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THE EFFECTS OF ASYMMETRIC TRANSMISSION OF EXCHANGE RATE ON INFLATION IN IRAN: APPLICATION OF THRESHOLD MODELS

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Abstract:

Given the recent fluctuation in the exchange rate and the presence of several factors such as the various economy-political sanctions (mainly embargos on oil and banking), extreme volatility in different economic fields, and consequently the devaluation of national and public procurement –A landmark that is emanating from exchange rate fluctuation – two points should be noted: First, it is essential to review the effect of exchange rate fluctuation on macro economic variables such as inflation and to provide appropriate policies. Second, the existence of this condition provides the chance to study the relation between exchange rate and inflation in a non-linear and asymmetric method. Hence, the present study seeks to use TAR model and, on the basis of monthly time series data over the period March 2002 to March 2014, to analyze the cross-asymmetric and non-linear exchange rate on consumer price index (CPI) in Iran. The results also show the presence of an asymmetric long-term relationship between these variables (exchange rate and CPI). Also, in the Iranian economy, the effect of negative shocks of exchange rate on inflation is more sustainable than the one from positive shocks.

Key words: *Consumer Price Index, the Asymmetric flow Pattern, Threshold Autoregressive Model (TAR)*

1. Introduction

Exchange rate is the one of the main factors determining raw material prices, intermediate goods, capital equipment and marginal goods. Due to the high dependence of production and consumption on imports, it seems it affects the formation of inflationary pressures.

Because of the profound change in the exchange rate regimes, the exchange rate variable has proven to be a key factor of influence on economic policy, and the impact of its fluctuations on inflation and domestic prices has become a common economic issue (Delatte & Villavicencio, 2012).

Inflation, as a rise in the average level of prices and steady decline in the purchasing power of money, has always been of special attention as one of the most acute economic problems of communities and, in particular, our part of the world, let it be due to an increase in demand pull inflation or a rise in cost push inflation.

A high inflation rate has undesirable effects on economic growth and development. One of the factors causing cost push inflation is the increasing price of primary as well as imported intermediate goods. Foreign currency devaluation policy that can be adopted to improve the trade balance of payment can cause inflation by raising the price of imported goods (Karoro & et al, 2008).

Pass-through approach is an interesting one. It has been used in this survey since in this approach the effects of foreign currency devaluation on tradable goods prices and terms of trade in the right direction, which is the necessary condition to improve trade balance, are studied. Considering the importance of exchange rate in economy, on the one hand, and the importance of inflation, on the other hand, also as regards the recent sharp exchange rate shocks in Iran and the possibility of a non-linear relationship between exchange rates and price indexes, the main purpose of this study is to analyze asymmetric transmission of exchange rate on inflation in Iran.

2. Hypotheses

The main idea of this study rises from the analysis of international surveys done on the asymmetric transmission of exchange rate on inflation. Most of these studies have used the linear method. However, the results of researches by Przystupa & Wrobel (2009), Mihaljek and Klau (2008) and Faruqee and Jeager(2004) showed the non-linear relationship of transmission of exchange rate on inflation. Theoretical foundation of this nonlinear relationship is based on two reasons:

1- When changes in exchange rates are created due to the sharp growth or decline in the devaluation of the national currency

2- When big changes have occurred in the exchange rate

The existence of these two factors makes the effects of transmission of exchange rate on inflation in Iran asymmetric (Nidhaleddine, 2012).

This study has applied Threshold Autoregressive Model (TAR) for data analysis. The hypotheses of this research are:

- Change in exchange rate has asymmetric effects on inflation.
- Change in exchange rate has a positive and meaningful impact on inflation.

3. Literature review

3.1. Cross exchange rate

Cross exchange rate is the changes of exchange rates in import prices whose amount is determined by the importing country's currency.

3.2. The mechanism of the effect of exchange rate changes on price indexes

The extent of exchange rate changes on the consumer price index has always been a topic of interest to economists. In the 1970's much interest was shown to this topic due to the growing inflation together with the flexible exchange rate regime in many countries, especially in developed countries after the collapse of the Bretton Woods system. At that time, high inflation made many central banks concerned about the potential effects of the national devaluation on inflation since the dramatic national devaluation causes inflation as well as inflation expectations to increase. With national devaluation declining, import price and, as a result, the cost of imported inputs increases which affects production and domestic prices. Therefore, an increase in import price makes domestic inflation increase and weakens terms of trade. On the other hand, inflation caused by national currency devaluation reduces the strength of manufacturing units in maintaining the real value of resources. Accordingly, the effect of exchange rate fluctuations and its impact on macroeconomic variables has always been of interest to economic policy makers.

3.2.1. Transmission mechanisms

Dornbush's study has been the base of other studies about the transmission of exchange rate changes on prices. He surveyed the relationship between exchange rate and domestic prices considering imports, import substitution, domestic production and market concentration. In their paper Goldberg & Knetter termed transmission of exchange rate changes "the percentage change in import prices as a result of one percent change in the exchange rate between the exporting and importing countries." Therefore, if exchange rate change is transferred one by one to import prices, transmission effect is complete, but if it is less than one, transmission effect is incomplete. Transmission of exchange rate changes on domestic prices is divided to direct and indirect effects.

A. Direct effect

This effect shows transmission exchange rate changes on import prices through the foreign sector.

For example, if "E" is taken for exchange rate and "P" stands for the price of imported goods in foreign currency, "E*P" is the value of imported good in the domestic currency. If "P" is fixed and domestic weakens, the price of imported good in domestic currency goes up. Since imported goods are typically final or intermediate goods, the first, directly, and the second, by increasing the production cost and increasing price of domestic goods, make consumer prices raise. This effect shows the transmission of exchange rate changes on prices of imported goods. Goldberg & Knetter (1997), assert the effect of transmission is complete when markup and marginal costs are fixed. When markup and marginal costs are fixed, producers do not apply any type of price discrimination, and the import prices will change in proportion to exchange rate changes. The higher the power of pricing to market, the lower the rate of transmission effect.

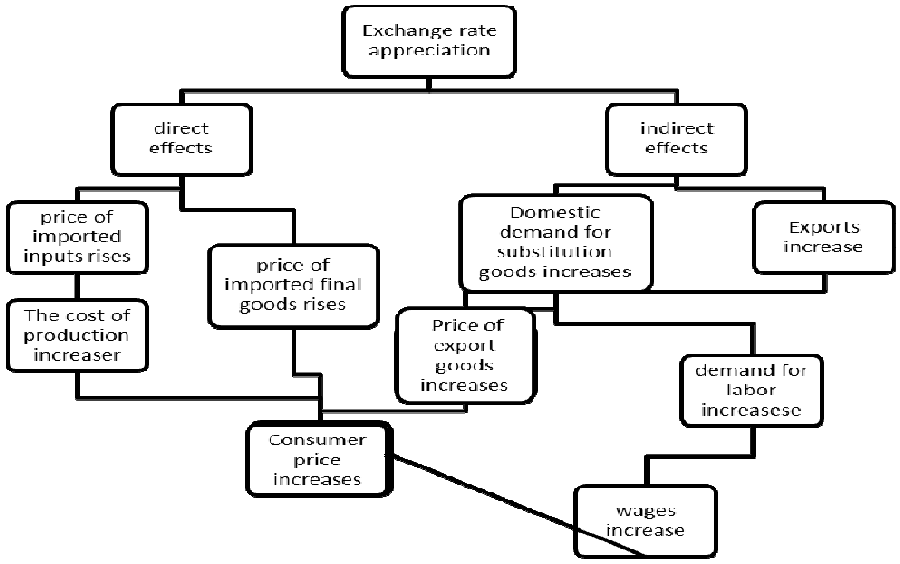
B. Indirect effect

The transmission effect of exchange rate changes on inflation depends on goods competitiveness in international markets. Devaluation of the national currency makes domestic goods cheaper than foreign goods for foreign buyers. As a result, exports and aggregate demands rise, and there is excess demand in domestic market and domestic level of prices increases. Since the level of nominal wages is fixed in short contracts, the level of real wages falls when the level of prices goes up. Over time, wages are adjusted and reach the initial level. With a rise in the cost of production level prices increase and, thus, production declines. Therefore, devaluation of the national currency leads to a permanent increase in the price levels, and this rise will cause a temporary decrease in the production (Hufner & Schorder, 2002).

Previous studies have shown that the transmission effect of exchange rate on domestic price level is not complete (Mihaljek & Klau, 2001).

The following diagram shows the points discussed.

Figure 1: The mechanism of the effect of exchanges on consumer prices



Source: Lafleche, 1996

3.3. Literature review of asymmetric transmission of exchange rate

In developing countries, exchange rate changes are very important for economic policy making, and they have always been an important economic policy maker to create production and employment.

Accordingly, foreign policy and its effects on macro economic variables are one of the most important discussions in economics. Since, in developing countries, the exchange rate is influenced by internal and external shocks, exchange rate will suffer from higher fluctuation.

Considering that exchange rate fluctuations affect the aggregate demand of economy through import, export and money demand as well as the aggregate supply of economy through the cost of imported intermediate goods, these effects on production and price will depend on the initial economic conditions of countries. In summary, in commodity markets, a positive exchange rate shock causes price of imported goods to increase and the price of exported goods to decrease and, as a result, increase demand of domestic goods. On the other hand, national currency devaluation increases liquidity demand of enterprises and money demand increases accordingly. On the supply side, in developing and semi industrial countries, positive exchange rate shocks (national currency devaluation) increase the cost of importing intermediate goods, thus, making production costs go up – known as imported inflation.

According to the theories of macroeconomics, when production cost increases, the aggregate supply curve diverts to the left and production decreases. Therefore, the marginal effect of exchange rate transmission depends on the transmission of aggregate demand and supply and initial economic conditions (Gylfson & Schmid, 1983).

Through years, international exchange rate regimes were faced with a lot of ups and downs which affected the economic structure of countries. Different exchange rate regimes show how the exchange rate of the economy is determined. Over years, exchange rate regimes have had high fluctuations, especially after the collapse of the fixed exchange rate regime (Bretton woods regime).

Since then, the effect of instability of the exchange rate on international trade has drawn the attention of advocates of both fixed and flexible exchange rate regimes.

One of the main reasons of advocates of the fixed exchange rate regime against the flexible exchange rate regime is that this regime provides a better environment for production, trade and international investment by reducing fluctuations of exchange rate. They believe that since the advent of the flexible exchange rate regime, the exchange rate has been very unstable during which time its long-term equilibrium has had many variations. However, advocates of the flexible exchange rate regime believe that the fixed exchange regime is unable to decrease unexpected instabilities. Flexibility of the exchange rate regime, in addition, makes possible the ease of a balance of payments in case of foreign shocks (Cote, 1999).

The policy devaluation makes the price of foreign goods go higher than domestic goods; hence, competitiveness of the domestic industry at the international level will increase, which consequently makes domestic goods more attractive to consumers (Kandil, 2000). Success in implementation of devaluation policy in order to improve the trade balance largely depends on the demand for domestic goods. However, traditional theories assert that devaluation policy boosts production, but the new theories hold varying views. If Marshall-Lerner condition does not exist, devaluation policy will have production decrease (Meade, 1951). Devaluation, with the assumption of a trade deficit in the economy will make the real national income decline and lead to a fall in aggregate demand. On the one hand, devaluation decreases the

export price and it will increase the price of imported goods, on the other hand. If there is not a trade balance and the terms of trade are fixed, it is expected that these changes will balance out each other. Should imports be greater than exports, the real income will decrease. (Hirschman, 1949)

The effect of devaluation policy on the supply side is more complex than the demand side of economy.

Bruno (1979) & Wijnbergen(1989) indicate that in a semi-industrialized country where import of production inputs is high and these inputs are not possible to produce in the country, devaluation policy increases the production costs of an enterprise. Implementation of this policy will have a negative effect on the relative price of domestic tradable goods and will increase the domestic price level. But Gylfson & Schmid (1983) provide evidence that the marginal effect of the implementation of this policy depends on diversion of aggregate demand and supply curves. Accordingly, in commodity markets, a positive shock in the exchange rate makes the price of import go higher than the price of export. The competitiveness of enterprises will then improve, and demand for domestic goods will naturally increase. This increase in demand will make production levels as well as prices rise, and a negative shock in exchange rate will have a reverse effect. Also, in the money market, a positive shock in exchange rate will raise money demand by enterprises which will end in an increase in the interest rate. An increase in interest rate partially balances out an increase in aggregate demand, and thereby it increases production levels, and prices will be partly compensated. On the supply side, a positive shock in exchange rate will increase prices of imported intermediate goods, so cost of products goes up and the production level decreases while the price level increases.

Therefore, a positive shock in exchange rate can either increase production levels and prices or decrease both of them. However, the result of the shock depends on the economic condition of the country. According to neoclassical theory, the effects of these shocks on macro economic variables are symmetric, but economists of the school of neo-Keynesians reject the hypothesis. Neo-Keynesians' theoretical and experimental studies show that under certain circumstances shocks on the demand side of the economy can have asymmetric effects on macroeconomic variables. Some of these reasons include: lag of the inputs and outputs in the production process, rigidity of wages and prices and the convex supply curve and credit limits. Accordingly, exchange rate fluctuations are considered as shocks to the demand side of the economy that depend on the initial conditions of the economy, and they can have asymmetric effects on the economy.

3.4. A review of experimented studies

There are two views as to the elements affecting exchange rate. The first view emphasizes the role of elements such as market power and price discrimination in international markets. Based on this view, the degree of "exchange rate pass-through" is determined by "demand price elasticity" and "structure of market" which are independent of the state's monetary systems. On the contrary, according to the second

view the degree of "exchange rate pass-through" has to do with a state's inflationary environment (Taylor Hypothesis, 2000). Based on Taylor Hypothesis (2000), a low inflationary environment leads to a low exchange rate pass-through to domestic price. That is, in a low inflationary environment where marginal cost of production reduces in countries exporting commodities and services, it is expected that changes in exchange rate will have less effect on price of domestic goods. In other words, in a more stable inflationary environment, changes of exchange rate lead to fewer changes in the cost of production, and in this way the transitional effects of changes in exchange rate will have less effect on the price of imported consumer commodities. In addition to the above analysis, there is another reasoning too. Which says in a country where the inflationary environment is high, since inflation expectations are high, the price of import goods will rise accordingly, thus the domestic consumers, willingness to purchase imported commodities will decrease. Domestic sales people will, therefore, decrease their marginal profit. Hence, in a high inflationary environment the effects of a rise in exchange rate will not transfer to the index of imported goods price. It can be concluded that the positive or negative effects of inflationary environment on the degree of exchange rate pass-through depends upon the economic conditions and structure of a country. Judging which view is more likely to be correct is subject to the analysis of findings as well as experimented observations.

Table 1: A review of the experimented studies as to exchange rate pass-through to price index

Researcher	Research Variables	Scope of Study	Period of Study	Results
Choudri & Hakura (2001)	Inflation rate is a function of lagged inflation, the rate of nominal effective exchange rate, general level of foreign prices and degree of openness of economy.	71 developed and developing countries	1979-2001	States with a more stable inflationary environment have experienced a lower degree of exchange rate pass-through.
Ghosh & Rajan (2009)	Using the Johansen and Juselius cointegration method, they surveyed the effect of exchange rate instability on the price index of import goods in south Korea and Thailand.	Korea and Thailand	1980-2006	The results show that exchange rate instability has a positive and meaningful effect on price index of imported goods. With an increase in exchange rate volatility, the price of import goods will increase too.
Lin & Wu (2012)	Using the Threshold Auto regressive (TAR), they surveyed the effect of exchange rate instability and inflationary environment on the	Taiwan	1980-2008	The results show when the exchange regime is instable, the degree of exchange rate pass-through

	degree of exchange rate pass-through in Taiwan.			increases as well.
Aguerre & Fuertes (2012)	This paper has surveyed the effect of exchange rate instability and inflationary environment of the degree of exchange pass-through in 37 developed and emerging countries.	37 developed and emerging countries	1980-2010	In a stable inflationary environment, the degree of exchange rate pass-through decreases. Also, the instability of exchange rate in both groups of countries has a positive and meaningful effect on the price of import good.
Jimborean (2013)	This paper investigated relationship between changes in nominal effective exchange rate and prices in the Eu member states. It also surveyed the effect of exchange rate pass-through on import, producer and consumer prices.	EU member states	1996-2010	The results show that changes of nominal effective exchange rate have a positive and meaningful effect on the price index of import goods in Eu member states.

4. The introduction of model variables

In this research, monthly time series data were used the consumer price index (CPI) and the exchange rate data have been taken from the central bank of Iran website (CBI). This research was carried out from March 2001 till March 2014.

Eviews software and Engel-Granger model, Threshold Auto regressive (TAR) and Error Correction model (ECM) were used in the study. The indexes in the survey are as follows:

Lcpi: Logarithm of the consumer price index
dLcpi: Difference of logarithm of the consumer price index
LUER: logarithm of the exchange rate
dLUER: Difference of logarithm of the exchange rate

4.1. Evaluation of the unit root test of variables

To check the stationary of the model variables, the Augmented Dickey – Fuller unit root test and Phillips –Porron were applied. The results are shown in the table (2).These two variables are not stationary in the level, while, the first order difference variables are stationary. (The results are shown in the table (3)).

Table 2: results of the unit root tests in the level variables

ADF test			
Results of test	Critical Statistic at 5%	t-statistic	Variables
Non-stationary	-1.94	6.144	LCPI
Non-stationary	-1.94	9.457	LUER
Phillips-Porron test			
Results of test	Critical Statistic at 5%	t-statistic	Variables
Non-stationary	-1.94	10.379	LCPI
Non-stationary	-1.94	9.467	LUER

Reference: Findings of research

Table 3: results of the unit root tests in the first order difference variables

ADF test			
Results of test	Critical Statistic at 5%	t-statistic	Variables
Non-stationary	-2.88	-7.453	dLCPI
Non-stationary	-2.94	-2.967	dLUER
Phillips-Porron test			
Results of test	Critical Statistic at 5%	t-statistic	Variables
Non-stationary	-1.94	-4.168	dLCPI
Non-stationary	-1.94	-9.126	dLUER

Reference: Findings of research

4.2. Evaluation of long-term relationships between variables

If two variables are not stationary, yet they have a long-term equilibrium relationship, the two variables have a cointegration relationship which shows up when the residual of model is stationary (Engel-Granger cointegration). Since the variables in this study are not stationary, it is necessary to do the test of cointegration relationship between the variables. Should there be a long-term relationship between the two variables the estimated models are reliable.

4.3. Engle-Granger and Augmented Engel-Granger tests on Cointegration

The result of Engel-Granger model estimate presented in equation (1):

$$LCPI = -4.35 + 0.997\ LUER \qquad (1)$$

t: (-13.53) (28.92)

R^2: 0.97

F – Statistic: 4992.19
Prob(F- Statistic): 0.000
SIB:-2.10
DW: 0.034

Exchange rate coefficient is positive and meaningful; also this relation is long termed. Variables in this study are logarithmic; therefore exchange rate coefficient indicates elasticity of consumer price index (CPI) to changes in the exchange rate. This coefficient shows pass-through of exchange rate to the consumer price index (CPI). According to the value of F-Statistic, this model is reliable, but it has serial correlation (Auto correlation).Therefore, to solve this problem Newey-west fixed method was used (Newey &West, 1987). With this method, it is possible to solve serial correlation and heteroskedasticity problems.

If residual of equation (1) is stationary, equation (1) will be a long-term relationship. The results of residual stationary test are given in table (4).

Table 4: The results of residual stationary test

ADF test			
Result	Critical Statistic at 5%	The amount of statistics	Variable
Stationary	-1.94	-4.019	E
Phillips-Porron test			
Result	Critical Statistic at 5%	The amount of statistics	Variable
Stationary	-1.94	-3.710	E

Reference: Findings of research

The table shows that the residual of equation 1(E) is stationary. Therefore, equation (1) is a long-term relationship. The main objective of this study was to investigate the asymmetric relationship between exchange rate and consumer price index (CPI), so vector error correction model was used in this study (VECM) since the Engle-Granger model is not able to investigate asymmetric relationship between variables. If two variables have asymmetric effects, it is not possible to use the Engel-Granger model to examine the long-term relationship between them, so the method of Threshold Autoregressive (TAR) is a good option. One of the Engel-Granger problems is that the number of long-term relationship between variable is not exactly clear.

4.4. Asymmetric Convergence applying Threshold Autoregressive (TAR) model

If two variables have asymmetric effects on each other, finding out the long-term relationship between them by using Engel-Granger is not possible. Therefore the asymmetric relationship between consumer price index (CPI) and the exchange rate with Enders and Silkos method was investigated (Enders, 2004). In this method given:

$$I_t = \begin{cases} 1 & if \quad \varepsilon_{t-1} > 0 \\ 0 & if \quad \varepsilon_{t-1} \leq 0 \end{cases} \qquad (2)$$

$$\Delta\varepsilon_t = \beta_0 + (I_t)\beta_1\varepsilon_{t-1} + (1 - I_t)\beta_2\varepsilon_{t-1} + \sum_{k=1}^{t-1}\beta_k\Delta\varepsilon_{t-k} \qquad (3)$$

The following two hypotheses must be tested by the Wald test.

$$I)\begin{cases} H_0: \beta_1 = \beta_2 \\ H_1: \beta_1 \neq \beta_2 \end{cases} \qquad II)\begin{cases} H_0: \beta_1 = \beta_2 = 0 \\ H_1: \beta_1 = \beta_2 \neq 0 \end{cases}$$

If the two hypotheses are rejected (in equation3), it is accepted that these two variables have asymmetric effects. Equation (3) is estimated through a TAR model. The results are as follows:

$$\underset{t}{\Delta\varepsilon_t} = \underset{(1.91)}{0.007} - \underset{(-4.074)}{0.456(I * \varepsilon_{t-1})} - \underset{(-0.33)}{0.02((1 - I) * \varepsilon_{t-1})}$$

$$R^2: 0.14$$

$$F - Statistic: 11.62$$

$$Prob(F - Statistic): 0.0000 \qquad (4)$$

$$SIB: -4.415 \quad , \quad DW: 2.42$$

In this model Ljung-Box test (Q-test) is used to determine the optimal lag ($\Delta\varepsilon_{t-k}$).The results of this test are shown in table (5).

Table 5: The result of Q-test

Test result	Prob	Q-Statistic	Length of Lag
No first order autocorrelation	0.778	0.079	1
No fifth order autocorrelation	0.693	2.231	5
No tenth order autocorrelation	0.619	8.105	10

Reference: Findings of research

The results of this table show that it is not necessary to enter (AR) as an explanatory variable. In other words, it is not necessary to enter ($\Delta\varepsilon_{t-k}$) in the equation (4), so the numerical value of (k) is zero. Then, diagnostic tests were done on residual of equation (4). The results of tests are shown in table (6)

Table 6: Diagnostic tests on residual of equation (4)

Type of test	Calculated statistics
LM(2)	1.071(0.346)
McLeod-Li(5)	2.539(0.771)
ARCH(5)	0.463(0.803)
ADF	-12.178(0.000)
Philips-Porron	-12.317(0.000)

Reference: Findings of research

The results of table (6) show that there is no serial correlation in equation (4) (according to the LM-test). Also, there is no heteroskedasticity problem in equation (4) (according to the Arch test). The result of ADF test shows that the residual of equation (4) is stationary. While, the Wald test shows consumer price index (CPI) and exchange rate in Iran have an asymmetric impact on each other.

Table 7: Results of asymmetric convergence

H_0			
$\beta_1 = \beta_2 = 0$		$\beta_1 = \beta_2$	
F	Prob	F	prob
11.619	0.000	6.522	0.011

Reference: Findings of research

The results of table (7) show that the two hypotheses are rejected, so these two variables have an asymmetric effect on each other.

4.5. Estimate of ECM and TAR-ECM models

The error correction model (ECM) (Pesaran and Pesaran, 1997) shows the relation between short-term and long-term behavior of two variables.

$$\Delta Y_t = \alpha + \sum_{i=1}^{m} \beta_i \Delta Y_{t-i} + \sum_{i=1}^{n} \gamma_i \Delta X_{t-i} + \lambda \varepsilon_{t-1} + V_t \qquad -1 < \lambda < 0 \qquad (5)$$

λ Is a short-term adjustment coefficient. This coefficient shows, in a short period of time, what percentage of deviation from long-term equilibrium relationship can be modified. Therefore, to compare the performance of symmetric and asymmetric models ECM and TAR-ECM models were applied.

So:

$$\underset{t:}{dLCPI} = \underset{(2.166)}{0.649} + \underset{(8.528)}{0.724\ dLUER} + \underset{(10.11)}{0.657\ dLCPI_{t-1}} - \underset{(-2.09)}{0.077\varepsilon_{t-1}}$$

$R^2: 0.58$

$F - Statistic: 63.055$

$Prob(F - Statistic): 0.0000 \qquad (6)$

$SIB: -4.2515$

$DW: 1.954$

$$\underset{t:}{dLCPI} = \underset{(1.89)}{0.59} + \underset{(8.45)}{0.723\ dLUER} + \underset{(10.09)}{0.659\ dLCPI_{t-1}} - \underset{(-7.45)}{0.063(I * \varepsilon_{t-1})} - \underset{(-0.06)}{0.036((1-I) * \varepsilon_{t-1})}$$

$R^2: 0.58$

$F - Statistic: 47.126$

$$Prob(F-Statistic): 0.0000 \qquad (7)$$

$SIB: -4.2841$

$DW: 1.961$

According to the equation (6) and (7):

One percent increase in the exchange rate leads to 0.72 percent increase in the inflation rate. Also, in both models, lag inflation has a positive effect on current inflation.

In equation (6), ε_{t-1} is meaningful. Coefficient ε_{t-1} shows that if the shock is exerted on inflation by the exchange rate, this shock effect will disappear in 13 time periods. While the results of TAR-ECM model show if the positive shock is exerted on inflation by the exchange rate, this shock will disappear in 16 time periods (based on coefficient$I * \varepsilon_{t-1}$) Coefficient of this variable is 0.063.Reversing this coefficient will give out the number 16.

In equation (7), coefficient $(1-I) * \varepsilon_{t-1}$) is not meaningful. Also, the results of TAR-ECM model show if the negative shock is exerted on inflation by the exchange rate, this shock will disappear in 28 time periods (based on coefficient$(1-I) * \varepsilon_{t-1}$).
In the Iranian economy, the effect of negative shocks of exchange rate on inflation is more sustainable than the one from positive shocks.

5. Conclusion

The main objective of this study was to investigate the asymmetric relationship between exchange rate and consumer price index (CPI) in Iran. The survey aimed at studying two hypotheses.

The first hypothesis is" change of exchange rate has an asymmetric effect on inflation". The results of TAR model approves of this hypothesis, because the coefficients of positive and negative residuals are meaningful and different in this model. In the Iranian economy, the effect of negative shocks of exchange rate on inflation is more sustainable than the one from positive shocks.

The second hypothesis which claim "changes in exchange rate have appositive and meaningful on inflation" is approved of too.

The Iranian economy is sensitive to changes in exchange rate. Iran's economy is heavily dependent on import; therefore, changes in exchange rate cause an increase in the consumer price index (CPI). Moreover, Iran's foreign exchange revenues depend on oil prices.

Changes in oil prices can cause an increase or a decrease in Iran's foreign exchange revenue. Thus, changes in exchange rate can affect the Iranian economy's performance. Therefore, it is not possible to control inflation without controlling foreign exchange rates.

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