Chapter
FIVE

DEMAND FOR FINANCIAL ASSETS

DEMAND FOR FINANCIAL ASSETS

In the preceding chapter, an attempt has been made to explain the supply aspect of financial assets divided into highly liquid and less liquid financial assets. In many developing economies, financial services are available due to growth of banking and non banking financial institutions sponsored by government. What is crucial in the growth process of such economies is the generation of demand response for the financial services in such economies given its supply. This chapter deals specifically with the factors influencing the demand for financial assets in Jordan.

Scholars in this area have delt with demand & supply aspects of financial assets comprehensively. Some holds that where enterprise leads finance follows, indicates that financial system some how accommodates or to the extent that it malfunctions, restricts growth of real per capital out put.[1] The same impulse within an economy which set enterprise on foot makes owners of wealth venturesome. However, when a strong impulse to invest is fettered by lack of finance, services, devices are invented to release it, ... and habits and institutions are developed.[2]* Patrick states that : *"Such an approach places emphasis on demand side for financial services; as the economy grows it generates additional and new demands for these services, which bring about a supply response in the growth of the financial system.* In view of this, *the lack of financial institutions in underdeveloped countries is simply an indication of the lack of demand for their services."*[3] In such

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(1) Patrik, Hugh T., "Financial Development and Economic Growth in Underdeveloped Countries", Economic Development and Cultural Change, Vol. XIV (January 1966), Page 174.

(2) Robison, Joan, "The Generalization of the General Theory", in The Rate of Interest and Other Essays, London : Macmillan, (1952).

  *   This statement was reproduced in Patricks work, (1966).

(3) Patrick (1966), page, 174.

cases *"the evolutionary development of financial system is a continuing consequence of the pervasive sweeping process of economic development. The emerging financial system is shaped both by changes in objective opportunities (the economic environment, the institutional frame work) and by changes in subjective responses (individuals and their motivations, attitudes, tastes, preferences)."*[4] Again he illustrates that *"The nature of the demand for financial services depends upon the growth of real output and upon the commercialization and monetization of agriculture and other traditional sectors. The more rapid the growth rate of real national income, the greater will be the demand by enterprises for external funds (savings of others) and therefore, for financial intermediation. Since under most circumstances firms will be less able to finance expansion from internally generated depreciation allowances and retained profits. "*[5] Therefore, *"with a given aggregate growth rate, the greater the variance in the growth rates among different sectors or industries, the greater will be the need for financial intermediation to transfer saving to fast-growing industries from slow-growing industries and from individuals."*[6] He further illustrates, *"It is assumed that the supply of entrepreneurship in the financial sector is highly elastic relative to the growing opportunities for profit from provision of financial services."*[7] Hence, supply response to demand is more or less automatic. It is also implied here that finance is essentially passive and permissive in the growth process. Even in academic circle, less emphasis has been given to supply side of financial services.*

(4) Ibid..... . p. 175.
(5) Ibid..... . p. 175.
(6) Ibid...... p. 175.
(7) Ibid..... .. p. 175.
* We are obliged to Patrick for his views which we reproduced here for its logical consistency. Which is a foundation in our hypothesis. *For further details see :* Patrick, Hugh T., "Financial Development and Economic Growth in Underdeveloped Countries" Economic Development and Cultural Change, Vol. XIV (January 1966) Page 175-189; (reproduced in Money and Monetary Policy Less Developed Countries, Warren E, Coats, Jr. and Deena R. Khatkhate, eds , Pergamon Press Ltd., (1983)

In theoretical as well as empirical analysis,[8] relative stability of demand function for financial assets is more crucial since it enables us to predict impact of supply of financial assets on aggregate economy. Hence, it is imperative to identify factors influencing demand and their relative contributions. An attempt has been made to investigate into Jordanian economy in this direction. It is our contention that national income, price level, rates of returns on other assets and demographic* factors would have statistically strong influence on demand for financial resources. It is not out of context that we review the growth of national income and other relevant variables.

Performance of Jordanian Economy :

Jordan has achieved remarkable economic growth during 1970-1981. It is mainly due to two external factors : first, the remittances of Jordanians working abroad and second, financial assistance of Arab states and non Jordanian donors.[9] Whereas during 1981-1992 Jordan experienced a sharp decline in growth rate.[10] Gross domestic product showed average increase of 14.49 percent per annum during the period on study, i.e. 1970-1992. It was 19.71 percent during 1970-1981 whereas it slowed down to about 6.27 percent during 1981-1992.

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(8)   Al-Shawa, Alaa, "Estimation of the Demand-for-Money Function using Nominal Partial Adjustment and adaptive-Expectations Models", Department of Economics, Ohio University, U.S.A., (1992).

*   Unlike other studies we have introduced demographic variable as an indicator of monetization and orbanization

(9)   Roberts, John, "Jordan's Economic Growth in the 1970's : Policies for Responding to an External Stimulus", Development Policy Review Vol. 2, No. 2, (November 1984), pp. 155-80.

(10) Diwiri, Khalil, "Monetary Policy in Jordanian Economy", Un-published Post Graduate Diploma *"Arabi Script"* National Institute of Planning, Cairo, Eygpt, (December, 1989) *See again* Gharaibeh, Hisham, "The Economy of Jordan : Major Trends and Development", Abhath Al-Yarmouk, Humanities and Social Sciences Series, Vol. 3, No. 1, (1987), pp 7-18

In terms of gross national product, the picture is more or less the same. During 1970-1992 GNP registered an average growth of 13.39 percent, slightly lower than GDP growth rate during the same period. The GNP growth was marginally higher than the growth of GDP during 1970-1981. It has grown by 20.16 percent as against 19.71 percent of GDP during the same period. The outcome was just the otherwise during 1981-1992 period. Though the domestic product and national income grew at a relatively slow rate at current prices, throughout this period the GDP growth rate registered 6.27 percent which was higher than that of GNP touching 5.16 percent for the same period. The growth of Jordan's economy, in real terms also reflects the same trends. In this way, Jordan passed through various stages in the process of development. Table (5-1), presented in graph shows that during the period of our study, complete business cycle experienced by the Jordanian economy. Table (5-2) shows the sectorial contribution of national income. It reveals that the service sector mainly dominated the economy as nearly about two third of GDP was produced by this sector. By and large, the table indicates a stable production structure. There were no significant shifts from services to any other sector. Agriculture which used to constitute 7.79 percent of GNP during 1970-1981 fell marginally to 5.55 percent of GNP during 1981-1992. This imparted an overall relative share of 6.76 percent of GNP during 1970-1992. Whereas the Industrial sector which used to contribute about 12.98 percent of GNP during 1970-1981 improved to 17.53 percent of GNP during 1981-1992. This resulted into an overall 15.19 percent share in GNP during the entire period of 1970-1992. Similary, the relative share of the service sector the major sector of the economy has shown relative stability. Its relave share was 57.91 percent of GNP during 1970-1981 which went up to 65.70 percent of GNP during 1981-1992. This registered an overall average of 61.71 percent share

Table : (5-1)

Average Growth Rate of Real National Income

Period	Average Real GDP at Market Price	Growth rate %	Average Real GNP at market price	Growth rate %
1970 - 1974	5.73	-3.03	6.24	-1.34
1975 - 1979	7.36	11.94	9.23	13.82
1980 - 1984	15.30	12.15	15.72	8.75
1985 - 1989	17.76	-3.24	17.33	-4.39
1990 - 1992	14.63	3.42	13.68	4.49

Sources of Data :
- Calculated from Appendix : (6).

Table : (5-2)

Relative Importance of Different Sectors
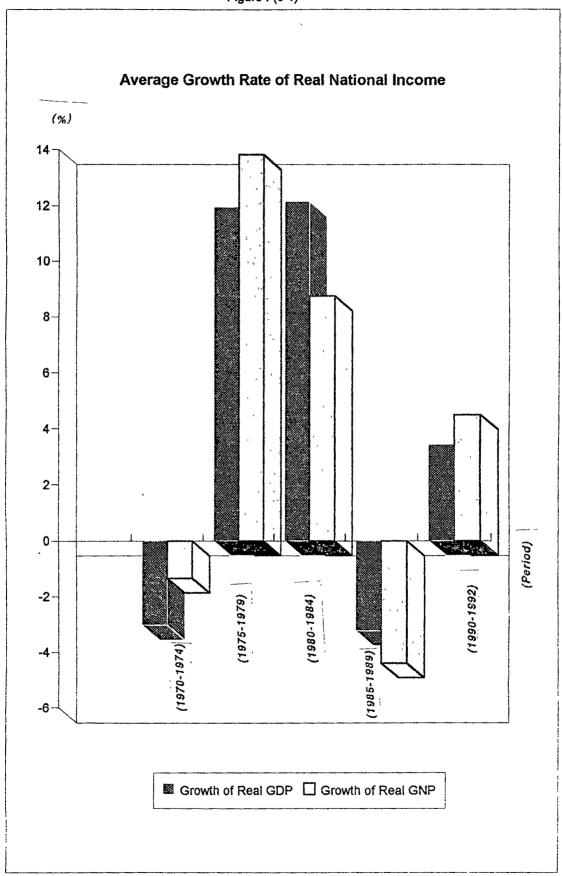### in Jordanian Economy

(in percentage)

Period / Sector	1970-981		1981-1992		1970-1992	
	GDP	GNP	GDP	GNP	GDP	GNP
Agriculture	8.88	7.79	5.42	5.55	7.25	6.76
Industry	14.94	12.98	17.13	17.53	15.97	15.19
Service	65.99	57.91	64.52	65.70	65.20	61.71

Sources of Data :
- Calculated from Appendix : (7).

Figure : (5-1)

Average Growth Rate of Real National Income

(%)

(Period)

(1970-1974)
(1975-1979)
(1980-1984)
(1985-1989)
(1990-1992)

Growth of Real GDP   Growth of Real GNP

in GNP during 1970-1992. Sizeable changes were experienced in the foreign sector and specially in terms of net factors like income from abroad. During 1970-1981, its relative share in GNP was 12.39 percent which went down to -1.99 percent in 1981-1992 keeping an overall relative share during 1970-1992 at 5.26 percent only. In general, there were no significant shifts from services to commodity production or any dramatic changes in commodity production itself. 1979-1981, was the period when Jordan was at the peak of prosperity. This was because manufacturing and construction* sectors expanded their relative share to the maximum. Since then till 1989, however, their shares have stuck to the pre boom level of 1975. Once again 1989 onward, the relative share of manufacturing and construction sectors started improving.

Economic Development and Financial Assets :

The process of monetization and financial development has occured in Jordan during the period of our study. The public hold of financial assets in Jordan rose more than thirty three folds between 1970-1992. The growth was accompanied by important changes in assets composition. As already seen in the earlier chapters, deposits with commercial banks gained significance in relation to liability of the Central Bank of Jordan. Other interest bearing assets also gained primacy at the expense of non interest bearing assets like currency and demand deposits.

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* Based on our calculations made from "Yearly Statistical Series" C.B.J (October 1994), table 38, manufacturing sector has grown by 33.08%, 39.76% and 25.87% during 1979-1980 and 1981 respectively. Whereas construction sector has shown 32.52%, 20.41% and 22.81% growth rate for the same years respectively. This could be attributed to the high growth of remittances made by Jordanian workers abroad. This is supported by recent study showing that remittances during 1979-1982 has grown substantially. *See for further details* Khatib, Fawzi, (1991) "Foreign aid and Economic Development in Jordan : an empirical investigation" in Politics and Economy in Jordan, Rodney Wilson ed, London, New York : Routledge pp, 60-75.

Highly liquid financial assets maintained steady growth with GNP at current prices. They grew at the rate of 17.08 percent on an average during the period of our study i .e. 1970-1992 .Though the rate was slightly higher than the growth of GNP showing 13.39 percent per annum, the trend was almost similar during 1970-1981 as highly liquid financial assets have grown by 22.10 percent and GNP registered 20.16 percent growth rate. This implies more than unitary elasticity of highly liquid financial assets to GNP. A wide fluctuation in GNP growth during 1981-1992 disturbed the uniformity between GNP and highly liquid financial assets. The Gross National Product dropped down to 5.16 percent which was followed by a fall in the growth rate of highly liquid financial assets from 20.23 percent during 1970-1981 to 10.08 percent during 1981-1992. But certainly it was higher than the growth of GNP during the same period. On the other hand, the less liquid financial assets grew more consistently between 1971 and 1992. They grew by 13.93 percent on an average during the period. Though the rate grew by 15.45 percent during 1970-1981, it kept falling marginally to 13.57 percent during 1981-1992.

The total stock of financial assets (i e., highly liquid and less liquid financial assets) has grown much consistently with GNP. In fact during 1970-1981, both categories of financial assets grew hand in hand. The relative growth rates were 20.23 percent for total financial assets and 20.16 percent for GNP exhibiting almost unitary elasticity. During 1981-1992, both showed relative decline however, the growth of total financial assets was higher than the growth of GNP. The total financial assets grew at the rate of 11.39 percent resulting in an average growth of 16.18 percent during 1970-1992. In the process of growth of financial assets in Jordan during 1970-1992, the note worthy factor was the domination of highly liquid over less liquid financial assets in

the total composition of financial assets. In fact highly liquid financial assets were around 72 percent of total financial assets during 1970-1981. It further went upto 79.36 percent during 1981-1992 which constituted 75.31 percent of the total financial assets during 1970-1992.

Sectorial Growth and National Income :

Relative share of each sector in domestic production also reflects the same trend. The relative position of the three sectors remains the same though some variations in percentage of share have been recorded. The agriculture sector which used to contribute 8.88 percent in GDP during 1970-1981 showed a decline in its share to 5.42 percent during 1981-1992. During the period of the study, the average share of the agriculture sector in GDP was around 7.25 percent only, while the industrial sector accounted for less than 20 percent share in GDP except for 1990 during which it showed 21.33 percent. Though over the years, the industrial sector has improved its relative contribuition in GDP still remains marginal. The relative share of industries in GDP improved from 14.94 percent during 1970-1981 to 17.13 percent during 1981-1992 which resulted in the over all average of 15.97 percent during 1970-1992. The service sector, a core sector of the Jordanian economy has contribution almost 3/4 of GDP. The relative share of services has remained more or less stable a round 66 percent of GDP. It was 65.99 percent during 1970-1981 which went up 64.52 percent during 1981-1992 maintaining an average rate of 65.20 percent of GDP during 1970-1992. This comparison reveals that the position of structure remained almost stagnant during 1970-1992 in Jordan in terms of relative share. Whatever marginal share may have been recorded, was from agricultural to industrial sector in terms of their shares in GDP.

Demand For Financial Assets : An Empirical Analysis.

In the following lines, regression analysis of demand for financial assets has been presented. As mentioned earlier, we expect strong positive influence of income on demand for financial assets as dependent variable. An attempt is made to quantify the effect of the national income (GNP) and the sectoral income on demand for financial assets. Also we have to set up a model to investigate into the effect of price level, interest rate, population variables and per capita income on demand for financial assets. In this analysis, aggregate demand is categorized into highly liquid financial assets and less liquid financial assets. It is our attempt to estimate the response of not only the total financial assets to set of selected variables but also its degree in each category of financial assets. We have used GNP as a scale variable. The regression analysis for the period 1970-1992 provides a strong empirical support to our hypothesis.

$$\text{The Model : TFA} = a + b \ \text{GNP}$$

$$\text{TFA} = -433.07 + 1.73 \ \text{GNP}$$

$$(16.04)$$

$$R^2 = 0.923 \quad \text{D-W} = 0.22$$

It is evident from the above estimate that 92% of variations in total financial assets are explained by gross national income alone. The regression coefficient of GNP is highly significant, as it is indicated by the t-value of individual parameter. For 1% increase in GNP, about 1.73% change takes place in the dependent variable. This estimate is reliable in terms of correct sign and significant t-values except that D-W statistics is poor.

(Regression estimate for 1970-1992 period.)

$$\text{Log TFA} = -0.879 + 1.157 \text{ Log GNP}$$

$$(29.692)$$

$$R^2 = 0.977 \quad DW = 0.298$$

We have here tried to estimate the demand function using the Log form of function. Estimated equation shows that income elasticity is greater than unity. Infact it turns out to be 1.2 percentage. The test of individual parameter is also highly significant. Both these estimates lend ample support to our contention that with a growth of national income the demand for financial assets would respond positively.

As mentioned earlier, there exist significant differences in economic condition of Jordan. Hence it is preferable to estimate relationships separately for each sub period from 1970 to 1981, from 1981 to 1992, and for the entire period of 1970-1992. The regression out come is summarized in table (5-3) presenting the relationship between TFA and GNP.

Table : (5-3)

Regression Relation Outcome Between

TFA and GNP

Test \ Period	1970-1981	1981-1992	1970-1992
R^2 on time	0.993	0.993	0.978
R^2 on GNP	0.993	0.934	0.923
t - value	36.694	11.918	16.044
D-W statistics	1.339	0.987	0.217
GNP elasticity	0.989	2.037	1.158

In the early period, i.e., 1970-1981, the regression of time trend and GNP on financial assets reveal the same values of R^2, the coefficient of determination and it explain 99 percent variations in TFA. During the same period D-W statistics does not show high degree of auto correlation. The regression results related to the period 1981-1992 indicate that variation in TFA caused by the GNP is relatively lower in terms of percentage though time trend variable gives relatively better fit. There are evidences to show that during 1981-1992 period, Jordanian economy faced by external and internal shocks.[11] A close investigation in terms of demands of highly liquid and less liquid financial assets relation to economic performance of Jordanian economy during 1970-1992 does not show drastic changes in the statistical results. Encouraged by this result, we made attempt to examine demand for highly liquid and less liquid financial assets separately. Both were regressed on time trends and GNP variables. The regression results are tabulated in tables (5-4) and (5-5) respectively.

Table : (5-4)

Regression Relation Outcome Between

Highly Liquid Financial Assets and GNP

Test Period	1970-1981	1981-1992	1970-1992
R^2 on time	0.985	0.993	0.969
R^2 on GNP	0.993	0.923	0.936
t - value	38.49	10.96	17.509
D-W statistics	1.16	1.21	0.242
GNP elasticity	1.087	1.932	1.232

(11) Gharaibeh, Hisham, "The Economy of Jordan : Major Trends and Development", Abhath Al-Yarmouk. Humanities and Social Sciences Series, Vol. 3, No. 1, (1987), pp. 7-18. See also . Diwiri, Khalil (1989), Op. Cit. page 17. . Twenty Fifth Annual Repost, 1988 C.B.J. Page 1. . Twenty Seventh Annual Report, 1990. C.B.J. Page 1.

Table : (5-5)

Regression Relation Outcome Between

Less Liquid Financial Assets and GNP

Test \ Period	1970-981	1981-1992	1970-1992
R^2 on time	0.958	0.963	0.986
R^2 on GNP	0.961	0.925	0.847
t - value	15.659	11.09	10.800
D-W statistics	1.231	1.20	0.351
GNP elasticity	0.738	2.426	0.958

The Regression estimate for both highly liquid and less liquid financial assets reveals that, time trends gives better fit than the GNP, except for 1970-1981 period. Again in case of demand for highly liquid financial assets the GNP variable perform better than in case of less liquid financial assets. The data shows a marked change in the income elasticity of demand for highly liquid and less liquid financial assets in Jordan during 1970-1992 making demand for financial assets highly sensitive. The economy experienced a relative rise in income elasticity of highly liquid financial assets between the periods 1970-1981 and 1981-1992. It rose considerably from 1.08 to 1.93 percentage. The degree of responsiveness of less liquid financial assets in relation to the GNP was relatively much greater. The income elasticity of demand for less liquid financial assets jacked up from 0.738 to 2.426 between the periods 1970-1981 and 1981-1992. It reveals a structural shift in 1981-1992 causing the people to hold more financial assets in relation to their income. We suspect that inflation caused greater demand for less liquid financial assets in 1981-1992 perhaps because they provided insurance to assets holders. Data on price rise reveals that price level rose by 7.30% in 1981-1992 period whereas the real GNP

indicate a negative growth rate of -1.79 percent per annum during the same period.

Financial Assets and Sectorial Income :

It is also imperative to examine the influence of variation in sectorial income on the demand for financial assets. Jordan economy is more diversified now than ever before. Income originated from various sectors indicates the predominance of services sector in the national economy. The agriculture sector though contributed around 7 percent in GNP, also witnessed massive positive changes in the last 20 years despite its dependence on eratic rain fall. Table (5-6) shows the relative growth rate of each of the sectors in Jordanian economy.

Table : (5-6)

Sectorial Income Growth Rate

(In Percentage)

Sector \ Period	1970-1981	1981-1992	1970-1992
• Agriculture	13.04	9.62	10.99
• Industry	26.00	7.94	16.98
• Services	19.24	5.13	14.12
• Net factor income from abroad	19.90	-45.94	7.78
GNP	20.16	5.16	13.39

As compared to average growth rate in GNP during 1970-1992, the industry and services sectors have shown relatively higher growth rate while the growth of agriculture sector and foreign sector, that of

particularly net factor income from abroad have remained relatively low. The growth in agriculture sector was much more consistent than any other sector but because its relative contribution is less in GNP, it could not influence GNP growth to a large extent. Variation in the growth of GNP was closely related to the growth of net factor income from abroad alongwith with the growth of the service and industrial sector. To a large extent, economic expansion of Jordan was caused by external factors, mainly remittances of Jordanians working abroad and financial assistance of Arab countries and non Jordanian donors. The key factor in Jordan's political economy has been an orientation towards transport trade and services. Hence, the services sector grew at an average annual rate of 14.12 percent during the period of our study. On year to year basis, this sector has experienced wide variation, more specifically during 1981-1992. As a result the average growth of service sector during 1970-1981 was 19.24 percent per annum which is closely matched by growth of total financial assets and highly liquid financial assets showing 20.23% and 22.09 percent respectively per annum during the same period. However, due to lack of support from external factors, the service sector failed to maintain the high growth rate. It fell down to 5.13 percent on average during 1981-1992 and further resulted in a decline of total financial assets and, more specifically, in highly liquid financial assets. Their relative growth rate fell to 11.39% and 10.08 percent respectively during 1981-1992.

Demand for financial assets can be assessed in relation to the sectorial income originating from agriculture, industry and serfvices sectors. In relative terms of ranking of the three sectors, the service sector contributed 61.71 in the national income, while industry and agriculture sectors contributed 15.19 and 6.76 percent respectively in the national income. Whereas in term of growth rate, the industrial

sector remained the first showing 16.98% growth rate, followed by the service sector with 14.12% growth rate and the agriculture sector accounting for 10.99 percent growth rate during the same period of 1970-1992. The demand for financial assets in Jordan have been studied with respect to agricultural, Industrial and services sectors income. The outcome is summarized in table (5-7). Regressing component of each sectorial income on demand for financial assets separately indicates better fit with each sector for entire period of study i.e., 1970-1992.

Table : (5-7)

Estimate of Demand For Financial Assets

with Respect to Sectorial Income

Sector	Category Test	T.F.A	H.L.A	L.L.A
Agriculture	EL	1.421	1.499	1.222
	R^2	0.957	0.948	0.963
	t-value	21.651	19.545	23.594
	D-W	2.188	2.007	2.012
Industry	EL	0.939	0.969	0.783
	R^2	0.974	0.979	0.922
	t-value	27.978	30.956	15.704
	D-W	0.659	1.102	0.611
Services	EL	1.103	1.174	0.915
	R^2	0.978	0.985	0.917
	t-value	30.701	37.664	15.196
	D-W	0.325	0.298	0.496

These estimates are in logarithmic forms to explore various dimensions of the relations between total financial assets and different sectors in the economy. These logarithmic regression displays some interesting properties. All the regression estimates with a strong t-value and correct sign.

Agricultural income has a strong and consistent influence over the demand for total financial assets in Jordan. The relative elasticities are 1.421, 0.939 and 1.103 with respect to income from agricultural, industrial and service sectors respectively. In all the cases, though R^2 is high, in case of income from agricultural sector, and D-W statistics indicates the absence of autocorrelation, while in the service and industrial sectors have low D-W which indicates the presence of autocorrelation. Further the demand for highly liquid and less liquid financial assets expressed in terms of income from agricultural industrial and services sectors reveals that the demand for highly liquid financial assets has a high elasticity, as compared to less liquid financial assets. Moreover demand for highly liquid financial assets with respect to the income from three sectors shows more than unitary elasticity except for industrial sector. The sectorial income elasticity for highly liquid financial assets was 1.499 from agriculture, 0.969 from industries and 1.174 from the services sector. In case of demand for less liquid financial assets, the relative income elasticity was low in all the three sectors as well as it was found to the greater than one only in case of agriculture. While in case of services and industries, it was found to be relatively inelastic, only 0.915 in case of income from services and 0.783 in case of income from industrial sector. It clearly indicates that in Jordan the demand for highly liquid financial assets is relatively much more responsive than that of demand for less liquid

financial assets. This is expected in developing countries in the early
stages to their development*.

A deeper analysis of the demand for financial assets has been done
dividing the entire period of 1970-1992 into two sub periods i.e. 1970-
1981 and 1981-1992. The outcome is summarized in table (5-8)

Table : (5-8)

Sectorial Income Elasticity of Demand

Sector	Category / Period	T.F.A	H.L.A	L.L.A
Agriculture	1970-1981	1.360	1.475	1.059
	1981-1992	1.048	1.000	1.299
Industry	1970-1981	0.785	0.828	0.589
	1981-1992	1.207	1.168	1.451
Services	1970-1981	1.018	1.119	0.754
	1981-1992	2.078	1.991	2.461

The regression outcome clearly reveals that over years the sectorial
income elasticity of demand for different type of financial assets
showed an overall shift from highly liquid financial assets to less liquid
financial assets. Though the degree of responsiveness of sectorial
income changed to demand for less liquid financial assets, it showed
an improvement in case of income from industry and services sectors
during 1981-1992 as compared to that during 1970-1981. Whereas
in case of agricultural income, Jordan experienced a relative fall

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*   *See for Example*, Trescott, Paul, "Demand for Money and Other Liquid Assets in
Thailand 1946-1967", Economic Development and Cultural Change, Vol. 20, No.
2, (January 1972), pp. 260-279.

income elasticity of demand for total financial assets which is expected in a usual development process.

As compared to 1970-1981 period, the sectoral income elasticity of demand for highly liquid financial assets and less liquid financial assets showed improved responsiveness during 1981-1992 except for agricultural income elasticity of demand for highly liquid financial assets. The responsiveness of highly liquid financial assets to change in sectorial income has been improved and in all cases it becomes elastic. But in case of agricultural sector, the income elasticity of demand for highly liquid financial assets has fell down from 1.475 in 1970-1981 to 1.000 in 1981-1982. Significant improvement has taken place in case of less liquid financial assets. Large demand for less liquid financial assets in 1981-1992 could be attributed to government fiscal operations. It was during this period that Jordan economy received external shocks forcing, the government to finance domestic economy through fiscal technology.[12] Literature in this regard supports our contention. In all the three sectors, the income elasticity of demand for less liquid financial assets improved sizably. In case of agricultural sector the value of elasticity improved from 1.059 to 1.299 as well the R^2 value and t-value also showed substantial improvement making it more statistically significant. In case of services, the value of income elasticity of demand for less liquid financial assets improved much making it statistically significant. It showed an improvement in elasticity from 0.754 in 1970-1981 to 2.461 during 1981-1992. However, in case of industrial income the responsiveness improved from 0.589 during 1970-1981 to 1.451 in 1981-1992 despite other regression outcome was not relatively strong. (See Appendix : 8).

(12) Diwiri, Khalil "Monetary Policy in Jordanian Economy" Un-Published Post Graduate Diploma *"Arabic Script"* National Institute of Planning, Cairo, Egypt, (December 1989) Page 17.

From the above analysis, we can conclude that elasticity of demand for financial assets has shown high responsiveness to the sectorial income change. At the same time, we notice a shift in sectorial preference from highly liquid to less liquid financial assets. The improvement in the responsiveness was higher, in case of services sector, in term of highly liquid as well as less liquid financial assets. Though industrial sector also shows improved value of elasticity of income on demand for highly liquid and less liquid financial assets it lacks in terms of statistical significance. Agricultural income has shown decline in income elasticity of demand for financial assets over a period of time but it has never been below unity.

Demand for Financial Assets and Other Determinants :

The Demand for financial assets in any developing country; though mainly depends on the degree of economic development indicated by the GNP. But at the same time there are other variables equally important to be taken into consideration like, rate of interest, price level, population growth, degree of urbanization, monetization of the economy etc. The following analysis highlights the influence of these variables on the demand for financial assets in Jordan. The various regressions outcome emerge with a strong t-value and expected sign. Each equation fits the data very well.

Rate of Interest :

As for the influence of interest rate variable is concerned, analysis reveals it to be less significant. This is perhaps due to the fact that like many developing economies the rate of interest is not permitted to be determined by free market mechanism. Institutional and policy

influence on it, is much pronounced. Jordan has for many years followed a policy of repression[13] where the rate of interest was delibrately pegged at a low level so as to facilitate government fiscal operations. An index of rate of Interest has been designed considering year 1981 as base year. It shows that for last 23 year (1970-1992), index of interest rate has hardly doubled. It was 69.23 in 1970, which went up to 136.62 in 1992. Whereas price index showed a significant upward trend, about 6.5 time increase between 1970-1992. In absolute term, it increased from 30.97 in 1970 to 205.67 in 1992. (See Appendix : 10) Relatively higher price index has resulted in lower real rate of interest and, in some years it has become even negative.

Again we tried to estimate interest rate elasticity on demand for financial assets. The outcome is shown in Table (5-9).

Table : (5-9)

Interest Elasticity of Financial Assets

Period / Category	1970-1981	1981-1992	1970-1992
• T.F.A	5.31	2.32	4.63
• H.L.A	5.74	2.23	4.89
• L.L.A	4.22	2.66	3.99

Although total financial assets as well as less liquid financial assets exihibited a high interest elasticity during the period of our study, table (5-9) clearly indicated a relative decline in the interest elasticity of total as well as less liquid financial assets, during 1981-1992 as compared to 1970-1981 period. In case of total financial assets, the

(13) Al-Khatib Fawzi, "Financial Liberalization and Economic Growth in LDCs : The Case of Jordan", Abhath Al-Yarmouk, Humanities and Social Sciences Series, Vol. 8, No. 1, (1992), Page, 44.

relative fall in interest elasticity was from 5.3 to 2.3 whereas in case of less liquid assets it was registered as from 4.2 to 2.7. This provides a very important inference that in case of Jordan, financial assets have become less interest elastic. However, still during later period of our study 1981-1992, less liquid financial assets remained higher interest elastic as compared to the total financial assets and highly liquid financial assets. The interest elasticity of less liquid financial assets was measured at 2.66 percent as compared to that of the total financial assets which was 2.32 percent. It is observed that interest elasticity of highly liquid financial assets for the entire period 1970-1992 was much higher though we do find drastic fall in elasticity response during 1981-1992. Since time deposits have shown a considerable growth in relation to other deposits, it was strongly positive responsiveness which is expected. Though, interest elasticity of demand for financial assets is significantly much greater than unity, we do not assign much significance to it for the simple reason that interest rate is not freely determined by market forces in Jordan. It is institutionally governed. Moreover, variations in the time series data of financial assets is considerable as compared to annual variation in the interest rate series. Hence, we attempted to use interest rate variable along with other variables to know true level of interest elasticity. As it will be seen in the subsequent analysis, interest elasticity gets stabilise below unity level.

Impact of Rate of Interest and GNP :

Having studied the impact of income and rate of interest on demand for financial assets in Jordan separately, it would be useful now to trace the impact of both variables taken together on demand for financial assets in general and on demand for highly liquid and less

liquid financial assets in particular. For this purpose, we present the regression estimates in logarithmic form to explore various dimensions of the relationship among total financial assets (TFA), rate of interest (RI), and gross national product (GNP). Further financial assets split into highly liquid and less liquid forms.

(Regression estimate for 1970-1992 period)

$$\text{Log TFA} = 1.140 \text{ Log RI} + 0.913 \text{ Log GNP} - 1.374$$

$$(3.762) \qquad (12.733)$$

$$R^2 = 0.986 \qquad \text{D-W} = 1.140$$

The above equation clearly reveals that the demand for total financial assets has higher interest elasticity than that of income for the period (1970-1992).

(Regression estimate from 1970-1992 period)

$$\text{Log HLA} = 0.971 \text{ Log RI} + 1.024 \text{ Log GNP} - 2.101$$

$$(3.717) \qquad (16.559)$$

$$R^2 = 0.991 \qquad \text{D-W} = 1.066$$

The demand for highly liquid financial assets indicates a higher income elasticity than that of interest as shown by above regression estimate.

(Regression estimate for 1970-1992 period)

$$\text{Log HLA} = 1.782 \text{ Log RI} + 0.579 \text{ Log GNP} - 1.728$$

$$(3.515) \qquad (4.826)$$

$$R^2 = 0.948 \qquad \text{D-W} = 1.299$$

The demand for less liquid financial assets further indicates that interest elasticity was greater than unity and was highly significant.

Price Level :

Economic theory postulates that the demand for financial assets will be stable provided other things in real value remain equal i.e., elasticity of demand for financial assets will be in unity, other things being equal. In case of Jordan, the demand for financial assets has been expressed in terms of change in price which reveals that the price elasticity demand for financial assets was greater than its unity, it was 1.696 during 1970-1981. It has shown a relative decline during 1981-1992. The elasticity of price level was declined from 1.696 in 1970-1981 to 1.340 in 1981-1992. Though it was not in unity it exhibited a tendency to move towards unity. It is clear from the following logarithmic regression result between total financial assets and price level.

(Regression estimate from 1970-1981 period)

Log TFA = 1.696 Log PI - 0.635

$\qquad$ (16.252)

R^2 = 0.964 $\qquad$ D-W = 0.609

(Regression estimate from 1981-1992 period)

Log TFA = 1.340 Log PI + 1.455

$\qquad$ (6.331)

R^2 = 0.800 $\qquad$ D-W = 0.544

One can notice the progressive fall in the price elasticity of demand for TFA during 1981-92 compared to the previous decade.

Population and Demand for Financial Assets :

When population is introduced as explanatory variable in the demand function, we find that its coefficient is not only significant by the test of individual parameter, but it is highly stable. We are of the opinion that with the growth of monetization and urbanization, financial transactions will increase and with growth in population, demand for financial assets is likely to increase substantially reflecting impact of financial changes. A strong relationship which we find with population variable supports our contention.

Note that growing degree of monetization in Jordan can be seen from the expansion of banking network during the period of our study. In the year 1970 there were 8 banks having 41 branches in Jordan. The number went up in 1980 to 19 banks with 174 branches, and further went up to 26 banks having 343 branches in 1992. Similarly in terms of urbanization, a sharp rise in urban population was registered in Jordan. In 1965, only 46% of total population used to reside in urban centers while in 1979, it went up to 59% and to 67% in 1989 and further to 77.9% in 1991.* These two favourable factors have contributed at large to improve the demand for financial assets in Jordan reflected through the impact of population growth on the demand for financial assets. The regression outcome is self explanatory.

(Regression estimate for 1970-1992 period)

Log TFA = 5.807 Log Pop + 0.519

(17.607)

R^2 = 0.937   D-W = 0.144

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* For years 1979 and 1991 taken from Jordan Economic and Social Development Plan 1993-1997, Ministry of Planning table 10 p. 35. While for 1965 and 1989 has been taken from "World Development Report 1991. The World Bank, table 31 p. 265.

We have identified some crucial variables such as rate of interest, price level and national income influencing demand for financial assets in Jordan. We also attempt to examine effects of degree of monetization and urbanization using population as proxy variable for it. Moreover, we also observe a strong correlation with this variable.

GNP, Rate of Interest, Price Level and Financial Assets :

In the following lines, we present a multiple regression analysis to investigate the influence of major monetary variables, namely the GNP, rate of interest and price level on the demand for financial assets jointly. The regression estimate is presented in log-log form.

(Regression estimate from 1970-1992 period)

$$\text{Log TFA} = -1.407 + 0.769 \text{ Log GNP} + 0.866 \text{ Log RI} + 0.348 \text{ Log PI}$$

$$(6.385) \qquad (2.481) \qquad (1.464)$$

$$R^2 = 0.988 \qquad \text{D-W} = 1.001$$

Regression estimate reveals that 1 percent rise in the GNP brings about 0.77% increase in demand for financial assets. Note that each coefficient of individual parameter is significant by usual test and all these independent variables jointly explain 99 percent variations in the dependent variable. Despite poor value of D-W = 1.001, our estimate is reliable. It is also note worthy that income elasticity of demand is relatively lower (0.77) than that of interest having (0.87) but higher than price elasticity having about (0.35).

We also set up a model for the demand for financial assets considering sub periods 1970-1981 and 1981-1992. The regression estimates are presented below.

(Regression estimate from 1970-1981 period)

Log TFA = -1.139 + 0.898 Log GNP + 0.226 Log RI + 0.103 Log PI

$\qquad\qquad$ (4.514) $\qquad$ (0.453) $\qquad$ (0.271)

R^2 = 0.99 $\qquad$ D-W = 1.487

It is observed that during the period 1970-1981, income emerged as the proximate and statistically strong explanatory variable for the demand for financial assets. Rate of interest and price elasticity coefficientl although having expected sign, were not statistically significant. It is also worth noting that 99 percent variation in the dependent variable is accounted for all the three independent variables. For poor interest and price elasticity we suspect relatively poor financial record which is also reflected in terms of strong government intervention in financial market low financial interrelation ratio. (See chapter 3)

(Regression estimate from 1981-1992 period) ·

Log TFA = -5.580 + 1.516 Log GNP + 4.11 Log RI + 0.232 LogPI

$\qquad\qquad$ (4.078) $\qquad$ (1.065) $\qquad$ (0.863)

R^2 = 0.947 $\qquad$ D-W = 0.909

It should be noted that income elasticity of demand for financial assets improved from 0.89 in 1970-1981 to 1.52 during the second phase period 1981-1992. Whereas some improvement in the interest elasticity of demand for financial assets has taken place. The t-value attached to interest rate variable improved from a low level of 0.453 in 1970-1981 to 1.065 in 1981-1992. This is as per the expectation. About 95 percent variation in the dependent variable is explained jointly by all explanatory variable. Income elasticity is found to be more significant and greater than unity. This is very much expected.

This could be explained in terms of significant development leading to financial deepening and widening in the Jordanian economy caused by strong efforts of the government which to provide financial infrastructure. Also it is to be stressed that it was this period coincided with urbanization and monetization influencing public preference for holding more financial assets to satisfy their needs for transaction and precautionary motives.

In our attempts to estimate influence of the GNP on individual components of highly liquid financial assets like currency, demand deposit and time deposit during 1970-1981, 1981-1992 and for overall period of 1970-1992, all the above components have shown responsiveness to the changes in the GNP. We also notice that the responsiveness of time deposits was relatively highly significant. During the period under study, 1970-1992, the responsiveness of currency to the GNP was 0.918, while that of demand deposits was 1.06 and that of time deposits shown highest responsiveness of about 1.713. This is an evidence of shift in public preference for long term claims on banks which is usually expected in developing financial system. It is also an evidence of institutionalization of saving in Jordan. This emerging trends, we hope would contribute greatly towards enhancing rapid economic development and growth in near future.

Influence of Per-Capita Income on Financial Assets :

From the survey of recent literature and empirical studies, we have found that several studies statistically * assessed the demand for

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* Bhatia and Khatkhate *have not used a simple regression model in this direction, which was commented by* Gupta. So therefore we regressed Per-Capita income on financial assets. *For further details see also* Bhatia, R. J. and D. R. Khatkhate, "Financial Intermediation Savings Mobilization and Entrepreneurial Development : The African Experience" I.M.F. Staff Papers, Vol. XXII, No. I, (March 1975) pp. 132-158 *See again* Gupta K. L., "Finance and Economic Growth in Developing Countries", Croom Helm, (1986), Page, 9.

financial assets. We have also made an attempt to explain variations in the demand for financial assets with respect to per-capita GNP and per-capita GDP. Regression results using logarithm function for different periods are presented below.

(Regression estimate for 1970-1992)

Log TFA $\quad$ = 0.862 $\quad$ + $\quad$ 1.381 Log per-capita GNP

(18.683)

R^2 $\quad$ = 0.943 $\quad$ D-W = 0.190

The above regression estimate shows that for the entire period of 1970-1992, there existed a strong relationship between TFA as dependent variable and per capita GNP. The value of R^2 shows about 94 percent variations in the dependent variable. Whereas t-value is highly significant and it shows income elasticity to be greater than unity. Regression estimates for sub periods are presented below:

(Regression estimate from 1970-1981)

Log TFA $\quad$ = 0.491 $\quad$ + $\quad$ 1.103 Log per-capita GNP

(24.156)

R^2 $\quad$ = 0.983 $\quad$ D-W = 1.061

Regression estimate for 1970-1981 period reveals an improvement as compared to that for 1970-1992. R^2 value has improved to 98 percent indicating variation in dependent variable. While regression coefficient of per-capita GNP remains highly significant indicating the same elasticity trend. We have also noticed considerable improvement in value of D-W statistics. This regression estimate is highly reliable.

The economy of Jordan received a setback during eighties. It was a period characterized by fall in remittances and foreign financial support. This caused distortion in production as shown in the below regression estimate.

(Regression estimate for 1981-1992 period)

Log TFA = -15.269 + 3.652 Log per - capita GNP

(4.181)

$$R^2 = 0.636 \qquad D\text{-W} = 0.576$$

Regression estimate of demand for financial assets during 1981-1992 reveals a poor performance, where R^2 dropped substantially from 0.983 in 1970-1981 to 0.636 in 1981-1992. Again, the value of D-W shows a strong auto-correlation and hence, the regression estimate is not reliable.

In the subsequent analysis we attempt to estimate a demand for financial assets using per-capita GDP as explanatory variable with a hope to get better fit.

(Regression estimate for 1970-1992 period)

Log TFA = -0.258 + 1.289 Log per-capita GDP

(23.299)

$$R^2 = 0.963 \qquad D\text{-W} = 0.277$$

The above estimate reveals that per capita GDP variable also performed better during 1970-1992. It may be noted that R^2 value has gone up considerably to 0.96 and regression coefficient of the GDP per-capita is statistically significant in terms of usual test of individual parameter. The regression estimate using the GDP per-capita as independent variable proved to be reliable for 1970-1992.

But the regression estimate for the 1970-1981 using per-capita GDP lends a strong empirical support to our contention that demand for financial assets was positively responsive to per-capita GDP as shown below.

(Regression estimate 1970-1981 period)

Log TFA = 0.596 + 1.112 Log per-capita GDP

(18.099)

R^2 = 0.970   D-W = 0.726

As we have noticed earlier that, the regression estimate for 1981-1992 period does lend support to our contention that, economy of Jordan was distorted largely, due to inadequacies inflow of foreign remittances and less support of foreign aids to Jordanian economy. It was also during this period that the government of Jordan had to depend on internal resources. It may further be noted that compared to previous period, variations explained in per-capita GDP variable as the independent variable during 1970-1981 is much less. But compared to per-capita GNP variable during the same period per-capita GDP performed better as shown below :

(Regression estimate 1981-1992 period)

Log TFA = -13.022 + 3.290 Log per-capita GDP

(8.674)

R^2 = 0.883   D-W = 0.908

As compared to per-capita GNP as independent variable for the same period, per-capita GDP performed better where t-value more increased to 8.674 and was highly significant. The value of R^2 increased to 0.883 and considerable improvement was noticed in value of D-W statistics.

Based on our findings, we draw the following conclusions.

(1)   For the entire period of our study, i.e., 1970-1992, both per-capita GNP and GDP performed much better.

(2)   During 1970-1981 also, both of these variables yielded better results with minor variation.

(3)   For the period 1981-1992, regression results changed drastically and, consequently, responsiveness of demand for financial assets in terms of both per-capita GNP and GDP was poor. However, per capita GDP performed relatively better than per capita GNP.

(4)   It is beyond any doubt that external shocks received by the economy of Jordan from abroad sources has caused distortion in production and consequently reduces the growth rate subsequently.

Faced with this situation, Jordan government had to resort to fiscal operations to provide strong support to economic activities. It had to supply more claims which were held by the banking system. Thus large part of demand for financial assets was supported by such holding. Note that 1981-1992 period also experienced high rate of inflation and perhaps strong money illusion prevailed which supported demand for these assets.

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