

Financial Intermediation and Economic Growth of Jordan 1964 - 1988

Dr Ali H. Magableh

**Dept of Banking & Finance
Yarmouk University**

ABSTRACT

Until recently, the economics and financial literature placed little attention on the role that financial intermediation can play in accelerating the rate of economic development in less Developed Countries (LDCs). This has been changed now, however, where some instrumental role has been emphasised for financial intermediation in the process of economic development and growth. It is argued that an expansion of the financial system, size and intermediation in LDCs tends to increase the level of savings, thus increasing the funds available for productive investment which induces higher economic growth and development. This research attempts to measure the relationship between financial intermediation and economic growth in Jordan for the years 1964 - 1988. A model of this relationship is built and tested. It is concluded that some role is played by the financial intermediation ratio FIR on Saving, Investment and Economic growth.

FINANCIAL INTERMEDIATION AND ECONOMIC DEVELOPMENT OF JORDAN 1964 - 1988

Preview

The link of Economic Development to financial intermediation neglected almost totally nearly three decades ago, when Gurley and Shaw G&S [1, pp 240 - 246] reviewed this very important aspect of economic development and stated that economic development institutionalises saving and investment and diversifies channels for loanable funds. Development includes finance as well as goods. G&S connect between finance and the division of labour, on one hand and saving and investment, on the other hand. They emphasise that the financial sector of an economy does matter in the process of economic development.

Keynes [2, pp 175 - 186] for example, discussed the financial sector, by relating the money market equilibrium to the general equilibrium of the economy as a whole. Moreover Keynes assumed a perfect and efficient money market in his analysis, which means that he did not deal directly with the economies of Less Developed Countries, LDCs, because the economies of LDCs' are recognised by imperfections usually.

The two important pillars of financial economic growth, i.e. saving and investment, were discussed with a relatively more emphasis on one of them more than the other in the area of financial intermediation Gupta, [3, pp 249 - 343], Khatkhate, [4, pp 3 - 371], Adams [5, pp 1 - 12] some focus was given on the importance of financial intermediation in raising levels of savings particularly in the rural areas which are assumed to be saving - idle sectors in most LDCs Saving functions for some Asian countries, were estimated conflicting results for the development variable of "Financial Intermediation Ratio" denoted here and thereafter by "FIR." The results were different from country to country. According to his regression analysis, the coefficient of FIR was negative for most of the countries. his conclusion did not support the argument that (FIR) has a significant influence on economic development.

The literature which investigated the relationship between financial intermediation and investment was not as extensive as that on savings. McKinnon [6, p 68] contends that there is a complementarity in LDCs between money and financial assets on one side, and physical assets on the other side. From surveying the discussion of the investment component of financial intermediation, it can be concluded that so far, there is no clear-cut conclusion on the effect of financial development on investment or capital formation. Thus this introduction signals out two things:-

First)

There was a marginal attention given to the role that domestic financial intermediation can play in economic development

Second)

For those who acknowledged the link between these two variables, the impact was a controversial one and, two types of conclusions were formed.

1) there is a positive and significant influence of financial intermediation on economic growth

2) there is a limited impact at most, or none at all, of a financial; intermediation on economic development

The goal of this study is to determine and evaluate the impact that financial intermediation may have on economic development through its effects on savings and investment in Jordan through the period 1964 - 1988. Determining this impact will be beneficial for planning policies in order to achieve the objectives of accelerating national development.

The analysis of this relationship between financial intermediation on one side , and saving, and investment on the other side will follow two paths:

First Path

Analysis of historical data of financial structural change. The pattern and rate of financial change will be calculated by using some measures of financial development.

Second Path

Empirical investigation, where a mathematical model for financial intermediation, savings and investment will be formulated and estimated.

THE HISTORICAL APPROACH

1. WITH RESPECT TO SAVINGS.

A theoretical foundation to the complex relationship between financial intermediation and economic growth, through savings approach, has not been laid firmly. Contradictory conclusions emerged from the work of, Shaw [1, pp240 - 246]. In other words, there is no a priori conclusion about this type of relationship, and the right judgement about it, is to analyse individually any country in question. We are doing just that for Jordan. The task here is to measure various indicators of financial development and relate them to aggregate savings in an attempt to find a possible correlation between the two. The ratio of the total financial assets denoted by FA to the Gross National product denoted by Y that is FA/Y is used as a main indicator of financial development and called as the financial intermediation ratio FIR.

Financial development could be examined by analysing the composition of money and bank deposits. The more the financial sector is developed, the lower the ratio of (currency/demand deposits) will be. The reason for that is preferences of the public that will be altered in favour of demand deposits DD rather than holding cash. The more the banking habits spread, the more the public use checks and demand deposits for various transactions. The initial expansion in the financial structure of LDCs is expected to be reflected through a falling trend in the currency/demand deposits ratio of C/DD.

Table 1 below presents the components of the money at its narrowest definition, which includes currency and demand deposits. Two ratios are measured

The (FIR) ratio

Theoretically, it is expected that FIR, the ratio of money (currency and demand deposits together) to GNP as a narrow form of FIR should first increase, as the financial system develops. The FIR ratio should increase in this case as a result of increase in the level of monetisation. Then it is expected to level off and probably decreases thereafter.

Inspecting Table 1 we find that these three theoretical stages have actually occurred, where the FIR increased from 0.23 in 1964 to 0.65 in 1975, levelled off at an average of 0.49 through the years 1976 - 1981, and started to decline until 1986, where we witnessed an increase in the percentage change in currency holdings during the years 1987, 1988 and that may be a result of expectations. Deviations of the ratio in 1969, 1972 are likely to be random.

The (C/DD) ratio

This ratio showed inconsistent results where it increased from 1.38 in 1964 to 3.58 in 1970, then decreased year after year toward 1978, where it started to rise again slowly but continuously. The political turmoil that accompanied the Zionist aggression of 1967 and continued until 1970, caused a radical tendency of hoarding currency and this is apparent in an accelerated increase during the years 1967 - 1971 at an average of 2.9.

The relatively great saving in Jordan during the years of 1973 on, which is due to the acceleration of the Arab financial aids to the Arab countries, including Jordan, was reflected in the decreasing ratio of C/DD up to 1978. But again the disturbances on the 1980s that resulted from the subsequent depression in Jordan, are clear as the ratio started to increase from 1978 on.

Table 1: Money composition in Jordan 1964 - 1988 (in millions of J.D.)

Year	Currency (C)	% Δ (C)	Demand Deposits (DD)	% Δ (DD)	$\frac{C}{DD}$	$\frac{C+DD}{GNP}$	GNP
1964	23.02		16.73		1.38	0.23	172.36
1965	26.35	0.14	20.77	0.24	1.27	0.26	180.50
1966	30.33	0.15	25.70	0.24	1.18	0.30	185.70
1967	51.52	0.69	23.72	-0.08	2.17	0.52	142.50
1968	63.55	0.23	24.43	0.03	2.60	0.52	166.40
1969	71.29	0.12	24.93	0.02	2.86	0.49	197.40
1970	82.43	0.16	23.03	-0.08	3.58	0.56	187.00
1971	83.01	0.01	24.99	0.09	3.32	0.55	195.90
1972	81.47	-0.02	33.55	0.34	2.43	0.52	218.00
1973	97.48	0.20	41.77	0.25	2.33	0.58	238.10
1974	115.45	0.18	56.51	0.35	2.04	0.62	278.10
1975	138.95	0.20	85.65	0.52	1.62	0.65	343.00
1976	161.36	0.16	115.52	0.35	1.39	0.49	565.10
1977	187.99	0.17	143.00	0.24	1.31	0.50	661.90
1978	219.46	0.17	155.91	0.09	1.41	0.48	788.60
1979	275.39	0.26	197.26	0.27	1.39	0.48	986.00
1980	351.63	0.28	243.14	0.23	1.47	0.50	1199.30
1981	412.31	0.17	289.35	0.19	1.43	0.48	1501.00
1982	469.98	0.14	317.52	0.10	1.48	0.46	1695.40
1983	516.05	0.10	353.37	0.11	1.46	0.45	1770.30
1984	530.50	0.028	347.90	-0.015	1.52	0.47	1853.60
1985	531.80	0.002	316.40	-0.090	1.68	0.45	1881.80
1986	583.90	0.097	312.20	0.013	1.87	0.47	1919.40
1987	655.80	0.123	324.00	0.037	2.02	0.52	1867.90
1988	811.20	0.236	355.60	0.098	2.28	0.63	1865.70

[7, different pages]

1.1 Financial Deepening

The degree of financial deepening represents the extent of expansion of quasi money in relation to total money supply, where quasi money comprises both time and saving deposits. It is possible that the upward trend of currency to demand deposits ratio may be a result of an increase in time and saving deposits (Quasi money). The ratio of quasi money to broad money indicates the ability of the banking system to create credit [8].

In Table 2 the composition of financial assets is introduced and the components are listed; this includes currency, demand deposits, quasi money, capital accounts of banks.

But in Table 3, %changes and ratios needed for our analysis are measured. The ratio of quasi money, QM, to total money supply, MS, that is the degree of financial deepening increased during 1964 - 1966, declined through 1970, and started to increase thereafter. On the other hand the currency, C, to total money supply ration also fluctuated, but in opposite direction of QM/MS ration. The C/MS ratio declined from 42.9% in 1964 to 40.2% in 1966 and from 63.8% in 1970 to 30.9% in 1988.

This exactly complies with the hypothesis that because of the change in the public preferences in favour of quasi money, the expansion of quasi money would lower the hoarding of currency resulting in such ratios of these two tables. Thus, the growth of financial assets signifies financial development and increases the trend of saving flows.

Table 4 in which (As) stands for the financial Assets (A1: currency, A2: demand deposits, A3: quasi money), where total of these three assets represents Money Supply, denoted by M2, and where M2/GNP ratio is a main indicator of financial development, shows and increasing tendency. The increase was continuous, thus indicating the significance of M2/GNP over the sample period. The financial system was successful in terms of quasi-money to GNP ratio.

The success of the financial system could be detected from the success of financial intermediation. There are arguments which maintain that a wide spread of the network of financial institutions and a diversified array of financial instruments will have significant effect on the saving-investment process. Analysis of the financial intermediation ratio FIRS in Jordan, and the ratio of gross national savings to GNP or GNS/GNP reveals that some pattern in their movement did exist. Table (4) also reveals that both variables increased, generally together, and decreased in some phases. The negative sign of GNS/GNP in 1967 was not unusual, because the Israeli aggression at that time cut off the West Bank of Jordan, still under Israeli occupation.

Table 2: Composition of financial assets in Jordan 1964 - 1988 (in millions JD)

Year	Currency	D D	Quasiy Money	Capital Accounts of Banks	Total Financial Assets
1964	23.03	16.73	13.81	2.53	56.10
1965	26.35	20.77	16.99	2.23	66.34
1966	30.33	25.70	19.79	2.26	78.08
1967	51.52	23.82	18.83	2.21	96.38
1968	63.55	24.43	20.84	1.63	110.45
1969	71.29	24.93	22.62	1.47	120.31
1970	82.43	23.03	23.68	1.45	130.59
1971	83.01	24.99	27.11	1.41	136.52
1972	81.47	33.55	31.45	1.41	147.88
1973	97.48	41.77	36.81	1.42	177.48
1974	115.45	56.51	47.83	3.59	223.38
1975	138.95	85.65	63.75	7.47	295.82
1976	161.36	115.52	101.44	11.36	389.68
1977	187.99	143.00	136.66	18.27	485.92
1978	219.46	155.91	231.32	31.40	638.09
1979	275.39	197.26	300.45	35.10	808.20
1980	351.63	243.14	389.99	33.80	1018.56
1981	412.31	289.35	478.22	33.98	1213.86
1982	469.98	317.52	615.84	32.94	1436.28
1983	516.05	353.37	745.74	23.76	1638.92
1984	530.50	347.90	879.30	16.62	1774.32
1985	531.80	316.40	1026.60	28.29	1903.09
1986	583.90	312.20	1175.30	22.54	2094.94
1987	655.80	324.00	1392.30	16.41	2388.51
1988	811.20	355.60	1459.60	3.17	2929.57

[7, different pages]

Table 3: Annual Changes and Some Ratios of Financial Assets 1964 - 1988

Year	Quasi Money %	Total Financial Assets (FA) %	Currency Money Supply %	Quasis Money Total Money %	Total Money Supply (M ₂)
1964	-	-	42.9	25.8	53.57
1965	23.0	18.3	41.1	26.5	64.11
1966	16.5	17.6	40.0	26.1	75.82
1967	4.8	23.4	54.7	19.9	94.17
1968	10.7	14.6	58.4	19.1	108.80
1969	8.5	8.9	59.9	19.0	118.84
1970	4.6	8.5	63.8	18.3	129.14
1971	14.5	4.5	61.4	20.1	135.11
1972	16.0	8.3	55.6	21.5	146.47
1973	17.0	20.0	55.4	17.9	176.06
1974	29.9	25.8	52.5	21.8	219.79
1975	33.3	32.4	48.2	22.1	288.35
1976	59.1	31.7	42.7	26.8	378.32
1977	34.7	24.6	40.2	29.2	457.65
1978	69.4	31.3	36.8	38.1	773.10
1979	29.8	26.6	35.6	38.8	773.10
1980	29.8	26.0	35.7	39.6	984.76
198	22.6	19.2	34.9	40.5	1179.88
1982	28.8	18.3	33.5	43.8	1403.34
1983	21.1	14.1	32.0	46.2	1615.16
1984	17.9	8.3	30.1	50.0	1757.66
1985	16.7	7.3	28.4	54.8	1874.84
1986	14.5	10.0	28.1	56.7	2072.43
1987	18.5	14.0	27.6	58.7	2372.20
1988	4.8	10.1	30.9	55.6	2626.40

[7, different pages]

II. WITH RESPECT TO CAPITAL FORMATION:

The beauty of financial intermediation is that it creates access to foreign sources of finance; besides it basically links between financial surplus units and deficit units in any economy, so it involves the mobilisation of savings to productive investment [8, pp 315 - 345].

Financial intermediaries face a weak money or capital markets in LDCs where the sufficiency of national investment finance depends, of course, largely on the extent of growth of the financial sector, monetary policy, regulations, and control. Sources of finance, both national and foreign, include savings by household, business firms and governments [9 pp 32 - 45].

Foreign savings, symbolised by FS is termed as the "trade gap." It is defined as the import of goods and services, plus net factor payments abroad, minus the exports of these elements. In an equation forms, $FS = M - X$, where M and X are imports and exports, broadly defined. Foreign savings are an alternative (to finance national investment) if we are facing a "Resource gap," which is referred to the case of insufficiency of national savings, i.e., if the flows of national savings GNS lag behind gross domestic investment GDI. To determine the role that the financial system plays in capital formation, it is vital to analyse the workings of the financial system and relate them to the process of capital formation. So the analysis will cover the various measures of financial development and link them to capital formation.

Table 4: Some Measures of Financial Development (1964 - 1988)

Year	M2	FA/GNP = FIR	F3/GNP(%)	GNS/GNP
1964	31.1	32.5	8.0	12.3
1965	35.6	36.7	9.4	13.9
1966	40.8	42.0	10.6	15.0
1967	66.1	67.6	13.2	-2.6
1968	45.4	66.3	12.25	10.4
1969	60.2	60.9	11.5	28.8
1970	69.1	69.8	12.6	14.9
1971	68.9	69.6	13.8	28.8
1972	62.6	67.8	20.5	20.0
1973	73.9	74.5	15.5	14.8
1974	79.0	80.3	17.2	22.5
1975	84.1	86.3	18.6	19.3
1976	66.9	68.9	17.9	23.5
1977	70.1	73.6	20.6	30.9
1978	76.9	80.9	23.9	39.1
1979	78.4	81.9	30.1	28.6
1980	82.1	84.9	32.5	24.3
1981	78.6	80.8	31.8	40.1
1982	82.8	84.7	36.4	43.5
1983	87.4	92.6	40.3	41.2
1984	94.8	98.7	0.47	47.4
1985	99.6	101.1	0.54	54.5
1986	107.9	109.1	0.62	61.2
1987	126.9	127.9	0.74	74.5
1988	140.7	140.9	10.78	78.2

Source: Previous tables 1 and 3

Table 5 sets out the types of finance for Jordan, both national savings and foreign savings. The national sources of finance include savings by household, business firms and government. This table and Table 6 together indicate that national savings were not sufficient some years, so the "finance gap" was filled with foreign savings. If FS has negative values as in Table 6, it means that foreign savings were not binding. Decreasing GNS/GDI were noticed between 1974 - 1976, 1979 - 1981 as example, but sharp drops occurred in 1967, and 1973 (the war years).

Table 5: Sources of Investment Finance 1964 - 1988 (in Millions of JD)

Year	GNS	FS	GDI	GNP	GDI/GNP %
1964	21.23	4.07	25.3	172.6	14.6
1965	25.17	2.63	27.8	108.5	15.4
1966	27.86	-1.46	26.4	185.7	14.2
1967	-3.78	36.18	22.4	142.5	15.7
1968	17.38	10.12	27.5	166.4	16.5
1969	55.68	-16.28	39.70	197.4	20.1
1970	28.03	-5.93	22.1	187.0	11.8
1971	56.48	-21.27	35.2	199.4	17.7
1972	43.61	-1.31	42.3	221.0	19.1
1973	35.4	3.80	39.2	241.5	16.2
1974	62.66	2.94	65.6	279.3	23.5
1975	66.34	17.30	88.08	376.0	25.6
1976	132.86	-2.40	150.2	562.4	26.8
1977	204.96	-85.80	202.5	660.1	30.7
1978	308.8	-2.08	223.0	781.0	28.6
1979	282.08	111.62	280.0	921.3	20.4
1980	292.48	-13.69	404.1	41185	33.7
1981	601.59	-118.27	587.9	1501.0	29.1
1982	737.57	-141.32	619.3	1695.4	26.5
1983	729.82	-104.10	588.5	1770.3	21.8
1984	614.20	-99.90	510.1	1853.6	27.5
1985	585.50	-916.0	485.6	1881.8	25.8
1986	459.60	-118.6	443.6	1919.4	23.1
1987	562.30	-105.10	444.0	1867.9	23.7
1988	550.50	-105.10	4450	1865.7	23.8

Source: Previous tables 1 - 4

Table 6: Share of National Savings in Financing Investment (1964 - 1988)

Year	GNS/GDI (%)	FS/GDI (%)
1964	0.83	0.16
1965	0.90	0.10
1966	1.05	-0.05
1967	-0.16	0.16
1968	0.63	0.36
1969	1.41	-0.41
1970	1.27	-0.27
1971	1.60	-0.60
1972	1.03	-0.03
1973	0.90	0.10
1974	0.95	0.05
1975	0.75	0.25
1976	0.88	0.12
1977	1.01	-0.01
1978	1.38	-0.38
1979	1.00	-0.01
1980	0.72	0.28
1981	1.02	-0.02
1982	1.19	-0.19
1983	1.24	-0.24
1984	1.20	-0.20
1985	1.20	-0.20
1986	1.04	-0.04
1987	1.26	-0.26
1988	1.24	-0.24

Source: table 5

**Table 7 : Rate of annual changes in Money (C + DD), and investment Ration
(1964-1985), values in millions of JD**

Year	C	DD	MS (C+DD)	Rate of change in MS(C+DD)	GDI/GNP
1964	23.03	16.73	39.76		14.6
1965	26.35	20.77	47.12	0.185	15.5
1966	30.33	25.70	56.03	0.189	14.2
1967	51.52	23.82	75.34	0.345	15.7
1968	63.55	24.43	87.98	0.168	16.5
1969	71.29	24.93	96.22	0.094	20.1
1970	82.43	23.03	105.46	0.096	11.8
1971	863.01	24.99	109.00	0.024	17.7
1972	81.47	33.55	115.02	0.065	19.1
1973	97.48	41.77	139.25	0.21	16.2
1974	115.45	56.51	171.96	0.23	23.5
1975	138.95	85.65	246.60	0.43	25.6
1976	161.36	115.52	276.88	0.12	26.8
1977	187.99	143.00	330.99	0.20	30.7
1978	219.46	155.91	375.37	0.13	28.6
1979	275.39	197.26	472.65	0.26	20.4
1980	351.63	243.14	594.77	0.26	33.7
1981	412.31	289.35	701.66	0.18	29.1
1982	469.98	317.52	787.50	0.18	29.1
1983	516.05	353.37	869.42	0.10	21.8
1984	530.50	347.90	878.4	0.01	27.5
1985	531.80	316.40	848.2	+0.03	25.8
1986	583.90	313.20	897.1		23.1
1987	655.80	324.00	979.80		23.7
1988	811.20	355.60	1166.80		23.8

Source: previous tables 2 + 5

II.1 FIR AND GROSS DOMESTIC INVESTMENT

The Financial Intermediation ratio FIR, which is the ratio of financial assets to GNP, is indicative of the absolute size of the financial system and is used as a main indicator of financial development. It could be related to the investment ratio, as shown in Table 5, where we witness a continuous increase, up to 1980, when it started to decline, because of the disappointing performance of Jordan economy.

II.2 MONEY AND CAPITAL FORMATION

Neoclassical arguments of monetary growth suggest that inflationary money creation would induce the acquisition of real assets rather than money balances. This is because inflation is likely to have some positive effects on investment, where the expectations of rising prices make it profitable to acquire durable assets.

So, observing the impact of monetary expansion on investment is another method of relating financial development to capital formation. However, it is likely that the pattern of investment in LDCs is grossly distorted since inflation may raise domestic prices relative to world prices. Therefore discouraging exports and import-substitution, could be followed by diversion of investment from the important export-orientated industries and subsequently a reduction in total output. As table 7 shows the rate of annual change in money (currency and demand deposits) was mainly high suggesting the existence of high inflation. During the period 1966 - 1972 the rate of monetary expansion decreased (except for 1967, a war year), growing at an annual average of 13.7%. The investment ratio during this period moved in the opposite direction and increased continuously annual average of 16%.

Between 1973 - 1979 the rate of monetary expansion fluctuated. The investment ratio during this period also fluctuated but in the opposite pattern. The rate of monetary expansion decreased from 1980 until 1985 when it reached a rate of 3%, and started to increase after that toward the end of the study period of 1988. The investment ratio on the other hand fluctuated between 1980 - 1985 then stabilised during the last three years of the study. It could be noticed that the only observable pattern of similar directional movement between the two variables occurred between 1980 - 1983 when the two decreased together. In general monetary expansion does not seem to have had any significant impact on the level of capital formation from experience above.

A MODEL FOR FINANCIAL DEVELOPMENT AND ITS RELATIONSHIP TO ECONOMIC GROWTH

Using the Keynesian Gross National Produce Identity GNP, a model for saving and investment functions can be derived such as the following:-

$$Y=C+I+G+(X-M)..... (1)$$

Where

Y = GNP (Gross National product

C = Private Consumption

I = Gross domestic investment

X = Export of goods and services

M = Imports of goods and services

G = Government Expenditures

denote "trade gap" by (F) to get

$$(M-X) = F..... (2)$$

and state that savings (s) equals

$$Y-C-G=S..... (3)$$

then

$$S=I+F..... (4)$$

But since savings are a process of asset accumulation, it is derived from demand for assets.

We could also state that the desired asset-income ratio denoted by (R) equals

$$R=\frac{S^*}{\Delta Y}..... (5)$$

or $S^* = R\Delta Y$

where

S*: desired savings

The adjustment formula for savings then is equal to the following set of equations

$$\Delta S_t = a (S^*_t - S_{t-1})..... (6)$$

where

$$(0 < a < 1)$$

here

a: stands for adjustment parameter

t: stands for time

Since current savings S_t equals last years savings S_{t-1} plus the change in savings between last year and this year

$$S_t = S_{t-1} + \Delta S_t \dots\dots\dots (7)$$

$$S_t = S_{t-1} + a (S^*_t - S_{t-1}) \dots\dots\dots (8)$$

$$S_t = S_{t-1} + a S^*_t - a S_{t-1} \dots\dots\dots (9)$$

Collecting terms

$$S_t = (1-a)S_{t-1} + a S^*_t \dots\dots\dots (10)$$

here if $a = 0$ then $S_t = S_{t-1}$

In other words if no adjustment occurs, then this year savings will equal last years savings. Also if $a=1$ then $S_t=S^*-1$, so the actual savings will equal the desired level of savings. The normal case is where $(0 < a < 1)$.

Now by substituting eq. 5 into 10 we get

$$S_t = (1-a)S_{t-1} + a.R\Delta Y_t \dots\dots\dots (11)$$

Here Y is introduced as a determinant of savings. To introduce the financial intermediation ratio FIR in the saving equation we formulate the following linear equation

$$S_t = (1-a)S_{t-1} + a.R\Delta Y_t + \theta FIR + \epsilon \dots\dots\dots (12)$$

Where θ is the FIR coefficient with respect to S_t . Also ϵ is an error term. To test whether or not financial intermediation has a significant impact on the level of aggregate savings, means to test whether of not $(\theta \geq 0)$.

Turning to investment (I) is because of the need to construct equations in an attempt to eliminate the simultaneous bias in the parameter estimates of the saving function. It is agreed that investment is a function of national income, the inflow of foreign capital, and here by adding the financial intermediation variable FIR , the equation becomes

$$I_t = \gamma_1 Y_{t-1} + \gamma_2 F_t + \gamma_3 FIR_t + U_t \dots\dots\dots (13)$$

Where F_t is inflow of foreign capital. Also $S I_t$ is assumed to be a function of the lagged value of income.

POINTS

- a - The variables to be estimated S_t , I_t , are endogenous variables as well as Y_{t-1} while all other variables are assumed to be exogenous.
- b - All variables to be expressed in constant prices to take care of possible inflationary effects.
- c - All variables are to be expressed as deviations from the trend, to minimise the possible effects of an upward trend in the saving function.

The two estimational functions are expressed now in the following

$$\hat{S}_t = a_0 + (1-a) \hat{S}_{t-1} + a.R.\Delta \hat{Y}_t + \theta \hat{FIR}_t + \epsilon_1 \quad \dots\dots\dots (11')$$

$$\hat{I}_t = \gamma_0 + \gamma_1 \Delta \hat{Y}_{t-1} + \gamma_2 \hat{F}_t + \gamma_3 \hat{FIR}_t + \epsilon_2 \quad \dots\dots\dots (13')$$

REGRESSION RESULTS

Saving Equation

Nominal Values $S_t = 56.0 + 0.87 S_{t-1} + 0.59 \Delta \gamma_t + 0.87 \text{FIR}$
 (-0.8) (11) (3.8) (0.96)
 $R^2 = 95\%$ $F = 121.8$
 $D.W. = 2.06$ $n = 24$

Real Values $S_t = 0.58 + 0.71 S_{t-1} + 0.33 \Delta \gamma_t + 0.90 \text{FIR}$
 (1.09) (3.61) (1.34) (-1.06)
 $R^2 = 87\%$ $F = 44$
 $D.W. = 2.04$ $n = 23$

Without FIR

Nominal $S_t = 1.4 + 0.93 S_{t-1} + 0.56 \Delta \gamma_t$
 (0.7) (17.4) (3.7)
 $R^2 = 94\%$ $F = 179$
 $D.W. = 2.06$ $n = 24$

Real $S_t = 0.015 + 0.92 S_{t-1} + 0.53 \Delta \gamma_t$
 (0.18) (124) (3.9)

$$R^2 = 89\% \quad F = 87$$

$$D.W. = 2.08 \quad n = 23$$

Using the deviation from the trend method

Nominal $S_t = 0.397 + 0.83 S_{t-1} + 0.54 \Delta \gamma_t + 0.642 \text{ FIR}$
 (0.02) (0.98) (2.11) (0.265)
 $R^2 = 72\%$ $F = 17$
 $D.W. = 2.03$ $n = 24$

Real Values $S_t = 0.0017 + 0.92 S_{t-1} + 0.36 \Delta \gamma_t - 0.21 \text{ FIR}$
 (0.33) (8.75) (2.3) (-0.15)
 $R^2 = 82\%$ $F = 29.7$
 $D.W. = 2.04$ $n = 23$

Without FIR

Nominal $S_t = 0.14 + 0.8 S_{t-1} + 0.48 \Delta \gamma_t$
 (-0.01) (6.7) (3.08)
 $R^2 = 72$ $F = 25$
 $D.W. = 2.02$ $n = 24$

Real $S_t = 0.03 + 0.91 S_{t-1} + 0.38 \Delta \gamma_t$
 (0.05) (8.95) (3.5)
 $R^2 = 80\%$ $F = 40$
 $D.W. = 2.02$ $n = 23$

Investment Equation #13

Nominal $I_t = 171.6 + 0.59 \Delta \gamma_t - 0.86 F_t + 0.69 \text{ FIR}$
 (0.91) (3.3) (-0.5) (0.61)
 $R^2 = 73\%$ $F = 2.6$
 $D. = 1.06$ $n = 23$

Real Values $I_t = 0.99 + 0.18 \Delta \gamma_t - 0.84 F_t = 0.8 \text{ FIR}$
 (2.9) (1.49) (-0.55) (-1.58)
 $R^2 = 72\%$ $F = 1.79$
 $D.W. = 1.25$ $n = 23$

Without FIR

Nominal	$I_t = 235 + 0.55 \Delta \gamma_{t-1} - 0.09 F_t$
	(1.17) (3.4) (-0.52)
	$R^2 = 0.4$ $F = 4.24$
	$D. = 0.95$ $n = 24$
Real Values	$I_t = 0.66 + 0.24 \Delta \gamma_t - 0.16 F_t$
	(1.9) (1.05) (-1.13)
	$R^2 = 79$ $F = 1.6$
	$D.W. = 1.61$ $n = 23$

Using the deviations from the trend method

Nominal	$I_t = 15.5 + 0.52 \Delta \gamma_{t-1} - 0.06 F_t + 1.27 \text{FIR}$
	(0.34) (3.3) (-0.39) (1.11)
	$R^2 = 50\%$ $F = 6.13$
	$D. = 1.04$ $n = 24$
Real Values	$I_t = 0.99 + 0.185 \Delta \gamma_{t-1} - 0.089 F_t + 1.04 \text{FIR}$
	(0.3) (1.19) (-0.04) (-1.29)
	$R^2 = 42$ $F = 1.47$
	$D.W. = 0.65$ $n = 23$

Without FIR

Nominal	$I_t = 14.6 + 0.58 \Delta \gamma_{t-1} - 0.05 F_t$
	(0.31) (3.9) (-0.34)
	$R^2 = 74$ $F = 8.5$
	$D. = 1.25$ $n = 24$
Real Values	$I_t = 0.107 + 0.23 \Delta \gamma_{t-1} - 0.21 F_t$
	(0.32) (1.5) (-1.05)
	$R^2 = 61$ $F = 1.4$
	$D.W. = 1.87$ $n = 23$

CONCLUSION AND POLICY RECOMMENDATIONS

Inspecting the regression results of these 2 equations (the saving and investment equations), we can set these matrices:

Case 1: Nominal Values, and without deviation from the trend method

	$\frac{S_t}{I_t}$	$\frac{I_t}{I_t}$
FIR Coefficient with	0.87	0.69
t - statistic	0.96	0.61

$$R^2 = 0.95 \quad 0.73$$

$$D.W. = 2.06 \quad 1.06$$

Case 2: Real Values, and without deviation from the trend method

	$\frac{S_t}{I_t}$	$\frac{I_t}{I_t}$
FIR Coefficient with	0.90	0.8
t - statistic	1.06	1.58

$$R^2 = 0.94 \quad 0.72$$

$$D.W. = 2.06 \quad 1.25$$

Case 3: Nominal Values, and with deviation from the trend method

	$\frac{S_t}{I_t}$	$\frac{I_t}{I_t}$
FIR Coefficient with	0.64	1.27
t - statistic	0.265	1.11

$$R^2 = 0.72 \quad 0.50$$

$$D.W. = 2.03 \quad 1.04$$

We can conclude that some role is played by (FIR) on savings and investment, and hence on Economic Growth, in Jordan. This judgement is substantiated because when FIR was removed from the regression, R^2 measure deteriorated, particularly in case of nominal values of investment.

Our results here also comply with those results reached by Shaw [1973] where he emphasised that financial sector of economy does matter in the process of economic growth. Accordingly policy makers should take that into consideration.

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