INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 4, Issue 9, (2014) E-ISSN: 2222-6990

Thresholds Effect of Money Growth on Inflation in Iran

Mohammad Mirbagherijam
Department of Accounting, Iranshahr Branch, Islamic Azad University, Iranshahr, Iran PhD student of Economics, University of Sistan and Baluchestan, Iran,
Email: mohammad.mirbagherijam@gmail.com

DOI Link: http://dx.doi.org/10.6007/IJARBSS/v4-i9/1160

Published Date: 23 September 2014

Abstract

This paper surveys the effects of money growth and economic growth on inflation in Iran. We use Threshold Vector Error Correction Model (TVECM) for two sets of bivariate series inflation- money growth and inflation-economic growth separately and estimate the parameters of TVECMs by quantitative econometric software R 3.1.0. The estimation results based on the sample of data 1990:Q1 to 2013:Q4 show the long-run equation $\pi_t = 0.94298\, m_t$ with threshold value 0.028 for bivariate series inflation-money growth. In the short-run, money growth has no effect on the inflation rate if economy switches to the low-inflation regime (the quarterly inflation rate being less than 2.8 percent) but it has significant positive impact on inflation at high-inflation regime Estimated threshold value for bivariate series inflation- economic growth is 0.073 and the high inflation rate above this threshold value, in contrast to low inflation rate, has positive effects on economic growth in the short-run. The obtained results support the view that inflation rate dynamics may be different when economy switch to the different inflation regime.

Key words: Threshold cointegration, Inflation; Monetary Policy; Growth, IRAN Economy

JEL: E31, E52, C22

1. Introduction

Annual Inflation rate of Iran is double-digit since last three decades and this known as "chronic problem of macroeconomic. There are large empirical studies to explain the inflationary economy and neuromas of research conducted to solve this problem in the country; See (Hosseini and Mohtashami 2008; Hadian and Parsa 2008; Hosseini Nasab et al. 2010; AbbasiNejad and Tshkyny 2011). More recently, we use the vector error correction model (VECM) approach to do a survey of inflation dynamic in Iran; and show that inflation is not a monetary phenomenon, but it is mainly cost-push problem in the long-run (see M Mirbagherijam 2014). The VECM approach is used for linear cointigration

and the speed of adjustment toward the equilibrium supposed to be constant over all the sample estimation. However, there are several empirical studies on the issue indicate that the relationship between inflation and output growth is not linear and there exist a threshold level of inflation See (Bildirici et al. 2011; Mohanty et al. 2011; Doguwa 2012; Ajide and Lawanson 2012; Bhusal and Silpakar 2012). Furthermore, the cointgration between money growth and inflation might be non-linear. Therefore, the use of threshold vector error-correction model (TVECM) approach is a practical way of capture a non-linear effect of money supply and economic growth on the inflation dynamics and examines the asymmetries in the adjustment of the deviations towards the long-run equilibrium.
The threshold cointegration technique has been applied recently to analyze the complex interaction among macroeconomic variables such as inflation rate, money supply, economy growth, interest rate and exchange rate; See, for example (Drukker et al. 2005; Bhaduri and Durai 2012; Shirvani and Delcoure 2012). This paper surveys the threshold dynamics of inflation in Iran since 1990 to this end we use the TVECM to examine the effect of money growth and economic growth on inflation rate in the short-run and long-run. The parameters of the TVECM are estimated by the quantitative econometric software R 3.1.0 and the empirical results of estimation contribute to the literature of inflation dynamics.
The rest of this paper is as following: Section 2 describes our data and analytical methods. Section 3 explains estimation results and discussion. Final section concludes the article.

2. Data and Analytical Methods

2.1. Data

The data which used in this paper are: Consumer price index (CPI); Money supply (M); Gross domestic product at market price, at constant 1987/88 (GDP). Money supply includes the narrow definition of money (M1) plus Quasi-Money (QM) or short-term time deposits in banks; M1 include coins and notes that are in circulation and other money equivalents that could be converted easily to cash. All row data are accessible from the web site of Central Bank of Iran (CBI). The sample of data has been since 1990:Q1 to 2013:Q4.

2.2. Analytical Method

Economic theory may suggest employing nonlinear relationships models in the dynamic of an economy system. There are different ways of modeling nonlinear relationships in economics: the vector threshold autoregressive (VTAR), the vector smooth transition autoregressive (VSTAR) and the vector Markov-switching autoregressive (VMSAR) model. Threshold models are a special case of regime switching models. The general idea behind the threshold models is that a process may behave differently when the values of a variable exceed a "threshold value". That is, a different model may apply when values are greater than a threshold than when they are below the threshold. The "threshold cointegration" is typically nonlinear cointegration model[1] and this concept was introduced by Balke and Fomby (1997). Government policy, structural change and regime-switching imply the threshold effect and nonlinear cointegration relationships among macro economy variables such as money and economic growth and inflation. There are several economic backgrounds for threshold

1 -Nonlinear cointegration is extension from of the Engle and Granger (1987)'s definition of linear cointegration.

cointegration: There is a literature that argues that economic expansions are smoother and last longer than economic contractions. This kind of asymmetry can be captured through a transition autoregressive (TAR) representation of real GDP growth rates (Potter 1995). Positive and negative monetary policy shocks may have asymmetric effects, and the effect may depend nonlinearly on the size of the shock as opposed to linear models in which this effect is proportional to the size of the shock. Therefore, the nonlinear models and threshold effect may also be useful in analyzing monetary policy.

2.2.1. Self-Exciting Threshold Auto-Regressive (SETAR) Model

The SETAR is a particular type of TAR model[2]. It introduced by Chan (1985) and discussed extensively in Tong (1990). In the SETAR model, the autoregressive coefficients take different values depending on whether the previous value is above or under a certain threshold value, thus exhibiting regime switching dynamics. The SETAR model with 3 regimes for a univariate time series written as follows:

$$y_t = \begin{cases} \mu_L + \rho_{L,1} y_{t-1} + \cdots + \rho_{L,p} y_{t-pL} + \varepsilon_t & if \quad y_{t-1} \leq \theta_L \\ \mu_M + \rho_{M,1} y_{t-1} + \cdots + \rho_{M,p} y_{t-pM} + \varepsilon_t & if \quad \theta_L \leq y_{t-1} \leq \theta_H \\ \mu_H + \rho_{H,1} y_{t-1} + \cdots + \rho_{H,p} y_{t-pH} + \varepsilon_t & if \quad \theta_H \leq y_{t-1} \end{cases} \quad (1)$$

Where $\rho_{L,j}$, $\rho_{M,j}$ and $\rho_{H,j}$ are autoregressive parameters and subscript L, M and H stand for Low, Middle and High regime. The SETAR model nest the AR(p) when $\rho_{L,j} = \rho_{M,j} = \rho_{H,j}$ for j=1, …, p.

A SETAR model specified with his hyper-parameters; i.e. the threshold delay, the number of lags in each regime and the threshold value. Criterions AIC and SSR would be used to specify the hyper-parameters; See (Gonzalo and Pitarakis 2002). For more detail about the stationarity conditions of SETAR process with one lag see Chan et al. (1985)'s sufficient and necessary conditions and Stigler (2010)'s discuss for SETAR process with more than one lag.

2.2.2. Threshold Vector Error Correction Model (TVECM)

A VECM with threshold effects typically named TVECM. In compression to the VECM, the coefficients of the TVECM are not fixed over time and threshold effects may being applied to the error correction term (Granger and Lee 1989; Seo 2006) or to the lags and the intercept as well Hansen and Seo (2002) and Zivot (2002). The bivariate TVECM with one lag and three regimes and threshold effect on the error correction term (ECT) represent as following equation:

2 -In the TAR process if the threshold variable is a lagged value of itself, it known as "self-exciting" TAR model or SETAR process.

$$\begin{bmatrix}\Delta X_t\\ \Delta Y_t\end{bmatrix} = \begin{bmatrix}c^X\\ c^Y\end{bmatrix} + \begin{cases}\begin{bmatrix}\alpha_{XL}\\ \alpha_{YL}\end{bmatrix} ECT_{L,t-1} & if\ ECT_t \leq \gamma_L\\ \begin{bmatrix}\alpha_{XM}\\ \alpha_{YM}\end{bmatrix} ECT_{M,t-1} & if\ \gamma_L \leq ECT_t \leq \gamma_H\\ \begin{bmatrix}\alpha_{XH}\\ \alpha_{YH}\end{bmatrix} ECT_{H,t-1} & if\ ECT_t \geq \gamma_H\end{cases} + \begin{bmatrix}b_{11} & b_{12}\\ b_{21} & b_{22}\end{bmatrix}\begin{bmatrix}\Delta X_{t-1}\\ \Delta Y_{t-1}\end{bmatrix} + \begin{bmatrix}\varepsilon_t^X\\ \varepsilon_t^Y\end{bmatrix} \quad (2)$$

Estimation and specification of parameters' TVECM involves three aspects: test the distribution, test the existence of threshold cointegration and the number of regime.

Test Hansen (1999) is able to determine the number of regimes, through a test of one against two thresholds. Following Hansen and Seo (2002), it is possible to test the null hypnosis of linear against threshold cointegration and the test Seo (2006) is used to test the null of no cointegration against threshold cointegration with bootstrap distribution.

3. Estimation results and Discussion

3.1. SETAR's hyper-parameters

Table 1 summarizes the estimation result of SETAR's hyper-parameters for each series. Following the Gonzalo and Pitarakis (2002), the Akaike information criterion (AIC) shows two regimes (Low and High regimes) in each series[3] and the threshold value 0.0209, 0.0715 and -

0.157 are computed for series π, m and g respectively. Series π has 1 and 6 autoregressive lags in low and high regimes; Series m correlated to its lags with orders 4 and 5 in the low and high regime; Series g has 7 and 4 autoregressive lags in low and high economic growth level.

Table 1- SETAR's hyper-parameters for series **π**, m and g

Economy Growth		Money Growth		Inflation Rate	
Min	-0.22	Min	-0.01	Min	-0.04
Max	0.34	Max	0.17	Max	0.18
Average	0.01	Average	0.06	Average	0.05
Threshold Value:	-0.157	Threshold Value:	0.07154	Threshold Value:	0.02093
Average in Regime 1	-0.0586	Average in Regime 1	0.0595	Average in Regime 1	0.0445
Average in Regime 2	0.0122	Average in Regime 2	0.0498	Average in Regime 2	0.0465
const L	0.1577	const L	0.0238	const L	0.0580
	0.2039		0.0815		6.949e-10 ***
phiL.1	1.0431	phiL.1	0.3700	phiL.1	-1.9646
	0.0739		0.0061 **		5.723e-05 ***
phiL.2	0.1945	phiL.2	0.0209	const H	0.0210
	0.5118		0.0225 *		0.0154 *
phiL.3	-0.1549	phiL.3	-0.2837	phiH.1	0.2712
	0.5622		0.0045 **		0.0220 *
phiL.4	1.2386	phiL.4	0.4546	phiH.2	0.1893

3 - We estimate the SETAR models with 0, 1, 2 and 3 thresholds (single regime, two, three, four regimes). See Strikholm, B., & Teräsvirta, T. (2005) for determining the number of regimes in a Threshold Autoregressive Model.

	0.0009 ***		9.456e-06 ***		0.1180
phiL.5	0.5416	const H	0.0870	phiH.3	0.1582
	0.0687		0.0013 **		0.1182
phiL.6	0.2294	phiH.1	-0.3549	phiH.4	0.2712
	0.3848		0.0584		0.0053 **
phiL.7	0.8586	phiH.2	-0.1068	phiH.5	-0.1108
	2.067e-05 ***		0.6240		0.2842
const H	0.0179	phiH.3	0.3786	phiH.6	-0.2693
	0.0010 **		0.0450 *		0.0459 *
phiH.1	-0.5206	phiH.4	-0.1692		
	5.460e-08 ***		0.4757		
phiH.2	-0.5132	phiH.5	-0.4001		
	1.409e-08 ***		0.0205 *		
phiH.3	-0.4911				
	7.259e-08 ***				
phiH.4	0.4741				
	1.437e-07 ***				

Note: **, * and ▪ indicates significance at the 0.001%, 0.01% and 5% level respectively. The values in parentheses represent P-Value. Source: author foundations

Table 2 shows the result of Hansen (1999) test for linearity against threshold of with bootstrap distribution. For all series, the F test value in the Test 1vs2 and Test 1vs3 is greater than its corresponding Critical Values; Therefore the Null hypothesis, linear AR versus threshold TAR rejected at 95% confidence level in each series of π, m and g. Furthermore, the hypothesis 1 threshold TAR versus 2 thresholds TAR did not reject. Thus, it would be suitable to estimate a SETAR model with one threshold value or two regimes for each series of such it estimated in table 1.

Table 2- Test of linearity against threshold of Hansen (1999) for series **π**, m and g

Null hypothesis (H0)	**π**	m	g
Test 1vs2: Linear AR versus 1 threshold TAR	35.2680 [30.7173]	30.2825 [27.5098]	49.5279 [40.1166]
Test 1vs3: Linear AR versus 2 threshold2 TAR	116.3431 [101.5458]	60.3959 [52.9218]	90.5948 [76.7912]
Test 2vs3: 1 threshold TAR versus 2 threshold2 TAR	57.6891 [61.83345]	22.4683 [29.9764]	26.2775 [28.2348]
Specification	SETAR(1)	SETAR(1)	SETAR(1)

Note: Critical values of F test at 95% confidence are in the bracket []. Sou
rce: author foundations

3.2. Estimation of TVECM

Here we estimate the TVECM for two set of bivariate series, i.e. inflation-money growth and inflation-economic growth separately, afterwards test the threshold cointegration. Tables 3, 4 and 5 show the threshold cointegration tests and the estimation results of TVECM.

Table 3- Test of threshold cointegration

Null hypothesis (H0):	inflation-money growth	inflation-economy growth
linear cointegration versus threshold cointegration: Hansen and Seo (2002) test	19.47395 [14.46715]■	39.60951 [14.7666]
No cointegration versus threshold cointegration: Seo (2006) test	41.90036 [41.90036]	15.02939 [15.02939]

Note: Critical values of test at 95% confidence are in the bracket [].■: Critical value of test at the 1% , 5% and 10% significance level are 17.5917, 14.4671 and 13.8434 which is less than test statistic value 19.4739. Source: author foundations

To assess the evidence of threshold cointegration, we use the Hansen and Seo (2002)'s test for null hypothesis of linear cointegration against threshold cointegration, and Seo (2006)' test for null of no cointegration versus threshold cointegration. The result of table 3 provides a strong rejection of the null of linear cointegration at the 1% significance level for both set of bivariate series.

Table 4- Threshold cointegration of inflation-money growth

Threshold estimate	0.02820036	
Cointegrating vector Estimate	- 0.9429801	
First regime	Inflation Rate	Money Growth
ECT_L	-0.3163 (0.0444)*	0.3844 (0.0090)**
Constant	-0.0006 (0.8878)	0.0103 (0.0117)*
π_{t-1}	-0.3642 (0.0044)**	-0.4893 (5.8e-05)***
m_{t-1}	0.0197 (0.8980)	-0.8430 (7.6e-08)***
π_{t-2}	-0.2504 (0.0050)**	-0.4358 (6.1e-07)***
m_{t-2}	0.0725 (0.5120)	-0.0469 (0.6475)
Percentage of observations	82.6%	
Second regime	Inflation Rate	Money Growth
ECT_H	-1.7908 (2.7e-05)***	1.0012 (0.0088)**
Constant	0.0665 (0.0023)**	-0.0189 (0.3368)

Vol. 4, No. 9 2014, E-ISSN: 2222-6990 © 2014

π_{t-1}	0.2120 (0.4613)	-0.8091 (0.0031)**
m_{t-1}	-1.1399 (0.0075)**	0.5493 (0.1579)
π_{t-2}	0.1199 (0.7049)	-0.7298 (0.0147)*
m_{t-2}	-1.7419 (0.0032)**	1.3136 (0.0157)*
Percentage of observations	17.4%	

Note: **, * and ▪ indicates significance at the 0.001%, 0.01% and 5% level respectively. The values in parentheses represent P-Value. We applied AIC and BIC to select the lag length and pick the TVECM with 2 lags. Source: author foundations

Table 5- Threshold cointegration of inflation-economic growth

Threshold estimate	0.07394147	
Cointegrating vector Estimate	-0.0595932	
First regime	Inflation Rate	Economic Growth
ECT_L	-0.5362 (0.0041)**	0.2087 (0.4670)
Constant	0.0239 (0.0038)**	-0.0080 (0.5275)
π_{t-1}	-0.3392 (0.0507) ▪	-0.2482 (0.3595)
g_{t-1}	-0.0033 (0.8753)	-1.0460 (2.1e-45)***
π_{t-2}	-0.0959 (0.5043)	0.0846 (0.7082)
g_{t-2}	-0.0234 (0.2447)	-1.0400 (1.6e-46)***
π_{t-3}	0.0736 (0.4823)	0.1223 (0.4591)
g_{t-3}	0.0528 (0.0082)**	-1.0036 (3.6e-46)***
Percentage of observations	85.7%	
Second regime	Inflation Rate	Economic Growth
ECT_H	-0.4144 (0.5187)	-3.1913 (0.0022)**
Constant	0.0512 (0.1865)	0.1068 (0.0818) ▪
π_{t-1}	-0.5341	3.8733

	(0.4377)	(0.0006)***
	0.0246	-0.8207
g_{t-1}	(0.6289)	(6.2e-16)***
	-0.5563	5.6348
π_{t-2}	(0.5251)	(0.0001)***
	-0.0316	-0.9351
g_{t-2}	(0.5766)	(1.9e-16)***
	-0.0540	8.0031
π_{t-3}	(0.9605)	(1.2e-05)***
	0.1394	-0.5518
g_{t-3}	(0.0436)*	(2.0e-06)***
Percentage of observations	14.3%	

Note: **, * and ▪ indicates significance at the 0.001%, 0.01% and 5% level respectively. The values in parentheses represent P-Value. The selected TVECM has Minimum AIC, -1234.436, with 3 lags. Source: author foundations

3.3. Empirical results

The estimated threshold for bivariate series inflation-money growth is, $\gamma_{\pi,m} = 0.02820$, with the threshold itself being determined by the relative level of the two time series. The error- correction term is defined as: $ECT_t^{\pi,m} = \pi_t - 0.94298\, m_t$ Thus, the first regime occurs when
$\pi_t \leq 0.94298\, m_t + 0.02820$. About 82.6% of the observations are found in this regime, which we label the "typical" regime. The second regime is relevant to about 17.4% of the observations, and may be viewed as an "extreme" regime and it occurs when $\pi_t \geq 0.94298\, m_t + 0.02820$.

As shown in the table 4, the estimated coefficients of error correction term for bivariate series inflation-economic growth is statistically significant. The sign of adjustment coefficients for equation inflation is negative; however, the size of them is significantly different in both regimes. The lags of inflation in the first regime and the lags of money growth in the second regime for equation inflation are statistically significant. From these results we find that money growth has different effects on the dynamic of inflation across the different inflation regime.

Threshold cointegration for bivariate series inflation-economic growth estimated as: $ECT_t^{\pi,g} = \pi_t - 0.05959\, g_t$ with threshold value $\gamma_{\pi,g} = 0.07394$ and therefore first regime occurs
when $\pi_t \leq 0.05959\, g_t + 0.07394$ and second regime occurs when $\pi_t \geq 0.05959\, g_t + 0.07394$. As shown in table 5 for equation economic growth, the lags of inflation in the second regime of inflation in contrast to first regime, are statistically significant. These empirical results pointed
to conclusion that in the short-run economic growth linked to level of inflation rate. Hence the
quarterly inflation rates above the 7.39 percent accelerate the rate economic growth in the short-run.

4. Conclusion

The aim of this research is to examine the short-run and long-run effects of money growth and economic growth on inflation in Iran. We use threshold vector error-correction model (TVECM) as general econometric framework to capture the asymmetries and nonlinearity in the adjustment of the deviations towards the long-run economic equilibrium. The parameters of TVECM for two set of bivariate series, inflation-money growth and inflation-economic growth are estimated separately by quantitative econometric software R 3.1.0.

The estimation results based on the sample of data 1990:Q1 to 2013:Q4 show the long-run equation $\pi_t = 0.94298\, m_t$ with threshold value 0.028 for bivariate series inflation-money growth. A comparison of the estimated error-correction coefficients across both regimes
suggests that the adjustment process towards the long-run equilibrium of inflation is relatively
faster (greater) in the regime second regime. It is -0.316 in first regime and -1.790 in second regimes. And if the quarterly inflation rate being less than 2.8 percent, i.e. the economy switch to first regime of inflation then money supply growth had no significant effect on inflation in the short-run despite the fact that money growth increase inflation in the long-run. If the economy switches to second regime of inflation, then money growth has considerable influence on inflation in the short-run. Based on the estimation results of table 5 we find that economic growth has no significant effect on inflation in short-run. And if the economy switches to high- inflation regime (quarterly inflation greater than 7.3 percent) then high inflation rate has positive effect on economic growth in short-run; Statistically significance of estimated coefficients π_{t-1} , π_{t-2} and π_{t-3} in the column "Economy-Growth" of table 5 shows this fact.

The results obtained support the view that inflation rate dynamics may be different when economy switch to different inflation regime.

Acknowledgement

This study is prepared as a part of the research project "*A Survey on Monetary and Inflation Dynamics in Iran since 1979*" and conducted at Islamic Azad University of Iranshahr. Training working with an econometric software R by *Professor Gholamreza Keshavarz Haddad* in this study helped me greatly. I would like to thank *Professor Nazar Dahmardeh Ghale No*, *Dr. Gholam Reza Zamanian* and *Dr. Mojahedi Moakhar* to teach me about Monetary Economic theories and also *Dr. Mohammad Nabi Shahiki Tash* as well as all the other professors who help me over the past three years of my pursuit of the PhD course. Finally, I sincerely thank to *Professor Hamid Bahadur*, Dean of Islamic Azad University of Iranshahr Branch, who supported us financially.

References

ABASSINEJAD, H., & TASHKINI, A. (2011). MEASURING CORE INFLATION (THE CASE OF IRAN).
TAHGHIGHAT-E-EGHTESADI.

Ajide, K. B., & Lawanson, O. (2012). Inflation Thresholds and Economic Growth: Evidence from Nigeria.

Balke, N. S., & Fomby, T. B. (1997). Threshold cointegration. International economic review, 627-645.

Bhaduri, S. N., & Durai, S. R. S. (2012). A note on excess money growth and inflation dynamics: evidence from threshold regression. MPRA Paper, (38036).

Bhusal, T. P., & Silpakar, S. (2012). Growth and inflation: Estimation of threshold point for Nepal. Economic Journal of Development Issues, 13, 131-138.

Bildirici, M., Alp, E. A., & Kayikçi, F. (2011). Relationship between hot money and economic growth: Tar-cointegration and MS-VAR analysis. African Journal of Business Management, 5(3), 1060-1075.

Chan, K. S. (1993). Consistency and limiting distribution of the least squares estimator of a threshold autoregressive model. The annals of statistics, 520-533.

Chan, K. S., Petruccelli, J. D., Tong, H., & Woolford, S. W. (1985). A multiple-threshold AR (1) model. Journal of Applied Probability, 267-279.

David, D., Pedro, G. P., & Paula, H. E. (2005). Threshold effects in the relationship between inflation and growth: A new panel-data approach.

Doguwa, S. I. (2012). Inflation and Economic Growth in Nigeria: Detecting the Threshold Level.
Journal of Applied Statistics, 3(2), 99-124.

Engle, R. F., & Yoo, B. S. (1987). Forecasting and testing in co-integrated systems. Journal of econometrics, 35(1), 143-159

Gonzalo, J., & Pitarakis, J. Y. (2002). Estimation and model selection based inference in single and multiple threshold models. Journal of Econometrics, 110(2), 319-352.

Granger, C. W. J., & Lee, T. H. (1989). Investigation of production, sales and inventory relationships using multicointegration and non-symmetric error correction models. Journal of applied econometrics, 4(S1), S145-S159.

HADIAN, E., & PARSA, H. (2008). DISTRIBUTED LAG EFFECT OF MONEY CHANGES ON THE RATE OF INFLATION IN IRAN. IRANIAN ECONOMIC RESEARCH, 12(36), 1-1.

Hansen (1999) Testing for linearity, Journal of Economic Surveys, Volume 13, Number 5, December 1999 , pp. 551-576(26) avalaible at: http://www.ssc.wisc.edu/~bhansen/papers/cv.htm

Hansen, B. and Seo, B. (2002), Testing for two-regime threshold cointegration in vector errorcorrection models, Journal of Econometrics, 110, pages 293 - 318

HOSSEINI, N. E., & REZAGHOLIZADEH, M. (2010). ANALYSIS OF THE FISCAL SOURCES OF INFLATION IN IRAN GIVING SPECIAL EMPHASIS TO BUDGET DEFICITS. THE ECONOMIC RESEARCH.

Hosseini, S., & Mohtashami, T. (2008). The Relations of Money Growth and Inflation in Iran Economy; Interruption or Satiable? The Economic Reseach, 21-42.

Mirbagherijam, M. (2014). Survey the Dynamic of Inflation in Iran Since 1990.International Journal of Academic Research in Business and Social Sciences,4(6), 210-224.

Mohanty, D., Chakraborty, A. B., Das, A., & John, J. (2011). Inflation Threshold in India: An Empirical Investigation. Reserve bank of India Working Paper Series, 18.

Potter, S. M. (1995). A nonlinear approach to US GNP. Journal of Applied Econometrics, 10(2), 109-125.

Seo, M. (2006). Bootstrap testing for the null of no cointegration in a threshold vector error correction model. Journal of Econometrics, 134(1), 129-150.

Seo, Myunghwan, (2006). "Bootstrap testing for the null of no cointegration in a threshold vector error correction model," Journal of Econometrics, vol. 127(1), pages 129-150, September.

Shirvani, H., & Delcoure, N. N. (2012). Trend reversion in the velocity of money: some international evidence based on the STAR approach. Research in Business and Economics Journal, 6, 1-9.

Stigler, M. (2010). Threshold cointegration: overview and implementation in R. Working paper.

Strikholm, B., & Teräsvirta, T. (2005). Determing the number of regimes in a threshold autoregressive model using smooth transition autoregressions (No. 578). SSE/EFI Working Paper Series in Economics and Finance.

Tong, H. (1990). Non-linear time series: a dynamical system approach. Oxford University Press. Zivot, E., & Andrews, D. W. K. (2002). Further evidence on the great crash, the oil-price shock, and the unit-root hypothesis. Journal of Business & Economic Statistics, 20(1), 25-44.