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Abstract

When we accept money and its functions in the Islamic economic framework, the same as all other economic systems, we should consider monetary policy as an important available tool for governments to pursuit macroeconomic objectives. But the problem rises when we want to choose our instruments for executing monetary policy. Since according to Shariah rules we are not allowed to use interest based instruments for monetary policy in Islamic economic framework, some Islamic scholars believe that, hear, we should confine ourselves only on the monetary aggregate instruments like credit ceiling; Although in reality, Islamic countries do not follow this theoretical base and use widely profit rate instruments, like Musharakah certificates, as a substitute for interest based instruments. What we discuss in this paper is providing a good explanation for this gap between theory and practice in the monetary policy of Islamic economic system. Comparing monetary aggregate and interest based instruments from economic system. Comparing monetary aggregate and interest based instruments, we have more stability in goods and money markets after executing monetary policy; and that is why in many Islamic countries like Islamic republic of Iran, monetary officials use extensively profit rate instruments for executing monetary policy.

1. Introduction

One of the most important roles of the government in any country is to monitor the movement of macroeconomic variables such as inflation, growth, employment and try to improve them by using efficient policy tools. These policy tools are different like fiscal and monetary policy, direct control of prices and incomes and taxation. So, monetary policy is one of the tools available for governments to pursuit economic objectives.

In this process, the trade off between some economic objectives, like economic growth and inflation make it impossible for the government to target all objectives at the same time and by the same instrument. As a result, economic officials have to decide first which objectives are most important and then determine the suitable policy for targeting them. Another point hear is that, even in cases when some different instruments bring us to the same macroeconomic goal, government must choose its appropriate instrument among them; because each instrument has different effects on the market conditions after executing monetary policy. For example, for reducing inflation rate, central bank who is responsible to adopt monetary policy, should reduce the volume of money in the society and execute contractionary monetary policy. For this purpose, central bank is able to use either credit ceiling instrument or open market operation, but using each instrument has its own effects on the stability level of goods and money markets after executing monetary policy.

The same as conventional economics, in Islamic economics also we face all macroeconomic issues like growth and inflation, so the roles of monetary policy in Islamic economics is undeniable. But since in conventional economics, interest rate is the most important instrument for executing monetary policy, prohibition of this variable, as a fundamental pillar in Islamic economics, makes the process of monetary policy in Muslim countries more problematic than countries with conventional economic system.

The dominant view among Islamic scholars is that since the interest rate is prohibited in Islam and we can not use interest base instruments for monetary policy like open market operation, in Islamic economics we should concentrate only on the monetary aggregate instruments. But, practically, what is happening in countries with Islamic economic system is some thing different from this theoretical view point. In these countries, the monetary officials use profit rate instruments like Musharakah certificates widely for executing monetary policy. Analysing this gap between theory and practice in Islamic economics is the main concern of this paper.

In this article, we examine first the monetary control process of conventional economic system and categorize its monetary policy instruments in two wide groups: Monetary aggregate instruments and Interest based instruments. Then, by using simple IS-LM model, we analyse the level of stability in goods and money markets after using each group of instruments for targeting macroeconomic goals. At the third part, we turn to the Islamic economic situation and try to find the best explanation for the gap between theory and practice in Islamic monetary system. And at the end, by looking at monetary policy instruments in Islamic Republic of Iran, we can analyze practically what is happening in Islamic economic countries.

2. Monetary Control in Conventional Economics

There are number of methods in which a central bank is able to control the volume of money in the economy and execute monetary policy. We can categorize these methods in two board groups: Monetary aggregate control and Interest base control

2.1 Monetary Aggregate Control

Central bank is able to control the volume of money in the economy by affecting the money supply or monetary aggregate. In this method central bank tries to control the amount of money that commercial bank lend to people. The two main instruments of central bank for this purpose is determining lending ceilings for banks and changing their reserve rate.

By announcing some instructions to individual commercial banks, central bank is able to put restrictions on the quality and quantity of their lending to people. For example central banks may force commercial banks to decline their industry lending by 15 percent but remain their agricultural lending unchanged. Since the volume of lending of banks increase when their assets increase and vice versa, central bank can also control lending volume of these banks by setting limits on the assets hold by them.

Comparing with other method of monetary control as discussed below, credit ceiling control has this kind of advantages that its effects is completely predictable, because commercial banks have to act precisely as the central bank instructions. Although this method suffers from two main disadvantages: disintermediation and reducing competition.

First problem arises because this method is only concern about the supply side and is unable to control the demand side. When there is high demand for the money in the economy and central bank sets limit on the lending of individual banks, people will go to illegal or unauthorised institutes to borrow money and that is so dangerous for the economic health of the society. The technical term for this phenomenon is disintermediation. The other disadvantages is that when central bank sets lending ceilings for the commercial banks, this will limit the ability of each bank to offer lower interest rate for attracting customers from another bank. Consequently, all banks will work with the limited number of customers and at the same level of interest rate. This lake of competition will decline the efficiency of the banking system.

Another method available for central bank to control the volume of money is legal reserve. All commercial banks have to hold some percentage of their deposits in the central bank. This money makes it possible for individual banks to clear payments between themselves and also help them to be responsible to their customers. When a large number of customers come to a bank to withdraw their money from their deposits, this bank can use its money in the central bank to meet customer's request and provide cash to them. By increase or decrease of legal reserve rate, central bank is able to affect the lending ability of individual commercial banks. For example when by announcing an instruction, central bank increases the legal reserve rate by 5 percent, all banks have to put more money in their central bank deposit and so they have less recourses to lend to their customers. As a result, the total volume of money in the economy will decline.

2.2 Interest Based Control

One possible way for central bank to control money stock in the economy is to affect demand for bank credit thorough changing the interest rate. This method is based on this view that like all goods and services, demand for money is dependent on its price. According to Keynes theory about money, demand for money is consist of three factors: transaction demand, precautionary demand and speculative demand. When interest rate increases, actually, the opportunity cost of money is increased and therefore people prefer to hold less money. In this way, there is a negative relationship between interest rate and speculative demand for money. So, the higher the interest rate, the lower the money demanded by people. Although, this relationship is only true for private sector because the public sector demand for money is determined by government policies on public spending and taxes and will not change very much depending on interest rate.

The other thing about interest rate control of money demand is that, demand for money is not only dependent on interest rate and many other factors, such as expectation of future inflation and profitability of investment environment, have a large effect on demand for money. Consequently, in practice, monetary officials should have precise information about the volume of money at any interest rate level and at any economic situation, to be able to execute correct monetary policies.

For using interest based control of monetary policy, usually, central bank determines first the level of interest rate in the economy and then specifies its appropriate amount of bonds that should be sold or bought through open market operation. For example for declining the volume of money in the economy and executing contractionary monetary policy, central bank increases the interest rate level. Actually, central bank by this measure has increased the interest return of securities and made them more attractive for people. Now, central bank is able to sell appropriate amount of its securities to public and so indirectly encourage them to withdraw their money from bank deposits. This process by one hand decline the volume of money in the economy and by another hand creates shortage for commercial banks and makes them borrow from central bank at the higher rates. When commercial banks face higher rate for borrowing from central banks, they will be forced to increase their rate to meet their higher cost. Similarly, central bank can decline the interest rate level, buy securities from people and force banks to put more money in their central bank deposits.

2.3 Economic Analysis of Each Monetary Instruments

In the previous discussion we showed that there are two wide groups of instruments that can be used by central bank for executing monetary policy. Here, by using simple IS-LM model, we will examine that what is the effects of applying each group of instruments on the macroeconomic stability. So by this analysis, we can theoretically examine the effects of putting away interest base instruments in Islamic economics and using only monetary aggregate instruments for executing monetary policy. For this purpose, first we define the structure of goods and money markets and then by using IS-LM framework, we examine the process of executing monetary policy with each group of instruments. IS curve shows the combination of total output and interest rate points that bring equilibrium in to the goods market. Interest rate affects total expenditure in the goods market only through investment. Because of the negative relationship between investment and interest rate, the IS curve is downward sloping. There are two main explanations for the negative effect of interest rate on the investment. First explanation is that we can consider interest rate as a cost factor for investment. Since financing for investment goods is usually done through banks and financial institutions, increasing the interest rate for this kind of financing, increases the cost of investment and so total investment will decline. Another explanation is that, in reality, the return that banks and financial institutions offer for the deposits of people is a substitute element for the return of investment. The higher the interest that banks and other financial institutions offer to people, the more return of investment is required to make any kind of investment economically justifiable. So, by increasing the interest rate, the number of potentially feasible investment will decline.

LM curve is also combination of total output and interest rate optimal points but it derived from money market. LM curve is upward slopping because there is a positive relationship between output and interest rate in the money market. As we mentioned earlier, demand of money has three elements: transaction demand, speculative demand and precautionary demand. There is a positive relationship between output and transaction demand for money and there is a negative relationship between interest rate and speculative demand for money. Any increase in transaction demand for money as a result of increase in output, when supply of money is constant, should be offset by declining the speculative demand of money that required interest rate to increase. So, there is a positive relationship between output and interest rate in money market and LM curve is upward sloping.

Figure 1 shows that how equilibrium in money market determines the LM curve and the equilibrium amount of interest rate. In this figure r is the level of interest rate, m is the volume of money, y is total output in the economy, Ms is the supply of money which determines by central bank and Md is demand of money that is a combination of transaction, precautionary and speculative demand. The downward slop of Md is as a result of negative relationship between interest rate and speculative demand of money.



Figure 1: Equilibrium in money market and determination of interest rate level

2.3.1 Stability Analysis of Monetary Aggregate Control

Here we want to see what will happen in the economy when central bank uses only monetary aggregate as an instrument to target macroeconomic variables. Suppose central bank wants to decline inflation in the economy by declining total volume of money. So it puts credit ceiling restrictions for the individual commercial banks or increases the legal reserve for them in order to execute a contractionary monetary policy. This analysis is shown by the figure 2.

When central bank declines the money supply by one of the above instruments, Ms Curve shifts to left (Ms2) and interest rate will increase as a price of money, since there is now less money in the market. As a result, the speculative demand for money will increase and we move upward on the demand curve. The new equilibrium in money market is point A. Higher interest rate causes the investment to decline in goods market and lowers the level of total output. We can show this situation by shifting LM curve upward to LM2. Lower level of total output declines transaction demand of money and so Md curve will shift downward to Md2 and new equilibrium forms in money market at point B. Consequently we can see that this lower interest rate shifts LM Curve to LM3 and increases total level of output and we will end up with point C as a final equilibrium in goods and money markets.



Figure 2: IS-LM analysis for using monetary aggregate as a monetary policy instrument

It is true that at the end we will be at the equilibrium in both goods and money markets, but we know that in contrary with money market, goods market responds to the monetary policy in at least 10 to 12 months after executing monetary policy. So when central bank determines the level of monetary supply at the beginning of the period, speculative demand respond to it very fast and we move to point A. But changes in transaction demand for money, moving to point B, and changes in the total level of output, moving to point C, occur during 10 to 12 months after executing monetary policy. Consequently, in this case the place of LM curve is not completely specified and so there is not stability in none of the money and goods market in this period.

2.3.2 Stability Analysis of Interest Based control

Now, we examine what are the conditions of goods and money market in the economy when central bank uses the interest based instruments for executing monetary policy. Suppose the same as the previous example, central bank wants to decline inflation in the economy by applying contractionary monetary policy. But this time, it will use open market operation for this purpose.

Usually, central bank announces the level of interest rate for this kind of policy and then uses open market instrument to adjust the volume of money by this new interest rate. For example when central bank wants to target inflation in the economy, it determines first higher level of interest rate and announces it to the public. At the next stage central bank calculates that for reaching to this new level of interest rate, how much it should decline the volume of money in the economy and so how many bonds or treasury securities it should sell to people.

This analysis is shown at figure 3. For targeting inflation, central bank increases the level of interest rate from r1 to r2. The same as pervious section, speculative demand of money respond very fast and declines, so we move on Md1 leftward. Central bank now has to sell enough bonds to decline supply of money and shifts Ms1 to Ms2. Point A is new equilibrium in money market and point C is the new equilibrium in goods market.

The difference of this analysis with the previous one is that, here, when transaction demand of money declines gradually as a result of decrease in the level of output and shifts to Md2 after executing monetary policy, central bank sells more bonds and treasury securities in this period and declines the supply of money step by step in such a way that the interest rate remain unchanged at target rate, r2. So money supply shifts gradually from Ms2 to Ms3 and we will end up with point B as a final equilibrium in money market and point C remains unchanged as a total equilibrium at goods and money markets. We can see that in this case both goods and money markets are more stable comparing with the monetary aggregate control of monetary policy. The key factor hear is that open market operation lets central bank manage supply of money more flexible and protect from equilibrium in the goods and money markets



Figure 3: IS-LM analysis for using Interest based instrument for monetary policy

3. Monetary policy in Islamic Economic Framework

The same as conventional economics, in Islamic economics we need to use some policies for targeting important economic variable such as inflation, employment or economic growth. So, monetary policy should play an important role for establishing stability and growth in Islamic economics. But prohibition of interest as one of the fundamental pillars of Islamic economics makes the instruments and mechanism of monetary policy different from conventional economics.

Chapra in his book¹ argues that, the absence of interest rate in Islamic economics, and the existence of some institutions like Zakat, minimize the speculative demand for money and make total demand for money in Islamic economics more stable. In this way, demand for money in Islamic economics consists of only transaction demand and speculative demand. As a result of this kind of view point, Chapra suggests that in Islamic economic system, monetary aggregate instruments play the main role for executing monetary policy.

Similarly, Mohamed Ariff believes that, in Islamic economics, monetary policy should be executed through controlling stock of money and there is no need for using interest based instruments. In his article², he supports his viewpoint by modern monetary analysis: "New monetarist of Chicago school of thought stress that it is the stock of money, which is the most important. This revelation has important implications for an Islamic economy which denies any role to interest rate."

Although the interest rate is forbidden according to Islamic perspective and there is no place for interest rate analysis in Islamic economics, but it is not to hard to show that we are able to use the same IS-LM analysis in the Islamic economic framework. By considering the profit rate, that Islamic banks and financial institutions use according to Shariah contracts to attract and allocate money in their daily operation, we can show that there are downward IS curve and upward LM curve even in the Islamic economics.

We showed previously that the negative relationship between interest rate and investment is the only reason for downward slop of IS curve. By the same two explanations that we used there, we can show that this negative relationship remains even by using profit rate. When Islamic banks and financial institutions increase their share of profit in Musharakah contracts, the cost of Islamic investors will increase and so they decline their investments. By the other side, when Islamic bank increases the profit rate, which they offer to their depositors according to Shariah contracts, the expected return on investment will increase and fewer projects remain economically justifiable.

In the same way we can show how there is upward sloping LM curve in Islamic economic framework. We showed that the main reason for upward slop of LM curve is the negative relationship of speculative demand of money and interest rate. As we mentioned earlier, some Islamic scholars believe that there is no speculative demand for money in Islamic economics. Even if we accept this viewpoint, as long as there are some Islamic financial institutions like Islamic banks that attract the money of depositors and give them profit according to Islamic contracts, the relationship between this profit rate and money demand is negative. Islamic

¹ Toward a just monetary system

² Monetary and Fiscal Economics of Islam, page 300

banks, by increasing the share of profit of depositors, are able to encourage them to put more money in the bank and hold less cash by theirselves.

So even in Islamic economic framework, we can refer to our IS-LM analysis about the degree of market stability after using each monetary policy instruments. Consequently when we want to target macroeconomic variables through monetary policy, we can not only relay on monetary aggregate control as a monetary instrument. we showed that using only monetary aggregate instrument, cause instability in both goods and money market after execution of monetary policy and central bank needs to use something like open market operation to adjust money supply gradually in such a way that both goods and money market remain at equilibrium. For this reason, we can see that even in Islamic economic countries, the monetary officials use commercial shares or Musharakah certificates as a substitute tool for interest based control and open market operation.

Ausaf Ahmad in his book³ states two main difficulties for the adoption of open market operation in the Islamic economics. The first is conceptual problem, since the interest rate instruments are incompatible with Islamic economics, and the second one is institutional problem, because in most Islamic countries the financial market is underdeveloped.

The second problem is still a source of concern in many Islamic countries but the first problem is almost solved. Usually the Islamic government issues commercial shares or Musharakah certificates on the base of profit sharing. So, whenever the government wants to decline the volume of money in the economy, it sells these certificates to the public and whenever government wants to expand supply of money it will buy these commercial shares from people. Here the profit rate of these commercial shares plays the role of interest rate in the monetary policy process and by changing this rate, central bank can persuade people to buy or sell these certificates. The important point is that, central bank should issue all papers and certificates based on some productive economic projects otherwise the profit sharing principle dose not work.

³ Instruments of regulation and control of Islamic banks by the central banks

4. Monetary Policy in Islamic Republic of Iran

After the Islamic revolution in Iran, at 1979, there were comprehensive attempts by government to use Islamic rules and regulations in all aspects of society and economic and banking system of the country was one these aspects. Finally at 1983 economic experts and Shariah scholars provided the Interest Free Banking System Bill to the parliament that used Islamic contracts as instruments for attracting and allocating money in the banking system. After approving process by parliament, and Guardian Council, which contains 6 lawyers and 6 Islamic jurists who monitor all parliament approvals not to be against Islamic rules, from the 1984, the whole economic and banking system of country changed to Islamic one. Unlike some Islamic countries which have both Islamic and non-Islamic banking system, there is not any bank in Iran that works according to interest rate system.

From the beginning of the Islamic banking system, the central bank of Iran did its best to use monetary policy instruments which have no contradiction to Islamic rules and at the same time bring macroeconomic stability and growth to the country. We can see that Central Bank of Iran dose not restrict itself only to monetary aggregate instrument of monetary policy and uses extensively from profit rate instrument like Musharakah certificates. Here, we explain the instruments that central bank currently uses to execute monetary policy⁴.

4.1 Musharakah Certificates

As we mentioned earlier, using open market operation by bonds or other interest based instruments is against Islamic rules. But in Islamic economic framework, there is a suitable substitute for these instruments. Central bank of Iran, like some other Islamic countries, tries to control the volume of money in the economy by issuing Musharakah certificate. Selling these Musharakah certificate to people allows them to take part in the investment projects even with little money and get their profits and at the same time helps central bank to collect money from economy and control macroeconomics variables like Inflation. Table 2⁵ shows total value of Musharakah certificates that are published and sold in Iran during 2002 to 2006. It is clear that central bank of Iran widely uses from Musharakah certificate as an instrument for controlling the volume of money in the economy.

Year ⁶	Published Certificate	Sold Certificate	Expected Return	
	(Billion Dollars)	(Billion Dollars)	(Percent)	
2002	2.96	2.78	15-17	
2003	3.18	3.09	17	
2004	4.49	4.22	17	
2005	3.78	3.12	15.5-17	
20067	3.92	3.03	15.5	
2007 Planed	4.89	-	15.5	

Table 2: The value of published and sold Musharakah certificate in each year by central bank and other government companies and Institutions and their expected return

⁴ These Instruments are introduced in the website of Central Bank of Iran: <u>www.cbi.ir</u>

⁵ The data is from website of Central bank of Iran

⁶ Central Bank data is arranged according to Iranian calendar year, so each figure in the table is related to the period which starts from March 21 of the year that is mentioned in the rows and ends to March 20 of next year. ⁷ Figures of Feb and Mar of 2007 are not published yet and the data is related to the end of Jan 2007

4.2 Controlling Profit Rate of Commercial Banks

The same as many Islamic countries, there are two main categories for Islamic contracts in the Iranian banking system: Musharakah Contracts and fixed rate contracts like Murabaha and Ijarah. In the Musharakah contracts, bank uses the money of depositors in some investment projects and gives them their share as a profit. But since these investment projects are usually long term, bank provides yearly or monthly expected profits to the depositors and after two or there years, when bank is able to calculate its exact profits, it gives the precise profit to the depositors. By determining the profit rate for fixed rate contracts or expected profit rate for Musharakah contracts, central bank indirectly controls the banking system deposits. For example, when central bank wants to adopt an expansionary monetary policy, it reduces the profit rate in the banking system and so discourages people to put their money in the bank deposits which are determined by the central bank.

Year	Expected Profit Rate (Short Term Deposit)	Expected Profit Rate (5 Year Deposit)	
2000	2000 8		
2001	7	17	
2002	7	17	
2003	7	17	
2004	7	17	
2005 7		17	
2006	7	16	

Table 1: Expected profit rate of short term and long term deposits that central bank determines for state banks in each year.

4.3 Legal Reserve

The same as other countries, all commercial banks in Iran must put some percentage of their deposits to the central bank as legal reserve. The legal reserve in Iran is variable between 10 and 30 percent. When central bank wants to increase the volume of money in the economy, it declines this rate and vice versa. The legal reserve rate in Iran is 17 percent and according to the latest official released data, the volume of reserve account that banks and financial institutions have put to the central bank in Jan 2007, showed 39 percent increase comparing to the same date in the previous year and reached to 18.1 billion dollars⁹.

4.4 Special Deposits to Central Bank

From 1998 central bank of Iran used another instrument for executing monetary policy and controlling volume of money in the economy. This instrument allows commercial banks to open an account in to the central bank and put their extra money in this account. On the special conditions, central bank offers return for these deposits. At the end of Jan 2007 total amount of these accounts in the central bank was 1 billion dollars.

⁸ The data is from website of Central bank of Iran

⁹ Every where in this paper, For converting figures from Iranian Rials to U.S Dollars we have used this exchange rate: 1 U.S dollar= 9200 Iranian Rials

4.5 Credit Ceiling

Another instrument that central bank of Iran uses for controlling the volume of money in the economy is determining the quantity and quality of the money that banks lend to people. For example for adopting contractionary monetary policy, central bank is able restrict the level that each individual bank lend to people or for supporting agricultural sector it can lead banks resources from other sectors to agriculture. Table 3^{10} shows that, what is the share of every economic sector from the resources of banking system in each year.

	2000	2001	2002	2003	2004
Agriculture	20	18.8	18.8	25	25
Mining and	26.8	25.1	24.7	17.6	17.6
Housing and					
construction	23.2	21.8	21.4	15.2	15.4
Services and	3.6	3.4	3	2.1	2.2
Trade					
Not Specified	20	25	25	35	33.7
Total	100	100	100	100	100

Table 3: The share of every sector from resources of banking system that specifies each year by central bank.

¹⁰ The data is from website of Central bank of Iran

5. Conclusion

In conventional economics, for targeting macroeconomic goals by monetary policy, there are totally two groups of instruments that the central bank or monetary officials are able to use: Interest based instruments and monetary aggregate instruments. By using simple IS-LM model, we showed in this article that using each group of instruments has different effects on goods and money markets stability after executing monetary policy. Generally, interest based instruments let monetary officials manage the supply of money more flexible and so when central bank uses interest based instruments like open market operation, in the post policy execution period, there is more stability in both goods and money markets comparing with situation in which central bank uses monetary aggregate instruments like credit ceiling.

When we come to Islamic economics, for executing monetary policy, we face the important restriction that is the prohibition of interest rate. So using interest based instruments in Islamic economics is completely forbidden according to Islamic shariah rules. Some Islamic scholars suggest that, in Islamic economics, we should concentrate mainly on the monetary aggregate instruments for executing monetary policy and forget about interest rate instruments because they are totally forbidden in Islamic perspective.

Although there is no interest rate in Islamic economics, but here, there is a profit rate that Islamic banks and financial institutions use in their operation according to shariah contracts. We showed in the paper that by considering this profit rate as a substitution variable for interest rate, we can derive and use the same IS and LM curve as what we had in conventional economics. So, using the previous IS-LM analysis makes clear that, the same as conventional economics, monetary officials in Islamic economics can not only relay on monetary aggregate instruments and have to use profit rate instruments. That is why we can see Islamic countries widely use profit rate and Musharakah certificate in their monetary policy.

Studying the monetary system of Islamic Republic of Iran, which is one of the Islamic countries that reformed completely its financial and banking system according to Islamic rules after Islamic revolution, proves practically our previous results. Generally, central bank of Iran uses five main instruments for executing monetary policy. One of these instruments, that central bank uses it widely, is Musharakah certificates. These Musharakah certificates make it possible for all people to invest in the great and profitable projects and at the same time help central bank to control the volume of money flexible enough to bring stability in goods and money market when it wants to execute monetary policy.

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