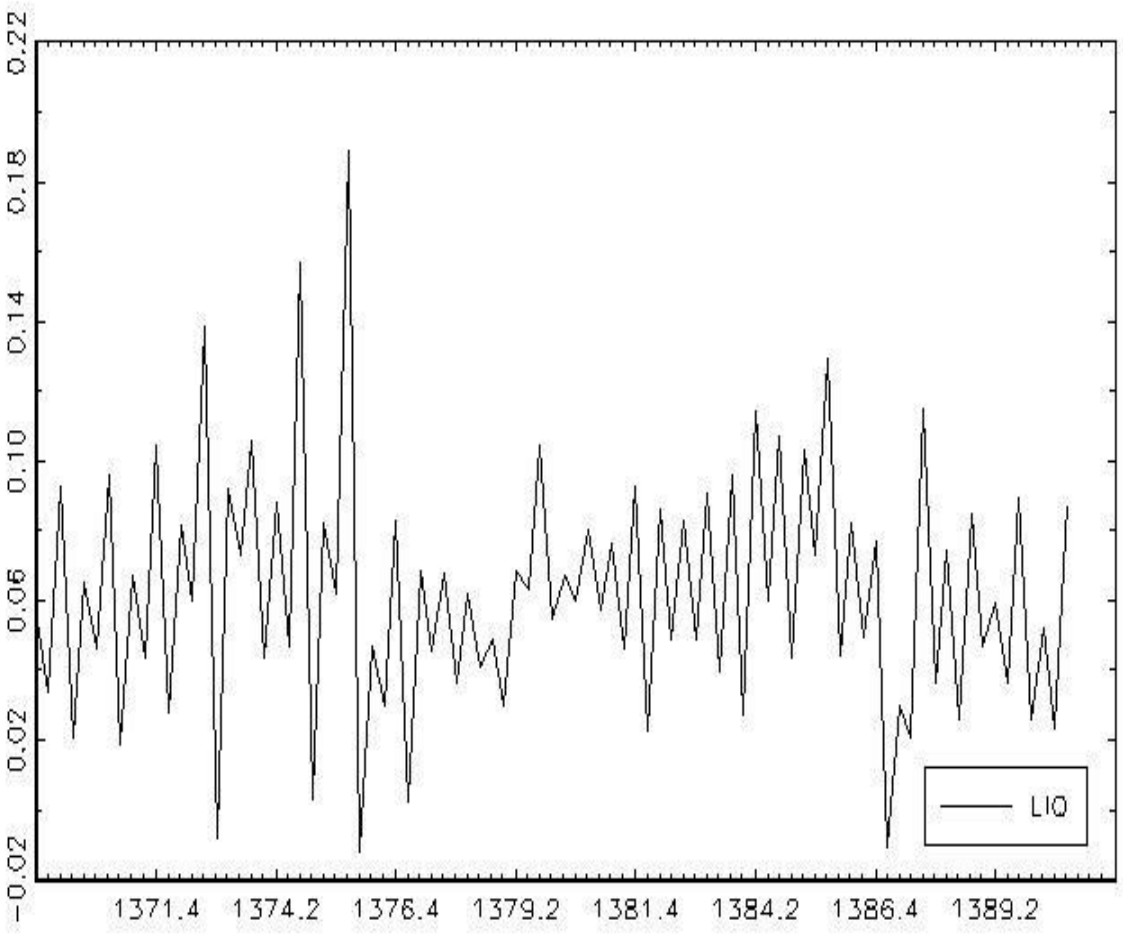

Figure 1. liquidity trend and its threshold value in 1990: 2 – 2013: 4.

In the Figure (1) the amount of transition function at different levels of liquidity (as variable threshold) is shown. Considering the logistic transition function of the regime change in the figure (2) observed that the transition speed occurs almost smoothly from a regime to another regime.

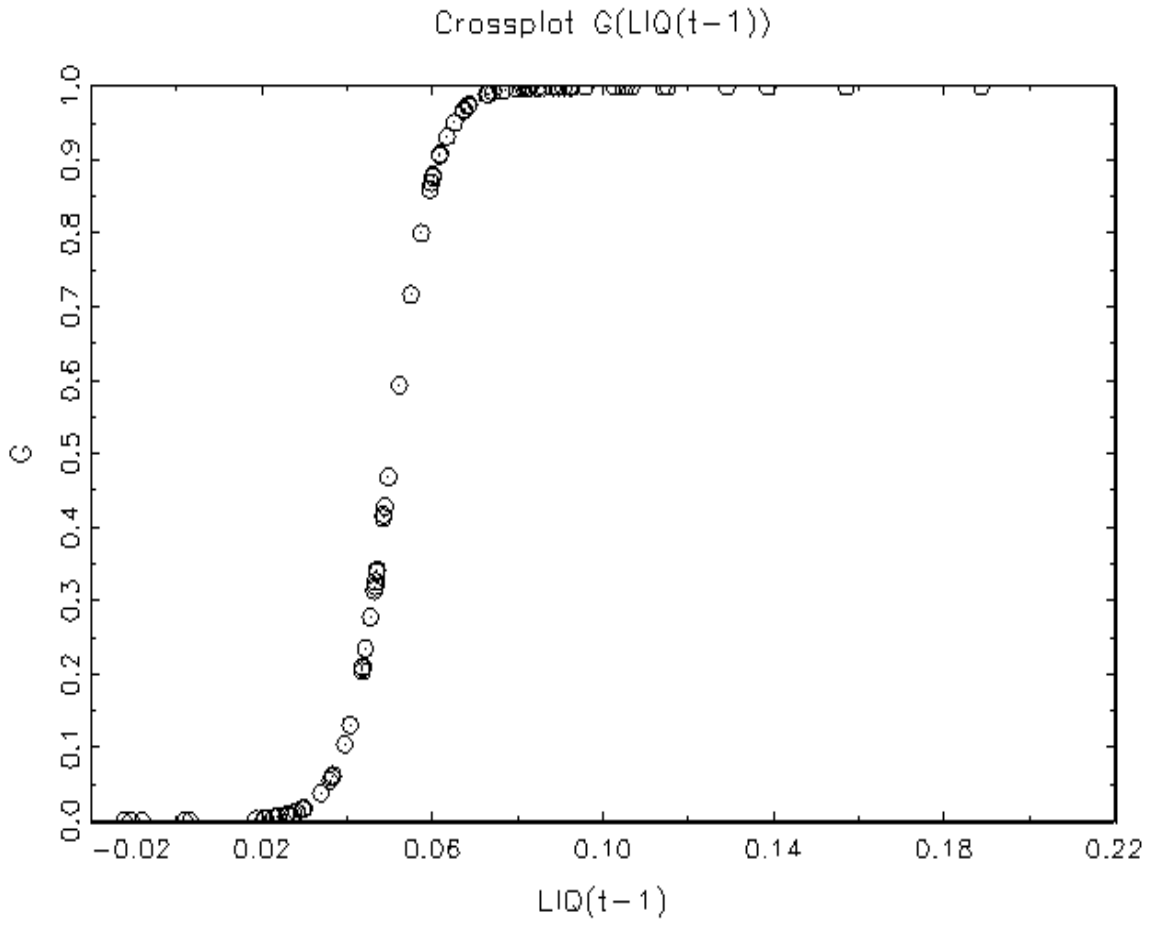

Figure 2. Logistic function's diagram for regime change.

Specification error tests for smooth transition nonlinear model results displayed in Table 5.

Table 5. Specification error tests for smooth transition nonlinear model.

1. The autocorrelation error test*

Lags	P-value F	Null hypothesis: no autocorrelation
1	0.56	Not rejected
2	0.79	Not rejected
3	0.78	Not rejected
4	0.82	Not rejected

5	0.82	Not rejected
6	0.78	Not rejected
7	0.80	Not rejected
8	0.79	Not rejected

2. Parameter fixed test in different regimes

Transition Function	P-value F	Null Hypothesis: Coefficients are Equal
$\mathbf{H_1}$	0.03	Rejected
$\mathbf{H_2}$	0.008	Rejected
$\mathbf{H_3}$	0.09	Rejected(in 90% confidence level)

3. Non-linearity Test

P-Value F	Null Hypothesis: Extra non-linear nexus not exist
0.36	Not Rejected

4. Conditional Heteroskedactisity Test

P-value F	P-value χ^2	Null Hypothesis: No Conditional Heteroskedactisity (ARCH effects)
0.88	0.58	Not Rejected

5. Normality Test of Resides

P-value χ^2	Null Hypothesis: Resides have Normal Distribution
0.78	Not Rejected

* Autocorrelation test error due to the seasonality of the period of study has been done with the 8 lag.
** Hypotheses are tested 95 confidence interval percentage.

In summary, based on all of diagnostic tests, non-linear estimation passed all of the tests and was considered satisfactory.

6. CONCLUSIONS

Central bank has adopted an inflation targeting monetary policy framework in recent years so as to control the level of inflation. In the other side, government in Iran owns oil revenues that exchange these with central bank to cover its expenditures. Therefore, even if government does not borrow from central bank, targeting monetary policy will be in trouble.

In addition, the internal studies so far, have different or contradictory results from the impact of the current and the development costs on the inflation that the main reason is applying linear models to explain this nexus. This paper, however, revisits the inflation–government spending nexus by applying a smooth transition regression model (STR) which precisely determines the threshold level of inflation endogenously, hence an important advantage of the STR over the alternative models that have been used to estimate such a relationship. So in this study the nonlinear effects of government spending, liquidity growth, economic growth and inflation expectations on inflation were investigated in Iran by using STR model to period 1990: 2- 2013: 4. Results indicate that linear approximation cannot explain satisfactorily non-linear effects of government spending and other variables in different regimes. Based on statistical analysis of the correct specification model the number of optimal regime equal two regime and lag of liquidity growth is as transition variable such that coefficient varying affected by the liquidity growth. Transition rate of regime to another regime is almost smoothly and the threshold value is equal to 5 percent (20% in year).

The impact of government spending and other explanatory variables on inflation depends on monetary conditions (Expansionary or contractionary monetary policy). In the first regime (low liquidity growth), government spending growth was not inflationary, even it had negative impact on inflation. In this regime, government spending possibly financed by taxation or non-inflationary oil revenues has contributed more to economic growth. In high liquidity growth regime, government spending was inflationary. In both regimes, output increases increased the inflation that it can represent shocks or pressures of demand side effects. But these shocks and pressures in the first regime had lower effect than the second. First and second lags of inflation as proxies of inflation expectations had more effect on inflation first regime. Therefore expectation has significant effect on inflation in low liquidity growth regimes. Against to the first regime, in second regime larger amount of increased money transferred to inflation and lesser transferred to economic growth. It's obvious that liquidity in shot-run is dominant factor for inflation in both regimes.

In low liquidity growth regime that, government spending is not financed through central bank, it can be possible to use fiscal policy effectively to stimulate the economic growth and simultaneously have control on inflation. In the first regime, dependence of government spending on borrowing from the central bank and fiscal deficit is lower; such that it's expenditures covered by taxes and oil revenues which can have anti-inflationary impact. Consequently, in low liquidity growth regime monetary and fiscal policies had lower inflationary effect and might have more effect on real economic activities. In high regime, perhaps the best policy to get rid of inflation is the discipline in monetary and fiscal policies.

References

[1] Cologni, A., & Manera, M. (2006). "The asymmetric effects of oil shocks on output growth: A Markov–Switching analysis for the G-7 countries". *Economic Modelling*, 26(1), 1-29.

[2] De Castro Fernandez, F. & Hernandez De Cos, P. (2006); "The Economic Effects Of Exogenous Fiscal Shocks In Spain: A Svar Approach", Ecb Working Paper/647.

[3] Ezirim Ch., Muoghal M. I., Elik U., (2008). " Inflation versus public expenditure growth in the us: AN EMPIRICAL INVESTIGATION" , *North American Journal of Finance and Banking Research* 2(2); 26-40

[4] Georgantopoulos A., Tsamis A. (2010). "The Interrelationship between Money Supply, Prices and Government Expenditures and Economic Growth: A Causality Analysis for the Case of Cyprus" , *International Journal of Economic Sciences and Applied Research*, 5(3), 115-128.

[5] Granger, C.W. and T. Terasvirta (1993). "Modelling nonlinear economic relationships", Oxford University Press: Oxford.

[6] Hamilton, J. D. (1994). "Time Series Analysis. Princeton University Press": Princeton

[7] Han, S., & Mulligan, C. B. (2002). "Inflation and the Size of Government" (Vol. 2, No. 1). Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board.

[8] Krolzig, H.-M. (1997). "Markov Switching Vector Autoregressions". Modelling, Statistical Inference and Application to Business Cycle Analysis. Berlin: Springer.

[9] Magazzino, C. (2011). "The nexus between public expenditure and inflation in the Mediterranean countries". MPRA Paper No. 28493,

[10] Mizrach, B., & Watkins, J. (1999). "A Markov switching cookbook". In Nonlinear Time Series Analysis of Economic and Financial Data (pp. 33-43). Springer US.

[11] Mohammad S.D, Wasti S.K, Lal I, Hussain A. (2009). "An Empirical Investigation between Money Supply, Government Expenditure, output & Prices: the Pakistan Evidence" Issue 17, *European Journal of Economics, Finance and Administrative Sciences.*

[12] Musa, Y., & Asare, B. K. (2013). "Long and Short Run Relationship Analysis of Monetary and Fiscal Policy on Economic Growth in Nigeria: A VEC Model Approach". *Research Journal of Applied Sciences, Engineering and Technology* 5(10): 3044-3051.

[13] Olayungbo , David Oluseun (2013), Government Spending and Inflation in Nigeria: An Asymmetry Causality Test, *International Journal of Humanities and Management Sciences*, 1(4).

[14] Pekarski, S., (2010). Budget Deficit and Inflation Feedback, Structural Change and Economic Dynamics.

[15] Piontkivsky R., Bakun A., Kryshko, M., & Sytnyk T. (2001). "The impact of the budget deficit on inflation in Ukraine". International Association for the Promotion of Cooperation with Scientists from the New Independent States of the Former Soviet Union (INTAS) Research Report, 95, 0273.

[16] Rafiq, S., & Zeufack, A. (2012). "Fiscal multipliers over the growth cycle: evidence from Malaysia". Policy Research Working Paper 5982.

[17] Surjaningsih, Ndari, Utari, G. A. Diah, Trisnanto, Budi (2012). "The Impact Of Fiscal Policy On The Output And Inflation", Bulletin of Monetary Economics and Banking 367, April 2012.

[18] Teräsvirta, T. (1998). Modelling economic relationships with smooth transition regression. In: Handbook of Applied Economic Statistics. Marcel Dekker: New York. pp. 507-522.

[19] Terasvirta, T. (2004). "Smooth Transition Regression Modelling, in H. Lutkepohl and M. Kratzig (eds); Applied Time Series Econometrics", Cambridge University Press, Cambridge, 17.

[20] Van Dijk, D., Trasvirta, T. & Franses, P. H; (2000). "Smooth Transition Autoregressive Models-a Survey of Recent Developments", *Econometric Reviews*, 21, 1-47.

(Received 11 January 2016; accepted 24 January 2016)