The Effect of Money Supply in Saudi Arabia

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Abstract. The money supply M, grew from S.R. 1428.46 million in 1964 to S.R. 44,654.88 million in 1978, recording an increase of 3,126 percent. But the currency held by the public rose from S.R. 909.55 million in 1964 to 17,882.70 in 1978. However, its proportion to M_1 has declined to 40 percent from 63.71 percent in the same period.

The commercial banks deposits with SAMA have increased substantially due to the huge expenditures in the development plans, which led to a rise in the t-ratio. The commercial banks investments abroad have been increased in the study period from S.R. 72 million in 1964 to S.R. 1549 million in 1985.

Time and savings deposits have grown very rapidly from 91.22 million to S.R. 3,184 million. The ratio of time-saving deposits to M_2 rose in 1964 to 6 percent and to 19.7 percent in 1978 due to commodity trading and real estate speculation. The required reserve ratio is not fixed by a certain percentage, but it has a certain limit range from 10 to 17.5 percent out of their demand deposit.

Introduction

The Saudi Arabian Kingdom is a large country in the sense of its size. It covers an area of 865,000 square miles, which roughly equivalent to the United States east of the Mississippi. It has a population of ten million.

Saudi Arabia was practically isolated from the Western world until oil was discovered in 1938. Now, it is engaged in trade with almost every country in the world, either in the East or in the West.

In the 1950s, Saudi Arabia experienced a monetary crisis due to the rapid increase in government expenditure and decrease in the oil revenue. However, in the early 1960s the government succeeded in solving the economic problem by tightening government expenditure.

Since 1970, the sharp rise in both the production and the price of oil, as well as better terms of agreement with the oil companies, has considerably strengthened the fiscal and external payment positions of the Saudi Arabian Kingdom.

The aim of this paper is to examine the Saudi Arabian Monetary System and to determine the factors that affect the money supply in the Kingdom.

The study is divided into five sections. The second section briefly surveys the monetary Institutions in Saudi Arabia while the third section concern the properties of money supply. In the fourth section the multipliers are derived and briefly analyzed in terms of Saudi Arabia. The conclusion is drawn in the fifth section.

Institutional Survey

Prior to 1950, the entire banking system in Saudi Arabia consisted of a branch office of one foreign commercial bank (The Netherlands Trading Society) and a network of money changers [1, p 4]. There was no central bank, nor any kind of banking control. However, the Ministry of Finance was the authority solely responsible for the issue of currency and coins, and the exercise of monetary control.

Today, the Saudi Arabian financial structure consists of the following three main institutions:
1. The Saudi Arabian Monetary Agency (SAMA)
2. Commercial Banks
3. Specialized Public Institutions

We are going to review very briefly the developments of each of the afore-mentioned institutions separately.

The Saudi Arabian Monetary Agency (SAMA)

As a result of the steady growth in the annual oil income flows and expenditure during the period 1950-1952, the government of Saudi Arabia thought that certain fiscal and monetary reforms would accelerate the country's economic development.

In April 1952, therefore, a central bank was established under the name of the Saudi Arabian Monetary Agency with the following main functions.

(i)   To strengthen the rate of the currency and to stabilize and fix its value in relation to foreign currencies.

(ii)   To aid the Ministry of Finance in centralizing the receipts and expenditures of the government and in controlling expenditures in accordance with items of the authorized budget [2, p. 238].

(iii) To supervise the existing banks.

(iv) To act as an advisor to the government on financial and monetary matters.

(v) To gather, analyse and publish statistics on money and banking collected from financial and governmental bodies.

Commercial Banks

The growth of the commercial banks has proceeded very rapidly along with the corresponding development of the Saudi Arabian economy. For example, in 1968 there was only one bank operating in the Kingdom, but by the end of 1986 there were eleven banks with 628 permanent offices and branches [3, pp. 186].

The main role of the commercial banks in Saudi Arabia is to provide and develop traditional short-term facilities. However, in the absence of specialized medium-term facilities in the Kingdom, commercial banks have been accommodating medium-term financing requirements through revolving lines of credit to selected customers, with special emphasis on industrial and development projects.

Private deposits constitute the basic source of funds for commercial banks, which generally do not pay interest on current account credit balances. Savings accounts are encouraged by local banks. These accounts represent a significant part of total bank deposits.

However, in spite of the fact that interest rates are not permitted in Saudi Arabia (for religious reasons) the banks do in fact charge "commissions" on their loans.

Specialized Public Institutions

There are six specialized credit institutions operating in Saudi Arabia. These institutions have been established by the Government to provide interest-free medium and long-term loans to different sectors of the economy. Their operations are, to a large extent, complementary to the commercial banks which, because of the predominantly short-term nature of their deposit liabilities, specialize in extending short-term loans and are not in a position to meet the medium and long-term credit needs of the economy. These institutions derive their capital and lending resources primarily from the government.

The specialized public institutions are:

(1) **The Agricultural Bank.** which was established in 1964 with an initial capital of SR 30 million rose to 53 million in 1970 [4, p. 11,26].

(2) **The Industrial Development Fund.** This fund was created in March 1974, with an initial capital of SR 500 million [5, p. 36]. This fund gives grants to the pri-

vate sector with medium and long-term interest and free loans up to 50 percent of the total capital needs, to assist and encourage the establishment or expansion of industries in the country.

(3)   **The Public Investment Fund.** This fund was established in 1971 with an initial capital of SR 30 million rose to SR 5800 million in 1973 [5, p. 36]. The original purpose of this fund was to finance commercially-oriented productive investments of the government and public corporation undertaken independently or in collaboration with the private sectors as well as to participate in newly established industrial, agricultural or commercial enterprises in the Kingdom.

(4)   **The Saudi Credit Bank.** This institution was founded in December 1973 with an initial capital of SR 5 million which was then supplemented by an additional SR 40 million in 1975 [6, p. 35]. This fund grants interest-free loans or specified social and economic purposes.

(5)   **The Real Estate Development Fund.** This fund was established in July 1974 with an initial capital of SR 250 million rose to SR 2,000 million in May 1975 [6, p. 36]. The main purpose of the fund is to grant medium and long-term loans for house construction purposes to Saudi nationals in low-and medium-income brackets up to 70 percent of the costs. In addition, the fund can participate in the development and improvement of cities and towns through the acquisition of old sections for the purpose of planning new residential and commercial complexes.

(6)   **Credit Fund for Contractors.** This fund was established in 1974 with capital of SR 50 million to help Saudi contractors fill the large number of tenders being offered for work throughout the Kingdom [6, p. 37].

After this brief discussion of the Saudi Arabian financial structure, I will try to find out the effect of the change of the parameter multiplier on money supply. Here, I will use the basic money-supply hypothesis proposed by Albert E. Burger [7, p. 10].

$$M = mB \qquad (1)$$

where M = money stock
         B = the monetary base
         m = money - supply multiplier

But here I will try to apply this equation to the Saudi Arabian economy taking into account the special features of Saudi Arabia's money supply.

Before doing that I will try to examine the conception of monetary base and what it contains.

The Properties of the Money Supply in Saudi Arabia

The Monetary Base

The monetary base summarizes the effects of actions by the monetary authorities on the money stock and is the main factor determining the growth of money stock.

In Saudi Arabia, the monetary authority is represented by the Saudi Arabian Monetary Agency (SAMA). So, the movements at the monetary base are dominated by changes in SAMA holdings of foreign exchange, gold, investment and government deposits.

In this case SAMA actions determine total bank reserved and the amount of currency in circulation plus the money stock of the last period.

Since the monetary base in Saudi Arabia is only working in one way, that is creating money for government expenditure, it cannot reduce the amount of money supply by open market operations since this market does not exist in Saudi Arabia. The question which now arises is how the SAMA can control the money supply. This may be done in the absence of open market operation by taxes. But since the tax is limited to imported goods and with virtual absence of income tax, it seems that this effect is very small and could be neglected. But some options for SAMA to control the money supply still remains.

The monetary base in Saudi Arabia has developed continuously during the period 1964-1978 by SAMA annual reports as shown by the following table.

The monetary base in Saudi Arabia 1964-1978

Year	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Base	2173.2	2411.2	2725.2	3063.7	3447.8	3606.5	3921.9	4139.9	5024.5	6410.3	8846.0	13702.7	21720.0	33103.9	63128.8

Given that the change in the monetary base (stock) is equal to government expenditure.

$$B_t - B_{t-1} = G \tag{2}$$

where

G = government expenditrue (money issued by govt.)
B_{t-1} = the monetary base for the previous period

By definition

$$G = R + C^p \qquad (3)$$

where

R = the commercial banks' deposits held by the monetary authorities (SAMA)
C = currency in circulation

By substituting equation (3) in (2) and solving for B we have

$$B_t = R + C^p + B_{t-1} \qquad (4)$$

Actions taken by the government and SAMA determine the size of the stock of the base money in Saudi Arabia at which it is supplied, while commercial banks and the public determine the uses of the monetary base.

SAMA and government control over the monetary base supply induces the banks and the public to adjust their holdings of currency as well as their financial assets in order to hold the amount of money equal to what was supplied by SAMA actions.

But Saudi Arabia has a special feature which is different from many countries. This feature is the existence of the specialized banks which are owned by the govenment. These specialized banks are not like a commercial bank with which you can open an account, nor is their main goal to maximize profits, but it is the main objective of these specialized banks to maximize social welfare. The specialized banks given loans without interest to any Saudi citizen whether he is rich or poor after he satisfied certain conditions. So, as a result of the existence of these banks their has been a great effect on the commercial banks, especially since these specialized banks cover most of the economic activities except imports and exports which are considered as the main activities for the commercial banks.

Commercial banks deposits held by monetary authorities are given by the following:

$$R = r^s + E^s + F \qquad (5)$$

where

r^s is the required reserve
E^s is the excess reserve
F   is what is invested abroad by the banking system.

The existence of specialized banks in Saudi Arabia affects the following variables.

(I) Excess reserve

$$E^s = f(i, p, g) \; ; f_i < 0, f_p > 0, F_g > 0$$

where

  i = the commission charged by commercial banks and this has negative effect on excess reserve.

  p = the discount commission which has positive effect on excess reserve.

  g = the government specialized banks commission rate.

Initially we assume that g is zero, but when it exceeds zero it is almost certain to have a positive effect on the excess reserve ratio.

(II) Borrowing ratio

As mentioned before, the function of specialized banks cover almost every aspects of the economic activities in Saudi Arabia. This limits the commercial banks activities to import and export activities, so that this has a great impact on the commercial banks loans. This borrowing ratio takes the following function which effect the commission charged by commercial banks and this has a positive effect on the borrowing ratio. Also, it has negative effect on the discount commission while the specialized government banks commission rate has a negative effect on the borrowing ratio.

$$W = w(i, p, g) \; ; w_i < 0, w_p < 0, w_g < 0$$

where g is the specialized government banks commission rate which is assumed initially to be zero.

(III) Time-deposit Ratio

The existence of specialized banks will not affect the time-deposit ratio, because individuals cannot open an account with these specialized banks for deposit purposes. But of course they can open an account when they get loans so that,

$$T = f(iF, it, N, Y/Y_p) \; ; f_{iF} > 0, f_{it} > 0, f_N > 0, f \, Y/Y_p > 0$$

where   T is time - deposit ratio.

  iF is the commission on the time deposit.

  N is the real wealth of human work.

  Y/Y_p is the ratio between income and the permanent income.

The Money Supply Multiplier

The size of the money stock associated with any given level of base money depends on the following factors:

(1)   how the public chooses to allocate wealth between currency and demand deposit (summarized in the c ratio).

(2)   what proportions of the bank deposits the public allocates to time and demand deposits (summarized in the r ratio).

(3)   the banks demands for required reserve and in relation to the publics deposits (summarized in the f ratio).

(4)   the banks demands for excess reserve in relation to the publics deposits (summarized in t ratio).

Now since the money supply in the narrow definition is given by

$$M = C^p + DD \tag{6}$$

where

DD is demand deposit
C is currency in circulation

Also, the reserve ratio that the banking system must have is given by

$$R^s = L\,(DD + T) \tag{7}$$

where

T is time deposit
L represents the actual fraction of reserves.

By substituting, the value of R^s from equation (7) in (4) and with using equation (2) we have

$$B_{t-1} + G = L\,(DD + T) + F + C^p + E^R + B_{t-1} \tag{8}$$

From (1) we have

$$M_t = B_t m_t \tag{9}$$

Then it follows

$$m_t = \frac{M_t}{B_t}$$

$$m_t = \frac{C^p + DD}{L(DD + T) + F + C^p + E^s}$$

dividing by DD we have

$$m_t = \frac{\dfrac{C^p}{DD} + 1}{L\left(1 + \dfrac{T}{DD}\right) + \dfrac{F}{DD} + \dfrac{C^p}{DD} + \dfrac{E^s}{DD}}$$

$$= \frac{C + 1}{L(1 + r) + f + c + t} \tag{10}$$

where

$$\frac{C^p}{DD} = c \text{ is currency – demand deposit ratio}$$

$$\frac{T}{DD} = r \text{ is the time – demand deposit ratio}$$

$$\frac{ER}{T+DD} = t \text{ is excess – reserve demand deposit ratio}$$

$$\frac{F}{DD} = f \text{ is invested – abroad ratio by the commercial bank since}$$

$L = i + t$ that is the actual fraction of reserves equals to the commission charged by commercial banks and excess reserve demand.

Hence we have

$$m_1 = \frac{1 + C}{(i+t)(1+r)f + C + t} \tag{11}$$

The above expression represents the money multiplier. This multiplier corresponds to the narrow definitions of money supply namely M_1. However, if we are interested in the broad definition of money supply, namely M_2 where

$$M_2 = C^p + DD + T \tag{12}$$

Then substituting equation (9) into equation (5) and following the same process as before we have:

$$m_2 = \frac{1 + c + r}{(i + t)(1 + r) + c + f + t} \tag{13}$$

It is clear that the factors affecting the money multiplier m_1 or m_2 are:

(i)   the currency ratio (C)
(ii)   the time-deposit ratio (r)
(iii) the required reserve ratio (i)
(iv)   the excess reserve ratio (t)
(v)   the invested abroad ratio by commercial banks (f).

Hence, the total contribution of all components of money supply multiplier equals the contribution of the multiplier to the growth of money stock.

In the following discussion we shall examine each of the above ratios, and the factors affecting them. Then we discuss effect of these factors on the multiplier (m) and hence the money supply (M).

The Currency-Demand Deposit Ratio (C)

As mentioned above, the currency demand deposit ratio (C) can be defined as the ratio between the currency in circulation and the demand deposits.

This ratio (C) enables us to determine whether the habit of using checks in payment vis-a-vis currency has tended to gain importance in Saudi Arabia or not.

Table 1 shows the composition of money supply and the level of the growth attained. For example, the money supply (M) grew from SR 1428.46 million in 1964 to SR 44654.8 million in 1978, recording an increase of 3126 percent.

However, currency held by the public rose from SR 908.55 million in 1964 to SR 17882.70 million in 1978, which indicates an almost nineteen times increase but its proportion to M has declined from 63.7 percent in 1964 to 40 percent.

Although, for the same period, the proportion in the demand deposits has jumped from 36.3 to 60 percent which indicates the increase of public preference for using the checks and dealing with banks.

Also, there are other factors such as: **(i)** availability of bank facilities; **(ii)** personal income; **(iii)** social and economic trends; **(iv)** preferences for liquidity and safety. These are the factors that affect the behavior of the C ratio [9, p. 120].

Table 1. Money Supply in Saudi Arabia

Year	Currency outside bank	Demand deposit	M¹	M²	Time & saving	RC¹	RD¹	RT¹	RC²	RD²
1964	909.55	518.91	1,428.46	1,519.68	91.22	63.7	36.3	6.00	60.0	34.0
1965	985.74	549.38	1,535.12	1,648.94	113.82	64.2	35.8	6.9	60.1	33.0
1966	1.111.25	634.24	1,745.49	1,888.45	142.95	63.7	36.3	7.6	59.0	33.4
1967	1,271.29	707.98	1,979.27	2,187.73	208.54	64.2	35.8	9.5	58.1	32.1
1968	1,393.5	744.5	2,138.00	2,445.65	307.65	65.28	34.8	12.6	57.0	30.4
1969	1,491.4	805.73	2,297.13	2,680.15	383.02	65.0	35.0	14.3	55.6	30.1
1970	1,561.81	802.27	2,364.08	2,853.13	489.05	66.1	34.0	17.1	54.7	28.2
1971	1,682.24	924.44	2,606.60	3,244.73	638.05	65.00	35.0	19.7	51.8	28.5
1972	2,001.0	1,228.74	3,229.74	4,027.25	797.51	62.0	38.0	19.8	50.0	30.2
1973	2,540.56	1,983.15	4,523.71	5,369.69	845.98	56.2	43.8	16.0	47.3	36.7
1974	3,430.5	2,929.20	6,359.70	7,336.11	976.41	54.0	46.6	13.3	46.8	39.9
1975	5,215.53	5,341.42	10,556.95	12,099.53	1,542.58	49.4	50.6	12.7	43.1	44.2
1976	8,596.23	10,895.21	19,491.44	21,257.98	1,766.54	44.10	55.9	8.3	40.4	51.3
1977	13,395.78	17,688.00	31,083.78	33,217.97	2,134.19	43.1	56.9	6.4	40.3	53.3
1978	17,882.70	26,772.18	44,654.88	47,838.96	3,184.08	40.0	60.0	6.7	37.3	56.0

Where: M¹ = currency outside banks + demand deposits; M² = M¹ + Time & Saving Deposit; RC¹ = the percentage ratio of currency outside bank to M¹; RD¹ = the ratio of demand deposit to M¹; RT² = the ratio of time & saving deposits to M²; RC² = the percentage ratio currency outside

bank to M²; RD² = the percentage ratio of demand deposits to M².

Source: Ref. [8, pp. 101-127].

In short, the effect of these factors on (C) will be summarized as follows:

1) The higher the number of bank branches and offices, the larger the number of deposits. This leads to a decrease in the C ratio and that is shown by increasing the number of bank branches in Saudi Arabia which rose from one bank in 1968 to almost 597 bank office in 1986.

2) Since an individual's willingness to use checks depends on his income and his ability to absorb the costs of demand deposits rises as income decrease, then it is clear that C is inversely related to income. That is, when income rises C declines and vice versa.

3) Improvements in the social and economic trends result in a greater public demand for banking services, and hence a greater use of deposits in place of currency. So C ratio will decline as a result of this development.

4) Since most banks with interest rates, and since the Islamic religion prohibits interest rates, then as a result most people in Saudi Arabia prefer to carry out their transactions in currency. This preference tends to raise the C ratio.

Now, to put all these factors which affect C together in order to find the effect of (C) on money supply M_1 can be deduced from equation (1)

By differentiating equation (1) totally we have:

$$\triangle M = m\triangle B + B\triangle m + \triangle B\triangle m \tag{14}$$

Since B is a constant, then it follows $\triangle B = B = O$ and equation (14) will be reduced to

$$\triangle M = B\triangle m \tag{15}$$

Thus, any change in (m) tends to change M and the change will be in the same direction.

Now, from equation (10) the C ratio acts as a constraint in the money supply process. The higher the C ratio, the lower the level of M associated with any given level of B. Thus an increase in the C ratio will cause (m) to fall and vice versa, as long as the value of the numerator in equation (10) is greater than the value of the denominator.

In short:

$$\frac{\partial M}{\partial C} = \frac{[\,(i+t)\,(1+r) + c + f + t\,] - (1+C)}{[i+ir+t^2+rt+c+f]^2}$$

$$\frac{\partial M}{\partial C} = \frac{[i+ir+t^2+tr+f+c)-(1+c)}{[i+ir+t^2+rt+c+f]^2} < 0 \qquad (16)$$

if

$$(1+c) > (i+t^2+ir+rt+f+c)$$

The Excess Reserve Ratio (t)

Excess reserves are defined as the amount of reserves that a bank has in excess of its required amount. When required reserves exceed actual reserves, the bank has a deficiency of reserves.

The excess reserve ratio (t) can be computed by dividing total excess reserves E^S by the public's demand deposits (DD) plus time deposits (T). In the mathematic form, we have

$$t = \frac{E^s}{DD}$$

Bank preferences for excess reserves depend on whether their loans and investments are being regularly inspected closely by critics who have the power to impose penalties on the banks which take risks. For example, article six of the Banking Control Law states:

> "The deposit liabilities of a bank shall not exceed fifteen times its reserves and paid-up or invested capital. If the deposit liabilities exceed this limit, the bank must; within one month of the date of submission of the statement, referred to a Paragraph 1 or Article 15; either increase its capital and reserves to the prescribed limit or deposit 50 percent of the excess with the Agency" [10, p.7]

Also, article eight sets the limits on investments and loans of the commercial banks in Saudi Arabia by stating that:

> "No banks shall grant loans or extend a credit facility or give a gurantee or incur any other financial liability with respect to any natural or juristic person for amount aggregating more than 25 percent of the Bank's reserves and paid-up or invested capital. The Agency may, in the public interest and subject to such conditions as it may impose, increase this percentage up to 50 percent" [10, p. 7].

It should be noticed that the above two articles supervise commercial banks in their management and grant SAMA the authority to regulate and control the commercial banking system.

As a result of the development plans, and with the huge expenditures for their projects, the commercial banks deposits with SAMA have been increased substantially causing (t) ratio to rise.

There are seven clearing houses in Saudi Arabia; Jeddah, Riyadh, Dammam, Taif, Madina, Abha and Buraydah. Commercial banks began to settle their accounts through manipulation of excess reserves rather than through cash payments. That is, commercial banks put aside a large amount of their reserves with SAMA as excess reserves for clearing and settling their payments with each other.

The number of checks has been increased from 29,788 in 1964 to 3.57 million checks in 1986 doubling 120 times. The money represented by these checks rose from SR 266 million in 1967 to SR 326,80 million 12,285 in 1986.

Thus, the increased use of checks in settling payments between commercial banks may have been one factor that raises the (t) ratio.

The effect on M of the factors shaping the (t) ratio can be deduced from differentiating equation (10) from equation (11). It appears that the change in the t-ratio will cause changes of the opposite sign in (m). Since any change in (m) will tend to change M in the same direction, then any change in the t-ratio will cause changes in M, but in the opposite direction.

Thus, if the t ratio rises (falls) as a consequence of income increases (decreases), money stock declines (expands).

That is,

$$\frac{\partial m}{\partial t} = \frac{-(1+c)(1+r)}{(i+t^2+ir+rt+c+f)} < 0 \qquad (17)$$

The Time-Deposit Ratio (r)

As stated above, the Time-Deposit Ratio can be defined as the ratio between the time deposits and demand deposits. That is

$$r = \frac{T}{DD}$$

Where (r) is the time-deposit ratio, T is the time deposits held by the public, and DD is the demand deposits held by the public.

As Table 1 illustrates, time and savings deposits have been growing very rapidly from SR 91.22 million to SR 3184 million which indicates an increase of four times.

The ratio of time savings deposits to money supply (M) rose from 6 percent in 1964 to 19.7 percent in 1972, and that was the highest level. Then it started to decline and reached 6.7 percent in 1978.

The decline in the ratio of time to savings deposits is due to the low yield on saving accounts (in spite of the prohibition of the interest rate in the Islamic religion) relative to other forms of investments, such as commodity trading and real estate speculation at the same period.

It is worth mentioning that the value of M has been increased from SR 1,519.68 million in 1964 to SR 47,838.96 million in 1986 doubling about thirty-two times.

Also, since income has an influence on the (r) ratio -- the increase in income tends to raise the public's holdings of time deposits relative to demand deposits causing the ratio to rise.

The per capital income in Saudi Arabia, on the average, has risen from $ 237 in 1960 to $ 10530 in 1983. So that the (r) ratio is also assumed to have risen as well [11,p. 510].

The effect on M of the factors shaping the r-ratio can be deducted from it appears that the change in r-ratio will cause changes of the opposite sign in m. Since any change in m will tend to change M in the same direction, then any change in the r-ratio will cause changes in M but in the opposite direction. Thus, if the r-ratio rises (falls) as a consequence of income increase (decreases), money stock declines (expands).

That is,

$$\frac{\partial m}{\partial t} = \frac{-(1+c)\,(i+t)}{[i+t^2+ir+tr+c+f]^2} < 0 \qquad (18)$$

The Required Reserve Ratio (i)

The required reserve ratio (i) can be computed by dividing total required reserves (R) by the public's deposit (DD+T).

That is

$$i = \frac{R}{DD+T}$$

The above equation describes the banks behavior in relation to its holding of reserves against the public's deposits.

The reserve requirements in Saudi Arabia are stated in Article 7 of the Banking Control Law which states:

"Every bank shall maintain with the Agency at all times a statutory deposit of a sum not less than 15 percent of its deposit liabilities. The agency may, if it deems it to be in the public interest vary the aforesaid percentage provided that it shall not be reduced below 10 percent nor increased to more than 17.5 percent. The Agency may, however, vary these two limits with the approval of the Ministry of Finance and National Economy" [10, p. 7].

In addition to the statutory deposit for the previous paragraph, every bank shall maintain a liquid reserve of not less than 15 percent of its deposit liabilities. Such reserve shall be in cash, gold or assets which can be converted into cash within a period not exceeding thirty days. The Agency may if deemed necessary, increase the aforesaid percentage up to 20 percent.

So it is clear that the reserve required is more flexible in Saudi Arabia than in most countries which set only a fixed percentage as a reserve requirement.

However, since the Banking control law has given the SAMA the right to raise or reduce this reserve requirement on demand and time deposits within certain limits 10-17.5%, this has an effect on the i-ratio. That is, when SAMA raises the required rates, the i-ratio will rise; on the other hand, when the required rates are reduced, the i-ratio declines.

Also, there is another factor which effects (i) besides the statutory. That factor is the transfer of funds between the public and the government.

The transfer of funds between public and the government sectors occurs as a result of manipulating government accounts between SAMA and commercial banks to enforce the commercial banks' liquidity position. This is made possible by transferring some government deposits from SAMA's banking departments to the commercial banks. For example, during the period (1961-62) there was an increase in the demand for credit. As a result of this increase in the demand, the government transferred SR 25 million of government deposits to certain commercial banks to help them cope with this increase in demand.

Thus, action of this nature increases government demand deposits with commercial banks, and thus causing an increase in the required reserve ratio (i).

In their relationships to the monetary-supply, the multiplier (m), and the money stock (M) can be described as follows: Changes in the reserve requirements against demand and time deposits cause opposite changes in m, and hence in M. When the

legal reserve requirement ratios are increased, banks which do not have sufficient reserves are forced to liquidate assets or borrow. This puts pressure upon the banking system to reduce its total loans and investments and thereby reduces the stock of money (M). Decreases in reserve requirements against demand and time deposits permit the banking system to expand loans and investments, and hence tends to raise M. The same conclusion applies to the effect of the transfers of funds between the public and government.

In short:

$$\frac{\partial m}{\partial i} = \frac{-(1+c)(1+r)}{(1+t^2+ir+tr+c+f)^2} < 0 \qquad (19)$$

The Invested Ratio by Commercial Banks

As a result of the existence of the government specialized banks which cover almost every aspect of the activities which can be done through the commercial banks, plus the increase of the time-savings, the commercial banks end up with huge amounts of money. Most of these deposits are invested abroad. Hence the factors which affect the investments by commercial banks are:

$$F = F(\underline{i}, \underline{e}, \underline{g}, \underline{b})$$

where:

    i = commission inside Saudi Arabia
    e = the discount commission
    b = interest rate abroad
    g = specialized banks commission

Since the invested abroad ratio is given by

$$f = \frac{F}{DD}$$

The increase in the investment abroad will decrease the multiplier and hence will decrease the money stock (M). In short, this can be expressed as follows:

$$\frac{\partial m}{\partial t} = \frac{-(1+c)}{(i+t^2+ir+tr+c+f)^2} < 0 \qquad (20)$$

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Table 2. Investment by commercial banks during the period (1964 - 1985)

Year	Million riyals
1964	72
1965	73
1966	79
1967	82
1968	81
1969	50
1970	59
1971	62
1972	68
1973	103
1974	139
1975	210
1976	247
1977	405
1978	611
1979	735
1980	773
1981	927
1982	1455
1983	1131
1984	1256
1985	1549

Source: ref. [3].

Conclusion

It is clear from past pages that the money supply M, grew from SR 1428.46 million in 1964 to SR 44,654.88 million in 1978, recording an increase of 3,126 percent. But the currency held by the public rose from SR 909.55 million in 1964 to 17,882.70 in 1978. However, its proportion of M_1 has declined to 40 percent from 63.71 percent in the osame period.

The commercial banks deposits with SAMA have increased substantially due to huge expenditures in the development plans. This in turn led to a rise in the t-ratio. As a result the commercial banks began to settle their accounts through their excess reserves rather than through cash payment.

Time and savings deposits have grown very rapidly from SR 91.22 million to SR 3.184 million, indicating an increase by forty times. However, the ratio of time-sav-

ing deposits to M_2 rose from 6 percent in 1964 to 19.7 percent in 1978, and that was not due to the prohibition of interest rates, but to commodity trading and real estate speculation.

The requires reserve ratio is not fixed by a certain percentage, but it has a certain limit ranging from 10 to 17.5 percent out of their demand deposit.

The commercial banks investments abroad have been increased in the study period from SR 72 million in 1964 to SR 1549 million in 1985.

This is due to the existence of the specialized banks which eliminates many activities that can be done by commercial banks.

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العوامــل المؤثـــرة في عـرض النقـــود
في المملكـة العربيـة السعوديـة

عاصم بن طاهر عرب

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ملخص البحث. لقـد كان نمـو عرض النقـود خلال العشرين سنـة الماضية مرتفعًـا، فقـد وصل إلى ٨٨،٦٥٤،٤٤ مليون ريال في عام ١٩٧٨م مقارنة بـ٤٨،١٤٢٨ مليون ريال في عام ١٩٦٤م.

كما أن إيداعات البنوك التجارية مع مؤسسة النقد العربي السعودي قد إزدادت نتيجة لوجود خطط التنمية وهذا ما أدى إلى قيام البنوك التجارية بتسوية حساباتها عن طريق الزيادة في الاحتياطي بدلاً من الدفع النقدي.

كما أن المدخرات من قبل المواطنين قد ارتفعت وهذا ما أدى إلى قيام هذه البنوك التجارية باستثمار جزء كبير من هذه المدخرات خارج المملكة.

وقد أدى قيام البنوك الحكومية المتخصصة بإعطاء قروض للمواطنين في مشروعات معينة بدون فوائد إلى عدم قيام ومساهمة البنوك التجارية في مثل هذه المشروعات.