CHAPTER VI

EMPIRICAL VERIFICATION OF THE HYPOTHESIS PERTAINING TO DEBT AND DEVELOPMENT

Economic problems for the economy of Jordan started emerging since the onsetting of centralized planning, though it was undertaken with the best of intentions. Strong government is necessary but the big government is counterproductive. This has been found to be true in every country wherein economic statism was allowed to proliferate in the name of socialism, planning and mixed economy. Marxist socialist theory has collapsed in all communist countries (except China) and the theory of the utility of the expansion of the public sector made England a sick man of Europe from which eventuality, Mrs. Margaret Thatcher saved it by lessening statism to a considerable degree and the bad consequences of mixed economy and centralized planning are becoming very obvious in India, Pakistan, Jordan, Turkey and other countries which the eyes can never fail to see. This is aptly epitomised by the remarks of Prof. P.T. Bauer of London School of Economics regarding the performance of the Government of under-developed countries. He rightly remarked, "They are unable to govern, but are anxious to plan".

The development of Macroeconomics without understanding its microfoundations has led to fallacious concepts, foolish views and silly theories regarding development, planning, public debt, deficit financing and inflation. So we have to define these concepts correctly and grasp them clearly. So that silly theories can be avoided.

125
DEVELOPMENT

Development is the creation and enhancement of human and non-human productive capacity which in the long run results into enhancement of employment, improvement of the standard of living of the common people, diffusion of economic power without endangering monetary stability and without creating chronic balance of payments disequilibrium. Development is a means for the all-round welfare of the people and it should be reflected in the lessening of poverty, enhancement of employment, cheaper availability of the basic necessities of life and the other minimum comforts which the modern science offers, better, distribution of income as well as, economic power, within a reasonable period of time. Thus development, in reality, widens the choice of the people pertaining to goods, occupations, residence, investment etc. Thus if it is true development, it should widen the area of human freedom in all respects. Thus freedom is not only one of the moral values, but it is the basic value without which all other values come to naught. Thus freedom besides being a moral value, it is also an economic necessity for the removal of poverty, unemployment, economic in-justice and exploitation. Acceptance of freedom makes more freedom possible. Thus centralized planning, expansion of the public sector, price control, foreign exchange control, enlargement of public debt, high taxes etc. are all different forms of statism which undermine the freedom of the labour unions and employees associations to fight for the rights of labour and which also lessen the freedom of the consumers besides lessening the freedom of the investors. This results into a low growth rate of national
income, prevalence of a high level of unemployment, perpetuation of poverty, inflation, maldistribution of income and wealth, concentration of economic power in a few hands and chronic balance of payments deficit. This cannot be called development even if it might have resulted into one-sided industrial growth.

Development is thus capital formation, capital to be understood in a very wide sense of the term. Capital goods may not only include machines and tools, but it may also include human education and training, building up of roads and the development of the transport and the communication system, lessening of disease and the building up of the health of the people too. Thus any produced means of production are capital which help in the production of other consumer or capital goods and investment is the creation of capital goods. So development requires enhancement of investment.

RESOURCES FOR DEVELOPMENT:

But investment requires resources. Here also the meaning of the term "resources" is not properly understood. Actually, resources are nothing but savings. Savings may be present savings, past savings and savings of the people of other countries made available to the government and the people of the relevant country. Savings tapped through taxation is called voluntary savings. It can also be tapped through sale of shares. It was argued that inflation creates forced savings by lessening the real incomes of the masses, but Prof. P.A. Hayek, Prof. Milton Friedman and Prof. B.R. Shenoy have shown that the prevalence of
inflation makes it anticipated and hence on one hand, the amount of forced savings diminishes and actually becomes negative due to upward revision of the money wages and salaries and other kinds of incomes of different classes of the people and due to hoarding of goods, and on the other hand, inflationary finance distorts the relative price structure which ultimately brings about recession or depression. So it should be clearly understood that augmentation of money supply through deficit financing does not augment the resources for economic development. So it is futile to believe that in a resource scarce under-developed country, deficit financing is an additional source of resources. Actually, deficit financing not only does not provide any new resources, but actually it reduces the total quantum of resources and directs a substantial part of it into unproductive channels of investment like land, housing property, gold and hoarding of goods and thereby lessens the tempo of development by creating inflation. The only function of deficit financing is to direct the resources to the public sector by reducing their flow to the private sector and doing this also by paying a very high price in terms of sacrifice of efficiency and social justice.

FOUR KINDS OF PUBLIC DEBT:
It is interesting to observe that though deficit financing involved in borrowing by the government from the Central Bank (C.B.J.) implies printing of new money, it is the important part of total public debt. Also, though borrowing by the government from the commercial banks implies augmentation of money supply to finance government budget deficit which is inflationary, still it
is surprisingly not accepted as the part of total deficit financing. But it has all the characteristics of deficit financing and it must be deemed so. So these two kinds of public debt should be considered to constitute deficit financing which may be defined as net bank credit to the government.

The third kind of public debt is borrowing by the government from the people. But this does not imply creation of new money or augmentation of money supply, but it involves only transfer of existing money supply to the government from the people. It enhances the purchasing power of the government, but it equivalently reduces the purchasing power of the people and so the total purchasing power and hence total demand for goods and services in the economy remains the same and so this kind of public debt is non-inflationary unlike the previously mentioned two kinds of public debt which are inflationary.

The fourth kind of public debt is borrowing by the government from the foreign government or from the International Monetary Fund or from the World Bank or from the International Money Market. Credit of this foreign loan is also taken by the government into its budget and hence to that extent, it augments the resources of the government and thereby it becomes instrumental in getting the quantum of deficit financing reduced. Thus from this point of view, it is anti-inflationary. On the other hand, foreign aid becomes instrumental in augmenting money supply, as it enlarges the foreign exchange resources of the banking system. As the foreign exchange reserves of the banking system grow, as a counterpart of it, domestic money supply also
gets expanded. If there is balance of payments deficit, foreign borrowing lessens this deficit and thereby lessens the amount of money contracted or if the amount of foreign borrowing is more than the deficit of the balance of payments and it results into some surplus, then to the extent of the surplus, there is expansion of money supply on this count. Thus on one hand foreign borrowing implies lessening of deficit financing and thereby lessening the amount of money to be expanded and on the other hand, by enhancing the foreign exchange reserves of the banking system, it expands money supply to that extent.

We have described four types of public debt depending on their respective sources. When the Government borrows from the central bank of the country, the newly printed money comes into existence and it adds to the existing supply of high powered money. Let us call it D1. It implied primary expansion of money supply. On the basis of the expansion of the supply of high powered money, the secondary expansion of the supply of bank money on the basis of the increase in their cash reserves, takes place. So the potency of the increase in the supply of high powered money to create inflation is greater. But when the government borrows from the commercial banks, the banks lend to the government by investing in government securities or treasury bills with the help of their cash reserves lying with the Central Bank. Hence the borrowing by the government from the commercial banks also enhances the supply of high-powered money in the economy which has a high inflationary potential. This kind of public debt may be termed as D2. These both kinds of public debt D1 and D2 are inflationary in
nature and both together may be termed as net credit of the banking system to the Government which we call deficit financing. Some economists restrict the definition of deficit financing to credit given to the Government by the Central Bank only, but economists like late Prof. B.E. Shenoy and other leading economists take into account total net credit given by the Central Bank and the commercial banks to the Government as constituting deficit financing.

Non-inflationary debt is incurred by the Government when money is borrowed from the public or when it is borrowed from abroad. This is because the people can lend through their savings and they have no power to create money or credit. Lending by the people to the government reduces their purchasing power, but increases the purchasing power of the government. Thus the total purchasing power in the economy remaining the same, so it proves to be non-inflationary.

In the same way, when money is borrowed from abroad, savings of the people of other countries are made available to the government of the borrowing country. This increases the foreign exchange reserves of the banking system which increases money supply. But against this expansion of money supply, there is made possible the equivalent import of goods from abroad and so it proves to be non-inflationary, as increased money supply is matched by increased availability of goods. Public debt incurred by the government when money is borrowed from the people, may be named as D3 and debt incurring by borrowing from abroad may be termed as D4.
We believe that borrowing by the Government from the banking system namely D1 and D2 must be completely stopped, as it is inflationary and the revenue acquired through borrowing from the people and from abroad i.e. revenue acquired through D3 and D4 must be used for specific public utility projects which are highly productive and capable of directly or indirectly contributing to government revenue in future so as to enable the Government to repay debt with interest with the same rates and without expanding their coverage. So revenue acquired through borrowing from abroad i.e. from foreign debt should not be utilized just to fill the autonomous current account balance of payments deficit. Of course in order to accommodate foreign aid, accommodating deficit in the current account may be created in order to match the capital account surplus arising from foreign debt. In the same way, revenue acquired through borrowing from the people should not be used to meet the deficit in the revenue account of the government budget, but it should be utilized for creating public utility projects covered under the capital account of the government budget.

If debt is incurred for productive purposes irrespective of it being private or public, it is worth having it. When debt is incurred privately, there is no burden on the society, but the burden of it is specifically on that person or firm concerned and it becomes encumbant on them only to see that it is used productively so that from the returns, interest cost also with the part of the principal amount can be paid to the lenders regularly. This does not create much of a problem. But when debt
is incurred by the Government, the use of the loan-revenue does not remain restricted to productive purposes, but the greater part of it is used for non-productive purposes (however much welfare-oriented measures they may be) and hence it becomes difficult to repay the instalments with interest. So the most tempting way of incurring more public debt is resorted to so that the Government is enabled to repay from the revenue collected through fresh loans. But this only postpones the dooms day.

Despite huge amounts of public debt, net amount of new loans becomes smaller and smaller as greater part of fresh loans is utilized to repay the past amounts of loans with interest. The economy comes under debt trap and so the Government finds it difficult to fill in the gap between Government expenditure and Government revenue. The Government in these circumstances, is tempted to resort to larger and larger doses of borrowing from the Central Bank and commercial banks which is phemistically termed as deficit financing.

We have already observed a distinction between internal public debt as borrowed from the people of the country concerned and external public debt which represents the savings of the people of the foreign countries. Foreign debt implies additional resources while internal public debt does not and to the total resources of the economy but merely transfers resources from the private sector to the government sector. So incurring of external public debt is better than incurring of public debt as borrowed from the people of the country as external debt implies an addition to resources for development. But external public debt
also creates a debt trap, as internal public debt does. This is on account of three reasons.

One basic reason is that it is not in the nature of any government to restrict the loan revenue to productive purposes only. Greater or substantial part of it is spent for nonproductive purposes and the inefficiency in the public sector is not checked and on the contrary, more money is allocated to meet the soaring expenditures and swelling deficits. Inability to service debt, goads the government to incur more and more public debt which ultimately lands the country under debt trap.

(2) Second reason is that the repayment of foreign loans is required to be done in terms of foreign currency which necessitates increase in exports for earning more foreign exchange. If the loan revenue is productively employed, it enhances productive capacity to produce output. Growth in output may help in increasing exports or in saving imports and thereby making more foreign exchange available for repayment of loans. But as we have already seen that the loan-revenue is mostly not productively utilized and hence export increase and import substitution get themselves limited. This is also because the government resorts to borrowing from the banking system on a large scale which produces, inflation due to resulting overexpansion of money supply which stagnates exports and encourages boost up in imports leading to balance of payments deficit rather than surplus which is necessary for repayment of external loans.

(3) The third reason is the loan capacity to pay interest, and that also specially in the form of foreign exchange. This is
because of mostly the unproductive use of loan-revenue by the Government. In private debt, such acute problems do not arise, because the specific individuals or specific companies are responsible for investment and for repayment and hence the self-correcting mechanism works for minimisation of error and maximisation of efficiency in use and the burden of repayment and interest is to be borne by debt incurers only.

Classical, Keynesian and the Liberal Schools condoned or supported internal public debt on the plea that the public projects financed out of debt revenue will take time to be completed and their benefits will mostly accrue to future generations and as debt implies future taxation to meet this debt, it is better to shift the burden of financing the projects also on future generations who are the real beneficiaries of them. For the lenders in the present, it is not a burden, but only a future income-giving transaction voluntarily undertaken for mutual benefit. If the productive use of debt revenue is made, national income increases which makes possible more tax revenue available to the Government which in turn, enables the Government to repay the loans with interest.

But as we have already seen that internal public debt as borrowed from the public, does not add to the resources, but only transfers resources from the private sector to the government sector, so loss of productive capacity and output in the private sector also should be offset against gain in capacity and output in the public sector. Thus the government competing with the private sector for catching hold of resources, private investment
and in this way inefficient public investment takes place at the cost of private efficient investment.

In case of internal public debt also, more and more debt is incurred in order to meet the past instalments with interest. Soon the country comes under the grip of debt-trap and willy nilly, it is compelled to resort to more and more deficit financing which leads to inflation.

So every time we find that public debt ultimately leads to debt-traps which necessitate resort to more and more deficit financing that is more and more borrowing from the Central Bank and the commercial banks which leads to inflation and to consequent chronic trade deficits which again lessen the capacity of the debt-incurring country for repayment of loans with interest. So the country that incurs external public debt, should specially avoid deficit financing, as it lessens its capacity to reply by creating inflation and trade deficits. But the inevitable unproductive use of the larger part of foreign loans encourages the government to seek more foreign loans for repayment of the past loans and thus postpones the readjustments in the economy as well as the economic policies that are required. Thus the external public debt goes on accumulation and it ultimately develops into a debt trap for the debt-incurring country.

With the external borrowing on a large scale for a longer period of time, the country forms the habit of having largescale public expenditure. This habit formation can be compared with the case of an oil-exporting country which enhances its public expenditure
to a very high pitch due to a high increase in the price of the barrel of oil in the beginning and then finding it very difficult to reduce its public expenditure and make other adjustments when the price of oil comes down. Jordan is now in the same position due to its habit formation of keeping its public expenditure at a very high level enabled in the beginning to do so by large-scale borrowing from Western and other Arab countries. But foreign aid is mostly in the form of loans and not grants or donations and hence, as we have already shown the economy lands itself into external debt trap. Internal public debt-trap as we have already clarified. Diminishing net external aid despite large-scale gross external borrowing and heavy increase in the non-developmental expenditure in the form of heavy interest burden, compel the government, so to say, to become an easy prey to the tempting remedy of large-scale deficit financing which gives rise to inflation and trade deficits. Gradually inflation becomes double digit and rapid which bids fair to make a U-turn in the economic policies in the direction of reducing public expenditure by pruning the five year plans and making the economy free and inviting private foreign capital to invest in the country concerned to meet the paucity of internal resources. This habit formation of keeping public expenditure on a high pitch with the help of borrowed money has to be changed if the economy is to be salvaged. In Jordan this habit - formation that has taken place on the basis of large-scale external borrowing in the past is coming in the way of making adjustments in the economic policies and the structure of the economy. But before we come to
the discussion of the remedies of the present apilments, let us try to have the empirical investigation of the results of the economic policies pursued in Jordan for the last 18 years. In order to have empirical verification of our hypotheses, we developed linear regression equations and fitted them on the empirical data pertaining to Jordanian economy and tried to measure the coefficients of correlation between various sets of variables with the help of the computer.

As for example, in the 1st set, with the help of two equations, we tried to verify the validity of the monetary hypothesis that the cause of inflation is the persistent rise in money supply per unit of output. Here both the definitions of money supply namely M1 (currency with the public + demand deposits of the banks) and M2 (currency with the public + demand deposits of the banks + time deposits of the banks) were taken into account and hence accordingly the relationship between M1 money supply per unit of output and the consumer price index and also between M2 money supply per unit of output and the consumer price index were examined and R values and F ratios found which were again compared with their table values and the results were very satisfactory from the point of hypothesis.
Relationship between price change and Money supply (M1) Variations
Relationship between price change and Money Supply (M2) Variations

Year


Figure No. VII

141
Set I

(1) \( p = a + bx_1 + e \)

(2) \( p = a + bx_2 + e \) 

where 

\( x_1 = M_1/Yr \)

\( x_2 = M_2/Yr \)

\( P = \text{Consumer price index and} \)

\( Yr = \text{real national income} \)

Results:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0.96</td>
<td>0.96</td>
<td>506.6</td>
</tr>
<tr>
<td>2.</td>
<td>0.96</td>
<td>0.95</td>
<td>397.0</td>
</tr>
</tbody>
</table>

So regarding the 1st equation, we find that the degree of correlation between the price index and the growth in money supply \( M_1 \) per unit of output is very high at the level of 0.96 which means that the 96 per cent variations of the price index are explained by variations in money supply per unit of output.

Of course, here we have taken the help of the economic theory that the increase in money supply is the cause and the change in the price index is the result, as, statistical data merely confirms the degree of correlation between two variables and it by itself does not clinch the issue regarding what is the cause and what is the effect between the two variables regarding which a high degree of correlation is established. F-ratio also very high in comparison with its table value at 1 per cent significance level.
Pertaining to the 2nd equation also, the results are very favourable to the validity of the monetary hypothesis. Here money supply has been defined as M2 by adding time deposits of the banks to M1. The coefficient of correlation is found to be 0.95 which is a very high figure and the F-ratio is also much higher than its table value at 1 per cent significance level.

Thus the results of both the equations of regressing price index on money supply per unit of output are found to be highly supporting to the validity of the monetary hypothesis.

SET II

Now in order to isolate the trend effect, we have taken the log values of the variables which express the growth rates of the relevant variables. So we get the following equations:

1. \( \log p = \log a + b \log X_1 \)
2. \( \log p = \log a + b \log X_2 \)

where \( p \) = consumer price index
\( X_1 = M_1/Yr \quad X_2 = M_2/Yr \)

Results:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co. R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0.96</td>
<td>0.96</td>
<td>457.6</td>
</tr>
<tr>
<td>2.</td>
<td>0.99</td>
<td>0.98</td>
<td>1643.2</td>
</tr>
</tbody>
</table>

Here we observe that the results have improved by isolating the trend effect which imparts more strength to the monetary hypothesis.
Now, increase in money supply does not affect the prices immediately and there is some time lag between expansion of money supply per unit of output and the price level. So in the following equation, we have brought into the picture one year time lag and we have taken their log values indicating thereby the growth rates of the relevant variables. Hence

\[ \log P_t = \log a + b \log X_1(t-1) \]
\[ \log P_t = \log a + b \log X_2(t-1) \]

Results:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0.96</td>
<td>0.96</td>
<td>476.09</td>
</tr>
<tr>
<td>2.</td>
<td>0.98</td>
<td>0.98</td>
<td>1035.60</td>
</tr>
</tbody>
</table>

Here, we observe that the results have somewhat improved as far as growth in money supply M2 is concerned. As far as M1 money supply is concerned, the results have almost remained the same and there is no improvement. But the R square values are very high at one per cent significance level supporting the monetary theory that the persistent expansion of money supply per unit of output is the cause of inflation.

Now the question arises about the proximate and the ultimate causes of the expansion of money supply defined as M1 and M2 is the expansion of the high-powered money which is nothing but the currency or reserve money or legal tender money. Printing currency is the monopolistic prerogative of the government and the Central Bank which is again the government's bank. Thus the
Relationship between Money Supply (M1) and High Powered Money (Xo)

Figure No. VIII

Money supply (M1)

High Powered Money (Xo)

Year

M1

Xo
increase or decrease in the high-powered money is completely under the control of the government only. We term it here as \( X_0 \) and regress \( M_1 \) and \( M_2 \) on \( X_0 \). So, we get the following equations:

Set IV

(1) \[ M_1 = a + bX_0 + e \]
(2) \[ M_2 = a + bX_0 + e \]

where \( X_0 \) = high-powered money

\( M_1 \) = currency with the public + demand deposits of the banks

Results:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>0.9949</td>
<td>0.9946</td>
<td>3150.00</td>
</tr>
<tr>
<td>(2)</td>
<td>0.9749</td>
<td>0.9733</td>
<td>622.80</td>
</tr>
</tbody>
</table>

Here, we find that the relationship between high-powered money \( X_0 \) and money supply popularly defined as \( M_1 \) and \( M_2 \) is closer even than what it is between the price index and the money supply per unit of output.

R square values are found to be between 0.97 and 0.99 and the respective F-ratios also indicate the close relationship at 1 per cent significance level.

Thus the 99 per cent variations in money supply \( M_1 \) and 97 per cent variations in money supply \( M_2 \) are explained by changes in the supply of high-powered money.
Set V

In the Vth set, we take the growth rates of these variables and observe the relationship between them. This requires taking the log values of these variables.

So the growth rates of money supply M1 and M2 are regressed on high-powered money and a very high degree of correlation is found between them. So the log equations will be as follows:

(1) \[ \log M1 = \log a + b \log Xo \]
(2) \[ \log M2 = \log a + b \log Xo \]

Results:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>0.9950</td>
<td>0.9947</td>
<td>3207.9</td>
</tr>
<tr>
<td></td>
<td>0.9974</td>
<td>0.9972</td>
<td>6251.8</td>
</tr>
</tbody>
</table>

The results have improved still further as is evident from F square values and F-ratios. Thus it is shown beyond and shadow of doubt that the proximate cause of expansion of money supply M1 and M2 is the expansion of high-powered money Xo.

Set VI:

We have seen that there is a close degree of correlation between the increase in the supply of highpowered money and money supply M1 and M2. But here the time lag was neglected. So it was necessary to take into account one year time-interval. Accordingly in their log values, we have introduced one year time lag. So we get the following equations:

(1) \[ \log M1(t) = \log a + b \log Xo (t-1) \]
(2) \[ \log M2(t) = \log a + b \log Xo (t-1) \]
Results:

<table>
<thead>
<tr>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.97</td>
<td>0.97</td>
<td>646.39</td>
</tr>
<tr>
<td>0.99</td>
<td>0.99</td>
<td>1953.12</td>
</tr>
</tbody>
</table>

Results were reversed. One year time lag has not improved results, given very high R square values at 1 per cent significance level implying thereby a very close correlation between the supply of high-powered money and money supply defined as M1 and M2. In theory, we have shown that the increase in the cash-reserves of the banks enables them to lend more and thereby become instrumental in the creation of credit which implies expansion of money supply. Time deposits of the banks can at any time, be transformed into demand deposits of the banks with little cost or inconvenience and hence economists like Milton Friedman have considered them to be the part of money supply which again depends on the supply of high-powered money.

So here it becomes perfectly clear that if the total money supply is to be controlled, the supply of high-powered money must be controlled and then alone inflation can be averted so that rapid economic development can be achieved. The supply of High-powered money is under the complete control of the government and its satellite—the Central Bank. So if there is inflation in any country, the government should blame itself and not any section of the people or any foreign government, or any international agency like IMF or IBRD or IDA which is World Bank's affiliate. Of course, the ultimate cause of expansion of money supply M1 and M2 and the proximate cause of expansion of high-powered money is
the soaring government expenditure which are in most of the cases, due either to huge five year plans or the expanding social security system requiring a large and increasing amount of government expenditures. In Sweden, the cause of excessive expansion of money supply was the extensive social security system and it led to the defect of the social Democratic party in 1976 elections after its rule for about 40 years. In India, in Jordan and in many other countries, it is due to large-sized five year plans that excessive expansion of money supply and Soaring internal and external public debt are coming into being thus giving rise to inflation which again hampers economic development.

Large and soaring public expenditures cannot be met fully only by tax revenues and hence public debt is incurred by borrowing from the people or from the banking system or from the foreign countries. Financing of this gap between government expenditure and tax revenue (along with other kinds of revenue) by incurring public debt may be called deficit financing. But as foreign debt implies addition to national resources, it is not included in deficit financing and on the contrary, it becomes helpful in keeping deficit financing at a lower level. Public borrowing from the people also is not considered to be deficit financing, as it does not increase money supply and it can be safely included in government revenue thus lessening budget deficit. In certain countries, like India, government borrowing from the banking system alone may be termed as deficit financing as it alone implies expansion of money supply. Of course, some economists do not
Relationship between Deficit Financing and Money Supply (M1) Variations
Relationship between Deficit Financing and Money Supply (M2) Variations

Figure No. XI

Series A

Series B

M2

D.F.

YEAR
consider borrowing by the government from the commercial banks as deficit financing and consider only government borrowing from the Central Bank as deficit financing. But we have already shown elsewhere that the government borrowing from the Central Bank as well as the commercial banks both constitute deficit financing, as both imply expansion of high-powered money to finance government expenditure in excess of government revenue. In both the cases, money comes from the Central Bank. So, we would like to examine the relationship between deficit financing and money supply or between it and the supply of high-powered money.

In sets VII and VIII, this is done

Set VII:

(1) \( M_1 = a + bx_3 + e \)
(2) \( M_2 = a + bx_3 + e \)

Where \( x_3 = \) deficit financing defined as borrowing by the government from the banking system. (D.F.)

Here money supply defined as \( M_1 \) and \( M_2 \) are regressed on deficit financing.

Results:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>0.76</td>
<td>0.75</td>
<td>52.74</td>
</tr>
<tr>
<td>(2)</td>
<td>0.89</td>
<td>0.88</td>
<td>132.38</td>
</tr>
</tbody>
</table>

Here results are good from the point of view of the validity of the hypothesis. Nearly about 80 to 90 per cent of the changes in money supply are explained by the quantum of deficit financing at 1 per cent significance level. This shows a high degree of
Relationship between Deficit Financing and Money Supply (X%) Variations
The correlation and indicates deficit financing as the chief cause of expansion of money supply defined as M1 and M2.

Set VIII

In this set, we try to examine the relationship between deficit financing and the supply of high-powered money. Our reasoning is that large-scale deficit financing gives rise to large scale expansion of high-powered money which again becomes instrumental in the large-scale expansion of money supply M1 and M2. So here we have regressed the supply of high-powered money Xo on deficit financing X2. So,

\[ Xo = a + bX3 + e \]

Where \( X3 \) = deficit financing

\( Xo \) = supply of high-powered money

Results:

<table>
<thead>
<tr>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.79</td>
<td>0.77</td>
<td>60.84</td>
</tr>
</tbody>
</table>

This shows that nearly about 80 per cent of the changes in the supply of high-powered money are explained by deficit financing and the significance level is one percent. This is a very favourable result demonstrating the close connection between the quantum of deficit financing and the supply of high-powered money.

Set IX

Deficit financing being the difference between government expenditure and government revenue, revenue being defined in various ways thereby giving rise to different definitions of deficit financing, it was thought fit to regress deficit financing.
Relationship between high Government Expenditure and Deficit Financing.

Figure No. XIII

YEAR

156
financing itself on Government Expenditure. Accordingly, we get the following equation:

\[ X_3 = a + bX_4 + e \]

where \( X_4 \) = Government expenditure
\( X_3 \) = deficit financing

Results:

<table>
<thead>
<tr>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.98</td>
<td>0.97</td>
<td>790.8</td>
</tr>
</tbody>
</table>

Thus, here we observe that the relationship between government expenditure and deficit financing is naturally very close. High government expenditures should not necessarily imply large doses of deficit financing, as high government expenditure can as well be financed by high tax revenue or by revenue gathered through borrowing from the people or from the foreign countries. But we know that other alternatives though correct, but have limitations as far as the general weakness of the tender government is concerned and the government is more likely to borrow from the banking system which we call deficit financing. When the government is borrowing from its own people and from foreign countries, borrowing from the banking system (Central Bank and the commercial banks) becomes risky and makes the servicing of the other two types of public debt more difficult. So in these circumstances, deficit financing should be specially avoided, as a blood pressure patient should avoid salt and a diabetic patient should avoid sugar. But generally it is not done and the disaster becomes imminent.
Relationship between Government Expenditure and High Powered Money

Figure No. XIV

Government Expenditure (G.E.)
High Powered Money (Xo)

Year

G.E.  Xo
It was also thought that the degree of closeness of relationship between government expenditure and the supply of high-powered money should be examined. Accordingly, the supply of high-powered money was regressed on the government expenditure and hence we get the following equation:

\[ X_0 = a + bX_4 + e \]

where \( X_4 \) = Government expenditure  
\( X_0 \) = supply of high-powered money

Results:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.78</td>
<td>0.77</td>
<td>59.43</td>
</tr>
</tbody>
</table>

Here it becomes clear that there is a very high degree of correlation between government expenditure and the supply of high-powered money at one percent significance level. Soaring government expenditures are responsible for the large expansion of the supply of high-powered money.

Set X:

Now we would like to examine the effect of total public debt on money supply and also on the price level directly. Our hypothesis is that the increase in public debt beyond a certain limit becomes the cause for the rapid expansion of money supply thereby leading to inflation and thus jeopardising the chances of rapid economic development of the country concerned.

So we regressed money supply \( M_1 \) and also money supply \( M_2 \) on public debt, we got the following equations:
Relationship between Public Debt and Money Supply (M1)

Figure No. XV

Money supply (M1)

Public Debt

M1 X5

Figure No. XVI

Relationship between Public Debt and Money Supply (M2)

Year

--- X5 --- M2
Relationship between Public Debt and General Price Level

Figure No. XIII

YEAR

Public Debt

General Price Level

X5

P

162
(1) \( M_1 = a + bX_5 + e \)
(2) \( M_2 = a + bX_5 + e \)

Where \( X_5 \) = public debt

Results were as under:

<table>
<thead>
<tr>
<th></th>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>0.89</td>
<td>0.88</td>
<td>133.31</td>
</tr>
<tr>
<td>(2)</td>
<td>0.98</td>
<td>0.98</td>
<td>850.06</td>
</tr>
</tbody>
</table>

We find that the variations in public debt explain variations in money supply in a very appreciable way and the possibility of mistake in these results is only one per-cent, as the results are significant at one per cent level.

88 per cent of variations in money supply \( M_1 \) and 98 per cent variations in money supply \( M_2 \) are explained by variations in public debt.

Thus it becomes clear that soaring public debt is the cause of soaring prices in Jordan which is inimical to economic growth. This becomes clear when we examine the relationship between public debt and the price index directly.

Set XI:

So here we have regressed the consumer price index on public debt directly with the help of the following regression equation:

\[ P = a + bX_5 + e \]

where \( P \) = consumer price index

\( X_5 \) = public debt
Relationship Between The Proportion of Public Debt to National Income and The General Price Level.

<table>
<thead>
<tr>
<th>Year</th>
<th>X9 — I — P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td></td>
</tr>
<tr>
<td>1979</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td></td>
</tr>
<tr>
<td>1983</td>
<td></td>
</tr>
<tr>
<td>1984</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td></td>
</tr>
</tbody>
</table>
Results:

<table>
<thead>
<tr>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.84</td>
<td>0.83</td>
<td>84.58</td>
</tr>
</tbody>
</table>

We find that 83 per cent of variations in the price index are explained by public debt and their direct relationship at one per cent significance level.

According to some economists, the burden of public debt cannot be understood when its magnitude is taken as an absolute figure by itself and so it should be taken into account as the percentage of national income. So we regressed the price index on public debt as the percentage of national income. So

\[ P = a + bX_9 + e \]

where, \( X_9 \) = public debt as percentage of national income

\[ P = \text{consumer price index} \]

<table>
<thead>
<tr>
<th>R-Square</th>
<th>Co-R-Square</th>
<th>F-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.99</td>
<td>0.98</td>
<td>719.43</td>
</tr>
</tbody>
</table>

Here we observe that 98 to 99 per cent of inflation is explained by soaring public debt as the percentage of national income at 1 per cent significance level. This is a very important result that we have arrived at.

Monetary stability is necessary for rapid economic development of any country. But public debt beyond a certain limit as the percentage of national income, gives rise to inflation and other related problems which jeopardise the process of rapid economic development. Thus it seems that public debt should be avoided for enhancing the process of economic development and other means like inviting foreign private capital from different countries.
with the conditions of their building of necessary infrastructural facilities for their working and the local participation in the shares of the foreign private companies and recruitment and training of a certain percentage of the local people in the staff of the companies may be insisted upon these foreign private companies by the government as the precondition for their free operation in this country and the granting of all other facilities by the Government.

In the subsequent last chapter, we express our conclusions in the form of the analysis and recommendation.