

Full Length Research Paper

Comparing the relationship between interest rate changes in Shariah banking system of Iran and informal USA, Britain, Australia and Japan exchange rates in the Iranian economy according to the international Fisher theory

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Accepted 14 March, 2012

This study has dealt with the relationship between the informal United States dollar rate and the Islamic system based interest rate of Iran and it also has compared with the informal exchange rates of Britain, Australia and Japan. The relevant data during 1991 to 2009 have been employed to compare the results. The unit root test, Dickey-Fuller, Durbin-Watson, White tests and the least-square estimate model have been used along with software Eviews7 and SPSS17 in this study. Our results unveiled a meaningful relationship between the interest rate in Iran, relying on the shariah system, and informal USD¹, GBP², and AUD³ rates. However, no meaningful relationship was found between the interest rate and informal JPY⁴ rate. Similarly, the results of such comparisons imply a stronger relationship between the interest rate and informal USD rate to other mentioned informal exchange rates. The coefficients of determination between interest rate in Iran and informal exchange rates of USD, GBP and AUD are 23, 20 and 16%, respectively. Accordingly, relying on the interest rate changes, changes of the informal USD rate enjoys more explanatory power than changes of the informal GBP and AUD rates.

Key words: Exchange rate, interest rate in Shariah system, Islamic finance, theory of international Fisher effect.

INTRODUCTION

During the recent decades numerous efforts have been exerted to regulate the interest rate. In fact, the remarkable effect of such variable on solving or making economic problems and turmoil in some societies has provoked the mentioned efforts. The exchange rate is defined as a key and important variable for policy making and its importance is so high that it is referred to as nominal anchor by a group of experts, particularly across

the developing countries. Exchange transactions rate is drastically influenced by the financial factors particularly interest rate. Many authors believe in direct effect of interest rate on the exchange rate. The exchange rate specifies business process, capital flows, foreign direct investment, inflation, international storage and payments in a certain economy (Aziz, 2008; Serven, 2002).

When stock market investors assail the currency

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of a certain country, then controlling the exchange rate, even under governmental supports, can become very costly and even futile policy. High interest rate impedes return of capital and hence scratches the economy (Solnik, 2000; Gould and Nelson, 1979).

Several factors can change the exchange rate: Foreign demand and supply changes, problems on repaying dues, inflation growth, interest rate, national incomes, financial supervisions and changes of predictions and stock market (Fisher, 1930; Johnson, 1976; Khalwaty, 2000).

Zaher and Kabir (2001) and Tarek and Kabirhassan (2001) review on the Comparative Literature of Islamic Finance and Western Banking system have dealt with analysis of the mentioned systems and their differences. These systems have substantial differences; of course the common tools used in the Islamic banking system suffer some problems and challenges related to depositors; however, they can progress quickly along with capitalism-based western banking system.

Iran is an Islamic country and takes advantage of Islamic principles, known as Islamic contract, to govern its banking system. Islamic contracts allow banks to grant loans to people and to invest indirectly. In this system, depositors will share in the banks investments which are conducted using their funds; hence, they are shared in profit/loss due to the contract. But depositors in the western banking system expect fixed and predetermined interests for their deposits in banks, so apart from banks status (loss/profit), they will receive the firm profits during the contract period (Schreiner, 2010; Sargent, 2010; Hedayati, 2000).

The 11 constituting Islamic contracts which form the Islamic economy are (Law of Bank Islamic, 1979; Hedayati, 2000; Zarrok, 2010):

Garzolhasaneh: Is a kind of contract in which a party transfers a certain amount of his/her assets to another in the present time. In return, the debtor is bound to return the same asset or its value during a certain period without any interest; such funds are spent on charity and welfare works. Bank would be a party and another party would be its customer.

Mozarebe: Is a kind of contract in which bank supplies the capital as a party and the other party begins to trade using the capital and finally the obtained profits will be divided between both parties.

Mosharekat Madani: Is a business contract by which two or more real or legal entities including bank combine their cash or non-cash capitals in a common mode in order to make profit.

Mosharekat Hogogi: is a kind of contract by which a bank supplies a part of required capital for new stock companies or it buys a part of shares of the current stock companies and will participate in their profits.

Installment sales: According to their customers' written

requirement, banks will purchase machineries and facilities whose useful life is more than 1 year and then sell them to their customers in installment.

Salaf: Bank will purchase the upcoming products of enterprises such as factories in forward; such enterprises sell their products in the framework of this contract to bank and take facilities in return.

Capital lease: Is another facilities granted by banks in which it is provided that the tenant (mainly housing constructors) must be the owner of the property at the end of rental term (in the case of fulfilling all terms of contract). Such contracts usually are concluded in the housing field and are paid by banks to housing constructors.

Joaleh: According to this contract the employer is bound to pay a certain commission to the agent in return of his/her certain act.

Mozareeah: Under terms of this contract bank lends a land for a certain period to another party for cultivation. Finally, the obtained interests are divided between both parties.

Mosagat: A contract between the owner of an orchard/garden with another party in which the latter safeguards the garden and harvests its products in return of a part of the products.

According to the International Fisher effect, the foreign exchanges with the relatively high interest rates will be depreciated over time, because high nominal interest rate reflects the expected inflation rate (Madura, 2000). The theory also specifies that point exchange rate changes between two countries will try to homogenize nominal interest rate changes (Demirag and Goddard, 1994).

In this study, we try to answer these questions that firstly, whether there is a relation between interest rate and informal exchange rate in the Iranian economy and secondly, which one of the mentioned informal exchange rates have more explanatory power in the Iranian economy.

LITERATURE AND DEVELOPMENT HYPOTHESIS

Aziz (2008) has analyzed the role of the exchange in trade balance in Bangladesh. His results indicated that the real exchange rate positively affects both short and long-term trades in Bangladesh and he concluded that high instability of exchange rate, for any reason, will bring about macroeconomic variables such as inflation, high interest rate and/or restrictions on money supply. Ogaki and Santaella (2005) examined experimentally the effects of interest rate on exchange rate in Mexico and they have come to the conclusion that 1-month and 3-month interest rate fluctuations in Mexico have exerted an inverse effect on exchange rate of the country.

Bhati and Bhati (2011) have embarked on analysis of the Islamic shariah-based corporate governance system

and they presented a relevant model. Their model is relied on the Koranic instructions, more and more transparency and revelation, loyalty in the accounting and economic professional demeanor and reporting truth.

Zettelmeyer (2003) has analyzed the relation between exchange rate and interest rate in Chile and studied the domestic money policy and its impacts on exchange rate in Chile since September 1999 and he found an inverse relation between exchange rate and interest rate.

Zhonzia (2003), in China during 1980 to 2002 has examined the relation between interest rate and exchange rate. For China's economy, he concludes that during unprecedented and oriented reforms of the market during two past decades both the real exchange rate as well as balance of payments have exerted considerable impact on each other.

Kandil (2000), studied on relation of fluctuations of exchange rate and interest rate and has found that exchange rate fluctuations in dramatically depend on the daily interest rate. MacDonald and Nagayasu (1999) have embarked on analyzing the relationship between the long-term interest rate and real exchange rate and they used the panel data of 14 industrial countries to conduct this study. Their studies on long-term panel data of different countries deny any relationship between long-term interest rate and real exchange rate in the equilibrium mode, even when the real exchange rate is constant.

Bidabadi and Rabiee (2010), in the relation between interest rate and exchange rate in the Iranian economy have analyzed these variables in the Iranian economy. The results point out to the fact that if currency exchange rate enhances in the economy, then the monetary officials must allow the interest rate to be decreased.

Bidabadi (2004) has taken advantage of macro econometric models of Iran, as the broadest econometric model, to evaluate effects of decreased interest rate on other economic variables of Iran. Using this model he succeeded to decline banking loans interest rate along different scenarios and then has begun to simulate the model.

The results show that decreased banking loans interest rate will lead to decrease import and export supply in economy of Iran and to improve trade balance of the country. Similarly, decreased interest rate will increase liquidity volume and will affect positively the economic growth through increasing non-oil GDP growth and also popularize the private investment in the economy.

METHODOLOGY

In this study, annual time series data were used for an 18-year course, that is, from 1991 to 2009. Given the economic statistics of Central Bank of Iran (CBI) the necessary information have been collected. In order to test hypotheses, the unit root test was used for reliability of variables of the study, Dickey Fuller test was used to test time series and Durbin-Watson statistic (D.W) was used in this

paper.

White test was used to discern the difference of variance and eventually the Least Square Estimate Model and econometric models, particularly Fisher Model, using Eviews7 and SPSS17 were employed to estimate the questioned functional parameters. The estimative function between 1-year interest rate changes and informal exchange rates of the selected countries:

H₁: There is a meaningful relationship between 1-year interest rate changes and informal USD rate in Iran (Table 1).

In the estimative model, the correlation strength between the independent variable (1-year interest rate) and the dependent variable (exchange rate) is -0.48; on the other hand the coefficient of determination indicates that 0.23% of changes are caused by the dependent variable exchange rate due to independent variable changes (1-year interest rate) which is acceptable.

Likewise, the regression value (sig.) has been measured as 0.03, thus the research hypothesis is verified. It means that there is a meaningful relationship between exchange rate and 1-year interest rate in the Iranian economy.

H₂: There is a meaningful relationship between 1-year interest rate changes and informal GBP rate in Iran (Table 2).

In the estimative model, the correlation strength between the independent variable (1-year interest rate) and the dependent variable (the British informal exchange rate) is -0.44; on the other hand, the coefficient of determination indicates that 0.20% of changes are caused by the dependent variable, Britain exchange rate due to independent variable changes (1-year interest rate) which is acceptable. Likewise, the regression value (sig.) has been measured as 0.019, thus the research hypothesis is verified. It means that there is a meaningful relationship between exchange rate (GBP) and 1-year interest rate in the Iranian economy.

H₃: There is a meaningful relationship between 1-year interest rate changes and informal AUD rate in Iran (Table 3).

In the estimative model, the correlation strength between the independent variable (1-year interest rate) and the dependent variable (the Australian informal exchange rate) is -0.40; on the other hand, the coefficient of determination indicates that 0.16% of changes are caused by the dependent variable that is. Australia exchange rate due to independent variable changes (1-year interest rate) which is acceptable. Likewise, the regression value (sig) has been measured as 0.05, thus the research hypothesis is verified. It means that there is a meaningful relationship between exchange rate (AUD) and 1-year interest rate in the Iranian economy.

H₄: There is a meaningful relationship between 1-year interest rate changes and informal JPY rate in Iran (Table 4).

Either regression value or $F = 0.30$ are known, therefore the regression hypothesis is not meaningful: H_1 is verified reliably, hence the extracted regression is denied. Meaningfulness coefficient (T) and meaningfulness level/reliance level show coefficients of model parameters. As a result, according to $t_1 = -0.55$, $sig = 0.59$, it can be stated that there is not any relation between informal JPY and 1-year interest rate in the Iranian economy (CI = 95%).

Comparing the results of the relation between interest rate and informal exchange rates of 4 countries

In this section we have compared the results of interest rate and

Table 1. Results linear regression evaluation first hypothesis.

Probability	Probability of multiplier	Variable	Variable name
0.12	66.58	β_1	α
0.36	107.0 - 15	R	Interest rate –per year
T2 = -2.28	T1 = 3.04	F-Statistic	21.15
R = 0.48	R2 = 0.23	Durbin-Watson	14.2

$$Y = F(X), Y = \beta_0 + \beta_1x + v_i, UE_2 = 58.66 - 15.107 R.$$

Table 2. Results linear regression evaluation second hypothesis.

Probability	Probability of multiplier	variable	Variable name
0.09	45.62	β_1	α
0.019	-2.556	R	Interest rate –per year
T2 = -3.41	T1=5.90	F-Statistic	22.00
R = 0.44	R2=0.20	Durbin-Watson	2.15

$$Y = F(X), Y = \beta_0 + \beta_1x + v_i; UE = 45.62 - 2.556 R.$$

Table 3. Results linear regression evaluation third hypothesis.

Probability	Probability of multiplier	Variable	Variable name
0.02	18.98	β_1	α
0.05	-5.61	R	Interest rate – per year
T2 = -2.24	T1 = 2.70	F-Statistic	11.53
R = 0.40	R2 = 0.16	Durbin-Watson	2.09

$$Y = F(X), Y = \beta_0 + \beta_1x + v_i, UE = 18.98 - 5.61.$$

Table 4. Results linear regression evaluation fourth hypothesis.

Variable	R	R ²	Sign	F	T ₁	R ₁	Std. error
R1	0.193	0.037	0.594	0.309	-0.556	-5.184	9.147

Informal USD rate with interest rate and informal GBP, AUD and JPY rate. The obtained results are summarized as follows: The correlation strength between interest rate and informal USD rate is 48%; on the other hand, the correlation strength between interest rate and informal GBP rate and informal AUD rate are 44% and 40%, respectively.

Accordingly, it can be concluded that the relation between interest rate and exchange rate (USD) enjoys more explanatory power. This task is designed to determine the exchange rate which gains the highest influence from 1-year interest rate in the Iranian economy.

1. The coefficient of determination between interest rate and informal USD rate is 23%, it means that 23% of informal USD rate changes caused by interest rate changes in the Iranian economy. The coefficients of determination between interest rate and informal GBP and AUD are 20% and 16%, respectively. Accordingly, it can be concluded that changes of the explainable variable, informal USD rate, enjoy more explanatory power rather than informal GBP

and AUD rates changes.

2. One percent increasing in the Iranian economy will decrease the informal USD, GBP and AUD rates as large as 15.10, 2.55 and 5.61%, respectively. Accordingly, effect of interest rate changes on the exchange rate (USD) is more than effect of interest rate on GBP rate.

DISCUSSION AND CONCLUSION

The main objective of the study is analyzing the relationship between 1-year exchange rate changes and informal USD, AUD, GBP and JPY rate changes in Iran using the International Fisher Model. Regarding the economic relation of countries to each other and fluency of exchange rate changes of various countries in economies of other countries and also dependency of the Iranian

economy, in export and import field, on foreign exchanges, it is expected that changes of exchange rate of other countries affect meaningfully the interest rate of Iran.

Our findings imply that: The effect of one-year interest rate changes on informal USD rate enjoys more explanatory power rather than informal GBP and AUD rates. Also, according to the obtained results, it can be stated that the USD currency exchange rate must be considered in the Iranian economic trades still. Because the estimative function is between interest rate and JPY rate is indicative of lack of a meaningful relation between them.

Another result of the paper is the inverse relationship between interest rate and informal exchange rate. It means that the more the interest is, the less the exchange rate will be. Thus, it is evident that higher interest rates strengthen and support exchange currency rate, so increasing interest rate makes more attractive depositing and investment in the country. Therefore, the demand for national exchange rate will be increased which is called hot cash flow.

Finally, it must be stated that the interest rate can be considered as a tool to control exchange rate in the Iranian economy. Whenever CBI begins to increase money supply, the interest rate falls, it quickly will result in decreasing exchange trade rate. So if the general level of prices is escalated because of increased money supply, it can be expected that the interest rate will be decreased very slowly in the long term.

RECOMMENDATIONS

1. The government uses the currency policy to control the exchange rate, but using currency policies always results in adjustment of the exchange rate in short term and creates the multi-exchange system in long term. We recommend to government to emphasize the floating exchange rate instead of exchange multi-rate policy. It must be kept in mind that dwindling exchange policy indicator indicates floating exchange rate.
2. With regard to the Iranian economic condition, the ability to control monetary authorities in terms of interest rate of banks has introduced it as one of the most important economic tools to provoke the main aspect of the economy. The efficiency of this political tool can be restricted by two following factors:
3. Inattention to competition in this kind of control may result in fact that interest rate suffer a lower efficiency to provoke investment, hence imperative change of banking interest rate will be devoid from the sufficient efficiency to provoke the real part of the economy.
4. Determination of the banking interest rate without considering the inflation rate changes fails to justify why funds are not deposited in banks. Hence, a great deal of

savings of citizens is not available for banks which it decreases capacity of banking system to affect the real part of the economy through changing banking interest rate in turn.

Therefore, providing the necessary tools for CBI in order to provoke the real part of economy entails statesmen to authorize the CBI to rationalize banking interest rate along with to reduce the economic risk. As a result, CBI will be able to employ the banking interest rate as a helpful tool to manage cash flow and convert it into investment and production trend.

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