Rivista Internazionale di Scienze Economiche e Commerciali
Vol. 34 (1987), N. 11-12, 1197-1216

CONSEQUENCES OF FINANCIAL UNDERDEVELOPMENT IN SAUDI ARABIA

by
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Introduction

Although much has been written in the financial press about the evolution of commercial banking in Saudi Arabia, the constraints imposed by Islamic law and practice and the impending difficulties the banks are likely to face as the economy goes through a transition from rapid growth with abundant oil revenues to one of lower more controlled growth, there have been no real attempts other than Wilson's (1982a, 1982b, 1986) to quantify the relationship between domestic macro-economic and monetary variables on the one hand, and the growth of bank deposits and lending on the other.

The purpose of this paper is to quantify to the degree possible the impact falling oil revenues and hence government expenditures are likely to have on the portfolios of the commercial banks in Saudi Arabia. The ultimate purpose of this analysis is to determine the extent to which these developments are likely to affect the volume of private credit extended to the private sector.

A related objective is to examine the ability of the Saudi Arabian Monetary Agency (SAMA) to control the domestic money supply given the rather primitive development of the domestic financial system, the limited monetary tools possessed by SAMA and the fact that higher interest rates in the euro-markets and few restrictions on capital flows may result in large outflows of money from the kingdom.

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Structural Changes in Commercial Banking Activity

Since the 1973/74 oil price increases growth of the Saudi financial system has been phenomenal. By 1984, the eleven commercial banks operating in the Kingdom had 524 branches compared with only 78 in 1975. By 1985 their foreign assets had grown to SR 71 billion from SR 32 billion five years earlier and their claims on the private sector had nearly doubled to SR 60 billion in the same period. By 1985, total assets stood at SR 143 billion, nearly two times their 1980 value and over nine times their value a decade earlier (Table 1).

Within the context of this rapid growth in assets, several major trends have characterized the development of commercial bank assets and liabilities (Table 1):

1. the steady increase in assets over the 1960-73 period with reserves increasing at an average annual rate of 20.4 percent, foreign assets at 27.2 percent, and claims on the private sector increasing at 11.9 percent;
2. the rapid expansion in assets during the 1973-80 oil boom years,

TABLE 1.

SAUDI ARABIA: ASSETS AND LIABILITIES OF THE COMMERCIAL BANKS, 1960-75
(Billions of Riyals)

Asset-Liability	Year							Average Annual Growth			
	1960	1965	1970	1973	1975	1980	1985	1960-1973	1973-1980	1980-1985	1960-1985
Assets											
Reserves	0.11	0.19	0.22	1.23	4.85	8.19	12.56	20.4	31.1	8.9	20.07
Foreign Assets	0.06	0.19	0.45	1.37	3.62	32.23	70.66	27.2	57.0	17.0	32.69
Claims on Private Sector	0.55	1.03	1.71	2.36	6.72	37.25	59.81	11.9	48.3	9.9	20.63
Liabilities											
Demand Deposits	0.41	0.55	0.77	2.23	7.50	33.28	46.06	13.9	47.1	6.7	20.79
Quasi Money Deposits	0.06	0.25	0.70	1.42	3.13	13.83	44.09	27.6	38.4	26.1	30.21
Foreign Currency Deposits	0.03	0.05	0.04	0.10	0.47	4.65	21.09	9.7	73.1	35.3	29.98
Foreign Liabilities	0.18	0.18	0.16	0.32	1.79	9.15	10.38	4.5	61.5	2.6	17.61
Government Deposits	—.—	0.05	0.09	0.11	0.28	3.56	1.37	—.—	64.3	−17.4	—.—
Capital Accounts	0.17	0.14	0.17	0.24	0.68	4.15	12.88	2.7	50.3	25.4	18.90
Other Items (Net)	−0.13	0.19	0.44	0.53	1.35	9.04	7.16	—.—	50.0	− 4.6	—.—
Total Assets Liabilites	0.72	1.41	2.38	4.96	15.19	77.67	143.03	16.0	48.13	12.99	23.57

Source: INTERNATIONAL MONETARY FUND (1986).

with reserves increasing at an average annual rate of 31.1%, foreign assets at 57.0%, and loans to the private sector at 48.3%;

3. the abrupt slow-down over the 1980-85 period in bank assets, with reserves increasing at an average annual rate of 8.9%, foreign assets at 17.0% and claims on the private sector falling to an average rate of increase of 9.9%;

4. movements in assets have been reflected in a similar movement in the liabilities of the commercial banks:

a) during the 1960-73 period the most significant trend in liabilities was the dramatic increase in quasi money deposits, increasing at an average annual rate of 27.6% over this period;

b) the greatest change in the post 1973 oil boom period was the dramatic increase in foreign currency deposits at an average annual increase of 73.1% (from 9.7% per annum during the 1960-73 period), and foreign liabilities at 61% per annum (from 4.5% during the 1960-73 period);

c) during the 1980-85 period the greatest change in bank liabilities was in government deposits declining at an average annual rate of 17.4% (in contrast to an average annual rate of increase of 64.3% during the 1973-80 period);

d) the expansion of demand deposits also suffered a rapid decline during the 1980-85 period, falling from an annual rate of 47.1% during the 1973-80 period to only 6.7% average annual increase in the 1980s. On the other hand, quasi money deposits showed great stability, falling only to an average annual increase of 26.1% from an expansion of 38.4% per annum during the 1973-80 period;

e) the most ominous recent trend has been an average expansion of assets and liabilities over the 1980-85 period at a rate of about one half their pace for the 1960-80 period as a whole and at a rate considerably (12.99% vs. 16.00%) below that attained in the 1960-73 period.

There have been some significant changes in the last several years, however, which highlight the new economic climate in which the commercial banks have to operate. The banks are still profitable, but profit levels are declining. The two big, fully domestic banks, National Commercial and Riyadh, with combined total assets of $25 billion and with over 280 branches, saw their pre-tax profits on assets ratio decline in 1984 to 0.92 and 1.92 respectively. For the first time since 1979, the total assets of banks fell in 1984 as public expenditure levels dropped to their lowest levels for five years. As Presley (1985) notes, within this less dynamic phase of economic development, a number of fundamental changes are likely to be forced upon the commercial banking system in Saudi Arabia.

TABLE 2.

SAUDI ARABIA'S COMMERICAL BANK ASSETS AND LIABILITIES
(Billions of Riyals)

	Year										
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Rival Accounts											
Reserves	4.85	7.11	13.03	22.12	13.59	8.19	8.27	10.81	8.26	11.04	12.56
Foreign Assets	3.62	8.29	11.28	11.55	18.19	32.23	53.35	61.00	62.38	67.24	70.66
Domestic Lending	6.72	9.88	10.68	11.40	26.73	37.25	43.25	50.16	56.84	59.63	59.81
Total Assets	15.19	25.28	34.99	45.07	58.51	77.67	104.88	121.97	197.48	137.91	143.03
Transaction Deposits	7.50	13.68	22.16	30.03	31.00	33.28	43.49	49.34	49.51	47.86	46.06
Savings Deposits	3.13	4.31	5.85	7.63	9.38	13.83	21.93	29.68	34.13	41.79	44.09
% Assets											
Reserves	31.93	28.13	37.24	49.08	23.23	10.54	7.89	8.86	6.48	8.01	8.78
Foreign Assets	23.83	32.79	32.24	25.63	31.09	41.50	50.88	50.01	48.93	48.76	49.40
Domestic Lending	44.24	39.08	30.52	25.29	45.68	46.96	41.24	41.12	44.59	43.24	41.82
Transaction Deposits	49.37	54.11	63.33	66.63	52.91	42.85	41.47	40.45	38.84	34.70	32.20
Savings Deposits	20.60	17.05	16.72	16.93	16.03	17.81	20.91	60.15	26.77	30.30	30.83
% Rate of Growth											
Reserves	—.—	46.60	83.26	69.76	−38.56	−39.73	0.98	30.71	−22.15	33.66	13.77
Foreign Assets	—.—	129.01	36.07	2.39	57.49	77.19	65.56	14.32	2.26	7.79	5.09
Domestic Lending	—.—	47.02	7.98	6.74	134.47	39.36	16.11	15.98	13.32	4.91	0.30
Total Assets	—.—	66.43	72.25	28.81	29.82	32.75	35.03	16.29	4.52	8.18	3.71
Transaction Deposits	—.—	82.40	61.99	35.51	3.32	7.35	30.68	13.45	9.34	− 3.33	− 3.76
Savings Deposits	—.—	37.70	36.22	30.43	22.94	47.44	58.57	35.34	14.99	22.44	5.50

Source: INTERNATIONAL MONETARY FUND (1986).

A detailed examination of the composition of the commercial bank's portfolio over the last decade (Table 2) yields further insights into the problems currently faced by the Saudi financial community:

1. reserves as a percent of total assets have fallen from 49.08% in 1978 to 8.78% in 1985 (up from a low of 6.48% in 1983);

2. despite the decline in oil revenues, foreign assets increased from 25.63% of total assets in 1978 to 50.88% in 1981, levelling off only slightly to 49.40% in 1985; domestic lending showed a similar pattern, increasing from 25.29% of total assets in 1978 to 47.96% in 1980 and stabilizing at 41.82% by 1985;

3. transaction deposits followed a pattern similar to reserves, decreasing from 66.63 percent of total assets to 32.20 percent by 1985;

4. reserves have shown the most erratic year-to-year movement, with savings deposits experiencing the most stability;

5. the most disturbing trends in the last several years has been the

negative growth in transaction deposits in 1984 and 1985 and the rapid decline in domestic lending (in the wake of a fairly strong foreign asset accumulation in 1984 and 1985).

According to Abdeen and Shook (1984, p. 68), one of the major failures of the Saudi financial system has been the failure of commercial banks to become increasingly involved in the kingdom's economic diversification effort. This fact is reflected in several of the major movements in the overall composition of assets in the financial system (Table 3):

1. the major trend over the 1975-85 period has been the decline in the percentage of assets held by the Saudi Arabian Monetary Agency (from 89.9% in 1975 to 55.22% in 1985);

2. the specialized banks have shown rapid growth, increasing their share of total financial assets in the kingdom from 0.09% in 1975 to 24.94 percent in 1985;

3. the commercial banks have shown steady if not spectacular growth, increasing their share of total financial assets in the kingdom from 10.0% in 1975 to 19.84% in 1985;

4. SAMA has experienced negative asset growth over 1983, 1984

TABLE 3.

SAUDI ARABIA: ASSETS OF THE BANKING SYSTEM, 1975-85
(Billions of Riyals)

	Year										
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Total Assets											
Saudi Arabian Monetary Agency	136.54	180.84	208.27	198.95	207.46	290.75	439.88	484.22	463.49	421.52	398.00
Commercial Banks	15.19	25.28	34.99	48.07	58.51	77.67	104.88	121.97	127.48	137.91	143.03
Specialized Banks	0.14	16.46	36.24	52.04	68.18	90.25	112.10	136.56	153.22	170.24	179.75
Total	151.87	222.58	279.06	299.06	334.13	458.67	656.86	742.75	744.19	729.67	720.78
% of Total											
Saudi Arabian Monetary Agency	89.91	81.25	74.52	66.53	62.09	63.39	66.97	65.19	62.28	57.77	55.22
Commercial Banks	10.00	11.36	12.52	16.07	17.51	16.93	15.97	16.42	17.13	18.90	19.84
Specialized Banks	0.09	7.40	12.97	17.40	20.40	19.68	17.07	18.39	20.59	23.33	24.94
% Rate of Growth											
Saudi Arabian Monetary Agency	—.—	32.44	15.27	− 4.48	4.28	40.15	51.29	10.08	− 4.28	− 9.06	− 5.58
Commercial Banks	—.—	66.43	120.17	46.30	•21.72	32.75	35.03	16.29	4.52	8.18	3.71
Specialized Banks	—.—	8122.22	75.27	34.16	30.98	32.41	24.21	21.82	12.20	11.11	5.59
Total	—.—	46.56	25.57	7.00	11.73	37.27	43.21	13.08	0.19	− 1.95	− 1.22

Source: INTERNATIONAL MONETARY FUND (1986).

and 1985, while the commercial and specialized banks have experienced a rapid deceleration in their portfolios.

Clearly, much of the financing of private sector activity usually assumed by commercial banks at the Saudi Arabian level of development has been assumed by the government subsidized specialized banks. Given the inability of the government to maintain the level of subsidies given to the

TABLE 4.

SAUDI ARABIA: COMMERCIAL BANK CREDIT BY ECONOMIC ACTIVITY, 1970-1977
(Billions of Riyals)

Sector	Year							
	1970	1971	1972	1973	1974	1975	1976	1977
Agriculture	9 (0.6)	10 (0.6)	10 (0.6)	11 (0.8)	20 (0.7)	32 (0.5)	52 (0.5)	67 (0.7)
Manufacturing	91 (5.9)	91 (5.6)	112 (6.9)	102 (7.1)	221 (7.2)	1001 (15.3)	1169 (12.5)	1138 (11.8)
Mining	27 (1.7)	38 (2.3)	27 (2.3)	35 (2.4)	24 (0.8)	67 (1.0)	41 (0.4)	36 (0.4)
Electricity, Water	30 (1.9)	75 (4.6)	83 (5.1)	56 (3.9)	116 (3.8)	142 (2.2)	299 (3.1)	244 (2.5)
Building & Costruction	308 (20.0)	249 (15.3)	266 (16.4)	302 (20.9)	518 (16.9)	1437 (21.9)	2218 (23.0)	2467 (25.6)
Commercial	525 (34.0)	536 (32.9)	569 (35.1)	376 (24.2)	1176 (38.5)	2338 (35.7)	3700 (38.4)	3315 (34.4)
Transport & Communication	38 (2.5)	59 (3.6)	27 (1.7)	41 (2.8)	105 (3.4)	192 (2.9)	231 (2.4)	163 (1.7)
Finance	135 (8.7)	148 (9.1)	121 (7.5)	85 (5.9)	63 (2.1)	68 (1.0)	163 (1.7)	104 (1.1)
Services	16 (1.0)	22 (1.4)	19 (1.2)	37 (2.6)	67 (2.2)	133 (2.0)	234 (2.4)	203 (2.1)
Other	364 (23.6)	401 (24.6)	375 (23.2)	400 (27.7)	478 (24.5)	1136 (17.3)	1525 (15.9)	1911 (19.8)
Total	1543 (100.0)	1629 (100.0)	1619 (100.0)	1445 (100.0)	3058 (100.0)	6548 (100.0)	9635 (100.0)	9648 (100.0)

Source: Arabian Monetary Agency, *Annual Report*, various issues.
( ) = % of total.

TABLE 5.

SAUDI ARABIA: COMMERCIAL BANK CREDIT BY ECONOMIC ACTIVITY, 1978-1985
(Billions of Riyals)

Sector	Year							
	1978	1979	1980	1981	1982	1983	1984	1985
Agriculture	93 (0.7)	249 (1.0)	209 (0.6)	304 (0.9)	421 (0.8)	651 (1.1)	1087 (1.8)	1048 (1.7)
Manufacturing	1443 (10.8)	2040 (8.5)	2553 (7.8)	3600 (10.8)	4885 (9.5)	5451 (9.6)	4841 (7.9)	6302 (10.0)
Mining	117 (1.3)	525 (2.2)	727 (2.2)	331 (1.0)	274 (0.5)	167 (0.3)	327 (0.5)	923 (1.5)
Electricity, Water	469 (3.5)	837 (3.5)	913 (2.8)	1058 (3.2)	1186 (2.3)	1400 (2.5)	1078 (1.8)	1511 (2.4)
Building & Costruction	2930 (22.1)	5447 (22.8)	7132 (21.9)	8714 (26.0)	11519 (22.9)	13089 (23.0)	11458 (18.7)	13048 (20.8)
Commercial	4520 (34.1)	8458 (35.4)	12541 (34.8)	15143 (45.2)	17747 (34.7)	19363 (34.1)	25746 (42.0)	22772 (36.2)
Transport & Communication	316 (2.4)	487 (2.0)	884 (2.7)	1017 (3.0)	2725 (5.3)	2987 (5.3)	3634 (5.9)	3839 (6.1)
Finance	225 (1.7)	439 (1.8)	653 (2.0)	917 (2.7)	774 (1.5)	1251 (2.2)	1451 (2.4)	1765 (2.8)
Services	426 (3.2)	835 (3.5)	1315 (4.0)	1610 (4.8)	1933 (3.8)	1445 (2.5)	2484 (4.1)	2996 (4.8)
Other	2821 (21.3)	4561 (19.1)	5713 (17.5)	8301 (24.8)	9706 (19.0)	11058 (19.4)	9183 (15.0)	8634 (13.7)
Total	13250 (100.0)	23878 (100.0)	32640 (100.0)	33533 (100.0)	51170 (100.0)	56863 (100.0)	61299 (100.0)	62838 (100.0)

Source: Arabian Monetary Agency, *Annual Report*, various issues.
( ) = % of total.

specialized banks, the major factor in affecting the private sector over the next several years will be the ability and willingness of the commercial banks to divert assets from foreign to domestic lending.

The asset growth of the specialized banks (largely the Saudi Arabian Agricultural Bank and the Saudi Industrial Development Bank) are reflected (Tables 4 and 5) in the sectoral composition of commercial bank lending:

1. by far the greatest volume of commercial bank lending has been for construction and commerce – these two sectors accounted for 54% of commercial bank loans in 1970, increasing to 57% in 1980 and 1985;

2. loans to the agricultural sector have averaged less than one percent of total commercial bank credit;

3. while manufacturing increased its share of commercial bank loans from 5.9% in 1970 to 15.3% in 1975, it has not been able to maintain this share, and has stabilized in the 9-10 percent range.

Already the banks are cautious of too heavy involvement in the construction sector. Not only has the fall in government spending diminished contract awards in this area, but the initial stage of development, with its overriding emphasis upon construction, has largely passed. The Fourth Development Plan (1985-90) budgets growth in the construction sector to actually decline at a rate of 2.5 percent per annum (compared with a decline of 1.2 percent per annum during the Third Plan period – 1980-85).

1. Historically, the commercial banks have been financial "gap-fillers" in Saudi Arabia. Unable to compete with the cheap finance offered by, for example, the Saudi Arabian Agricultural Bank (SAAB), or the Saudi Industrial Development Fund (SIDF) and the Real Estate Development Fund, the banks have exploited those areas not favored by government finance. These have included, principally, the finance of international trade, construction finance related to residential building for foreign workers and office premises and involvement in industrial and manufacturing finance as a result of the ability of the SIDF to offer only 50 percent of any project financing. Additionally, the attractiveness of overseas investments has been strong, given the risk and uncertainty often attached to domestic lending.

2. The short-run alternative, of course, is for the commercial banks in Saudi Arabia to extend operations in the international markets. The absence of sufficient domestic outlets for funds has in the past allowed a strong placement of funds abroad; this could be accentuated in future by still more foreign branches.

3. One financial gap which the commercial banks have been reluctant to fill is that of small business finance. Saudi Arabia is still predominantly a "small business" economy; the government has not yet found a complete answer financing the small businessman. The SIDF caters almost exclusively to large projects. The Third Development Plan called for small-business finance, but this did not materialize. The Fourth Plan does the same but with reduced government funding, the likelihood is that the commercial banks will be called upon to provide this service. As small firms grow more

accustomed to drawing up financial statements, so commercial banks can more meaningfully assess the viability of financing them.

4. Throughout the 1970s and early 1980s the Saudi Arabian Monetary Agency (SAMA) has taken a more dominant role in bank regulation. This was the result of the 1966 Banking Control Law and in particular, the desire for a complete Saudi-ization of banks. This has been followed by much tighter regulation of the money changers who previously fell outside the regulatory process, and who effectively determined the operations of the commercial banks. Future commercial bank operations will ultimately be determined within the framework laid down by SAMA.

5. Despite a promise of balanced budgets over the Fourth Plan period, one cannot rule out the possible requirement of budget deficit financing, given the current shortfall in oil revenues and the apparent inability of the government to control current expenditure. In January of 1984, SAMA experimented with a 90 day bill. This was not totally successful, largely because the banks were reluctant to enter the market. But obviously government domestic borrowing on a larger scale would open up more potential business for the commercial banks.

6. A further difficult issue currently pressing, and one which SAMA cannot stand back from indefinitely, is the question of enforcement of interest payments on outstanding loans. This combined with decreases in property prices gives the banks a series of difficulties with which to deal over the next few years.

7. In many ways all of this necessitates a new approach to banking in Saudi Arabia. There is a short term problem associated with the oil market and reduced government expenditure, but bankers should grow more accustomed to thinking long term. Many of the problems currently surfacing are the result of short-sighted policies in the 1970s. Over investment in some sectors, noticeably construction were predictable; the banks in many ways were partly to blame for financing the over ambitious schemes of many of their clients without investigating the nature and development of the long run market.

The current danger in Saudi Arabia is that banks and private sector alike will react in the opposite direction by failing to providing an adequate level of financing, as a consequence of short term signals currently affecting decision-making in the kingdom.

Interest Rates, Saudi Bank Deposits and Foreign Assets

Although it might be expected that the rate of commercial bank de-

mand deposit growth should have accelerated during the 1970s with the advent of Saudi-ization, the data for the commercial banks reported by the Saudi Arabian Monetary Agency do not appear to confirm this hypothesis. As Table 1 indicates, there was a rapid increase in demand deposits over the early period following Saudi-ization the value almost trebling between June 1976 and June 1978; yet demand deposits appear to have virtually stagnated between September 1978 and the end of 1980.

One would expect that, with the development of the country, banks should have been gaining deposits, perhaps at the expense of the money changers, or more likely as a result of checking being substituted for cash transactions. Admittedly, the rate of growth of the currency in circulation slowed down in 1978 and 1979, but the contraction in its growth rate was much less marked than the fall in the growth rate for demand deposits.

In addition, it is unlikely that the relative stagnation in demand deposits after September 1978 was due to any slowing down in domestic economic activity, as the rate of growth of GDP actually rose from a rate of 5.9 percent in 1977-78 to 10.9 percent in 1979-80. This of course reflected developments in the oil sector, especially the price rises which occurred in 1979 from $14 a barrel to over $30. The increase in oil revenues enabled the government to increase its expenditure substantially by over 27 percent during 1979 compared to an increase of only 7 percent two years earlier, when with decreasing oil income the budget actually ran into deficit. The private sector of the economy was also more buoyant in the second half of the 1976-81 period; indeed its growth was well above that of the public sector. As private businesses and individuals constitute the main commercial bank customers, this is a further reason for expecting an acceleration in the growth of demand deposits rather than a levelling off (Wilson, 1982a, p. 45).

If internal factors cannot be used to explain the shortfall in demand deposit growth, can external causes be held responsible, especially given the openness of the Saudi Arabian economy in general and its financial markets in particular?

The major factors which Wilson (1982a, p. 45) believes have significantly influenced flows within the kingdom's domestic banking system have been the large increase in interest rates in international financial markets, especially during the late 1970s and early 1980s. These rates resulted in a substantial differential between the returns available in international markets and those offered in Saudi Arabia, where the authorities not only object to usury on Islamic grounds, but also feel it would be inappropriate to

penalize private sector borrowers on whom so much of the country's development hopes depend.

The interest rate on three month euro dollar deposits [1] is a useful proxy for the spectrum of rates prevailing in international markets, as its movements tend to reflect changes generally. In the Saudi Arabian context it is particularly relevant, as substantial funds are placed directly into euro dollars by the Saudi Arabian Monetary Agency, the commercial banks, and even private investors. To test the significance of international interest rates in reducing the expansion of demand deposits in Saudi Arabia the following model was used:

$$\text{(I)} \quad \underset{?}{D} = f(\underset{+}{DL}, \underset{+}{GENAN}, \underset{-}{GRO}, \underset{+}{EURO}, \underset{+}{INFCPI}, \underset{+}{CBFA}, \underset{?}{D73})$$

where D = a measure of commercial bank deposits – total deposits, and demand deposits;
DL = deposits lagged one year;
$GENAN$ = government expenditures;
GRO = government oil revenues;
$EURO$ = the euro market interest rate;
$INFCPI$ = the inflation rate;
$CBFA$ = the foreign assets of the commercial banking system;
$D73$ = a dummy variable to test for possible structural shifts associated with the oil price increases in 1973/74.

Another variable, government deposits in commercial banks (*CBGD*), was included in the regressions to see if this policy had been effective in increasing deposits.

This specification with the lagged deposit ratio assumes a distributed lag relationship (Griliches, 1967), where deposits gradually adjust over time to increases in government investment and or commercial bank foreign assets [2]. The results reveal several interesting patterns:

[1] The euro interest rate is taken as line 60d in the INTERNATIONAL MONETARY FUND (1986).

[2] All of the results presented here were obtained through ordinary least squares regression estimates. First order serial correlation was corrected for by using the Cochrane-Orcutt iterative estimation procedure.

(1) $CBTD = \underset{(3.37)}{0.37\ CBDDL} + \underset{(4.31)}{0.13\ GENAN} - \underset{(-1.73)}{0.39\ EURO} - \underset{(-1.62)}{15.36\ INFCPI}$
$+ \underset{(3.44)}{0.40\ CBFA} + \underset{(2.81)}{7.89\ D73} - \underset{(-0.22)}{0.04\ RHO}$
$r2 = 0.997;\ F = 687.62;\ DW = 2.05$

(2) $CBTD = \underset{(10.70)}{0.79\ CBTDL} + \underset{(2.06)}{0.09\ GENAN} - \underset{(-1.77)}{0.41\ EURO} - \underset{(-0.37)}{3.09\ INFCPI}$
$+ \underset{(2.58)}{1.29\ CBGD} + \underset{(1.98)}{1.98\ D73} - \underset{(-1.11)}{0.22\ RHO}$
$r2 = 0.997;\ F = 770.33;\ DW = 2.17$

(3) $CBTD = \underset{(8.28)}{0.82\ CBTDL} + \underset{(6.76)}{0.06\ GRO} - \underset{(-2.30)}{0.38\ EURO} - \underset{(-1.58)}{11.44\ INFCPI}$
$+ \underset{(0.72)}{0.08\ CBFA} + \underset{(2.05)}{4.68\ D73} - \underset{(-0.45)}{0.09\ RHO}$
$r2 = 0.998;\ F = 1271.01;\ DW = 2.05$

(4) $CBTD = \underset{(41.61)}{0.89\ CBTDL} + \underset{(5.57)}{0.09\ GRO} - \underset{(-1.65)}{0.25\ EURO} - \underset{(-1.45)}{7.44\ INFCPI}$
$- \underset{(-1.52)}{0.88\ CBGD} + \underset{(1.00)}{1.77\ D73} - \underset{(-1.33)}{0.26\ RHO}$
$r2 = 0.999;\ F = 1827.69;\ DW = 2.25$

(5) $CBDD = \underset{(8.00)}{0.89\ CBDDL} + \underset{(7.97)}{0.06\ GRO} - \underset{(-2.96)}{0.44\ EURO} - \underset{(-2.36)}{15.07\ INFCPI}$
$- \underset{(-0.70)}{0.04\ CBFA} + \underset{(3.10)}{5.56\ D73} + \underset{(0.90)}{0.18\ RHO}$
$r2 = 0.995;\ F = 387.23;\ DW = 2.05$

(6) $CBDD = \underset{(18.82)}{0.65\ CBDDL} + \underset{(8.16)}{0.10\ GRO} - \underset{(-2.55)}{0.20\ EURO} - \underset{(-4.40)}{19.09\ INFCPI}$
$- \underset{(-3.84)}{1.55\ CBGD} + \underset{(3.28)}{4.21\ D73} - \underset{(-0.17)}{0.03\ RHO}$
$r2 = 0.998;\ F = 1007.18;\ DW = 2/01$

(7) $CBDD = \underset{(0.44)}{0.09\ CBDDL} + \underset{(5.68)}{0.21\ GENAN} - \underset{(-1.63)}{0.29\ EURO} - \underset{(-1.88)}{17.49\ INFCPI}$
$- \underset{(-0.25)}{0.02\ CBFA} + \underset{(2/76)}{7.06\ D73} - \underset{(-1.27)}{0.25\ RHO}$
$r2 = 0.995;\ F = 368.89;\ DW = 2.12$

$$(8)\quad CBDD = \underset{(0.80)}{0.20\ CBDDL} + \underset{(2.44)}{0.17\ GENAN} - \underset{(-1.54)}{0.33\ EURO} - \underset{(-2.13)}{17.52\ INFCPI} - \underset{(0.57)}{0.32\ CBGD} + \underset{(3.40)}{7.65\ D73} - \underset{(-0.71)}{0.14\ RHO}$$

$$r2 = 0.994;\ F = 313.30;\ DW = 2.04$$

1. total deposits (*CBTD*) in the Saudi Arabian commercial banking system are fairly sensitive to euro rates (*EURO*) decreasing with increased interest rates in these markets;

2. the distributed lag formulation appears to describe the adjustment of demand deposits to changes in oil revenues and variables such as increases in the foreign assets of the commercial banks (*CBFA*);

3. a significant structural shift took place with the oil price revolution in 1973-74;

4. inflation in Saudi Arabia appears to drive deposits out of the kingdom, and/or reduce their rate of expansion;

5. oil revenues (*GRO*) tend to give slightly better results than government expenditures (*GENAN*);

6. the same patterns hold with respect to demand deposits with the exception that demand deposits do show a much closer relationship with oil revenues than government expenditures;

7. the impact of government oil revenues on demand deposits follows the distributed lag pattern found above for total deposits; while government expenditures impact directly on demand deposits with their effect not spread over time.

In general, if the purpose of increased government deposits with the banking system was to increase deposits, this policy has not been successful.

These results are somewhat at odds with those obtained by Wilson (1982a [3], p. 45-46), who concluded that:

> The regression results therefore point to the need for caution in ascribing the relative stagnation in bank deposits to rises in euro dollar rates... It would be erroneous to conclude that external interest-rate factors react through domestic demand deposit to cause liquidity shortages in Saudi Arabia, although this effect cannot be dismissed.

Wilson speculated that the banks themselves, rather than their depositors or potential depositors, respond to external interest stimuli by holding

[3] Wilson's data is monthly, compared with the annual data used here. His regressions were for the period October 1978 to April 1981, whereas the analysis here covered the period 1960-85.

foreign funds which might otherwise be made available to domestic borrowers (Wilson, 1982a, p. 48).

To determine whether commercial banks may have restricted local business to take advantage of higher yielding euro assets, the following model (with expected signs) of private sector credit from the commercial banking system was estimated along lines similar to (I) and (II) above:

$$\text{(II)}\quad PSC = f(PSCL,\ GENAN,\ GRO,\ EURO,\ INFCPI,\ CBFA,\ D73)$$
$$\qquad\qquad\quad +\quad +\quad -\quad -\quad -\quad -\quad +$$

where:

PSC = private sector credit from the commercial banking system;
PSCL = private sector credit lagged one year;
EURO = the euro interest rate;
GENAN = government expenditure;
GRO = government oil revenues;
INFCPI = consumer price inflation;
D73 = dummy variable to test for structural shifts associated with the 73/74 oil price increases.

Again, to test for the robustness of the results, government deposits in commercial banks (*CBGC*) were included in the equation.

Again several interesting patterns emerge from the regressions:

$$\text{(9)}\quad CBPS = \underset{(4.99)}{1.10\ CBPSL} + \underset{(4.83)}{0.12\ GENAN} + \underset{(2.59)}{0.44\ EURO} + \underset{(1.13)}{7.34\ INFCPI}$$
$$- \underset{(-1.70)}{0.33\ CBFA} - \underset{(-1.20)}{2.36\ D73} + \underset{(0.51)}{0.10\ RHO}$$
$$r2 = 0.995;\ F = 396.32;\ DW = 1.99$$

$$\text{(10)}\quad CBPS = \underset{(11.74)}{0.70\ CBPSL} + \underset{(6.12)}{0.13\ GENAN} + \underset{(3.58)}{0.64\ EURO} + \underset{(2.23)}{13.04\ INFCPI}$$
$$- \underset{(-3.38)}{0.91\ CBGD} - \underset{(-2.15)}{3.90\ D73} + \underset{(2.32)}{0.42\ RHO}$$
$$r2 = 0.992;\ F = 245.09;\ DW = 1.79$$

$$\text{(11)}\quad CBPS = \underset{(2.38)}{1.30\ CBPSL} + \underset{(1.28)}{0.03\ GRO} + \underset{(1.48)}{0.37\ EURO} - \underset{(-1.14)}{9.51\ INFCPI}$$
$$- \underset{(-1.14)}{0.38\ CBFA} + \underset{(2.30)}{2.30\ D73} - \underset{(0.90)}{0.01\ RHO}$$
$$r2 = 0.989;\ F = 245.09;\ DW = 1.79$$

$$(12)\quad CBPS = \underset{(19.19)}{0.92\ CBPSL} + \underset{(2.05)}{0.05\ GRO} + \underset{(2.03)}{0.52\ EURO} - \underset{(-1.06)}{8.11\ INFCPI} - \underset{(-1.58)}{1.30\ CBGD} + \underset{(0.54)}{0.54\ D73} - \underset{(0.09)}{0.02\ RHO}$$

$$r2 = 0.991;\ F = 236.89;\ DW = 1.97$$

The results indicate that:

1. private credit exhibits a strong distributed lag relationship with government expenditures, with government expenditures (*GENAN*) considerably stronger than government oil revenues (*GRO*) in affecting private sector credit;

2. higher euro market rates, contrary to expectations, appear to result in increased commercial bank credit to the private sector;

3. however, the foreign assets held by the commercial banks appear to have a weak, adverse impact on commercial bank credit to the private sector.

In general, therefore, the fears expressed by some observers that commercial banks would likely shift their assets from domestic loans to investments outside the kingdom during periods of relatively high euro interest rates, do not appear to be borne out. On the other hand there does appear to be a general portfolio effect whereby increased foreign asset holdings on the part of the commercial banks tend to reduce the overall volume of credit to the private sector.

The third relationship involves the foreign asset holdings of the commercial banks. Here it is likely that another distributed lag relationship holds, with foreign assets increasing with increased government expenditure, foreign liabilities of the commercial banks, euro rates, and domestic inflation. More formally, along the lines of I and II above:

$$CBFA = f(\underset{+}{CBFAL},\ \underset{+}{GRO},\ \underset{+}{EURO},\ \underset{+}{INFCPI},\ \underset{+}{CBFAL},\ \underset{?}{D73},\ \underset{?}{AGENAN})$$

where:

CBFA = foreign assets held by the commercial banks;
CBFAL = foreign assets held by the commercial banks lagged one year
GRO = government oil revenues;
CBFL = foreign liabilities of the commercial banks;
EURO = the euro interest rate;
D73 = shift dummy variable to test for structural shifts associated with 1973-74 oil revenue increases;

AGENAN = dummy slope variable to test for structural shifts associated with the 1973-74 oil revenue increases.

Again private sector deposits in the commercial banking system (*CBTD*), private sector quasi deposits in the commercial banking system (*CBQD*), and government expenditures (*GENAN*), and government deposits in commercial banks (*CBGD*) were also added to test the robustness of the results.

The results [4]:

(13) $$CBFA = \underset{(24.36)}{0.90\ CBFAL} + \underset{(3.64)}{0.03\ GRO} + \underset{(3.00)}{0.63\ EURO} + \underset{(2.23)}{16.50\ INFCPI} + \underset{(4.60)}{1.32\ CBFL} - \underset{(-3.64)}{7.86\ D73} + \underset{(0.86)}{0.17\ RHO}$$
$$r2 = 0.994;\ F = 361.82;\ DW = 1.97$$

(14) $$CBFA = \underset{(17.15)}{0.94\ CBFAL} + \underset{(2.17)}{0.06\ GRO} + \underset{(2.17)}{0.74\ EURO} + \underset{(0.43)}{4.51\ INFCPI} - \underset{(-0.68)}{0.65\ CBGD} - \underset{(-1.13)}{3.77\ D73} + \underset{(1.17)}{0.23\ RHO}$$
$$r2 = 0.986;\ F = 144.27;\ DW = 1.64$$

(15) $$CBFA = \underset{(11.49)}{0.89\ CBFAL} + \underset{(0.77)}{0.03\ GENAN} + \underset{(3.66)}{0.97\ EURO} + \underset{(2.30)}{22.45\ INFCPI} + \underset{(3.53)}{1.42\ CBFL} - \underset{(-2.85)}{8.36\ D73} + \underset{(1.38)}{0.27\ RHO}$$
$$r2 = 0.988;\ F = 173.70;\ DW = 1.91$$

(16) $$CBFA = \underset{(3.96)}{0.58\ CBFAL} + \underset{(1.35)}{0.02\ GRO} + \underset{(2.61)}{0.73\ EURO} + \underset{(1.88)}{20.48\ INFCPI} + \underset{(2.61)}{0.38\ CBTD} - \underset{(-2.56)}{8.31\ D73} + \underset{(1.30)}{0.25\ RHO}$$
$$r2 = 0.989;\ F = 186.55;\ DW = 1.72$$

[4] The dummy variable *D73* consists of values of 0 for 1960-72 and 1 for the period 1973-85. The *AGENAN* is a slope dummy variable introduced to test for any change in the impact, i.e. slope, of the regression equation associated with increased government expenditures and commercial bank foreign assets. It was created by multiplying *D73* times *GENAN*. A negative sign would indicate that government expenditures as a proportion of commercial bank foreign assets declined after 1973-74.

$$(17)\quad CBFA = \underset{(1.81)}{0.38\,CBFAL} + \underset{(4.80)}{0.05\,GRO} + \underset{(2.25)}{0.45\,EURO} + \underset{(1.14)}{8.30\,INFCPI} + \underset{(1.90)}{0.68\,CBFL} + \underset{(2.45)}{0.87\,CBQD} - \underset{(-3.08)}{6.19\,D73}$$
$$r2 = 0.996;\ F = 510.2;\ DW = 2.00$$

$$(18)\quad CBFA = \underset{(2.36)}{0.44\,CBFAL} + \underset{(2.20)}{1.27\,GENAN} + \underset{(2.91)}{0.91\,EURO} + \underset{(2.52)}{26.18\,INFCPI} + \underset{(3.54)}{0.61\,CBTD} - \underset{(-2.29)}{1.32\,AGENAN} + \underset{(5.40)}{0.74\,RHO}$$
$$r2 = 0.941;\ F = 32.30;\ DW = 1.68$$

$$(19)\quad CBFA = \underset{(6.83)}{0.86\,CBFAL} + \underset{(2.42)}{1.39\,GENAN} + \underset{(1.04)}{1.04\,EURO} + \underset{(2.48)}{26.70\,INFCPI} + \underset{(2.45)}{1.16\,CBFAL} + \underset{(1.45)}{0.38\,CBDD} - \underset{(-2.50)}{1.44\,AGENAN} + \underset{(5.74)}{0.76\,RHO}$$
$$r2 = 0.941;\ F = 32.43;\ DW = 1.97$$

indicate that:

1. as anticipated, commercial bank foreign assets exhibit a strong distributed lag, particularly with regard to oil revenues;
2. increases in the Euro rates tend to result in Saudi commercial banks increasing their holdings of foreign assets;
3. there appears to be a fairly close link – one to one – between foreign assets and foreign liabilities of the commercial banks;
4. foreign assets appear to be associated largely with quasi deposits rather than demand deposits in commercial banks (as evidenced by the statistically significant sign on quasi deposits and the statistically significant sign on total deposits, but not demand deposits in the commercial banks);
5. increased rates of domestic inflation apparently create incentives for banks to shift assets from domestic to foreign in order to maintain positive real returns;
6. Government deposits in the commercial banks do not appear to be used for foreign asset acquisition.

It is apparent, therefore, that periods of high interest rates do pose a fairly serious problem for the Saudi banking system. The results presented above indicate that increased euro rates tend to significantly reduce the volume of demand deposits in commercial banks and tend to increase the holdings of foreign assets on the part of the commercial banks. In addition it appears that high euro rates, while not impacting directly on private sector credit from the commercial banks, may do so indirectly through the negative

impact that a shift into foreign assets has on the portfolios of the commercial banks.

It is clear from the analysis and discussion above that the government has the ability through altering its deposits in commercial banks to play an active role in stabilizing the level of deposits in the financial system. To determine how effective the government has been in this regard a model was constructed along the lines above whereby

(IV) $CBGD = f(CBGDL,\ GENAN,\ GRO,\ EURO,\ INFCPI,\ CBD,\ D73)$

$$+ \quad + \quad + \quad ? \quad ? \quad - \quad ?$$

where:

CBGD = government deposits in commercial banks;
GENAN = government expenditures;
GRO = government oil revenues;
EURO = the euro interest rate;
INFCPI = the rate of consumer price inflation;
CBDD = demand deposits in commercial banks;
D73 = dummy variable to account for structural change associated with the 1973-74 oil price increases.

Based on the assumed signs, we may conclude that the government policy of deposits in the commercial banking system would stabilize deposits if a negative sign was found on the deposit term i.e., government deposits increased during periods of low private sector deposits.

The analysis yielded:

$$(20)\quad CBGD = \underset{(0.77)}{0.07\ CBGDL} + \underset{(8.74)}{0.03\ GRO} + \underset{(1.54)}{0.08\ EURO} - \underset{(-1.28)}{3.23\ INFCPI}$$
$$- \underset{(-2.40)}{0.06\ CBDD} - \underset{(-1.07)}{1.07\ D73} - \underset{(-1.29)}{0.25\ RHO}$$
$$r2 = 0.957;\ F = 67.38;\ DW = 1.81$$

Dropping the insignificant dummy yielded:

$$(21)\quad CBGD = \underset{(1.15)}{0.10\ CBGDL} + \underset{(9.12)}{0.03\ GRO} + \underset{(1.14)}{0.06\ EURO} - \underset{(-4.81)}{5.70\ INFCPI}$$
$$- \underset{(-6.14)}{0.08\ CBDD}$$
$$r2 = 0.962;\ F = 50.85;\ DW = 1.83$$

$$(22)\quad CBGD = \underset{(10.03)}{0.03\,GRO} + \underset{(2.20)}{0.11\,EURO} - \underset{(-2.73)}{0.03\,CBDD} - \underset{(-5.20)}{1.67\,D73}$$
$$r2 = 0.953;\ F = 81.37;\ DW = 1.90$$

Summary and Conclusions

Parallel to the rapid economic development, there has also been an expansion of banking and finance institutions in Saudi Arabia. However, money, banking and the basic rules of finance are essentially the same as they were twenty-five years ago when the Saudi society and economy were stagnant (Al-Timimi, 1985, p. 83).

SAMA's rules of operation today in an open and affluent economy are no different from what they were then. It still provides the medium of exchange with limited control over credit in the economy. The reasons for this are historical and social and include the rather fortunate financial position of Saudi Arabia, which has made simple, indigenous and unique rules and policies of monetary management still functional (Al-Timimi, 1985, p. 83).

However, it appears from the analysis above that the country may no longer have the luxury of sustaining a somewhat antiquated financial structure. It is clear from the results above that the country may be very vulnerable to a serious liquidity crisis if significant increases in euro rates were to take place in an environment in which the government was unable because of slack revenues to significantly increase its expenditures. Clearly, recent movements in the direction of incorporating aspects of the interest rate into the financial system should be sped up if the kingdom is to sustain steady growth during the current period of relatively low and stagnant oil revenues.

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CONSEGUENZE DEL SOTTOSVILUPPO FINANZIARIO IN ARABIA SAUDITA

Scopo di questo articolo è di quantificare al massimo l'impatto che la diminuzione dei ricavi petroliferi e quindi della spesa pubblica probabilmente avranno sul portafoglio delle banche commerciali dell'Arabia Saudita. Lo scopo finale dell'analisi è di determinare in quale misura questi sviluppi influenzeranno il volume del credito privato destinato al settore privato. Come obiettivo collegato viene esaminata l'abilità della banca centrale (Saudi Arabian Monetary Agency) nel controllo dell'offerta di moneta dato lo sviluppo piuttosto primitivo del sistema finanziario interno, i limitati strumenti monetari posseduti dalla SAMA e il fatto che più alti tassi d'interesse negli euromercati e limitate restrizioni sui flussi di capitale possono determinare ingenti deflussi di moneta dal regno.