

The Impact of Monetary Policies on the Exchange Rate: A GMM Approach

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Abstract

This paper investigates the impact of monetary policies on the exchange rate of selected developing countries during the period 2001-2010. For this purpose, in addition to the theoretical explanation, dynamic panel data based on the generalized method of moments (GMM) have been used to estimate the model. Our findings indicate that the lag of exchange rate variable has a positive and significant effect on the exchange rate. This result reflects the dynamics of the exchange rate over time. Additionally, this paper indicates that the coefficient of liquidity as an indicator of monetary policy is positive and significant. Moreover, GDP, inflation, and exports of goods and services have negative, positive, and negative effects on the exchange rate, respectively, and all are statistically significant. Paying more attention to the exchange rate and the optimal control of liquidity in the economy is suggested as a policy recommendation in this research.

Keywords: developing countries, exchange rate, generalized method of moments (GMM), monetary policies.

JEL classification :E52, D51, C51, O50.

1. Introduction

Achieving sustainable economic growth, increasing employment level, controlling inflation and balancing the payments are considered among the most important objectives of economic planners and policymakers. Exchange rate is always considered as one of the most important macroeconomic variables by the monetary authorities. Currency rates and the factors affecting it can be important in achieving economic goals.

Some economists believe that the exchange rate is the most important price variable and is named as a nominal anchor, especially in developing countries (Edwards, 1992; Conway, 2012). The exchange rate affects the prices of imported goods in domestic markets and the price of domestically manufactured goods in foreign markets and affects the competitiveness of

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countries. Exchange rate is one of the basic factors that affect exports, imports, balance of payments, foreign exchange reserves, production, and employment.

Many factors such as economic, political, and psychological ones have effects on the exchange rate. Political and psychological factors can be referred to consistency in foreign policy and public expectations of future economic and political conditions. Monetary policy (interest rates, liquidity, etc.), national income, general price of level, exports, and imports are the most important economic factors that cause the exchange rate to be changed (Anvar, 2002).

Monetary policy as one of the most important factors affecting the exchange rate is the process which the monetary authority of a country change the money supply, often with the aim of regulating the interest rates and in order to achieve the economic goals. Romer (2006) showed that the ultimate goal of monetary policy is achieving price stability and low unemployment levels. To achieve these goals, intermediate objectives and tools are used. Monetary policies are tools which affect exchange rate by changing the supply of money, interest rate, and conditions of giving financial facilities.

Monetary policy and its impact on property market are issues that have been studied by economists in recent decades. Among the properties, exchange rates have drawn the greatest attention in monetary policy debates; for this reason, central banks should pay special attention to exchange rates and the value of their domestic currency. Changes in exchange rates can have a major effect on inflation, especially in small, open economies. Open economies may have more concern about exchange rates because the depreciation of the national currency can be dangerous in these economies and they may experience financial crises like the countries of East Asia.

In a theoretical approach, monetary policy can affect economic variables through various channels such as interest rates, exchange rates, asset prices, and the credit channel (Nyakerario and Nyamongo, 2010). The impact of monetary policies on exchange rate is important because the exchange rate is known as a channel in the direction of monetary shocks on the real sector of the economy.

Some studies have been performed on monetary policy and its impact on the exchange rate both inside and outside the country, but they have not elicited an exact relationship between these variables and their response in the long and short term. Given the importance of the exchange rate in the economic development of every country, it seems necessary to study the factors affecting it. Therefore, in the present research, the impact of monetary policy on the exchange rate of selected developing countries is experimentally examined with the generalized method of moments (GMM). For this purpose, first of all, the theoretical bases and empirical evidence are presented. Section 3 is dedicated to introducing methodology. Research findings are discussed in section 4, and the final section presents the conclusion and suggestions.

2. Review of literature

2.1. Theoretical bases

Several theories in the economics literature explain the impact of monetary policy on asset prices and the bubbles which are created in them. In general, there are three main views about monetary policy, asset prices, and their effects on economic variables.

The first view is liquidity. This approach emphasizes that by increasing liquidity, asset prices increase and it acts as a link in the transmission of monetary policy on the economic activities. This view includes a wide range of macroeconomic schools like Keynesians, monetarists, and new-Keynesians. The second approach was proposed in the 1920s by the economists of the Austrian School. In the twentieth century, the economists of BIS¹ believed that an increase in asset prices is likely to occur in an environment of low and stable inflation. In this view, monetary policy can encourage asset prices by stabilizing high prices.

A third view is presented in a dynamic general equilibrium model. Accordingly, the failure of monetary policy to stabilize the general price level will cause a bubble in asset prices. In the rational expectations models, poor monetary policy design such as the interest rate rules without a commitment to sustainable long-term inflation may lead to forecasts forward-looking and the creation of bubbles in asset prices. The new classic school and the real business cycle support this viewpoint (Bordo and Wheelock, 2004).

Macroeconomists tend to survey the effects of money and monetary policy on asset prices, including exchange, stock prices, and other assets. The most important theory of the relationship between liquidity and asset prices is the monetarist theory. An important aspect that has been represented by monetarists is that money supply gives information about the degree of uncertainty about the future boom of asset prices. High liquidity shares that are held by financial institutions can be a sign of a future uncertainty in asset prices. Increase in money supply leads to higher demands for assets such as currencies and, therefore, asset prices rise. In this process, growth of the money supply can be an impetus for change of asset prices, and it is effective in the selection portfolio of financial institutions (Adalid and Detken, 2007).

Monetary policy can affect economic variables through various channels that generally include the interest rate channel, the exchange rate channel, other asset price channels, and the credit channel. Since the present study surveys the impact of monetary policy on the exchange rate, the exchange rate channel is described below.

1. Bank for International Settlements

2.1.1. Exchange rate channel

In an open economy that has contact with the outside world, monetary policy can affect the real output through the exchange rate channel when nominal wages and prices are sticky (Krylova, 2002). Channels of influence through the exchange rate can be studied in two ways: aggregate demand and aggregate supply. Monetary policy has a direct effect on inflation and production through the exchange rate and imported price changes. On the demand side, when an expansionary monetary policy is applied, the domestic real interest rate reduces and, according to the interest parity condition, it leads to the depreciation of the real value of the domestic currency (increasing exchange rate).

In other words, a reduction in domestic interest rates increases the attraction outside rather than inside the country and, therefore, demands for foreign currency increases; hence, money in the country is depreciated (with the increase in the exchange rate). This exchange rate increase makes domestic goods cheaper than foreign ones and, thus, the increase net exports will ultimately lead to an increase in aggregate demand. On the supply side, depreciation of the real value of the domestic currency as a result of expansionary monetary policy leads to an increase in the domestic price of imported goods, thus increasing inflation. Moreover, with the rise in the price of imported input, production is reduced and inflation increases (Loayza and Schmidt, 2002).

2.1.2. Relationship between monetary policy and exchange rate

Exchange rate has drawn the greatest attention in monetary policy discussions. Changes in exchange rates may be important for countries which intend to stabilize currency exchange rates to the currency of another country or targeting. The main problem is focusing on limiting the exchange rate. When a country faces real shocks such as shocks to exchange rates, sometimes wrong policy choices have been selected, as it happened in countries such as New Zealand and Chile in the late 1990s (Mishkin, 2001).

The literature shows that monetary policy affects exchange rate through three channels:

1. The impact of monetary policy according to the type of currency system

Monetary policy can have different effects on exchange rate based on the type of currency system. If the central bank implements an expansionary monetary policy, increasing domestic money supply reduces the interest rate, and when the other conditions are constant, the outflow of capital occurs. Capital outflow reduces the supply of currency and increases the exchange rate. If the current system is a fixed exchange rate regime, the central bank intervenes in the foreign exchange market and does not allow the exchange rate to rise. For this reason, some of its reserves enter the market. With the

purchase of foreign currency by the public, the primary effect of increasing the money supply decreases and neutralizes the amount of money. Thus, monetary policy does not have efficiency in the system of fixed exchange rates. In the floating exchange rate regime, if the currency system is the floating exchange rate regime, by increasing the exchange rates, the central bank does not intervene in the market. With increasing exchange rate, exports increase and imports decrease.

2. The impact of monetary policy with respect to the price level

If the central bank implements an expansionary monetary policy, increasing the money supply increases the general price levels. Increase in domestic prices makes domestic goods relatively more expensive than foreign goods, and the export competitiveness in global markets falls. Reducing the competitiveness power leads to a decrease in exports and increase in imports. By increasing imports and decreasing exports, demands for foreign currency by importers increase and, on the other hand, the supply of currencies decreases. It increases the exchange rate from two channels.

3. The impact of monetary policies with regard to portfolio

The central bank implements an expansionary monetary policy increasing the money supply causes the interest rate to be reduced. Decline in interest rates makes it less attractive to deposit in banks, and people withdraw their money from banks and invest it in other markets, including the foreign exchange market. When the interest rates are low and other assumptions are constant, returns of some assets such as currencies increase and the demand for them rises. The increase of demand for them will increase the exchange rate.

2.2. Empirical evidence

Some studies have surveyed the impact of monetary policy on the exchange rate in different countries, and they have demonstrated that there is often a positive relationship between them. The results of these researches vary for different countries. In this section, some of these studies are referred to.

According to De Grauwe's study (2000), there is a relatively strong relationship between money supply and the nominal exchange rate in the long run. However, there is no significant relationship between money supply and exchange rates in the short term. Janathan and Phil (2006) evaluated the positive effect of monetary policy on exchange rates for four countries, namely, Australia, New Zealand, Canada and the UK. Stephen (2009) reviewed the relationship between changes in monetary policy and the exchange rate in Canada. First, he introduced the effect of variables by the abbreviated form of the Phillips curve equation. Then, he obtained a strong and significant negative correlation between the exchange rate and monetary policy by using the dynamic stochastic general equilibrium (DSGE) for the

open economy model and the Taylor-rule. Hushmand et al. (2012) investigated the relationship between monetary policy and exchange rate in Iran. The results of this study confirmed that monetary policy has a positive effect on the exchange rate in the long term and the lag of monetary policy has a significant and positive effect on the exchange rate in the short term.

3. Materials and Methods

In this section, first of all, the tests that are necessary before estimating the model are explained, then the methodology, variables, and the model are described. The first step in the empirical analysis is performing unit root tests. For this reason, we use tests such as Levin Lin Chu (LLC), Im-Pesaran-Shin (IPS), Fisher ADF and Fisher-Phillips Perron for panel unit root test. Then to avoid the spurious regression, we examine the co-integration test between the dependent variable and independent variables. For this reason, Pederoni co-integration test was used in order to assess the long-run equilibrium relationship between the variables in the model.

In this paper, we use the generalized method of moment estimator (GMM) for studying the monetary policy effects on the exchange rate.

The generalized method of moments estimator (GMM) is used where the specific unobservable effects of every section and lags of the dependent variables as explanatory variables are the fundamental problems in estimating the models. It is based on dynamic panel models (Barro and Lee, 1996).

Linear GMM estimator in the literature of economics was first introduced by Hansen and Singleton (1982). This estimator has quickly become one of the popular econometric techniques, both in the estimation of cross-sectional data and panel data because it is very flexible and requires only weak assumptions. It is necessary to specify the instrumental variables in this approach. The consistency of the GMM estimator is based on the validity of the assumption of no serial correlation between error terms and instruments. This can be performed by the tests that were presented by Arellano and Bond (1991), Arellano and Bond (1995) and Blundell and Bond (1998). The first test that is necessary in this approach is Sargan test. It tests the validity of the instruments which are used in estimation.

The second test is the Arellano-Bond test. This test surveys serial autocorrelation in the error terms of first-order difference. In both tests, if the null hypothesis is not rejected, it provides evidence for assumptions such as the validity of instruments and no serial autocorrelation.¹ It is very important to note that the number of sections (N) is greater than time period (T) in this method (N>T) (Bond, 2002; Baltaji, 2008).

One method to estimate the GMM model is Arellano and Bond method (1991). Arellano and Bond suggested a first-order difference approach for

1. For more information, refer to Arellano and Bond's article (Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations).

estimating the model. GMM Estimator makes it possible for researchers to eliminate the problems of serial correlation, heteroskedasticity, and endogeneity of some variables. In this method, the lags of dependent variables are used in the model to consider the dynamic effects. Dynamic relationships are modeled with inserting the lags of dependent variables as explanatory variables in the model. When the lag of dependent variables appears on the right side of equation, OLS estimators are not consistent (Hsiao, Baltaji Arellano and Bond, 1995). Thus, we should use the two-stage least squares method (2SLS) or the generalized method of moment (GMM) to estimate the model.

Matyas and Sevestre (1992) believed that the 2SLS estimator may give high variances for coefficients because of the difficulty in selecting instruments, and it is possible that estimates not be statistically significant. Therefore, the GMM technique has been proposed by Arellano and Bond (1991) to solve this problem. This estimator increases the stability of estimation by reducing the sample bias.

Arellano and Bond (1995) suggested two-step GMM estimators using these conditions. As Blundell- Bond (1988) and Arellano- Bond (1995) explained, the asymptotic standard deviation for two-stage estimators has a downward bias and the one-step estimators relative to two-step estimators are asymptotically inconsistent even if the variance of the error terms is equal. Windmeijer (2005), by using Monte Carlo analysis, showed that the two-stage estimator has less bias and standard error than the one-step estimator. In this research, we use the two-step estimator because it is more efficient than the one-step estimator.

Based on the mixed results that have been extracted from the relationship between monetary policy and exchange rates in different countries, in this study we use panel data model and the generalized method of moments to survey the impact of monetary policy on the exchange rate in selected developing countries.

According to theoretical and experimental studies such as Assenmacher and Gerlach (2008), Edwards (1989), and Jalili (2013), the empirical model is as follows:

$$EX_{it} = \alpha + \beta EX_{it-1} + \theta M_2 + \lambda X_{it} + \mathcal{E}_t + \delta_i \quad (1)$$

where

EX_{it} : The exchange rate for country i in period t

M_2 : Liquidity (monetary policy indicator) for country i in period t

X_{it} : Vector of regressors and control variables, such as GDP, inflation, and export, affecting the exchange rate.

\mathcal{E}_t : Errors terms

δ_i : Special effects for sections (random or fixed)

Dynamics in the model has been shown as the lag of dependent variable with EX_{it-1} .

All the variables in the model are in logarithmic form except inflation.

This study used the annual data of 30 selected developing countries¹ from 2001 until 2010. They have been obtained from the latest data published by the World Bank on the basis of maximum available information. For converting the nominal variables to real scale, the consumer price index has been used, and all variables in the estimation are in real scale.

4. Results

Before estimating the model, it is necessary to conduct stationary tests for the variables. If the variables are non-stationary, spurious regression might occur. For this reason, we use tests such as Levin Lin Chu (LLC), Im-Pesaran-Shin (IPS), Fisher ADF and Fisher-Phillips Perron for panel unit root test.

The results² show that the exchange rate and inflation are stationary in levels, but other variables have a unit root and are not stationary in the other tests. For this purpose, stationary tests are repeated for other variables in first difference. The results are shown in Table 1.

Table 1. The Results of Stationary Tests for Variables in Levels and First Difference

<i>test/variable</i>	LLC		IPS		FISHER-ADF		FISHER-PP	
	LEVEL	D(1)	LEVEL	D(1)	LEVEL	D(1)	LEVEL	D(1)
LER	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000
LM ₂	0.0015	0.0000	0.9998	0.0000	0.9997	0.0000	0.6392	0.0000
LGDP	0.0010	0.0000	0.9969	0.0000	0.9995	0.0000	0.7267	0.0000
INFLATION	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LEXPORT	0.0000	0.0000	0.5406	0.0000	0.7841	0.0000	0.1508	0.0000

Source: Author's calculation

Variables used in Table 1: LER is exchange rate, LM₂ is liquidity as an indicator of monetary policy, LGDP is gross domestic production, INFLATION is obtained from consumer price index growth and LEXPORT is export of goods and services.

Notice that the logarithmic form of all the variables is used in the empirical analysis.

Based on the results in Table 1, liquidity variable, GDP, and exports of goods and services are stationary in first difference in all tests. Because the variables of the model do not have the same result according to stationary tests, to avoid the spurious regression, we should test the co-integration

1. Albania, Algeria, Angola, Azerbaijan, Bahrain, Cameroon, China, Egypt, Gabon, Indonesia, Iran, Jordan, Kazakhstan, Kuwait, Malaysia, Morocco, Nigeria, Oman, Pakistan, Philippine, Qatar, Saudi Arabia, Senegal, Sudan, Syrian Arab Republic, Tajikistan, Tunisia, Turkey, Venezuela, and Yemen.

2. In the present study, the period of time in every country is 10 years. Panel unit root tests are performed when the period of time in every country is more than 10 years. In this study, a stationary test is not necessary, but to ensure that there is no spurious regression and the estimate is valid, we perform panel unit root tests by using four tests.

between the dependent variable and independent variables. For this purpose, Pederoni co-integration test was used in order to assess the long-run equilibrium relationship between the variables in the model.

According to the results of the co-integration test, presence of co-integration between the variables is not rejected. Therefore, the long-run equilibrium relationship between the variables and the absence of spurious regression in the model is confirmed. The results are shown in Table 2.

Table 2. The results of Pederoni co-integration test

Null hypothesis: No co-integration: (within-dimension)				
Statistics	Statistic	Prob.	Weighted	
			Statistic	Prob.
Panel v-Statistic	-338.882	1.0000	-3.66118	0.9999
Panel rho-Statistic	4.648597	1.0000	4.608239	1.0000
Panel PP-Statistic	-2.67804	0.0037	-6.71163	0.0000
Panel ADF-Statistic	-1.82903	0.0337	-3.58561	0.0002
Null hypothesis: No co-integration: (between-dimension)				
	Statistic	Prob		
Group rho-Statistic	6.781768	1.0000		
Group PP-Statistic	-8.5817	0.0000		
Group ADF-Statistic	-3.31559	0.0005		

Source: Author's calculation

According to Equation (1), this study examines the effects of monetary policy (liquidity) on the exchange rate of selected developing countries. In this model, GDP, inflation, and exports of goods and services are used as control variables for analysis. The lag of exchange rate that reflects the dynamics of the model and is used in GMM method is inserted as an explanatory variable in the model.

The results of the model's estimation using the generalized method of moments are presented in Table 3.

Table 3. The Results of Estimation

LER : dependent variable				
Variable	coefficients	Std. Error	t-Statistic	Probability
LER(-1)	0.3879406	0.0047611	81.48	0.000
LM_2	0.0408942	0.0028734	14.23	0.000
LGDP	-0.0442593	0.0073912	-5.99	0.000
INFLATION	0.0003241	0.0001427	2.27	0.023
LEXPORT	-0.0886443	0.0035519	-24.96	0.000
CONS	3.362749	0.1676695	20.06	0.000
Number of instruments			41	
Test	Value		Probability	
Sargan test	25.84559		0.8699	
Wald test	763293.51		0.0000	
Arellano- Band test for autocorrelation	AR(1)	-0.97	0.04	
	AR(2)	-0.34	0.73	

Source: Author's calculation

According to the results in Table 3, the coefficients of all the variables in the model are statistically significant at 95% confidence level.

Sargan test shows that the assumption of the presence of any correlation between the instrumental variables and residuals is rejected. Based on this test, instrumental variables used in the model are valid. According to the Wald test, the hypothesis that all coefficients are zero is rejected at 5% significance level; thus, the validity of coefficients is confirmed. To ensure the absence of serial autocorrelation of first-order difference in residuals, the first and second order serial autocorrelation test proposed by Arellano and Bond (1991 and 1995) is used. The null hypothesis of this test is the absence of serial autocorrelation which should be greater than 5% in the second order and less than 5% in the first order. Based on the results mentioned above, the null hypothesis, no second-order serial autocorrelation in residuals of first-order difference, is not rejected. Therefore, the method of estimation is suitable for this model. Additionally, the first order autocorrelation probability is less than 5% and the null hypothesis of the test is rejected. The results of the observations are compatible with the research of Arellano and Bond (1991).

According to the results in Table 3, as we expected, the lag of exchange rate has a positive and significant effect on the exchange rate. This result reflects the dynamics of the exchange rate over time, so the functioning of the foreign exchange market in the current period will be extended to the next period. This means that increase of the exchange rate in the previous period increases the exchange rate in the current period. As the results show, the liquidity variable as a proxy of monetary policy has a positive and significant effect on the exchange rate of the selected developing countries.

The coefficient of this variable is about 0.04 and it means that if the liquidity variable as an indicator of monetary policy increases one percent, assuming that all other conditions are constant, the exchange rate increases about 0.04 percent. This result is also consistent with the theoretical bases. This relationship can be explained thus: if the central bank implements an expansionary monetary policy, the increase in money supply (liquidity) reduces domestic interest rates and causes the outflow of capital. Capital outflow reduces the supply of currency and the exchange rate increases.

The next variable that has a significant and negative effect on the exchange rate is GDP. According to the results, if real GDP increases one percent, the exchange rate reduces about 0.05 percent. It might be argued that the relative increase in domestic revenue is expected to create additional demand for domestic money. In this situation, when firms try to increase their actual monetary equilibrium, they increase their demand for domestic currency and reduce the demand for foreign currency. The result of this action will reduce the exchange rate. The results are consistent with the results of studies such as Acheampong (2007), Hushmand et al. (2012) quoted by Subastian Edwards, Kazerooni et al. (2010).

The other variable that needs to be interpreted is inflation. It has a positive and significant effect on the exchange rate. In conditions of inflation and with a rise in the general price of level, the exchange rate can be increased through two channels. Increase in the domestic price level makes domestic goods relatively more expensive than foreign goods and reduces the competitiveness in global markets. When domestic goods become more expensive for foreigners, demands for them decrease and exports are reduced. Decline in exports leads to a decrease in the supply of foreign exchange in the country and increases the exchange rate. On the other hand, when general price of level goes up, demands for foreign goods increase. The increase in imports results in an increase in the demands for the currency and leads to an increase in the exchange rate. As it was seen, in conditions of inflation, the currency supply decreases and demands for foreign exchange increase and the exchange rate increases through two channels.

The final variable that is used in the model is exports of goods and services. This variable has a significant and negative effect on the exchange rate. As the results show, if this variable increases one percent, the exchange rate declines 0.08 percent and this is consistent theoretically. The negative effect of this variable can be explained thus: the increase in the country's export leads to an increase in the currency supply; with the increase in the currency supply, the exchange rate decreases.

5. Conclusions and Policy Recommendations

The exchange rate and the variables related to it are important issues in the economy, especially in developing countries. Monetary policy is one of the most important factors that influence the exchange rate, and it has different effects on the exchange rate according to the type of economic system in each country. Therefore, the impact of monetary policy on the exchange rate in every country is faced with ambiguity. In this study, the effects of monetary policy on the exchange rate of selected developing countries (2001-2010) was evaluated applying the generalized method of moments (GMM).

According to the results of the estimation, the coefficients of all the variables in the model are statistically significant at 95% confidence level and are consistent with what we expected. In addition, Sargan test and Arellano-Bond test confirm the validity of the instruments and the absence of serial autocorrelation of first-order difference in residuals.

The results of the estimation show that the lag of exchange rate has a positive and significant effect on the exchange rate. This result reflects the dynamics of the exchange rate over time. Therefore, the functioning of the foreign exchange market in the current period will be extended to the next period.

The results showed that the liquidity variable as a proxy of monetary policy has a positive and significant effect on the exchange rate in selected developing countries. This result is also consistent with the theoretical bases. Moreover, GDP, inflation, and exports of goods and services have negative,

positive, and negative effects on the exchange rate, respectively, and all are statistically significant.

The results showed that monetary policy (liquidity) and other variables used in the model have a significant impact on the exchange rate of selected developing countries. For this reason, policymakers of economic, monetary authorities and central banks of countries need to pay special attention to liquidity and other factors that may cause fluctuations in exchange rates. It results in the maintenance of stability in the foreign exchange market, and the function of other variables is not disrupted.

Based on the results of this research, policy recommendations are presented as follows:

It is suggested that the government optimally control the liquidity in order to prevent rise in the exchange rate and bubble in the market, which may lead to losses in other markets including the stock market. It is recommended that policymakers implement planned expansionary monetary policies to maintain the value of the domestic currency and the competitiveness of Iran and other developing countries in the international markets. Governments can maintain exchange rate stability and other financial assets in the long run by reducing inflation and improving the business environment by directing liquidity towards production and investment. Monetary authorities should keep the central bank independent of the government in order to avoid imposing the budgetary policy of the government on monetary policies so as to make monetary policies efficient in the medium and long term. It is necessary for the government to reduce the dependence of economies on oil and gas exports in order to prevent the entry of petrodollars in the market in Rials and establish an independent currency reserves account for savings of the foreign revenues from the sale of crude oil that there is no permission for withdraw in order to support current expenses and provide the government's budget deficits.

It is advisable to review the factors affecting the exchange rate carefully due to these factors' high contribution to its fluctuations, avoid the bias (by only paying attention to the exchange rate), and review one sector (by solely focusing on the currency sector) in the implementation of monetary and currency policies.

References

Persian

1. Taghavi, M & Mohammadi, M. (1390). 'Factors affecting exchange rates and balance of payments in the economy (the monetary approach)'. *Journal of Quantitative Economics*, 2: 51-72.
2. Jafari Samimi, A. & Tehranchian, A. (1383). 'The effects of optimized monetary and fiscal policies on major macroeconomic indicators in Iran: An Application of Optimal Control Theory'. *Economic Research Journal*, 65: 232-213.

3. Jalili, Z. (1392). 'Dynamics of gold demand and the factors affecting it: panel data'. *Journal of Economic Modeling*, 4: 120-103.
4. Jafari Samimi, A, Elmi(Mila), Z. and zaruki, Sh. (1392). 'Evaluation of effectiveness of monetary policy's instruments in states with a dynamic panel data and GMM system'. *Journal of Economic Research*, 1: 79-61.
5. Kazerooni, A., Rezazadeh, A. and Feshari, M. (1388). 'Monetary approach to the nominal exchange rate: A Case Study of Iran'. *Journal of Economic Sciences*, 1: 1.
6. Mohseni zunuzi, S. (1390). 'Monetary policy and asset prices in the economy of Iran'. *Journal of Monetary Economics and Finance*, 2: 86-120.
7. Noferesti, M. (1384). 'The effect of monetary and currency policy on the economy and foreign exchange within a dynamic macro-econometric model'. *Economic Research*, 70: 1-29.
8. Hushmand, M., daneshnia, M., Shahrivar, S., Qizilbash, A. and Eskandari Pour, Z. (1391). 'Relationship between monetary policy and exchange rate in Iran'. *Journal of Quantitative Economics*, 272: 109-1.

English

9. Acheampong, I.K. (2007). 'A monetary approach to Exchange Rate Liberalisation regime in Ghana'. *International Journal of management Research and Technology*, 1(1).
10. Adalid, R., and Detken, C. (2007). *Liquidity shocks and asset price boom/bust cycles* (No. 0732). European Central Bank.
11. Anderson, T.W., and Hsiao, C. (1982). 'Formulation and estimation of dynamic models using panel data'. *Journal of econometrics*, 18(1), 47-82.
12. Arellano, M. and Bond, S. (1991). 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations'. *The review of economic studies*, 58(2), 277-297.
13. Arellano, M. (2002). 'Sargan's Instrumental Variables Estimation and the Generalized Method of Moments'. *Journal of Business & Economic Statistics*, 20(4).
14. Assenmacher, K. and Gerlach, S. (2008). 'Monetary Policy, Asset Prices and Macroeconomic Conditions: a Panel-VAR Study'. *National Bank of Belgium*.
15. Baltagi, B. (2008). *Econometric analysis of panel data* (Vol. 1). John Wiley & Sons.
16. Bernanke, B.S. and Gertler, M. (1995). *Inside the black box: the credit channel of monetary policy transmission* (No. w5146). National bureau of economic research.
17. Biorn, E. and Klette, T.J. (1998). 'Panel data with errors-in-variables: essential and redundant orthogonality conditions in GMM-estimation'. *Economics Letters*, 59(3), 275-282.

18. Bond, S.R. (2002). 'Dynamic panel data models: a guide to micro data methods and practice'. *Portuguese economic journal*, 1(2), 141-162.
19. Bordo, M.D., and Wheelock, D.C. (2004). *Monetary policy and asset prices: a look back at past US stock market booms* (No. w10704). National Bureau of Economic Research.
20. Calvo, G.A., Reinhart C.M. and Vegh, C.A. (1995). 'Targeting Real Exchange Rate: Theory and Evidence'. *Journal of Development Economics*, 47: 97-133.
21. Conway, P. (2012). 'The exchange rate as nominal anchor: A test for Ukraine'. *Journal of Comparative Economics*, 40(3), 438-456.
22. Caporale, G.M., Cipollini, A. and Demetriades, P.O. (2005). 'Monetary policy and the exchange rate during the Asian crisis: identification through heteroscedasticity'. *Journal of International Money and Finance*, 24(1), 39-53.
23. De Grauwe, P. (2000). 'Exchange Rate in Search of Fundamental Variable'. *Centre for Economic Policy Research, Discussion Paper No.1073*.
24. Duran, M., Özcan, G., Özlü, P. and Ünalıms, D. (2012). 'Measuring the Impact of Monetary Policy on Asset Prices in Turkey'. *Economics Letters*, 114(1), 29-31.
25. Edwards, S. (1989). *Real exchange rates, devaluation, and adjustment: exchange rate policy in developing countries*. Cambridge, MA: MIT press.
26. Forni, M. and Gambetti, L. (2010). 'The dynamic effects of monetary policy: A structural factor model approach'. *Journal of Monetary Economics*, 57(2), 203-216.
27. Hansen, L.P. (2001). 'Generalized method of moment's estimation: a time series perspective'. *International Encyclopedia of Social and Behavioral Sciences*.
28. Levin, A., Lin, C.F. and James Chu, C.S. (2002). 'Unit root tests in panel data: asymptotic and finite-sample properties'. *Journal of econometrics*, 108(1), 1-24.
29. Mengesha, L.G., and Holmes, M.J. (2013). Monetary policy and its transmission mechanisms in Eritrea. *Journal of Policy Modeling*, 35(5), 766-780.
30. Mishkin, F.C.S. (2001), "The Transmission Mechanism and the Role of Asset Prices in Monetary Policy", *NBER Working Paper 8617*, 21p.
31. Matyas, L. and Sevestre P. (1992). *The Econometric Analysis of Panel Data, Handbook of Theory and Application*, Dordrech, Kluwer Academic Press.
32. Nyakerario, M. and Nyamongo, S. (2012). 'Asset Prices and Monetary Policy in Kenya'. *Journal of Economic Studies Vol. 39 No. 4*, 451-468.
33. Ping, X. and Xiaopu, Z. (2003). 'The coordination between monetary policy and exchange rate policy in an open economy in transition: a case

- study on China from 1994 to 2000'. *Journal of Asian Economics*, 14(2), 327-336.
34. Rigobon, R. and Sack, B. (2004). 'The Impact of Monetary Policy on Asset Prices'. *Journal of Monetary Economics*, 51(8), 1553-1575.
35. Taylor, J.B. (1995). 'The Monetary Transmission Mechanism: an Empirical Framework'. *Journal of Economic Perspectives*, Vol. 9, 11-26.
36. Vithessonthi, C. (2014). 'Monetary policy and the first-and second-moment exchange rate change during the global financial crisis: Evidence from Thailand'. *Journal of International Financial Markets, Institutions and Money*, 29, 170-194.
37. Windmeijer, F. (2005). 'A finite sample correction for the variance of linear efficient two-step GMM estimators'. *Journal of econometrics*, 126(1), 25-51.