

**INFLATION IN DEVELOPING
COUNTRIES: THE CASE OF JORDAN**

by

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**Thesis presented for the Degree of Doctor of Philosophy at the
University of Leicester : UK.**

Leicester

September 1989

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To the many who made it all possible, especially to my parents and my family for their appreciation and love.

ACKNOWLEDGEMENTS

I am most pleased to take this opportunity to express my indebtedness and profound gratitude of the contribution of several individuals for their helpful guidance and assistance throughout this study.

First in line is my supervisor, Professor P M Jackson, to whom I am indebted for his suggestions, enlightenment, and for providing constant moral and material encouragement during the study, which had certainly contributed immensely to the quality of this research and beyond. I also extend my thanks to Mr H Rees for his comments on some of the econometric issues.

I am also grateful to my colleagues, especially Dr Jasim Alali for always being ready to listen, to discuss difficulties and also give his comments.

I wish to express my appreciation to the Leicester University Computer Centre staff for excellent facilities and their assistance throughout the study.

I would like to express my deep appreciation to Ms Pat Greatorex for her coping with the task of typing the thesis and turning a puzzling and troublesome hand written manuscript into an excellent final draft.

I owe an everlasting debt to my parents for their love, moral and constant financial support.

Last, but by no means least, I owe a special debt of gratitude to my wife, Tina, who has often provided the encouragement which lifted my flagging spirits, and who has given me her assistance, throughout the production of this thesis, by checking for any mistakes and ambiguities which, but for her vigilance, would have gone unnoticed.

Also my children, Jordanna and Ghaith, whose playful antics have helped to reduce the pressure of my work load.

ABSTRACT

"Inflation in Developing Countries: The Case of Jordan"

by

Hasan Mohammed El-Nader

Since the early 1970s, Jordan like many other developing countries, has experienced significant inflationary pressure in the course of economic development. However, the overall aim of this thesis is to identify analytically and empirically the factors which have contributed to the process of inflation in Jordan, and consequently it is hoped to contribute to the debate on the cause and effect of inflation in LDCs.

This objective, achieved throughout many analytical and empirical investigations, begins with analysing the difficulties which arise in studying inflation in developing countries, and at the same time, highlights the theoretical and practical argument for and against inflation in these countries.

Thus, the thesis has taken a selective review of the theoretical and empirical explanation of inflation in LDCs. Moreover, it has also investigated some of the literature, concerning the relationship between inflation and economic growth in LDCs, at the same time, providing an analytical and empirical examination with reference to inflation and economic growth in Jordan as well as identifying the main factors which have led to the rapid economic growth in Jordan. With respect to the cause of inflation, the thesis has submitted an analytical and empirical examination of the contributing factors which are held responsible for the inflation process in Jordan.

In addition, the cause of inflation in Jordan has been analyzed by producing and testing a replica of the monetarist model, structuralist model, combined model and by conducting some forms of modification by either utilizing Ordinary Least Squares, or by utilizing Cochrane-Orcutt method when it becomes necessary.

Finally, it has also offered a recommendation for both policy makers and planners, on the grounds of empirical findings and also the current economic climate that has prevailed in Jordan.

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CHAPTER 1

Introduction

Inflation appears today to be a world-wide phenomenon, and in many LDCs it has become more than a passing phenomenon. The reason may be that government in these countries see inflation as a means of promoting growth. In fact, the long history and the way inflation is developed in LDCs led two groups of economists (i.e. monetarist and structuralist) in these countries to suggest that the entire area is subject to a type of inflation pressure peculiar to LDCs which needs a special theory to explain it. But the attempt to identify the underlying cause and cure of inflation in these countries has still remained a very controversial issue.

The importance of price stability in economic development in these countries has come under intensive scrutiny by many economic planners and other policy makers. Hence, inflation in these countries poses a grave threat to both the economic and the political system. In spite of the fact that Jordan, like many other developing countries has tried to maintain economic growth and price stability at the same time, price increases on the other hand have become one of the most pressing economic problems facing Jordan since the early 1970s.

1.1 Purpose of the Study

To the best of our knowledge, the present study is motivated by the fact that no elaborate study that involves

analytical and empirical investigation has so far been made for the purpose of identifying the cause of inflation in the course of economic development in Jordan. However, the overall aim of this study is to explore, in more detail, the contribution factors (regarding some structural as well as the monetary factors) and consequently it is hoped to contribute the debate on the cause and effect of inflation in LDCs. Moreover, special attention has been given towards the following issues:

- (a) To conduct a review of the importance of studying inflation in LDCs.
- (b) To examine the theoretical and empirical explanation of inflation in LDCs.
- (c) To explore the analytical and empirical relationship between inflation and economic growth and what are the main factors which have led to the rapid economic growth in Jordan.
- (d) To provide an analytical and empirical examination of the contribution factors which are held responsible for the inflation process in Jordan.
- (e) To produce and test a replica of the monetarist model structuralist model and combine model, and conduct some forms of modification.
- (f) To provide recommendations to policy makers and

researchers in Jordan on the grounds of the empirical findings.

1.2 Scope of the Study

The period of the study is based on annual data for the period between 1966 - 1985. For the analytical investigation we have chosen the years between 1966 - 1985, while the empirical investigation we have chosen the years between 1968 - 1985. The reason for this selection is, because it reflects the sweeping economic changes, as well as the fact that the period has experienced a rapid socio-political and institutional arrangement. At the same time, it provides a lengthened time horizon for reflection and assessment of the economic activities, and problems that have taken place in the Jordanian economy. In fact, the selection of this period is also because the availability of reasonable data and reasonable empirical result respectively. Thus, the period 1966 - 1985 has been chosen intentionally to reflect the lagged dependent variable in the empirical investigation.

Moreover, whatever the data and general information permit, our prime interest will be the behaviour of the inflation in Jordan, many factors will also be examined. These factors include the behaviour of gross domestic product, the role of government, the money supply, foreign prices, wages and food shortages e.g. food price increases.

Data for the analytical and the empirical investigation

were obtained from several sources. For example, the publication of the Central Bank of Jordan, the Department of Statistics in Jordan, the International Labour Organisation, Food and the Agricultural Organisation of the United Nations, the International Trade Statistics of the United Nations and from the international financial statistics published by the International Monetary Fund.

1.3 Methodology of the Study

The methodology adopted in the study has set out to address the following issues:

- (a) The first issue addresses the difficulties which may arise in the study of inflation in developing countries and at the same time, highlights the theoretical and practical argument for and against inflation in these countries.
- (b) Theoretical and empirical issues, which involves a selective review of the explanation of inflation in LDCs.
- (c) Reviewing analytically and empirically the issues concerning Jordan's inflation and economic growth as well as analysing the factors which have led to the rapid economic growth in Jordan.
- (d) To submit an analytical and empirical examination of

the contribution factors which are held responsible for the inflation in Jordan.

- (e) Producing and testing a replica of the monetarist (Harberger) model, structuralist model, and combined model and conducting some forms of modification by either utilizing Ordinary Least Squares (OLS), or by utilizing Cochrane-Orcutt (CORC) method when it becomes necessary.
- (f) Offering a recommendation for both policy makers and planners, on the grounds of the empirical findings.

1.4 Organisation of the Study

This thesis consists of eleven chapters, however, the objective of the current chapter (introduction) is to state the problem in hand, the purpose, the scope, the methodology and the organisation of the thesis. Following this introduction, chapter two investigates the problems which may arise in studying inflation in developing countries and why it is considered to be so important. It also provides an examination of the theoretical and practical argument between inflation and economic development, which implies an inquiry into whether inflation is a necessary condition for development. At the same time, it discusses the problems facing inflationary development policy.

Chapter three provides a review of the theoretical

literature of the origin and the nature of the inflation in LDCs, which implies an examination of the structuralist - monetarist explanation of inflation in the LDCs and the debate between them.

The research moved then to chapter four where it is mainly devoted to a review of the empirical evidence concerning the cause of inflation in LDCs. This involves a selective review of some of the most important empirical studies for both the structuralist, monetarist, and both combined.

Chapter five deals with the relationship between economic growth and inflation in Jordan. This chapter presents a general view of the behaviour of the prices in Jordan for the period 1966 - 1985, which implies that an inquiry into the conditions surrounding the price level. It also provides a concise review of the literature on the relationship between economic growth and inflation in LDCs. At the same time, it establishes an empirical examination of the impact of inflation on the growth in GDP as well as the impact of the growth in GDP on the inflation in Jordan for the period 1968 - 1985, and assesses the main factors behind the rapid economic growth in Jordan.

Chapter six, then attempts to examine the role of the government in the inflationary process in Jordan, which involves an inquiry into some analytical and empirical arguments related to the contribution of government expenditure and the inflationary process in Jordan. It also provides some

insight of the revenue and the impact of direct and indirect taxes on the inflationary pressure in developing countries, identifying the feature of the tax revenue system in Jordan and states the reason behind the growing domestic revenue.

Chapter seven presents an examination of the contribution of the monetary expansion to the inflationary process in Jordan. It involves an inquiry into the parallelism between the annual average rate of change in the money supply and the annual average rate of change in the price level. In this chapter, one tries to explain the reason behind the expansion of the money supply in order to be able to judge whether or not these increases in the money supply are as a result of domestic policies or of external factors. Apart from this, an empirical study of the contribution of money supply to the inflationary process has been conducted with the aid of regression analysis. Thus, this chapter is also devoted to an examination of the composition of the money supply and the relative importance of its component to the money, the behaviour of the commercial banks and monetary authorities. At the same time, it investigates the nature of the activities of the commercial banks.

Following this account, chapter eight is set out, to examine the contribution of foreign trade prices to Jordan's inflation. This involves a review of historical changes which may have contributed to world inflation and also involves an examination of the argument related to inflationary process as a result of changes in the price of traded goods. Thus, this

chapter also provides an investigation of the importance of foreign trade in LDCs and with special reference to Jordan. Moreover, the investigation also covers to what extent domestic prices may be influenced as a result of Jordan's international transactions with the rest of the world, this relationship however, has been tested with the aid of regression analysis.

The study then proceeded to chapter nine, where it has tried to identify in a broader sense the other contributory factors which could be held responsible for the inflationary process in Jordan. However, the first section of this chapter involves an examination of the nature of the labour market and its impact on the movement of the price level. It also involved an inquiry into the conditions which have led to wage increases. Moreover, an empirical investigation using regression analysis has also been applied to measure to what extent the general price level may be influenced as a result of wage increases.

The second section of this chapter involves an investigation of the relative importance of the agricultural sector in economic development, and also identifies the factors behind the shortages in food production and at the same time provides an examination of the impact of food shortages in the general price level. This relationship has been tested with the aid of regression analysis.

Chapter ten is devoted to presenting an empirical investigation into the causes of inflation in Jordan. However,

the empirical investigation of this chapter involves an examination of the monetarist hypothesis using a replica of Harberger model as well as the interpretation of the results obtained by either utilizing Ordinary Least Squares (OLS), or, by utilising the Cochrane-Orcutt (CORC) method. Followed by an integrated model of inflation which embraces both structuralist and monetarist ideas (using the basic Harberger model appended by the structural factors), the structuralist argument has also been empirically examined by using a regression analysis in order to identify the most significant variables underlying the cause of the inflationary process in Jordan, and then the contribution factor model has been also empirically assessed.

Finally, chapter eleven provides a summary of the work and its conclusions and offers some suggestions on the grounds of empirical findings for future researchers and policy makers. In addition, it also outlines the need for further research on this topic.

CHAPTER TWO

Why the Study of Inflation in Developing Countries is Important

In this chapter, we will mention some of the main problems which may arise in studying inflation in developing countries and we will examine the main theoretical and practical arguments between inflation and economic development, which implies an inquiry into whether economic development necessarily involves inflation or indeed, whether inflation is a necessary condition for economic development. We will also discuss the problems facing inflationary development policy.

2.1 Introduction

First of all, like many economic concepts, the problems associated with inflation arise not from an explanation of it but rather from trying to define it. In fact there remains no single definition of inflation that is generally accepted.⁽¹⁾ However, the most popular definition of inflation is made by Laidler and Parkin (1975)⁽²⁾ where they defined inflation as

"a process of continuously rising prices, or equivalently, of a continuously falling value of money"

(Laidler and Parkin (1975), p.741)

(1) See, for more details H Frisch (1983), Theory of Inflation, Cambridge University Press, Cambridge, p.9

(2) D E W Laidler and M J Parkin (1975) "Inflation : A Survey", Economic Journal, 85(340), p.741 - 809.

This definition, however, refers to the symptoms of inflation but tells nothing about the causes and effects of inflation. However, Killick (1981)⁽¹⁾ has also pointed out that this definition must imply that a rise in price of some particular commodities is not inflationary if compensated by falls in other prices. He also added that a once-and-for-all rise in the general price level is not inflationary unless it is accompanied by responses which generate a process of price rises continuing over time. A persistent rise in the general price levels means that a given sum of money will purchase a smaller quantity of goods than was formerly the case. This indicates an alternative way of defining inflation, as a continuous decline in the purchasing power of money.

Although it has been customary in the past that inflation is seen as an economic phenomenon, nowadays it has witnessed a growing awareness that the study of its causes and consequences cannot be confined to economic analysis alone. Hence it has been argued by Hirsch and Goldthorpe (1978)⁽²⁾ that inflation:

"pervades the political structures of the society and may become embedded in those structures"

(Hirsch and Goldthorpe, 1978, p.1)

Above all, the analysis of inflation in LDCs cannot be isolated from the more general problem of underdevelopment.

(1) For more details see Tony Killick (1981), Policy Economics: a Textbook of Applied Economics on Developing Countries, London, Heinemann, (chp. 7, p.157)

(2) F Hirsch and J H Goldthorpe (1978). The Political Economy of Inflation, Oxford, Martin Robertson.

However, any attempt which involves keeping away the discussion of social, political and institutional factors will merely conceal the real issues involved. Thus, it not only hides the real issue, but it will also be a miscarriage of justice in reducing a complex economic and social-political problem to a simple technical one.

Therefore, Hirschman (1981)⁽¹⁾ has been argued that:-

"It has long been obvious that the roots of inflation, whether in Western Europe, the United States, Latin America or elsewhere, lies deep in the social and political structure in general, and in social and political conflict and conflict management in particular.... it would be difficult to find an economist who would not agree that "underlying" social and political forces play a decisive role in causing both inflation and the success or failure of anti-inflationary policies." (Hirschman 1981, p.177)

There are, however, many difficulties which arise when one attempts to study the rate of inflation in LDCs.⁽¹⁾ First of all the data on price increases in LDCs should be treated with some caution, hence data in most LDCs are still characterised by paucity, inadequacy, and even when it is available, it is hard to obtain accurate data which have been objectively estimated.

Moreover, the majority of LDCs do not compile GNP deflators but the only available price series are the cost of

(1) For more details see C H Kirkpatrick and F I Nixson (1976), "The Origins of Inflation in Less Developed Countries: a Selective Review" in M Parkin and G Zis (eds) Inflation in Open Economies, Manchester University Press, p.126 - 174.

living index and the wholesale price index. Both of these measures are, however, subject to their own peculiar serious shortcomings. The wholesale price index is constructed from prices at the level of first significant commercial transactions, and is frequently heavily weighted with the price of exports and imports, which tend to be measures of equivalents of foreign prices rather than measures of domestic prices. In contrast, the cost of living index is usually based upon a limited sample of goods and services purchased in major urban areas and hence is not a clear representation of the consumption patterns of the population residing in small urban centres and rural areas.

Thus, studying inflation in LDCs is not an easy task. Particularly when one tries to apply the concepts and theories which have originated in the economic and institutional setting of western, industrialized economies. These difficulties have virtually become a major concern because of a number of basic characteristics which are common to LDCs such as the widespread disguised unemployment or underemployment, factor immobility, market imperfection, rigidities and disequilibrium between demand and supply in different sectors of the economy, dualistic structure of production, rapid growth of population rigidity in the tax structure, inadequacies of money and financial markets and widespread government control of wages, price, exchange rates, import and subsidies and incentives which are often misplaced. Applying these concepts and theories of inflation on the LDCs may lead to a faulty analysis and incorrect policy prescriptions.

2.2 Inflation and Economic Growth

The issue of whether inflation is inevitable in the growth process has made the topic of inflation and growth so interesting to many economists and inflation itself is currently considered of global significance, affecting both the developed and less developed countries (LDCs) in varying magnitudes. While developed countries are faced with different tasks of maintaining full employment with price stability, the developing countries, committed to a development programme which is considered to be a major national objective, are confronted with the problem of maintaining high rates of economic growth with reasonable price stability, and hence the process of economic development which is likely to trigger off inflationary pressures.

It is also argued that the LDCs are more prone to inflation than developed economies. The reason for this is that many governments in LDCs see inflation as a means of promoting growth. Thus, as emphasised by Thirlwall (1978)⁽¹⁾ given the level of income distribution and low per capita income, voluntary savings would not come to the level required to achieve the high growth target as a result of governments in LDCs who resort to money and credit creation to finance the excess investment over saving. This is often referred to as "forced" savings (Thirlwall (1978), p.258).

(1) A. P. Thirlwall (1978), Growth and Development, second edition, London: Macmillan Press.

It has been agreed by many economists that a high level of economic development will necessarily generate inflation. Among these are the structuralist writers who are often accused of favouring inflation as a means of accelerating economic growth.

According to this view, economic development can generate structural imbalances in the economy, particularly when some sectors in the economy are underutilized and suffer from inadequate demand which coexists with other sectors who experience excess demand and other sectors characterised by inelasticity of supply, coupled with a rapid urbanisation and rapid industrialisation which eventually will have profound effects on the composition of aggregate demand. This will, in turn, lead to the sectoral inflation which may spread through the economy and consequently produce a general increase in price levels.

Thus, structuralists are also concerned with the problem of making price stability compatible with development, but they argued that price stability can only be achieved through economic growth which is a long run process. And yet, they emphasized that inflation cannot be curbed in the short run without imposing heavy social and economic costs retarding the processes of structural change which is necessary for long term growth and development. For this reason they prefer inflation to stagnation, and inflation is regarded by them as the lesser of two evils.

Other economists also argue in favour of a mild rate of inflation on the basis that it will eliminate the slackness in the economy by generating more employment and investment opportunities where capital formation will take place.

Also, rapid economic growth requires a higher rate of investment in productive capital. Thus, it is argued that inflation can provide incentives to investment, since inflation is considered to increase the profitability of the firms.

Inflation, according to the Keynesian income redistribution approach (which is derived from the work of Keynes, Tract on Monetary Reform (1923), Treatise on Money (1930), and The General Theory of Employment, Interest and Money, (1936) is said to promote economic growth by redistributing income from wage earners who are supposed to have low marginal propensities to save and invest, to profit earners who are supposed to save and invest. Redistribution forces can therefore increase the aggregate marginal propensity to save which implies an effective increase in the savings ratio S/Y . Where S is saving and Y is gross domestic product (GDP). Hence investment would increase with a subsequent increase in output. But this will depend on meeting the requirement that investment GDP (I/Y) ratio increase with inflation and that growth increases with investment - GDP ratio. If these requirements hold then investment - GDP ratio (I/Y) will increase with inflation.

The Quantity Theory approach affirms that inflation assists economic development by reducing the purchasing power of money

as it has been emphasised by Johnson (1967)⁽¹⁾ that:

"Inflation imposes an "inflationary tax" on the holdings of money, which consists in the real resources that the holders of money have to forgo each period in order to restore the real value of their money holdings".

(Johnson, 1967, p.286)

Thus it is argued that the existence of this tax, in turn, would encourage the public to reduce their holdings of money, which implies money held by the public will dictate less of the available resources, which in turn lead to release more real resources for use in the public sector. Therefore, if the public sector made use of these resources in development programmes and if they are used for investment, then this may lead to more employment and output. For this reason, it is believed that inflationary policy may accelerate economic growth. Inflation can therefore be used to implement development.

Likewise, the decline in the real wage due to rising prices, may lead to wage lags, which implies that there will be an increase in the investable profits, if they are used for development purposes. This may lead to economic growth.⁽²⁾

(1) H. G. Johnson (1967) "Is Inflation the Inevitable Price of Rapid Development or a Retarding Factor in Economic Growth", in H. G. Johnson, Essays in Monetary Economics, London, George Allen and Unwin Ltd. p.281-291.

(2) For more details see, R de Oliveira Campos (1964) "Economic Development and Inflation with Special Reference to Latin America", in O.E.C.D. Development plans and Programmes, O.E.C.D. development Center, Paris, pp. 129-37. Reprinted in G. M. Meier, (1976), Leading Issues in Economic Development, 3rd edition, New York: Oxford University Press.

Thus, there are many economists who advocate maintaining inflationary policy on the grounds that inflation encourages saving and capital formation which eventually leads to a higher rate of economic growth.(1)

Harberger, however, is in favour of bias towards inflation. Since he argued that inflation has a lower welfare cost in terms of unemployment of labour and capital and he also added that it may not only lead to increases in capital formation but also to efficient use of existing capital stock.(2)

This, however, leads us to emphasise that the pressure of inflationary demand allows the full utilization of manpower and resources, whereas an attempt to curb inflation, may be required to eliminate the excess demand. This may, however, lead to serious consequences, which involve bringing down employment and resource utilization and which may subsequently lead to an increase in the bottleneck factors in the economy.

The LDCs are, however, inclined to adopt inflation as a major "tax" to finance public expenditure in order to contribute to economic development, because of the inability of developing countries to raise enough revenue by taxation or by

(1) See: U. Tun Wai (1959) "The Relation Between Inflation and Economic Development: A Statistical Inductive Study", I.M.F. Staff Papers, 7(2), pp. 302-17.

(2) Arnold C. Harberger (1964) "Some Notes on Inflation", in Werner Baer and Issac Kerstenetzky, eds. Inflation and Growth in Latin America, Homewood III: Irwin, pp. 319-51.

borrowing from the public. This is because the tax revenue as a proportion of GNP is low and the tax elasticity with respect to income is always less than unity. Given certain demand for money assumption which implies a relatively smaller use of money than in common advanced countries, therefore, inflation can be used to raise revenue.

In addition to revenue promotion, others in favour would argue that governments of LDCs may try to be less obliged to depend upon foreign resources and that this may lead to serious implications for their economy if they stay dependent upon foreign resources.

Thus, the success of inflationary financing will depend upon the scope and range of financial institutions that exist. It has been argued that inflation, as a means of finance, could promote the growth of financial institutions and that such a growth would imply that they may persuade the public to hold financial rather than physical assets which in turn would release real resources available for economic growth.⁽¹⁾

There are many economists who would, on the other hand argue against inflation as a means for economic growth on the grounds that the disadvantages of inflation are greater than its advantages and that the end result has a devastating effect on development. Hence, the nature of inflation is such that it

(1) A. P. Thirlwall (1974), Inflation, Saving and Growth in Developing Economies, London: Macmillan, p.15.

has social and economic consequences. Moreover, if inflation is left unhalted, then at the end of the day, the result will be painful and its implications costly for the economy.

It is generally argued that many LDCs' governments engage in inflationary development policies which is likely to be under strong political pressure to protect certain sectors of the economy from the effects of inflation through imposed prices and controls on food, rents and urban transport fares, and so on.

This argument was emphasised by Kahil (1973)⁽¹⁾, in which he argued that the factors prospectively responsible for inflation were political rather than economic. Since the main policy objectives of the LDCs government in the 1950s were to generate a rapid industrial base and the winning of the loyalty of the urban masses while at the same time protecting other political interest of influential groups in the economy.

Likewise, Goode (1984)⁽²⁾ also argued that

"For a time inflation may perform the political function of avoiding a direct confrontation between interest groups that press demands beyond the economy's capacity to meet. By public spending and increases in money income, the government can seem to satisfy the conflicting demands and thus avert strife and possible violence. Later people will realise that their gains were illusory and the feeling of having been cheated may heighten bitterness and intensify strains on the political system" (Goode 1984, p.228)

(1) R. Kahil (1973), Inflation and Economic Development in Brazil 1946-63, Oxford: Clarendon Press. p.330.

(2) R. Goode (1984) Government Finance in Developing Countries, Washington D. C. The Brookings Institution.

Therefore, it is argued that the most dangerous factor to economic development that is brought about by a high inflation rate is the threat of social upheavals which are capable of wrecking the whole process of economic development.

This argument has been emphasised in recent sociological theories of inflation.⁽¹⁾ For example, Egypt (1979) and Sudan (1985) have witnessed political unrest due to the removal of subsidies, which in turn has led to high rises in the price of rice and staple foods. Riots in protest against food prices have increased and have led the government to reinstate the subsidies to keep the peace. These events in Egypt and Sudan underscoring the importance of price stability in the context of economic development.

Another argument against inflation, is distortion and misallocation. Such consequences of inflation may arise if the government imposes price controls in an effort to repress inflation or to protect certain sectors of the economy. Thus, such controls may restrict or even discourage the expansion and development of certain activities in the economy, i.e. discourage investment in basic industries and infrastructural services, which required to be produced in bulk, or require a long gestation period (especially the agricultural production and the agricultural techniques and utilities). Besides

(1) See for more details: J. H. Goldthorpe (1978), 'The Current Inflation: Towards a Sociological Account', in F. Hirsch and J H Goldthorpe (eds), 1978, op. cit. p.186 - 216.

control may be satisfactorily effective for short periods, but usually the result in the long run is a shortage, black market and inefficient production and distribution.

Others add that the situation may become even worse, when governments call for subsidies for these activities, in order to keep the price control going. This, however, implies that government expenditure will most likely to increase. Therefore, a means of finance has to be found to finance its expenditure, then governments may have to resort to borrowing and also have to raise the real interest rate to attract savers which may, in turn have an adverse effect on the budget deficit and investment and consequently on economic growth.

Above all, it has recently been argued by many economists, notably Aghevli and Khan (1978)⁽¹⁾, Goode (1984)⁽²⁾, Heller (1980)⁽³⁾, and Johnson (1984)⁽⁴⁾ that a rapid rate of inflation may increase government expenditure, while government tries to sustain its expenditure in real terms. This will, however,

(1) B. B. Aghevli and M. S. Khan (1978), "Government Deficits and Inflationary Process in Developing Countries", I.M.F. Staff Papers, Vol. 25, September, pp.383-416.

(2) R. Goode (1984) op. cit.

(3) P. S. Heller (1980), "Impact of Inflation on Fiscal Policy in Developing Countries", I.M.F. Staff Papers, Vol. 27, December, pp. 712 - 48.

(4) Omujunde E. G. Johnson (1984), "On Growth and Inflation in Developing Countries", I.M.F. Staff Papers, December 31(4), p.636-60.

have a lasting effect on the budget deficit, and on the inflationary process because government revenues are always behind in real terms in many developing countries due to the collection lags, the form of expenditure and government revenue reaction to inflation and other factors.

This, has led Tanzi (1978)⁽¹⁾ to emphasise that governments in developing countries which have resorted to the use of inflation as a means of finance in order to generate growth, should take into account the effect of inflation on the existing tax system.⁽²⁾ He has also further argued that inflation may reduce the real value of tax receipts. Governments in developing countries should therefore incorporate this reduction in their account.

It has also been argued by Johnson (1967)⁽³⁾ that the real interest is likely to be negative during a high rate of inflation, when it is eventually accompanied by interest rate control. This may discourage saving and, given the condition of low levels of saving in most LDCs, saving will be reduced even further.

(1) V. Tanzi (1978), "Inflation, Real Revenue and the Case for Inflationary Finance: Theory with application to Argentina", I.M.F. Staff Papers, Vol. 25, September, pp. 417-51.

(2) For more details see V. Tanzi (1982), "Fiscal Disequilibrium in Developing Countries", World Development, Vol. 10, December, pp. 1069-82.

(3) H. G. Johnson (1967), op. cit.

At the same time, a high rate of inflation may distort confidence in the stability of the value of money and may lead to a reduction in its real value. Consequently peoples' savings held in money form will be reduced and, if the real level of consumption is to be maintained, then saving will be further reduced.

It is generally argued by Shaalan (1962)⁽¹⁾ that inflation may have a detrimental effect on economic growth, because a rapid rate of inflation may induce people to invest in non-productive sectors of the economy, such as hoarding of gold, precious stones, foreign exchange, real estate, inventories of goods and materials. This occurs because investment in these sectors would hedge against the depreciation of the external value of the currency, ensures a high rate of return and does not, necessarily, require the ability to predict or even to manage it.

This has also been emphasised by Ghatak (1978).⁽²⁾ In times of high inflation, people may speculate in unproductive sectors (because among other factors people do not have the confidence in monetary assets) and that this may lead to a weakening or prevention of the growth of banks and financial institutions.

(1) A. S. Shaalan (1962), "The Impact on the Composition of Private Domestic Investment", I.M.F. Staff Papers, 9(2), pp243-63.

(2) S. Ghatak (1978), Development Economics, London: Longman.

Furthermore, inflation may discourage the inflow of foreign capital and this may create more difficulties for governments in LDCs both in the financing and maintaining of expenditure and its effects on domestic institutional organisations.

The social consequences of the redistribution of incomes caused by inflation may arouse public hostility against the use of inflationary policies. Furthermore it may add to the existing inequalities in the distribution of income in many LDCs since it is argued that inflationary financing often tends to redistribute income in favour of profit earners rather than wage earners. Thus, more inequality may arise when profit earners use these resources in unproductive sectors.

Meanwhile, it is also argued that, given the high marginal propensity to consume by wage earners, their real consumption is likely to fall. Hence, many economists argue that consumption could also have a favourable effect on the growth of the economy in LDCs.⁽¹⁾

(1) For more details see:-

J. A. Mirrlees (1975), "A Pure Theory of Underdeveloped Economies", in L. G. Reynolds, Agricultural Development Theory, New Haven: Yale University Press.

A Foxley (1976), "Redistribution of Consumption: Effects on Products and Employment: Journal of Development Studies, 12 (3), pp.171-190.

C.J. Bliss and N. H. Stern (1976) "Economic Aspects of the Connection between Productivity and Consumption", University of Essex Discussion Paper No. 67.

Another adverse redistribution effect of inflation arises when a transfer of wealth from creditors to debtors occurs where creditors attempt to safeguard their wealth. Nominal interest rates will rise with inflation, and this may in turn effect investment and consequently economic growth. A high rate of inflation may therefore jeopardise the economic growth.

Inflation may also depress labour productivity through a loosening of industrial discipline. Innovation may be reduced as a result of less incentives by businessmen due to rapid changes in inflation rates which could cause an increase in uncertainty about future price movements which may imply that they will require a larger return to induce them to adopt cost cutting innovation. Harberger (1964)⁽¹⁾ has, however, emphasised the above argument against inflation.

It has been argued that, if redistribution happens, then the reason regarding its social effects should not be used in the case of a mild rate of inflation since it may enrich the process of development. This argument is emphasised by Thirlwall (1974)⁽²⁾:-

"The distribution consequences of inflation which are often uppermost in people's minds and constitute one of the main arguments against inflation in developed countries are hard to assess. The consequence depends on so many characteristics of individuals and are so widely diffused that it is difficult to make a firm judgement on whether inflation increases income inequality or not, let alone to say whether the distribution is "better" or "worse". The

(1) A. C. Harberger (1964), op. cit.

(2) A. P. Thirlwall (1974), op. cit.

evidence is equivocal... on some grounds an individual might gain from inflation, on others, lose. The net result may be zero. It cannot be said that the existing rich will necessarily get richer, and the poor poorer. In the context of developing countries, the possible inegalitarian distribution consequences of demand inflation should not be allowed to constitute an argument against the use of mildly inflationary policies if one of the objects of the policies is to create additional employment... The old who suffer most from inflation.... are frequently cared for in extended family systems in the developing countries and a large number of people in self-employment and farming are in a position to defend or insulate themselves against market trends. The major beneficiaries of inflationary finance should be the unemployed which represents a move towards a more egalitarian structure of incomes.

(Thirlwall, (1974), p.33-34)

Thus, it is argued that inflation in typical LDCs may proceed at an unsteady and unanticipated rate. Such variations in the rate of price increases may cause distortion in economic calculations and make planning more difficult because of the risk and uncertainty which accompany inflation. Hence, it has been argued that to finance a long run fixed capital investment (such as building a hospital) is difficult. On the other hand, dropping such a project may have serious consequences on long run investments.

Finally, there is also another reason against a high level of international trade. Thus it is also added that any developing countries undergoing a rapid rate of real Gross National Product (GNP) will have to confront a pressure on their balance of payments, as well as when governments try to curb inflation. Therefore this may lead governments in LDCs to undertake remedial action. Moreover, such action may aggravate the problem. Action such as import controls, devaluation and Import Substitution Industrialization (ISI).

However, import controls and devaluation remedies can be ineffective, if the demand for foreign products is inelastic. Thus import controls usually imposed by high tariff rates which will eventually lead to a higher domestic price. This may be due to the tariffs themselves or because they stimulate black market activities.

Also, governments sometimes undertake devaluation policies in order to encourage more exports and to reduce the imports, but such action is not likely to succeed, because developing countries are heavily dependent on imports of intermediate and capital goods required for production and investment. Consequently this may lead to problems in financing expenditure on imports and eventually create more problems for the balance of payments.

Furthermore, the use of Import Substitution Industries (ISI) policies are usually accompanied by problems for the balance of payments since it may lead to more imports and less exports because the ISI usually concentrate on production of consumer goods which are heavily dependent on foreign supplies of intermediate and capital goods, where in turn, the results will be a diversion of resources away from the exports.

Thus, such industries may be confronted with a problem (due to shortages of supplies, or import bills cannot be paid) which may lead to their collapse and, consequently, to more difficulties for the balance of payments. Since governments should pay for its import expenditure in foreign exchange to

implement its ISI, this may be considered as a diversion of income to foreign countries and, bearing in mind the consequences of foreign influence on the industry, may be subjected to political tactics.

In reality, government in LDCs may resort to the use of protective tariffs, this may involve an increase in the industries' costs which consequently lead to higher prices. Thus, if the result of increasing protection is in terms of higher prices for domestic goods than for those paid for imports, then the consequence of the industry is socially inefficient.

Therefore any LDCs suffering from long term balance of payments deficits should be very careful in using the inflationary policies. Since it may reduce the competitive power of a country in export markets, eventually the result may price itself out.

Moreover, there is another problem against inflation, namely, the growing disassociation between inflation and economic development which is also emphasized by Johnson (1967)⁽¹⁾, and Harberger (1964)⁽²⁾ who do not support either extreme view of inflation as a necessary condition for economic development or inflation as a factor impedes economic development.

(1) H. G. Johnson (1967), op. cit.

(2) Harberger (1964), op. cit.

Despite the increasing number of empirical studies on inflation and growth, it is still inconsistent in findings. Johnson (1967)⁽¹⁾ sums up the debate that the viable historical and comparative evidence on this point, whether inflation is associated with rapid or slow economic growth, is fairly conclusive, as there is no convincing evidence of any clear association, positive or negative between the rate of inflation and the rate of growth.

Johnson also concludes that the question of inflation and growth relations should go beyond the simple correlation of growth rates and rates of price changes. This may not, however, be an easy task since it concerns the fundamental causes of economic growth which may be many and varied, and an even more controversial problem is the question of the causes of inflation in the LDCs. Thus it is sometimes difficult to isolate the influence of inflation on growth.

Finally, the conclusion derived from this chapter is that inflation by no doubt can create social and economic problems for society if it is left unchecked. Thus, policy makers should be aware of such consequences and it should become their responsibility to restrict the growth in the rate of inflation within tolerable limits to the society which implies within the limit that it does not create serious and harmful effects on the social and on the economy.

(1) H. G. Johnson (1967), op. cit.

Consequently this has led Johnson⁽¹⁾ to emphasize an upper limit of 10% as an annual average rate of inflation, but this naturally depends on the country's social economic structure. Hence it differs in different countries.

(1) H. G. Johnson (1967) op. cit.

CHAPTER THREE

Review of the Theoretical Literature of Inflation in LDCs

Having stated in the previous chapter the importance of studying inflation in developing countries, in this chapter our main objective will be to examine the structuralists and the monetarist explanation of inflation in LDCs, and we will highlight the debate between them.⁽¹⁾

3.1 Structuralists

In this section we will attempt to analyse the worldwide phenomenon of inflation in many LDCs, where it has become more than a passing phenomenon. Thus, the LDCs have also witnessed a long history of inflation, which has led a group of economists, in these countries to suggest that there is a type of inflationary pressure peculiar to LDCs, and therefore, it requires a special theory to explain such a phenomenon. However, these economists, generally known as structuralists, which have emerged in Latin America in response to the rejection of the theories of the Demand Inflation and

(1) For a comprehensive study of both theoretical and explanations of inflation in LDCs see C. H. Kirkpatrick and F. I. Nixon (1976) "The Origins of Inflation in Less Developed Countries: A Selective Review", in M Parkin and G Zis (eds) Inflation in Open Economics, Manchester University Press, p.126-174 and C. H. Kirkpatrick and F. I. Nixon (1987) 'Inflation and Stabilization Policy in LDCs', in Norman Gemmell (ed.) Surveys in Development economics, Basil Blackwell, Oxford, p.172-202.

Cost-Inflation which is dominant in the Western Countries, they also believe that it is only applicable to countries at a high stage of development.

Therefore, inflation in LDCs in their view cannot be explained as something divorced from the problems of underdevelopment and development. Thus inflation in LDCs can also be complex to untangle since it can be intensified by many factors, namely economic, political and social conflicts (for example class struggle between conflicting interests; between government business and labour to defend their economic positions).

However, there are many advocates of structural inflation, most notably; Seers [(1962)⁽¹⁾, (1964)⁽²⁾], Grunwald (1961)⁽³⁾, Prebisch (1970)⁽⁴⁾, Sunkel (1960)⁽⁵⁾, and Felix (1961)⁽⁶⁾

(1) D Seers (1962), "A Theory of Inflation and Growth in Underdeveloped Economics Based On the Experience of Latin America", Oxford Economic Papers, 14(2), June pp174-195.

(2) D Seers (1964), "Inflation and Growth: The Heart of Controversy", in W. Baer and I Kerstenetzky Inflation and Growth in Latin America Homewood, Illinois Irwin pp 89-103.

(3) J Grunwald (1961), "The Structuralist - School on Price Stabilization and Development: The Chilean Case", in A. O Hirschman, (1961), Latin America Issues: Essays and Comments, New York: Twentieth Century Fund pp 95 - 123.

(4) R Prebisch (1970), "Structural Vulnerability and Inflation", in G. M. Meier (1976), in Leading Issues in Economic Development Studies in International Poverty New York, Oxford University Press, pp 238-41

(5) O. Sunkel (1960), "Inflation in Chile: An Unorthodox approach", International Economic Papers No. 10 pp 7-31

(6) D. Felix (1961), "An Alternative View of the "Monetarist" - "Structuralist" Controversy" in A. O. Hirschman op.cit. pp 81 -

The structionlists seek the causes of inflation basically on the supply side. Thus, their argument is based on the forces underlying the inflationary pressure from the real side during the growth process. Also, their explanation of inflation in LDCs is based on the reference of several unique characteristics.

However, a less developed economy is usually subjected to a number of economic, technological, sociological and political constraints. It is also characterised by the absence of basic structural reforms, and growth and development which may not be expected to proceed smoothly. In addition, the less developed economies and societies are characterised by a dualistic structure.

Also, many LDCs resort to development strategies, which are based on consumer goods, and Import Substituting Industrialization (ISI), in which there is a heavy dependence on foreign capital and technology which is usually capital intensive. Besides that, these countries are characterized by rural-urban migration, which has led to the neglect of their rural sector, particularly in agricultural production for the domestic market. In addition to that, it is also characterised by an unequal distribution of income and many LDCs have pursued inflationary policies which have made income distribution even more unequal.

Hence, it is emphasized by Sunkel (1960)⁽¹⁾ that the

(1) Sunkel (1960) op. cit

"Basic inflationary pressures. These are fundamentally governed by the structural limitations, rigidity or inflexibility of the economic system. In fact, the inability of some productive sectors to adjust to changes in demand - or in short, the lack of mobility of productive resources and the defective functioning of the price system - are chiefly responsible for structural inflationary disequilibria."

(Sunkel (1960) pp110)

However, the structurlists argued that the root of inflation in many developing countries is caused by many obstacles, bottlenecks and constraints. Many writers notably Felix (1961)(1), Balassa (1982)(2), Johnson (1984)(3), Goode (1984)(4) Arnolt (1985)(5) Kirkpatrick and Onis (1985)(6) and others have made an extensive list of obstacles, bottlenecks and constraints, which are as follows:

(1) The inelasticity of food products, which may imply that food products fail to expand output in response to arise in demand;

(1) D. Felix (1961) Op.cit.

(2) B Balassa (1982), "Disequilibrium Analysis in Developing Countries: An Overview", World Development 10(12) pp 1027-1038.

(3) O. E. G Johnson (1984), "On Growth and Inflation in Developing Countries", I.M.F Staff Papers December 31(4) pp 636-60.

(4) R. Goode (1984), "Government Finance in Developing Countries", The Brooking Institution Washington D.C

(5) H. W. Arndt (1985), "The Origin of the Structuralists", World Development 13(2) pp 151-159.

(6) Colin Kirkpatrick and Ziya Onis (1985), "Industrialization as a Structural Determinant of Inflation Performance in I.M.F. stabilization in Less Developed Countries", The Journal of Development Studies 21(3) April, pp 347-361.

- (ii) The unavailability of foreign exchange, due to the weakness of international trade sectors;
- (iii) The rigidity in the tax structure and government expenditure, due to the income inelasticity of tax system, or budget constraint and the inability to raise enough internal saving;
- (iv) The factor of immobility and downward rigidities, and
- (v) the inability to supply various intermediate inputs such as fuel, fertilizers, transport facilities and credit availability.

Thus, the structuralist school of thought is divided between two main groups, the old structuralists and the new structuralists. Also, it has been argued by Balassa (1982)⁽¹⁾ that there is a substantial difference in the analysis between the new structuralists and the old structuralists on the grounds of structural constraints, and the appropriate policy response to them.

However, the old structuralists have demonstrated that the structural constraints are an inevitable result of the pressure of growth on LDC's economic structures. They also argue that market reform alone is not likely to generate the appropriate supply response, since there is an existence of immobility in resource, market segmentation, and institutional rigidities.

(1) B Balassa (1982) Op.cit.

In contrast, the new structuralists have demonstrated that the supply constraints are the result of the market distortions, which may be caused by price and exchange rate rigidities, monopolies, tax subsidies and trade restrictions. Consequently, the new structuralists are in favour of the liberalization of financial and trade markets, which in practice can be seen as a means of supplementing demand management policies .

However, let us now explain in more detail the obstacles, bottlenecks and constraints which are believed to be behind the inflationary process in LDCs.

(i) The agricultural sector in most LDC's are characterised by primitive technology and low supply response, uneven land distribution. Absentee ownership and other institutional structural factors also contribute to the relative backwardness of agriculture. Hence, Sunkel (1960)⁽¹⁾ has pointed out this with respect to Chile (the country in which the structuralist analysis originated) that:

"... the stagnation of global agricultural production, cannot be attributed to market demand, and/or price conditions, but must be due to factors inherent in the institutional and economic structure of the main part of the agricultural sector itself."

(Sunkel 1960 pp115).

Thus, there are other factors that have hindered food production and made it rigid and unresponsive to demand

(1) O Sunkel (1960), Op.cit.

pressure, such as government policies which are in favour of industrial growth at the expense of agriculture, or a system of imposing price controls which serve to discourage food production.

These, however, have led to cause an inelasticity of food supplies, which constitutes a structural inflationary factor.

The structuralists' argument is based on the concept that the demand for food supply is a function of population growth, the growth of per capital income and the degree of urbanisation. Thus, they also argued that agricultural sector in LDC's doesn't respond adequately to the rising demand for food product during the process of economic development and the consequent industrialization, taking into account the existence of inelasticity of supply of food and inelastic demand for food. This, inevitably will create excess demand for food product, and as a result this will lead to a rise in the level of prices.

Also, the rise in prices may create a demand for higher wages, since it causes a fall in real wages, and if wages also rise, this is likely to squeeze the profit margins in industry, due to the rise in labour cost. Therefore, the industry will also increase its prices and will eventually pass it on to the consumers in still higher prices.

This, however, has been emphasized by Kalecki (1976)⁽¹⁾ that the supply of food in LDCs may be fairly rigid and that the inelastic supply of food will, if aggregate demand increases and raises food prices, such an increase would cause a decline in real wages, and eventually will generate an inflationary price wage spiral. Therefore, rising food prices caused by the agricultural sector are claimed to be the prime mover in inflationary pressures and are supposed to be the main source of wage price spiral as food occupies a very important place in the total spending of LDC's.

- (ii) The second major bottleneck identified by the "structuralists" is the foreign exchange bottleneck, which arises because the rate of growth of total foreign exchange receipts (earnings from exports and capital inflow such as aid and private investment) is not sufficient to meet their rising imports demand which is generated by accelerated development efforts, rapid population growth and industrialization effort which has taken place within an environment of technological limitation, structural imbalances and imperfect factor mobility.

Thus, this may imply that inadequate foreign receipts can form an effective structural constraint upon the growth and development of the economy as pointed out by Chenery and Strout (1966)⁽²⁾, since:

(1) M. Kalecki (1976), Essays on Developing Economies, Hassocks, Harvester Press.

(2) H. Chenery and A. Strout (1966), "Foreign Assistance and Economic Development", American Economic Review 56⁽⁴⁾ part 1, September pp 679-733.

"... rapid growth requires a large increase in the supplies of machinery and equipment, raw materials and other manufactured goods that are typically imported in a poor country. The more rapid the rate of growth, the larger the reallocation of labour and capital away from traditional patterns that will be needed to prevent bottlenecks developing. If this reallocation is not sufficiently rapid, shortages of imported goods will provide a limit to further growth quite apart from the investment limitations. The import limit reflects the inability of the economy to provide the composition of output from domestic sources plus imports that is required by its level of income, rate of investment and pattern of consumer demand. In cases of acute shortages of imported goods the economy will be unable to transform potential saving into investment because of insufficient supplies of investment goods (Chenery and Strout 1966, p.682). The similarity of "the gap - analysis" of foreign aid requirements and the foreign exchange constraint interpretation of inflation in LDCs."

Therefore, the foreign exchange bottleneck argument implies that typical LDCs will experience persistent pressure on the balance of payment, with a permanent tendency for the foreign balance to move into deficit. Eventually, balance of payment difficulties force the LDC to devalue their currencies and this in turn adds to domestic inflationary pressures especially when the elasticity of demand for import is very low.

Also, the decline in their external position provokes import restriction and import substitution. Thus, via the mechanism of excess demand associated with the rise of import price, this will add to the inflationary situation.

Hence, Baer (1967)⁽¹⁾ has emphasized that

(1) W Baer (1967), "The Inflation Controversy in Latin America: a survey", Latin American Research Review (Spring) 2(2), pp.3-25.

"...control of imports will create shortages of many formerly imported goods. The relative domestic price of these goods will rise and thus contribute to the inflationary forces..... balance of payment difficulties will sooner or later force countries to devalue their currencies; this will also have the effect of an immediate upward push on the price level, especially if imports consist of many consumer goods, including basic foodstuffs, which the agriculturally inelastic country might be forced to import."

(Baer 1967, p.9)

Besides that if a policy of import substitution is pursued behind high tariff walls, and pressed forward with less regard for dynamic comparative costs, then this can also be a potent source of inflation in developing countries. Since the imposition of tariffs on imported manufactured goods force up the price level to the domestic consumer as compared with the previous situation.

Also, the danger behind such a policy is, when it encourages the establishment of industries of limited market, because it has to operate on an inefficient scale, or have to be monopolized to achieve a more efficient economies scale. Thus when monopolies are operating in a protected market, this can be a source of inflationary pressure since this is no incentive for them to be "cost conscious".

Another effect of import substitution industries is, to turn the domestic terms of trade against agriculture and adds to the problem in the agricultural output (due to the lack of investment in agriculture sector) and this would have an adverse effect on agricultural exports, which is

considered to be an important source of foreign exchange.

However, the structuralists in the LDC's have also attached a considerable importance of the instability of world demand for primary products and consequent fluctuations in export earnings. Thus, the earnings from exports may decline not because of a decline in real exports, but because of reduced world market prices, due to the fact that their exports consist essentially of primary products, and this is subject to low income elasticity of demand, and faced with competition from synthetic substitutes as a result of technology. On the other hand their imports from industrialised countries are of high income elasticity of demand.

Thus, it also added that the instability in foreign sectors of developing countries can create an inflationary pressure. Since, an improvement in foreign sector is likely to be accompanied by a rise in per capital income, and economic activity and this will generate a demand - pull inflation. Also, the deterioration in the foreign sector may exert cost-push inflationary pressure, due to a rise in import volume and import prices.

However, both types of inflation are said to exist in developing countries. Furthermore, it has been argued that instability of export proceeds may be inflationary, especially when it leads to a reduction in government revenue and this therefore forces governments to resort to

deficit financing to maintain its expenditure.

(iii) Some structuralist writers, but not all, have identified a third bottleneck, that is the lack of internal financial resources. The structuralists argue that rapid development efforts increase the range of necessary government involvement in the economy, mainly in the social and physical infrastructure facilities, but government revenues rarely expand rapidly enough to meet the growth of government expenditure. Thus, the government in LDCs usually are forced to play a larger role in capital formation, because many LDCs are still characterised by the low rate of private capital formation and its preference for saving in non-productive investment. Meanwhile the inability of tax revenue in LDCs arises from their tax structure which is characterised by regressive and tax-collecting bureaucracies and are described sometimes as inefficient and corrupt.⁽¹⁾ However, the insufficient government revenue is usually solved by recourse to deficit financing⁽²⁾ which is bound to have inflationary consequences. Moreover, the budget deficit and credit expansion can lead to an increase in the money supply. Whereas the increase in the money supply is seen by the

(1) for more details see W. Baer (1967) Op.cit.

(2) for example, Olivera 1964 doesn't accept this as a structural bottleneck, for more details see J. H. G. Olivera (1964), "On Structural Inflation and Latin American 'Structuralism' ", Oxford Economic Papers (November) Vol. 16 No. 3 pp. 321-332.

structuralists as a permissive factor which allows the inflationary spiral to manifest itself and become cumulative, thereby the money supply is considered to be passive and treated as dependent on real factors. Therefore, the increase of money supply is a symptom of the structural rigidities which give rise to the inflationary pressures rather than the cause of inflation itself. However, they argued that the increase in the supply of money is a necessary condition for the rise in the general level of prices, but it is not regarded as a sufficient condition. Therefore, they would argue that the sustaining forces behind this increase may be economic, political and social which have led the monetary authorities to expand the money supply.

(iv) Also, the structuralists identified another contribution factor to the inflationary process, such as the factor immobility and downward rigidities. The first one to spell out this role was the United Nation World Economic Survey⁽¹⁾ in which it stated that:-

"An additional key element in inflationary pressures underdeveloped countries is the high degree of immobility of resources which prevents the structure of production from adapting itself sufficiently rapidly to the pattern of demand".⁽²⁾

However, this has led many economists to believe that structural inflation has resulted from the general

(1) United Nations (1957), "The United Nation World Economic Survey 1956", Department of Economic and Social Affairs New York,

(2) Ibid pg.8.

immobility of factor of production, the presence of monopoly power in industry and bottlenecks that hinder the equilibrium of demand and supply and the inequitable distribution of wealth.

Therefore, the lack of mobility and adaptability on the part of work forces makes expansion and diversification of the economy more difficult and expensive. Since the existence of the weak structure of industry and lack of competition give monopoly power to established firms and hence allow them to charge what the market will bear. Therefore, firms with monopoly power generally produce less and charge more than firms in pure competition.

(iv) Finally, some structuralist also identified other bottlenecks which is considered to be of importance in giving rise to inflationary pressures. This however, has been pointed out by Myrdal (1968)⁽¹⁾ that:-

"Other bottlenecks such as lack of adequate electricity, fuel, imported raw materials, transport, repair facilities and credit facilities are important in given rise to inflationary"

(Myrdal 1968, pp. 1928-29)

In addition to these basic inflationary pressures, Sunkel (1960) also identified exogeneous inflationary pressure.

These would include upward movement in the price of

(1) G. Myrdal (1968), "Asian Drama: An Inquiry into the Poverty of Nations", Volume III, Allen Lane The Penguin Press London.

imported goods and services and major increases in public expenditure arising out of natural disasters and political pressures.

Moreover, Sunkel (1960) also argues that cumulative pressures are influenced by inflation itself. These pressures are identified as an increasing function of the extent and the rate of inflation and they include the orientation of investment, expectations, the negative impact of inflation on productivity including distortions brought up by price controls and the lack of export incentives.

So far the outlined structural constraints above give rise to price increases, which in turn lead to a rapid and continuous increase in price levels, there must be an effective transmission or propagation mechanism which allows for the various inflationary pressures to reveal themselves.

This however, has led Lewis (1964)⁽¹⁾, to distinguish between factors that start a price rise and a spiral process that keep prices rising. According to Lewis, the process of inflation may be described as a mechanism which may be triggered by a number of factors, which include increases in money supply, rise in the price of domestic food stuffs, etc. He also added that if these or any factors cause the cost of

(1) W A Lewis (1964) "Closing remarks", in W Baer and I Kerstenetzky (1964), Inflation and Growth in Latin America, Homewood III, Irwin.

living to rise:-

"Then the mechanism starts wages rise, and this raises prices more, wages more, prices more, and so on. Secondly, in those countries where the marginal ratio of government receipts to national income is below the the average ratio, the price rise opens up a budget deficit because government costs rise faster than government revenue. This gives an extra twist to the spiral. Thirdly, the rise in prices forces devaluation and, this raises import prices proportionately to the devaluation, and domestic price in somewhat smaller proportions.... so that with wage pressures, budget deficit and devaluation, prices may rise continually and at a high rate for reasons which have nothing to do with the original cause".

(Lewis 1964, pp 21-22).

However, the structuralists are very articulate in their diagnosis of Latin American inflation, but their policy recommendations are far less explicit, and do not go beyond the structural changes, which by themselves, are characterised by a long-run nature, and cannot be serviceable recipes for the short-run cure of inflation.

Therefore, the structuralist tends to advocate gradualism in anti-inflationary programmes and proposes land reform as a means of expanding agricultural output and to remove the supply rigidities in the agricultural sector. Thus, they propose export acceleration and diversification, and import substitution as a means of widening the import capacity bottleneck. They suggest that removing illiteracy and improving education as a means of weakening the tendency for labour mobility to act as a ratchet on money wages. They also suggest that the tax system should be reformed in order to strengthen their fiscal system.

Given these measures, the structuralist explanation of

inflation in the LDCs has been criticised on a number of grounds. First of all, it fails to provide a formal explanation of the fact that an increase in the relative price of food leads to an on-going inflation, since it requires that the relative price of food increases continuously and at an increasing rate in order to account for inflation. Also, the structuralist hypothesis for the existence of bottlenecks in food production and their inflation consequences have been criticised on the grounds of empirical evidence, which implies that agricultural production does respond to price incentives. It has been suggested by Goode (1984), however, that:-

"....Agricultural production is responsive to price incentives and that farmers will accept new and improved seeds and cultivation methods when they are available and profitable. Domestic food production can be supplemented by imports, which, of course, have to be paid for by exports"
(Goode 1984, p. 271)

Secondly, it neglects the wage resistance and industrial prices to downward pressure, the role of inflationary expectations, which are considered to be an important factor in the inflationary process. However, recent empirical studies in industrialised countries show that the expectation about inflation cannot be taken for granted.⁽¹⁾

Thirdly, their explanation of inflation leaves the role of aggregate demand (or money supply) unspecified which may be evident in their objection to the use of fiscal and monetary restraint as a means of dealing with inflation, and also

(1) For more details see for example J A Trevithick and C Mulvey (1975), The Economics of Inflation, Martin Robertson, London, pp.106-125.

because of their disapproval of the role of monetary policy in the LDCs as a possible factor in the growth process.

Finally, one should point out that many of the structural rigidities which are indicated by the structuralists which prevent an economy from achieving maximum output constitute the very essential part of being underdeveloped, which are common in most LDCs.

3.2 Monetarist

In this section we will examine the monetarist approach, which claims that the cause of inflation should be sought in the source of excess demand. According to them, the development process in a less developed country leads to a monetary expansion rate that is greater than the rate of increase in real output. Consequently such expansion will create an inflationary pressure in the country.

Thus the monetarist school of thought emphasizes that the pressure of monetary demand is the domineering factor in the inflationary pressure. Also they believe that the inflationary pressures whether generated by supply shortages, wage increases in any other way cannot be augmented themselves into a general price level and continue to raise prices unless monetary expansion occurs in the economy, or income velocity rises (which by itself is assumed to be greatly influenced by monetary expansion).

This, however, has been emphasised by Friedman (1970)⁽¹⁾
that:

"...Inflation is always and everywhere a monetary phenomenon... and can be produced only by a rapid increase in the quantity of money than in output."
(Friedman (1970) p.24)

Above that, he also argued that there are many different reasons for the increase in the quantity of money but he also emphasised that nothing will produce a sustained rise in the price level unless it produces a more rapid increase in the money supply than output and nothing will halt inflation unless it causes an end to the excessive rise in the money supply.

It has also been argued that the relationship between the quantity of money and inflation may be closer in LDCs than in the developed countries, because the LDCs usually possess a much less sophisticated financial structure and consequently favour money substitutes.

Therefore, the nature and the causes of inflationary pressure in LDCs may possess characteristics peculiar to themselves, which thereby requires different policy prescriptions.

(1) M. Friedman (1970), "The Counter Revolution in Monetary Theory", Institute of Economic Affairs occasional paper No. 33.

Furthermore, let us now examine the main source of monetary expansion in a developing economy. The monetarists, however, have considered the role of budget deficit as a major source.⁽¹⁾ Hence, the aim of these countries is to industrialise and develop, which in fact leads these governments to resort to deficit financing, thereby a serious unbalanced budget can cause inflationary pressures.

Meanwhile, the monetarists emphasise that in a country where real resources are limited, inflation is bound to be initiated, if government emphasis is on securing additional resources without other sectors in the economy being willing to reduce their share of national output.⁽²⁾

Hence, the monetarists stress that governments in LDCs usually finance expenditure by borrowing from the central banks and this leads to an increase in the money supply and borrowing from the banking system will expand the private credit as a result of rising bank reserves.

(1) See for example, A. C. Harberger (1964) "Some Notes on Inflation", in W. Baer and I. Kerstenetzy (eds), Inflation and Growth in Latin America, The Economic Growth Center, Yale University, p.322 and E. Gudín (1962), "Inflation in Latin America", in D. C. Hague (ed) Inflation, Proceedings of a Conference held by the International Economic Association, London, Macmillan & Co. p. 343.

(2) See for more details E. M. Bernstein and I. G. Patel (1952) "Inflation in Relation to Economic Development", I.M.F. Staff Papers, 2(3), p.368.

Thus, many LDCs have attempted to use some policies in order to encourage exports and discourage imports which are seen through the use of multiple exchange rates. However, multiple exchange rates usually mean that the central bank is required to subsidise the difference between import and export exchange rates. Such action will involve the bank paying more to exporters for their foreign exchange than it receives from importers. The result of this policy is that the money supply will increase.

However, Kirkpatrick and Nixon (1976)⁽¹⁾ have summarized the monetarists analysis of inflation in LDCs by saying that :-

"Inflation originates in and is maintained by expansionist monetary and fiscal policies, comprising government deficit spending (coupled with the operation of inefficient state enterprises and uneconomic pricing policies), expansionist credit policies and the expansionary exchange operations of central banks."

(Kirkpatrick and Nixon (1976), p.136)

The Latin American monetarists also argued that the effective way of reducing the rate of inflation is curbing the excess demand through monetary and fiscal policies, control of wage increases and the elimination of over value exchange rates. Further, they argue that the dominant source of growth in the money supply is central bank borrowing by the central government and the most effective way of rate of growth of the money supply is to block off this source of growth. This can be done either by eliminating the central government deficits which the borrowing is being used to finance or by

(1) C. H. Kirkpatrick and F. I. Nixon (1976), op. cit.

substituting private sector borrowing for central bank borrowing. However, given the primitive state of LDCs' capital market, the former is the only real alternative.

Above all, we should also consider the structuralist-monetarist controversy of inflation in LDCs, and we should take into account that a rigid separation between them could be a hazy separation.

However, it is important to note that the monetarists do not deny the existence of structural rigidities and bottlenecks in LDCs but they emphasize that they are not structural or autonomous in nature. Rather, they are a result of the price and exchange rate distortions which are created by inflation itself and government endeavours to reduce price increases.

For example, Campos (1964)⁽¹⁾ argued that the alleged structural inelasticity of food supplies is, in fact, the result of the frequent administrative control of food prices imposed by governments in order to protect the urban consumers and avoid growing pressures for wage increases.

(1) Roberto de Oliveira Campos (1964) "Economic Development and Inflation with Special Reference to Latin America", in G. M. Meier (ed) (1976) Leading Issues in Economic Development, 3rd edition, New York University Press, pp 316-321.

Such interference in the operation of market forces has had a discouraging effect on food producers, but this distortion is induced by the administrative controls and is not inherent in the structure of land ownership. Also, unfavourable input pricing has consistently undermined profit opportunities in agriculture which has led to low investment in agriculture.

Moreover, they suggested that high prices for some items such as food are necessary to attract an adequate supply, but this should be done within the context of overall control of the money supply and the reallocation of resources should be done through market forces. Hence, high prices for such items are compensated by low prices for others, and as a result, inflationary pressures are not generated.

The monetarists also emphasize that the reason behind the slow growth of exports is policy induced rather than structurally induced. Thus, Campos added that :-

"the inelasticity of world demand for primary export would tend to lower the export capacity below import requirements for growth, rendering necessary an accelerated process of import substitution. But, at least initially, import substitution tends to be inflationary because of the relative inefficiency of the new industries during the learning period, this cost pressure being aggravated by the need for exchange devaluation in attempt to restore external balance (1976 p.318).

In general, the monetarists believed that the exchange rates are typically over valued and the development efforts are used to emphasize the import substitution of industrialization (inward-looking) rather than outward looking policies which are aimed at maximizing traditional exports and developing new lines.

Nevertheless, the monetarists accept the existence of constraints and bottlenecks, but the causal relationship is reversed. Moreover they believe that bottlenecks in the economy prohibiting growth will be eliminated when inflation is brought under control. This, however, is based on the argument that inflation leads to a great waste of resources and produces distortion which in the long-run might slow down or even stop economic growth (depending upon the intensity of inflation).

Also, the majority of monetarists recognize the social priority of development but argue that stable and sustained growth can only be achieved in an environment of monetary stability.⁽¹⁾

Yet, the monetarists have been criticised on the one hand on the grounds that it is too strong to be adopted (in controlling the money supply), since controls will involve restrained investment, consequently generate unemployment and even losses in real output, and will augment the supply problem, thereby creating political unrest. On the other hand, some would argue that it is too weak to be adopted (in controlling the money supply), because without the influence of fiscal policies it does not essentially control excess demand nor does it go to the core of the problems generated by the structural and institutional problem, such as the very limited financial markets which are dominant in the LDCs.

(1) R. De O. Campos (1967), Reflections on Latin American Development, Austin and London, University of Texas Press.

3.3 Summary and Conclusions

Finally, let us summarise and conclude this chapter. First of all, the LDCs have experienced a long history of inflation and that LDCs are more prone to inflationary pressure than developed countries. Thus, the two main schools of thought were discussed which mainly concern the origins and the nature of inflation in LDCs. The structuralists on the one hand has claimed that the basic forces of inflation in LDCs are structural in nature and that inflation is a supply phenomenon. Thus the structuralists have argued that inflation in LDCs was as a result of a number of obstacles, bottlenecks and constraints, that have prevailed in these countries.

Moreover, the structuralists do not deny that inflation could not be sustained without monetary expansion but regard this as irrelevant. Hence, price stability would only be achieved by monetary means at heavy costs such as stagnation and underemployment resources. In the structuralists view, a reduction in the money supply would only attack the symptoms of inflation, but not the underlying cause of inflation.

The monetarists, on the other hand, argue that the causes of inflation in LDCs arise as a result of the monetary expansion in excess of real income growth. Also, the monetarists hold the view that the only effective way of reducing inflation, is curbing the excess demand through monetary and fiscal policies, control of wage increases and the elimination of over value of exchange rates. Thus, the

monetarists do not deny the existence of structural rigidities and bottlenecks in LDCs but they argue that most of the alleged supply inelasticities and bottlenecks are not autonomous or structural in nature, they are instead, a result of price and exchange rate distortions which are created by inflation itself and by government attempts to reduce it.

The overall conclusion which might be suggested is that neither structuralist nor monetarist explanations are sufficient enough by themselves and what we actually need is to draw attention to the fact that inflation in LDCs could be a result of the combination of both demand and supply factors, and the problems of inflation in LDCs cannot be divorced from the problems of underdevelopment and development.

CHAPTER FOUR

Empirical Studies of Inflation by the Structuralist,

Monetarist and Both Combined

Having earlier explained the theoretical argument of the origin of inflation in the LDCs by both structuralists and monetarists, in this chapter we will review some of the most important empirical studies for both the structuralist and monetarist and both combined.⁽¹⁾

4.1 Empirical Studies of Inflation: Structuralists

Edel (1969)⁽²⁾ has investigated the inflationary experience process which emerged from food supply bottlenecks in eight Latin American Countries. He tests two main propositions, the

(1) As we noted in an earlier chapter, for a comprehensive study of both theoretical and empirical approach to inflation in LDCs, see:

(i) C H Kirkpatrick and F I Nixon (1976) 'The origins of Inflation in Less Developed Countries: A Selective Review', in George Zis (ed) Inflation in an Open Economy, Manchester University Press pp. 126 - 174.

and

(ii) C H Kirkpatrick and F Nixon (1987) 'Inflation and Stabilization Policy in LDCs in Norman Gemmel (ed.) Surveys in Development Economics, Basil Blackwell, Oxford, pp. 172 - 202.

(2) M Edel (1969) Food Supply and Inflation in Latin America, (New York, Praeger).

first one involved that food has lagged behind the required rate of growth. Secondly, whether the agricultural lag is also associated with inflation, balance of payment problems and inflation. Thus, he also defined the adequacy of food supplies as the rate of autonomous growth of production (which may arise from the adoption of new techniques, increases in labour forces, and the expansion of production areas etc) sufficient to satisfy the demand without creating a change in the relative prices given, income elasticities of demand and growth in real income.

On this basis, Edel⁽¹⁾ has also shown that in Mexico, Brazil and Venezuela, that food production is shown to be sufficient over the period 1953 - 62, while in Chile, Columbia, Peru, Uruguay and Argentina, food production falls beneath the required level. He also concluded that:

"The trend or autonomous rate of growth of food output would thus seem to be a more important determinant of the adequacy of a country's agriculture than the existence of a positive response to prices... it may be incorrect in these countries to speak of "inelastic supply" as the central aspect of the problem, it seems justifiable to speak of "inadequacy" of production trends in Chile, Columbia, Peru, Uruguay and Argentina and add inelasticity as a factor, perhaps in the last three" (Edel 1969, p.41 - 42).

Furthermore, Edel did not find a perfect relationship between food supply and inflation but has concluded that

"...the direction of the relationship is the one indicated by the structuralist theory that less adequate food production means more inflation, as well as relative rises in the food prices, more food imports, and slower growth in other sectors of the economy" (Edel 1969, p.135-6).

(1) M Edel (1969) op. cit.

Another example of an empirical study of the structuralist approach is Kahil (1973)⁽¹⁾ where he has studied inflation in Brazil for the period 1946 - 63. This study was, however, mainly to examine the four alleged structural bottlenecks, namely the agricultural sector bottleneck, the inadequate mobility of capital, the external bottlenecks, and the effect on demand and costs of rapid urbanisation. He concluded that:

"the structural weakness of the economy cannot have played a significant role in the evolution of the price level from 1945 to 1964, and that their aggravation towards the end of the period was more an effect than a cause of the acceleration of inflation" (Kahil 1973, p.327).

Kahil also added that price rises were caused by

"...large and generally growing public deficits, together with too rapid expansion of bank credit in the first years and, later exaggerated and more and more frequent increases in the legal minimum wages" (Kahil 1973, p.329).

He also argued that these factors interacted in such a way that it was impossible to distinguish cause from effect and the basic cause of inflation

"Appears to be simply parts of its propagation mechanism - merely passive elements in an uncontrollable process which seems to have a life of its own, and dominates the whole economy" (Kahil, 1973, p.329 - 330).

Finally, he qualified his monetarist conclusion by arguing that the factors ultimately responsible for inflation were political rather than economic. Hence, the two policy aims of the fifties in Brazil where rapid industrialization and the

(1) R Kahil (1973) Inflation and Economic Development in Brazil, 1946-63, Clarendon Press, Oxford.

winning of the allegiance of the urban masses whilst at the same time serving the interests of other politically important groups such as big industrialists, bankers, merchants and contractors.⁽¹⁾

The work of Argy (1971)⁽²⁾ is also another example of the empirical study of the structuralist in which he has provided, to some extent, an econometric analysis of structuralism. In this study, unlike other, earlier studies, Argy has specified a form which is suitable for hypothesis testing. Thus, his empirical study was mainly to assess the contribution of structural elements in inflation using cross section data for 22 developing countries for the period 1958 - 1965.

He has computed a variety of indices, in order to examine the four structural hypothesis, namely, the demand shift hypothesis, the foreign exchange scarcity hypothesis, the export instability hypothesis, the agricultural bottleneck hypothesis. He also added two additional variables to some of regression, there were the government budget rate and the rates of change in money supply.

(1) Kahil (1973), op. cit. p.330.

(2) V Argy (1970) 'Structural Inflation in Developing Countries', Oxford Economic Papers, 22 (1), pp 73 - 85.

Argy has, however, found little statistical support for the four alleged structural bottlenecks, but obtained a much stronger result when the monetary variable was included as an independent variable.

Argy's empirical study acknowledges the difficulties involved in testing the structural position. Hence it is very difficult to specify correctly and construct indicators which represent adequately the four alleged structural bottlenecks. For example, in order to test the Foreign Exchange Scarcity hypothesis, Argy uses

- (i) The average annual percentage change in terms of trade, and
 - (ii) the average annual import ratio (import over GDP).
- However, these measures are inadequate and do not represent the capacity to import, and consequently are not sufficient to test the balance of payments constraint.

There is also reason to believe that a significant multi-collinearity between the explanatory variable used in the regression analysis is likely to be in existence.

4.2 Empirical Studies of Inflation : monetarist

Harberger (1963)⁽¹⁾ has examined the dynamics of inflation in Chile during 1939 - 58. Ever since, his work has become the

(1) A C Harberger (1963) "The Dynamics of Inflation in Chile", in C Christ et. al. (eds) Measurement in Economics: Studies in Mathematical Economics and Econometrics in Memory of Yehudi Grundfeld, Stanford, Stanford University Press, pp 219 - 250.

most influential and the best known empirical study of inflation in Latin America. His model is based on a reduced form single-equation. Thus he used the traditional liquidity preference function to express the demand for money. In this premise, the demand for money is assumed to be stable and a function of the price level, the level of real income and the cost of holding money. Thus, the money supply is assumed to be exogeneously determined and in an equilibrium situation the price will adjust to equate the demand for money to an existing supply, provided the level of real income and the cost of holding money are all held constant. Then, the price level is expressed as a function of the quantity supply of money, the level of real income and the cost of holding cash. Thus, the effects of increases in the money supply on the price level are assumed to take place over a period of time and thus, the money supply is included in the equation in the form of distributed lag.

Hence, Harberger was mainly interested in analysing the rate of inflation rather than the price level. Therefore, he has used the rate of inflation as the dependent variable and regresses it against the percentage change in money supply during the present and preceeding year, and the percentage change in real income during the present change. Thus, changes in velocity caused by expected changes in the cost of holding idle balances are allowed by introducing past changes in the rate of inflation as an additional independent variable.

He also attempts to allow for the influence of structuralist factors by including a wage variable and uses wage changes as an additional independent variable in regression equations.

The empirical findings obtained by Harberger appear to support the monetarist explanation of the causes of inflation in Chile with sign, magnitude and statistically significant at 5% level of each coefficient agreeing with Harberger's expectations. However, Harberger does not adopt a strict monetarist position which as a result seems to support the argument that:

"These results suggest that one of the major roles of wage variables was indeed as a "transmitter" of inflation from one period to the next, responding to the monetary expansion of the past period and inducing monetary expansion in the subsequent period. The wage variable does not significantly alter the predictions... and in this sense one does not "need" it... The wage variable does not add significantly to the variation in the rate of inflation explained by monetary factors; in this... one does not "need" it. But none of this denies that if wage changes had tended in the period to be unaccompanied by monetary expansion, prices would nonetheless have responded. Nor does it deny that prior wage rises were an important factor in inducing monetary expansions during the period. It only says that during this period monetary expansions were typically great enough to "finance" prior wage changes, and that on the top of this, monetary expansions had independent variations, which also influenced the price level in much the same way as if they had been accompanied by wage changes". (Harberger 1963, pp 246 - 47)

Diz (1970)⁽¹⁾ has also used the Harberger model for studying the relative causes of inflation in Argentina covering the period 1935 - 62. Using both wholesale prices and the cost of living indexes as dependent variables. While the

(1) A C Diz (1970) "Money and Prices in Argentina 1935 - 62", in D Meiselman (ed) Varieties of Monetary Experience, The University of Chicago Press, Chicago and London, pp 71 - 162.

independents are variable: the money supply with two definitions whereas one includes and the other excludes savings and time deposits; real income, an index of nominal wages, the official exchange rate; and a measure of price expectations, represented by the lagged inflation as a proxy for the cost of holding money.

The empirical findings obtained by Diz appear to show the expected signs of the coefficients of the money supply, real income, and expectations and are all significant at 5% level. While the wages coefficient are found to be insignificant and exchange rate coefficients, although significant, suggest a high inelastic response of prices to changes in the exchange rate.

The conclusion which can be derived from the Diz empirical finding is that changes in money supply have a substantial impact on the rate of inflation and this, however, can be considered evidence in support of the monetarist view of the causes of inflation.

Furthermore Vogel (1974)⁽¹⁾ has also extended the Harberger model to 16 Latin American countries and his study which covers the period 1950 - 69. Using the consumer price index as a dependent variable, while the independent variables are the

(1) R C Vogel (1974) "The Dynamics of Inflation in Latin America 1950 - 1969", American Economic Review, Vol. 64, No. 1, March, pp 102 - 114.

money supply (which is defined as currency plus demand deposits), real income (which is defined as nominal GNP deflated by consumer price index) and finally past changes in the rate of inflation (as a proxy for the expected cost of holding real balances). Thus, all variables are annual and are expressed in the terms of the percentage change. Also, the structural variables such as wage changes and exchange rate changes are excluded from a model.

Vogel's findings are based on the pooled data and show a high level of overall explanatory power, and the estimated coefficients of the explanatory variables have exhibited the correct sign and are statistically significant with the exception of the lagged changes in the inflation rate of variables. But his findings on the basis of the individual countries were less favourable and they revealed considerable differences between countries.

Finally he concluded his study by saying that:

"The most important of the present study... is that a purely monetarist model with no structuralist variables, reveals little heterogeneity amongst Latin American countries, in spite of their extreme diversity. The substantial difference in the rates of inflation among these countries cannot, under the present model be attributed to structural differences, but must rather be attributed primarily to the difference in the behaviour of the money supply". (Vogel 1974, p.113)

Vogel's attention, however, was aroused while he was reviewing earlier work by Harberger (1963)⁽¹⁾ and Diz (1970)⁽²⁾ on inflation in Latin America.

(1) A C Harberger , 1963, op. cit

(2) A C Diz, 1970, op. cit.

He has found that extremely different conclusions had been reached from similar findings about the monetarist-structuralist controversy. The three of them came to the same conclusion that money supply may not be exogenous in every Latin American country and have suggested that further research was needed on the determination of the money supply and that structural variables could be added to the model.

4.3 Empirical Studies of Inflation: Combined Model of Both Structuralist and Monetarist

There has been a growing dissatisfaction with the sharp division between monetarists and structuralist models. This, however, has led many researchers to integrate both elements of approaches.

Thus Seers (1982)⁽¹⁾ has emphasised the need for integration of both elements in a hybrid model. In the light of this Akhtar (1975)⁽²⁾ has constructed a general model to explain the causes of inflation, with special reference on the structure of developing countries. (This study covers the period 1951-70 for India and 1951-72 for the Philippines).

(1) Dudley Seers (1982) 'Inflation: The Latin American Experience', Bulletin of Latin American Research, 1, (2) May pp. 79 - 88.

(2) M A Akhtar (1975) 'The Inflation Problem in Developing Economies, India and the Philippines'. The Indian Economic Journal, Vol. 23 (2), October - December, pp. 144-165.

However his empirical analysis is geared to concentrate on the monetarist explanation of inflation, the contribution of fiscal development variable (budget deficit) to inflation; the influence of foreign trade variable on inflation, and finally, the simultaneous application of all relevant explanatory variables of inflation.

The empirical findings from his study suggest that the monetarist model yields considerably better results for the Philippines than for India. The regression coefficients of current rates of growth in money supply and lagged rates of growth in the money supply, and current rates of growth of real income, and the past changes in the rate of inflation explain about 65% of the observed variance of the rate of inflation in the Philippines. The estimated coefficient of the explanatory variables have exhibited the correct sign and are statistically significant at the 5% level. The additional lagged of one year in the rate of growth in income (as a proxy for a permanent income in the model) increases $\bar{R}^2$ to 0.721 and its regression coefficient exhibit the correct sign and is significant at the 5% level but its inclusion decreases the regression coefficient of the cost of holding real balances.

The empirical findings of the simultaneous applications of the relevant explanatory variables of inflation (i.e. the monetarist explanation of inflation, inflation and development and inflation and the foreign sector), yields a significant improvement in the explanation of inflation in both India and Philippines than in the basic monetarist model.

The results also indicate that all three types of variables have exerted some pressure on the rate of inflation in India. In particular "the rate of growth in the money supply, lagged one year, remains the most significant explanatory variable of the rate of inflation in India. The current rate of growth of industrialisation is a very close second. The remaining variables do not appear to be important in contributing to an explanation of inflation in India". Akhtar 1975, p.160)

While the empirical findings of simultaneous application of all three variables in the case of the Philippines reveals that the inclusion of non-monetarist variables produces somewhat less improvements in the explanation of inflation it appears that the inclusion of the foreign trade variables (the rate of change of import prices) is insignificant. But the inclusion of the rate of change of the ratio of total imports to total income to the monetarist model, accompanied by the lagged one year in the growth rate in real income (as a proxy for permanent income), produces a significant increase in the adjusted R^2 .

Thus, the questions relating to whether or not the money supply is exogeneously determined has emerged from his work. He argued that:

"if the money supply increases in response to other forces such as wage rates, industrialisation, etc., some inflation is an inevitable result of the structural factors underlying changes in the money supply. The evidence in this study strongly suggests the existence of powerful structural influences on inflation in a developing economy. (Akhtar, 1975, p.163)

He also partially attributed the inadequacy of the basic monetarist model by arguing that the degree of inflation may be

a necessary consequence of the mobilisation of economic resources through attempting development policies and he addresses the growing concern of the effect of openness on inflation.

Another example of the integration of both approaches can be seen in the work of Wachter (1976)⁽¹⁾ in which she has developed a reformulated structuralist model, in which the relative prices affect inflation rates from a clearly specified theoretical framework. In her analysis, food prices are assumed to be more flexible than non-food prices. She has argued that:

"If prices rise in agriculture, even if aggregate demand is not excessive, inflation results in the short run. This comes about as follows: if excess demand prevails in agriculture, balanced by an equivalent amount of excess supply elsewhere, agricultural prices will rise in response to the excess demand in that sector, but prices outside of agriculture will not fall an equivalent amount.... Once inflation becomes anticipated and these expectations are validated by monetary and fiscal policy, an ongoing inflation is possible at the equilibrium expected rate" (Wachter 1976, p.136)

This inflation rate cannot, however, proceed in the long run without changes in government policy namely, an increase in the rate of monetary growth. Wachter emphasizes this by saying that:

"...for the higher inflation rate to be maintained, money supply must respond; but it is quite possible that money supply is passive and does respond to higher prices". (Wachter 1976, p.136)

(1) S M Wachter (1976) Latin American Inflation: The Structuralist-Monetarist Debate, Lexington, Massachussettes : D C Heath.

Wachter has also tested the monetarist (Harberger) and the reformulated structuralist models for four Latin American countries (Argentina, Chile, Brazil and Mexico). The conclusion derived from her study reveals that:

"the empirical results... support a broad model of inflation. The findings of significant coefficients with anticipated signs for the demand-pull and expectational variables in the Harberger and Phillips curve equations are consistent with the Latin American monetarist argument that excessive aggregate demand is responsible for inflation. However, the reformulated structuralist model is also substantially supported by the finding... of a significant and positive coefficient for the rate of the change in the relative price of food". (Wachter, 1976, p.137)

Thus, by using a technique developed by Sims, she has tested the existence of a passive money supply in a two-way regression between prices and money and has concluded that "the structural hypothesis of a passive money supply cannot be rejected for Brazil, Chile or Mexico" (Wachter, 1976, p.137).

The results also reveal that structural disequilibriums had an impact on the Argentinian inflation rate in the short run, but in the long run, because the monetary authorities rejected to accommodate structural inflation, the existence of structural constraints did not result in a persistently higher rate of inflation. Moreover, Lowinger (1978)⁽¹⁾ has tested a new modified version of the Harberger model, by including an

(1) T C Lowinger (1978) "Domestic Inflation and Exchange Rate Changes: The Less Developed Countries' Case", Weltwirtschaftliches Archiv, 114, p.85-100.

additional independent variable (exchange rate variable) to the model and also data from four LDCs (Brazil Colombia, South Korea, and the Philippines).

The conclusion derived from his empirical results indicate to some extent a considerable agreement with earlier studies by Harberger and Vogel. He also argued that:

"For open economies, the naive quantity theory model is inappropriate and that allowance must be made for economies' interactions with the rest of the world".
(Lowinger 1978, p.96)

Because it seems to indicate that for relatively open economies, a variable exchange rate would impose an additional cost and consequently would contribute to the inflationary process of a country.

Afterwards Leventakis (1980)⁽¹⁾ investigated the causes of inflation in Greece for the period 1963 - 1977 using quarterly data following the monetarist hypothesis as well as a combination of monetary and cost-push factors.

However, the result derived from the monetarist model is consistent with the findings of several earlier studies (e.g. Harberger, 1963; Vogel 1974; Lowinger, 1978).

The empirical findings of the combined model suggest that import prices and wages are significant but do not

(1) J A Leventakis (1980) "A Monetary Interpretation of Inflation: the Greek Case", Weltwirtschaftliches Archiv, 116, p.551 - 559.

substantially improve the overall explanatory power of the model.

Levantakis has also paid attention to the question of whether or not the money supply is exogeneously determined. He argues

"despite... that inflation and changes in the money supply are highly correlated, no definite conclusions can be drawn about an underlying cause, because part of the money supply may not be exogenous. In particular, changes in cost variables may create pressure on monetary authorities to accommodate, that is to react by raising the money supply". (Leventakis, 1980, p.556)

A recent study of the combined model has been tested by Bhalla (1981).⁽¹⁾ In this approach he has basically included structural variables such as the percentage change in the relative price of food and the percentage change of import prices to the basic Harberger monetarist model to form what he so called a "hybrid reduced form model".

The model applied to annual time series data for 29 developing countries, covering the period 1956 - 75.

The conclusion derived from these empirical results is that for all the countries in question, the hybrid model was a better prediction than the basic Harberger monetarist model, and the structural variables turned out to be important factors as contributors to inflation. Thus, the money supply variables are significant in both models (Harberger and the

(1) S S Bhalla (1981) 'The Transmission of Inflation Into Developing Countires', in W R Cline and Associates (eds) (1981) World Inflation and Developing Countries, Washington DC : The Brookings Institution, pp. 52 - 101.

hybrid).

The main short coming of a so-called hybrid model of inflation may emerge from the existence of multicollinearity between the structural variable and the supply variables. Hence, the introduction of the structural variables affecting the coefficients of the money supply variable. Thus, they (hybrid models) may be insufficient to test the structuralist argument concerning the causes and controlling the inflationary process; by merely adding proxy variables for structural factors to the basic monetarist (Harberger). Although their inclusion will almost certainly increase the overall explanatory power of the equation.

However, when it comes to identifying and measuring structural constraints the problems remain. One of these being how to relate them to the process of growth and change which is occurring in the LDCs, more especially with respect to industrialisation and then constructing a genuinely structuralist model of inflation.⁽¹⁾

Recently, another empirical work of the combined model has been investigated by Saini (1982)⁽²⁾ using data taken from the experience of six Asian countries (India, Philippines, South Korea, Sri Lanka, Taiwan and Thailand) and using different types of measurement for both income (actual and permanent) and the money supply (M_1 and M_2 definitions).

(1) see C Kirpatrick and F Nixon (1987), op. cit. p.183

(2) Krishan G Saini (1982), "The Monetarist Explanation of Inflation: The Experience of Six Asian Countries", World Development, Vol. 10, No. 10, p.871 - 884.

The conclusion derived from this study is that earlier studies on inflation (using basic monetarist Harberger model) which has concentrated on the experience of a high inflation rate in Latin American countries. But they were in a better position in terms of predicting that when this type of model is applied to the six Asian countries, which have experienced both low and moderate inflation rates. The empirical results, however, reveal that:

"The growth of the money stock was not the primary source of inflation in these countries".
(Saini, 1982, p.871)

He also attributed the failure of the basic monetarist model to explain the prices in Asian countries to:

"partly to monetization of these economies which makes the growth of the money stock endogenous, and partly to its rigid specification which excludes the impact of the various domestic and external cost pressures" (Saini, 1982, p.871).

However, for testing for the validity of the impact of structural variables (such as the behaviour of prices of imported goods on inflation) by including it to the monetarist model, provide a support for the view that import prices can play a major factor which intensifies the inflationary pressure in developing countries. The conclusion can also be derived from Saini's study that "monetary discipline may be, by and large, ineffective in controlling inflation in moderate inflation countries" (Saini, 1982, p.871).

Nugent and Glezakos (1978)⁽¹⁾ were, however, unhappy with

(1) J B Nugent and C Glezakos (1978) "A Model of Inflation and Expectations in Latin America", Journal of Development Economics, 6 (3), pp 431 - 446.

the existing model for explaining inflation in developing countries. They have therefore constructed a model which they believe to be more realistic in explaining inflation in Latin American countries. Their model is appending a simple model of expectations formation to a simple macroeconomic simultaneous equation model of aggregate supply and demand.

Using simultaneous equation estimation techniques, i.e. two stage least squares (TSLS) and ordinary least squares (OLS), to a pooled sample of time series data for 16 Latin American countries for the period 1950 - 1969.

The conclusion obtained from their empirical study is that:

"(i) Among the developing countries of Latin America there are similarities in the process of inflation among countries grouped by common characteristics, but these patterns vary significantly between groups.

(ii) Attempts to explain or predict short-run behaviour in less developed countries with theories based on institutional and socio-economic characteristics of developed countries or long-run relationships such as the monetarist model of inflation may not always succeed.

(iii) In contrast to the results of earlier studies... Changes in exchange rates and in the opportunity cost of holding money play important roles in the inflationary processes of certain countries.

(iv) Permanent income seems to be a more significant determinant of the demand for money and hence of prices than transitory income". (Nugent and Glezakos, 1978, pp. 445 - 446).

Thus, the conclusion obtained from their empirical work is that they have supported their revised hypothesis and have given new insights of how the relationships between the actual and expected rates of inflation, the rate of income growth and the growth rate of the money supply are determined in developing countries.

As we earlier pointed out, studies by Harberger, Diz and Vogel, have indicated that the money supply may not be exogenous in every Latin American country and the importance of the role of money suggests that further research is needed for its determination.

Another example of an attempt to combine the monetarist and structuralist model is found in a study done by Dutton (1971⁽¹⁾) in which he has incorporated an endogenous money supply and formulated a hypothesis to comprise the whole system.

However, this model is based on four equations: the rate of change in the price level, the rate of change in the money stock, the rate of change in monetary base and the rate of deficit expenditure in nominal terms which are simultaneously determined. The money supply stock used in Dutton's model is defined as currency outside banks plus demand deposits held by the public. The monetary base includes currency held by the public plus bank reserves. Government deficit is expenditure minus tax receipts of the central government and the price level is measured by the consumer price index.

The expected rate of price changes has been used as additional explanatory variables in the price equation. The period of investigation by Dutton is the second quarter of 1958 through the fourth quarter of 1966, and the model was tested on

(1) D S Dutton (1971) "A Model of Self-Generating Inflation: The Argentine Case", Journal of Money Credit and Banking, Vol. 3, May pp. 245 - 262.

data taken from Argentina. He concludes that the system of four equations under the assumed institutional structure has performed reasonably well in describing the inflationary process in Argentina for the period covered, with sign, magnitude and significant at 5% level of each coefficient in the model agreeing with Dutton's anticipations. However, the conclusion derived from his study

"on the effects of the rate of monetary expansion on the rate of price level change.... implies that an increase in the money supply increases the price level after some time lag, and that after about two years over 95% of the effect of the money supply increase on prices has been felt" (Dutton (1971), pp. 61)

The work of Aghevli and Khan (1977)⁽¹⁾ has been considered to be another influential example of a combined model of inflation explaining the origin of the inflation process in developing countries. The model applied on data taken from Indonesia for the period 1951 - 72. Their approach is mainly an attempt to stress the role of feedback between inflation and increases in the money supply. However, they have even argued that inflation in Indonesia was basically a monetary phenomenon and that monetary expansion of itself is linked to the rate of inflation through the influence of government budgets.

The Aghevli-Khan model, like that of Dutton, uses four relationships. Their model is based on four first order differential equations determining simultaneously the rates of change of price, real government expenditure, nominal tax

(1) B B Aghevli and M S Khan. (1977) "Inflationary Finance and the Dynamics of Inflation: Indonesia 1951 - 1972" American Economic Review, 67 (3), p.390 - 403.

revenues and the money supply by using the Full Information maximum likelihood (FIML). Thus, they defined the real value of government expenditure as a constant fraction of real income while they defined the desired level of nominal taxes as a constant fraction of nominal income.

In comparison, price level, money supply, deficit and monetary base were endogenous variables in Dutton's model. While price level, real government expenditures, nominal tax revenues and money supply constitutes endogenous variables in Aghevli-Khan's model. The deficit, therefore, is broken down into variables (ie expenditure and tax revenues). In the Aghevli-Khan model each is taken separately as dependent variables while in Dutton's model the deficit is not disaggregated. Both models have the same definition of money and basically use variables which are pre-determined. The only difference being that in the Aghevli-Khan model, the lag structure is estimated whilst the Dutton's model lags are arbitrarily imposed.

Their empirical result revealed that all parameters in the model have the expected signs and are significantly different from zero at the 5% level. However, the conclusion derived from work is:

"The resultant budget deficit increases the money supply and induces further inflation pressures...This model seems to explain the Indonesian inflation quite well".
(Aghevli-Khan, 1977, p.401)

Aghevli and Khan 1978⁽¹⁾ have also extended the model proposed by them to Indonesia (1977) to investigate the government deficit and inflation process in four developing countries (Brazil, Colombia, the Dominican Republic and Thailand) for the period 1961 - 74. Except Brazil, which covers only 1964 - 74, due to the limited availability of data on government revenue and expenditures.

In general, the empirical result has demonstrated that it had supported the theoretical expectations regarding the values of parameters, the behaviour of the price level, and the dynamic stability properties of the estimated model during the period covered by the investigation.

However, their conclusion has also provided support for their earlier work on the dynamics of inflation in Indonesia (1977), that fiscal deficit can play an important role in the original force and the propagation mechanism in the inflationary process in developing countries and government deficit tends to perform a destabilizing role. Therefore, the deficit in turn can be explained by the fundamental difference which arises from the behaviour of government expenditure and revenue during an inflationary process. This has been emphasized by Aghevli-Khan by saying that:

"Even if government fully recognises the need to restrain expenditures during periods of inflation, they find it difficult to reduce their commitments in real terms. On the other hand, in contrast to the situation in most developed countries, where nominal revenues often more than keep pace with price increases in developing countries

(1) B B Aghevli and M S Khan (1978) "Government Deficits and the Inflationary Process in Developing Countries", I.M.F. Staff Papers, 25, pp 383 - 416.

they lag substantially behind. The contrast arises both because of low nominal income elasticities of tax systems and long lags in tax collection in developing countries. In any event, tax systems in developing countries depend rather heavily on indirect taxes and, in particular, on foreign trade taxes....Further, indirect taxes in developing countries are often specific and even when they are ad valorem, the adjustment of base values for some of these taxes is not frequent enough to keep pace with inflation"

(Aghevli and Khan, 1978, p.391).

Inflation does, however, perpetuate itself through an initial inflationary shock, which in turn, leads to an expansion of budget deficits and consequently leads to an expansion in the money supply. The increase in the money supply results in an increase in price levels. Therefore, inflation induces fiscal deficit, which can be explained in terms of the structural constraints on the fiscal system, which is prevailing in LDCs, and therefore, has become one of the dynamic forces behind sustaining inflation in developing countries.

The Aghevli and Khan model can be criticised by the structuralist view for presenting a somewhat superficial and mechanical explanation of budget deficit and has failed to identify the determinant factor for both government expenditures and revenue and also, of failing to take into account the characteristics of the inflationary situation in developing countries.(1)

(1) For more details see P S Heller (1980), "Impact of Inflation on Fiscal Policy in Developing Countries", I M F Staff Papers, 27, pp 712 - 48.

Batavia and Lash (1983)⁽¹⁾ is also another example to substantiate the earlier work of Dutton, and Aghevli and Khan. Their investigation is based on the annual data taken from Turkey for the period of 1950 - 1975.

The model consists of five equations and an identity. Thus, the relationships are estimated simultaneously using three stage least squares (3SLS). However, the first equation measures the impact of prices on government expenditure. The second equation measures the impact of prices on tax revenue, the third equation measures the impact of inflation on agricultural State Economic Enterprise (SEEs). The fourth equation posits that public sector deficits are financed primarily through the creation of a monetary base by the central bank and thus through increases in the money supply. The fifth and final equation links the money supply and prices. The relationship is, however, determined by using the demand for real balances, which are taken to be a function of two major variables, i.e. the real GNP and inflationary expectations.

The conclusion derived from the findings provides support for their expectations that

"Turkish inflation has a feed back mechanism. Thus, ... the Bank of Turkey's monetization of public sector deficits causes inflation, an increase in inflation causes a further increase in public sector deficits, thereby causing yet another round of inflation. The results of the Sims test support this hypothesis of two-way causation. The primary

(1) Bala Batavia and Nicholas A Lash (1983), "Self-Perpetuating 'Inflation': The Case of Turkey", Journal of Economic Development, Vol. 8, Part 2, pp. 149 - 66.

cause of this inflation is the relatively slow adjustment of government tax revenues to higher levels of inflation. Actual government expenditures adjust to desired expenditures instantaneously while tax revenues have an average lag of 0.5 years. Inflation also was found to increase the deficits of the State Economic Enterprises directly financed by the Bank of Turkey. Both deficits, once widened, seem to impel an increase in the money supply which increases an increase in the price level".

(Batavia and Lash, 1983, p. 164)

To conclude this chapter⁽¹⁾ we begin by criticising the argument which has been put forward by both monetarists and structuralists. On the one hand the monetarist can be criticised for the treatment of high correlation between the monetary variables and the inflation rate as a means of evidence of causation, and also for failing to explain the fundamental causal relationships which exist between structural constraints, monetary expansion and inflation.

On the other hand, the structuralist can be criticised for the fact that they often devote insufficient attention to the propagation mechanism in general and the expansion of the money supply in particular (which however is considered to be a necessary condition other things being equal for the manifestation of the spiralling price rises). The structuralist expresses the opinion that an increase in the money supply is merely complaisant and tends to conceal the broader social economic framework whether this policy option is adopted or forced upon the economy by the government. Both the structuralist and the monetarist have accepted the argument that changes in the money supply happens as a response to

(1) See C Kirpatrick and F Nixson (1987), op. cit. p.181

political factors but the basic question remains unanswered as to whether or not these changes are actually permitted or are they a cause of the inflationary process.

Furthermore the various studies described above reveal the difficulties that can arise in attempting to identify empirically the relative importance of the structural and monetary factors that characterise the inflationary situation in LDCs. Hence, the problem of inflation cannot be separated from the problems of underdevelopment and development.

Thus, the empirical studies on inflation in developing countries by the monetarist model and the combined model have been derived from the money demand function, which has also been surrounded by the following issues: the appropriate definition of the money supply, choosing the appropriate number of lagged periods in money supply, the stability of money demand functions, the appropriate measure of the cost of holding money, the monetization rate, choosing the appropriate income deflator, choosing between the measure of income and the appropriate measure of permanent income, whether or not the money supply and real income are exogeneously determined (which implies whether to use single equation models or simultaneous equation models), and whether or not to assume the economy is closed or open.

CHAPTER 5

The Relationship Between Economic Growth and Inflation

Having earlier reviewed the empirical studies of inflation in LDCs, in this chapter we will examine the behaviour of the prices in Jordan for the period 1966 - 1985, which implies that an inquiry into the conditions surrounding the price level. We will also examine the impact of inflation on the growth in GDP as well as the impact of the growth in GDP on the inflation in Jordan for the period 1968 - 85, and the factors which could be responsible for the economic growth in Jordan.

5.1 Historical Background of Inflation in Jordan

Before we examine the rises in the price level in Jordan let us state that the availability of price data in Jordan has restricted us to choose the cost of living index as an indicator of the general price level. Although this does not actually represent the inflationary experience of the entire country, hence, the cost of living index is based on a limited sample of goods and services purchased in major urban areas and is therefore unrepresentative of the consumption patterns of the majority of the Jordanian population residing in rural areas. Therefore, the index is usually criticised because it fails to reflect the quality changes taking place in consumer goods as well as the addition of new products, and that it reflects the lower prices from improved methods of distribution very slowly.

Thus, it is also difficult to interpret, and this difficulty may arise by the practice of the Jordanian government which involves direct subsidies and price controls on some essential commodities that play a key role in the consumer price index, causing a downward bias in the general index. Despite our acknowledgement of its shortcomings, the cost of living index in Jordan still remained the only consistent series of data available and the most accurate and meaningful measure for a general use.

However, during the fifties and sixties, up to the outbreak of the Arab-Israel war in 1967 Jordan was enjoying relative price stability with prices increasing at an average rate of inflation of 2%.

With regard to the period 1966 - 1986, the cost of living index in Jordan (1975=100) is represented in Table 5.1 and whereas the general price level has risen from 51.96% in 1966 to 225.30% in 1985 this represents a compound growth rate of 8.03% during the period (1966 - 1985). It is worth mentioning here that this inflation took place inspite of generous subsidies and price controls on rent and essential commodities by the government. Therefore, if inflation had not been officially repressed, price increases would have been much more pronounced than actually recorded by the cost of living index.

During this period, Jordan has witnessed unprecedented changes. One of these changes has emerged from the political

JORDAN'S COST OF LIVING INDEX (1975=100)
For the Period 1966 - 1985

YEAR	OTHER GOODS AND SERVICES	HOUSING	CLOTHING & FOOTWEAR	DRINKS & TOBACCO	FOOD ITEMS	ALL ITEMS	% RATE OF CHANGE IN OTHER GOODS & SERVICES	% RATE OF CHANGE IN HOUSING	% RATE OF CHANGE IN CLOTHING & FOOTWEAR	% RATE OF CHANGE IN DRINKS & TOBACCO	% RATE OF CHANGE IN FOOD ITEMS	% RATE OF CHANGE IN ALL ITEMS
WEIGHT	15.4	21.8	10.2	4.4	48.2	100						
1966	68.960	69.450	58.770	85.560	37.320	51.960	2.060	2.060	2.060	2.040	2.090	2.020
1967	70.380	70.880	59.980	87.310	38.100	53.030	1.300	1.500	0.090	2.610	0.180	0.190
1968	71.297	71.946	60.036	89.588	38.170	53.132	0.690	-0.100	1.170	0.980	16.690	6.910
1969	71.791	71.875	60.757	90.463	44.540	56.750	7.860	6.620	7.450	1.450	6.770	6.930
1970	77.433	76.630	65.264	91.776	45.557	60.680	2.000	3.710	5.340	0.000	6.650	4.730
1971	78.980	79.470	68.750	91.776	50.720	63.549	1.610	5.810	6.380	0.000	7.450	5.680
1972	80.250	84.090	73.137	91.776	54.500	67.160	2.200	4.220	11.590	1.420	19.460	11.240
1973	82.016	87.640	80.610	93.080	65.110	74.707	6.280	8.350	13.700	4.900	31.070	19.410
1974	87.165	94.957	92.788	97.637	85.340	89.210	14.720	5.310	7.770	2.420	17.180	12.100
1975	100.000	100.000	100.000	100.000	100.000	100.000	12.130	6.810	7.570	5.770	14.620	11.480
1976	112.129	106.810	107.570	105.770	114.618	111.477	18.420	7.450	29.500	5.880	14.190	14.530
1977	132.790	114.770	139.300	111.986	130.877	127.680	14.920	10.400	4.880	4.300	3.680	7.070
1978	152.600	126.700	146.093	116.797	135.687	136.710	16.590	28.480	23.570	7.420	5.820	14.110
1979	177.920	162.780	180.520	125.459	143.587	156.000	19.980	7.700	5.930	7.460	10.870	11.100
1980	213.469	175.280	191.225	134.820	159.198	173.320	9.700	2.920	26.300	9.920	8.100	6.700
1981	234.200	180.397	241.520	148.200	172.090	186.660	13.130	7.950	5.550	16.820	4.720	7.430
1982	264.950	194.740	254.927	173.140	180.220	200.530	5.770	8.830	3.510	28.950	2.570	5.010
1983	280.250	211.930	263.880	223.270	184.847	210.570	6.890	5.200	0.500	3.820	2.000	3.870
1984	299.570	222.940	265.200	231.800	188.535	218.710	5.420	3.300	-0.150	14.420	2.200	3.010
1985	315.810	230.297	264.810	265.229	192.675	225.300						
AVERAGE	8.330	6.510	8.240	6.130	9.020	8.030	8.510	6.650	8.560	6.350	9.280	8.130

NB Calculation is done by the author

Source: (1) CBJ: Yearly Statistical Series (1964-1983), Special Issue No. 20.

(2) CBJ: Monthly Statistical Bulletin Vol. 22, No. 10, October 1986.

instability in particular, the consequence of the Arab-Israeli War (1967), which has presented new social and economic problems to the economy. For example, the absorption of refugees into the economy has forced the government to increase its expenditure in order to meet the population needs, given the fact that government resources are limited. Thus the absorption of refugees has created a demand for housing in towns which consequently implies high rents and the absorption of refugees in general has also increased the demand for food and consequently put pressure on food prices.

During this period and especially after 1973, Jordan has launched a three and five year development programme after a period of stagnation and recession that has prevailed in the Jordanian economy. Implementing these programmes has generated an excess demand for goods and services which in turn has created inflationary pressure.

Thus, during this period and in particular after 1973, the world has witnessed a sudden jump in the international commodities prices, followed by a sharp increase in oil prices by OPEC which has two main repercussions on the Jordanian economy. One of these repercussions is the cost of imported crude oil which has increased sharply and consequently has triggered off inflationary pressure. The other repercussions which arise from an increase in oil prices means that oil revenue in Arab oil producing countries has increased and this has meant an increase in the economic activities in these countries. This has subsequently led to an increase in demand

for Jordanian products and labour (migration of Jordanians to Arab oil producing countries has increased) and thereby prices and wage levels in Jordan have been affected by the excess demand which was generated from abroad.

Let alone the effect that has arisen from the increasing remittances of the Jordanians working in these countries, which has resulted in rapid growth in the money supply, and consequently has put some pressure on the availability of resources in the Jordanian economy as well as increasing the demand for imported goods and thereby has contributed to the inflationary pressure.

Moreover, during this period Jordan has experienced a rapid increase in money supply which in turn has a result of the growing net foreign assets, credit to the private sector, credit to municipalities and public entities, and by the credit to the government. Thus, during this period, (1966-1985), monetary expansion couldn't be absorbed and consequently this may be reflected in price rises.

As for the role of the individual components of the cost of living index (1975 = 100), the price of foodstuffs has increased from 37.32% in 1966 to 192.675% in 1985. This, however, represents an annual average growth rate of 9.02% during the period. This growth in food prices has taken place inspite of generous subsidies and price controls on essential commodities such as sugar, wheat, rice, oil etc. Thus, the price of foodstuffs has taken place inspite of government

attempts to secure availability of foodstuffs by direct involvement in resorting to import foodstuffs. Therefore, if all these policies are not in practice, foodstuff prices would have been more pronounced than actually recorded.

However, the growth which occurred in the prices of foodstuffs still remained the largest increase in the components of the cost of living index (9.02%). Thus, it is also important because if there is a small change in the price of foodstuffs, then it would be significantly felt in the general price level. Hence, it weights 48.2% in the basket of the cost of living index. Therefore, the most significant annual rate of change in the price level of foodstuffs has occurred in 1969, 1973, 1974, 1975, 1976, and 1977 and recorded 16.69%, 19.46%, 31.07%, 17.18%, 14.62% and 14.19% respectively.

Moreover, the growth in the prices of foodstuffs can be attributed to many factors, namely because during this period, Jordan has, and is still suffering from limited water resources, coupled with fluctuations in rainfall and dry weather conditions (i.e. drought) which has limited the expansion of agricultural production. Hence, the agricultural production in Jordan depends heavily on rainfall. Therefore, any fluctuation in agricultural output implies that one would expect food prices to fall during years of good harvest, and to rise sharply during drought years.

In addition, during this period Jordan had experienced a rapid growth in per capita income, a rapid growth in

population, and increasing demand in the Arab neighbouring countries for Jordanian products. In particular the demand for vegetables and fruits in 1977. This, however, has put significant pressure on the demand for foodstuffs and consequently on the domestic price of foodstuffs.

Moreover, the political instability during 1967 - 71 has played a significant part in the escalation of food prices. For example, in 1967, the Arab-Israeli War resulted in the occupation of the West Bank and the loss of a thriving agricultural sector there. This was followed by the shelling of the East Ghor Cannal (Irrigation area, the country's major development project and the most productive area) by the Israelis. Consequently, this forced farmers to flee, and subsequently has contributed to expansion of agricultural deficit and thereby has generated a pressure on the price of food.

The second major component of the cost of living index is the price level of other goods and services which includes transportation, medical care, personal care, education and recreation and others. As to the price of other goods and services (1975 = 100), these have increased from 68.96% in 1966 to 315.81% in 1985. This, however, represents a compound growth rate of 8.33% during the period (1966 - 1985).

Therefore, the most significant annual rate of change in the price level of other goods and services has occurred in 1970 and between the period 1974 - 1982 have been recorded

respectively as 7.86%, 6.28%, 14.72%, 12.13%, 18.42%, 14.92%, 16.59%, 19.98%, 9.70%, and 13.13%. The growth, however, was a result of many factors, namely the rapid increase in the demand for education, accompanied by a rise in the transportation cost of import and communication fares.

The third major component of significant importance in the cost of living index, is the price level of clothing and footwear. However, the price of clothing and footwear (1975 = 100) has witnessed a rapid increase from 58.77% in 1966 to 264.81% in 1985. This, however, represents an annual average growth rate of 8.24% during the period. Therefore, the most significant annual rate of change in the price level of clothing and footwear has occurred in 1977 and also in 1981 and is recorded as 29.50% and 23.57% respectively.

The fourth major component of importance of the cost of living index, is a rise from the price level of housing (1975 = 100) which has also witnessed an increase from 69.45% in 1966 to 230.297% in 1985. This, however, represents a compound growth rate of 6.51%. It is worth mentioning here that, this growth does not represent the true picture, hence fuels are subsidised by the government and old rents are fixed by Law. In Jordan, however, a property owner cannot increase the rent or evict a tenant as long as the latter is regularly paying the rent. In recent years, the government has allowed some adjustment on the old rent, but it still remains very small. However, rent increases have therefore been reflected mainly in newly constructed housing. Therefore, if the government adopts

a relaxed policy towards subsidies and rent control, then the increase in housing prices would have been more pronounced than actually recorded.

Therefore, the most significant annual rate of change in the price level of housing has occurred in 1970, 1974 and between the period 1976 - 1980, and also between the period 1982 - 1983, which respectively recorded, 6.62%, 8.35%, 6.81%, 7.45%, 10.40%, 28.48%, 7.70%, 7.95%, 7.95%, and 8.83%.

The growth, however, was attributed to many factors, namely because during these periods Jordan has witnessed a rapid increase in the demand for construction material and housing following the implementation of the three and five years development plan.

Thus, during this period there has been a rapid increase in income, migration from rural to urban areas and also an increase in the inflow of Lebanese refugees after the 1976 civil war which has played an important role in creating a shortage of not only available living quarters but also construction material as well. The result was an upward rise on prices of both construction and housing costs.

Thus during the period Jordan has also experienced a rapid increase in the demand for housing as well as an increase in the price of land following the rapid increase in the remittances of Jordanians working abroad, which tends to prefer investment in land because it would be a significant means of

protecting against inflation as well as the fact that land trading was not subjected to heavy taxes, and, to a certain extent, this can be attributed to paucity of alternative investment opportunities stemming at least, in part, from controls by central bank on interest rates which can be paid on commercial deposits rendering these unattractive outlets for remittance.

Moreover, during this period, remittances was challenged towards investment in land and in luxurious housing, which was considered to be unproductive and does not add to the aggregate supply but at the same time, it increases the demand for land and housing materials and consequently it would add to land prices escalating and a shortage in housing materials, and the result was an upward rise in housing prices.

5.2 Economic Growth and Inflation

This topic was a hot issue in most LDCs in the 1960s, and has been examined by many economists notably, Tun (1959)⁽¹⁾, Bhatia (1960)⁽²⁾, Lewis (1963)⁽³⁾, Dorrance (1966)⁽⁴⁾, Johnson

(1) Wai U Tun (1959), "The Relation Between Inflation and Economic Development: A Statistical Inductive Study", IMF Staff Papers 7 (2), pp 302-17.

(2) R J Bhatia, (1960), "Inflation, Deflation and Economic Development", IMF Staff Papers, Vol. 8, Nov. pp. 101 -114.

(3) W. Arther Lewis (1964) "closing remarks" in W Baer and I Kerstenetzky, (ed) Inflation and Growth in Latin America, Homewood II Irwin, pp. 21-33.

(4) G. S. Dorrance (1966), "Inflation and Economic Growth: The Statistical Evidence", IMF Staff Papers, Vol. 13, March. pp. 82 - 102.

(1967)⁽¹⁾, Wallich (1969)⁽²⁾, Mikesell (1969)⁽³⁾, Thirlwall and Barton (1971)⁽⁴⁾, Corbo (1974)⁽⁵⁾.

However, in order to determine the relationship between inflation on growth in Jordan, we should first find the association between these variables. Therefore, the measurement of these variables are also based on the percentage rate of change in the consumer price index and the percentage rate of change in Real Gross Domestic Product ($\dot{y}$) where as Gross Domestic Product at market price is deflated by Consumer Price Index (CPI).

Looking at the result of the correlation matrix which is represented in Table 5.2 for the period 1968 - 1985 makes it very interesting. In 1968, the inflation rate was only 0.19% but $\dot{y}$ was 18.75%. This may be due to lower deflator and at

(1) H. G. Johnson (1967), "Is Inflation the Inevitable Price of Rapid Development or a Retarding Factor in Economic Growth", in Essays in Monetary Economics by H G Johnson, George Allen and Unwin Ltd. London, pp. 281-291.

(2) H. C. Wallich (1969), "Money and Growth: a country cross-section analysis", Journal of Money Credit and Banking, Vol. 1, pp. 281-302.

(3) R. F. Mikesell (1969), "Inflation in Latin America", in C. J. Nisbet (ed), Latin American Problems of Economic Development, The Free Press, New York, pp 143-189.

(4) A. P. Thirlwall and C. A. Barton (1971), "Inflation and Growth: The International Evidence", Banca Nazionale Del Lavoro Quarterly Review, No. 98, September, pp. 263 - 75.

(5) V. L. Corbo (1974), Inflation in Developing Countries: An Econometric Study of Inflation, North Holland Publishing Co. Amsterdam, Oxford.

TABLE 5.2 - %
THE RELATIONSHIP BETWEEN INFLATION
($\dot{p}$) RATE AND REAL GROWTH RATE OF
GDP ($\dot{y}$)

YEAR	INFLATION RATE ($\dot{p}$)	REAL GROWTH RATE OF GDP ($\dot{y}$)
1968	.190	18.750
1969	6.810	9.998
1970	6.930	-11.066
1971	4.730	1.945
1972	5.680	5.295
1973	11.240	-5.286
1974	19.410	-5.132
1975	12.100	12.586
1976	11.477	21.177
1977	14.530	6.486
1978	7.070	14.827
1979	14.110	4.380
1980	11.100	17.650
1981	7.690	9.820
1982	7.430	5.630
1983	5.010	2.550
1984	3.870	1.468
1985	3.010	1.860
Mean	8.466	6.275
STD DEV	4.770	8.715
Correlation matrix	$\dot{p}$	$\dot{y}$
	$\dot{p}$	1.0
	$\dot{y}$	-0.12047
		1.00

Source: Central Bank of Jordan (CBJ)
(1964-1983) Special Issue No. 20, 1984
and CBJ Statistical Bulletin 23 (6),
June 1987.

some time to an increase in GDP from the previous year. The year 1970 has witnessed a decline in GDP. Also, 1973 and 1974 witnessed an increase in the inflation rate which may have led to the decline in the real GDP. Looking at the mean and standard deviation of both the inflation rate and $\dot{y}$, we can see that there is enough variability in the real rate of growth of GDP, and inflation rate, which makes it worthwhile to investigate even further.

The result of the correlation matrix indicates that there is a negative relationship between $\dot{p}$ and $\dot{y}$, but we should also point out that regression and correlation techniques differ, in that the correlation technique refers to the notion of co-movement rather than looking at explanatory power (as the R^2 does) it simply measures the extent to which the variables move together, thus the correlation technique does not involve an implicit assumption of causality, while regression techniques do.

Anyhow, using the regression technique ordinary least squares (OLS) using data for the period between 1968 - 1985, in which $\dot{y}$ is a function of constant (α) and $\dot{p}$;

$$\dot{y} = 8.18 - 0.23 \dot{p}$$

(1.87) (-0.5)

$$R^2 = .015$$

$$R^{-2} = -.046$$

$$N = 18$$

$$F_{1,16} = 0.247$$

$$DW. 1.31$$

The numbers in parenthesis are T- statistics.

The goodness of fit R^2 is near to zero while the adjusted R-square (i.e. adjusted for the degree of freedom) is even

negative. It does generally happen when R^2 is very close to zero. In fact, $\bar{R}^2$ may actually fall if the additional explanatory power generated by an added variable is more than compensated for by the adjustment process. Therefore, the negative effect of the adjustment is larger than the positive effect of the added variable on the R^2 .

Thus the estimated coefficient ($\hat{B}$) is negative but not significant at the 5% and the 10% level. Thus, the F statistics (0.247) indicate that every partial regression coefficient does have a value of zero. The value of DW lies in the region of inconclusive. The model therefore indicates that there is only 1.5% of the variation in $\dot{y}$ is explained by $\dot{p}$. This may suggest that the model is incomplete, i.e. there is an important variable missing or it shows a failure of the estimated regression line which is not useful to describe the relationship between $\dot{p}$ and $\dot{y}$ or the relationship may be a curvilinear fashion on but not in a linear or, it may be that the residuals between $\dot{p}$ and $\dot{y}$ are large relative to the deviations of $\dot{y}$ from its mean.

However, an autocorrelation test using the Cochrane-Orcutt Technique (CORC) for correcting first order serial correlation of the error has been used which gave the following result:

$$\dot{y} = 12.0 - 0.83 \dot{p}$$

$$(1.88) \quad (-1.56)$$

$$R^2 = 0.14$$

$$\bar{R}^2 = .083$$

$$F_{1,16} = 2.45$$

$$DW = 1.89$$

$$\text{Final Value of Rho} = 0.52$$

$$\text{T-statistic of Rho} = 2.50$$

Having used the correction method for the first order autocorrelation, the estimate of β is slightly improved but still insignificant at 5% and 10% level, and the value of DW indicates that no autocorrelation exists. Once, again with some limitation, that it is not a *ceteris paribus* experiment, the above result does not hold for argument that an inflation like Jordan is inevitable to promote growth.

Meanwhile regressing $\dot{p}$ on α and $\dot{y}$ using OLS for the same period we get the following result:

$$\dot{p} = 8.89 - 0.0675 \dot{y}$$

(6.28) (-0.50)

$$R^2 = 0.0152$$

$$\bar{R}^2 = -0.46$$

$$F_{1,16} = 0.247$$

$$D.W. = 0.76$$

$$N = 18$$

The above result shows that D.W. is quite low, which indicates the existence of autocorrelation among the error terms. Therefore, an autocorrelation test using the CORC for correcting first order serial correlation of the error has been carried out which gave the following result:

$$\dot{p} = 10.02 - 0.2126 \dot{y}$$

(3.48) (-2.15)

$$\begin{aligned}
 R^2 &= 0.236 \\
 \bar{R}^2 &= 0.185 \\
 F_{1,16} &= 4.63 \\
 D.W. &= 1.86 \\
 \text{Final Value of Rho} &= 0.69 \\
 \text{T Statistic of Rho} &= 3.96
 \end{aligned}$$

The test indicates a significant improvement in all statistical criteria. However, it shows that about 23.6% of the variations in the $\dot{p}$ are explained by $\dot{y}$. The estimated coefficient (γ) is negative and significant at 5% level. Thus, the F-statistics indicate that every partial regression coefficient does not have a value of zero. Also, the value of D.W. indicates the absence of autocorrelation among residuals. The conclusion of this model reveals, however, that an increase in the rate of change in the real output can play a significant role in reducing the rate of change in the price level. For example, every one percent increase in the rate of change in real output, there is a decrease of 0.2126 per cent in the rate of change in the price level. Thus, the model may also suggest that there are other important variables which could have an influence on the inflationary process in Jordan.

However, the direction of the correlation between $\dot{y}$ and $\dot{p}$ has been questioned by Tun (1959)⁽¹⁾ on the grounds that correlation between $\dot{p}$ and $\dot{y}$ may indicate the direction of the relationship, i.e. positive, negative or even zero, but does not represent a causal relationship.

Also, the direction of the correlation between $\dot{y}$ and $\dot{p}$ has

(1) W. A. Tun (1959) op. cit.

been questioned by W. Arther Lewis⁽¹⁾ on the basis that:

"Economic growth will cause the general price level to rise through the effects of the expansion of some sectors... The classical case is where extra income derives from an increase of exports. Part of the proceeds of these exports is spent on other sectors and in so far as the output of these other sectors is inelastic and not completely substitutable by the imports, prices rise in these sectors. Prices will rise if demand puts pressure on supplies but prices may also rise sympathetically without such pressure." (Lewis (1963), p.26)

Besides the direct pressure of demand on output stagnating sectors, then we should be aware of the sympathetic upward movement of income on rising prices.

Thus, Dorrance (1966)⁽²⁾ found some interesting evidence that:

"while a declining price or unduly low price increase appears to be associated with low rates of growth, and while relatively slowing prices particularly in wealthier countries may have a stimulating effect. Beyond a certain rate, rising prices discourage economic development and rapid inflation seriously inhibits growth".

(Dorrance (1966), p.94)

In addition to that Wallich (1969)⁽³⁾ has found a negative relationship between inflation and economic growth and concluded that inflation depressed growth through its effect on investment since it leads to deterioration of the quantity and distribution and the cost of investment.

(1) W. A. Lewis (1963), op. cit.

(2) G. S. Dorrance (1966), op. cit.

(3) H. S. Wallich (1969), op. cit.

In spite of that it should be emphasised that the result should be interpreted with some awareness, because of a low degree of confidence of regression coefficients.

Meanwhile, some interesting results emerged from the study by Thirlwall and Barton (1971)⁽¹⁾ when they split the sample according to the level per capita income and the rate of inflation. For 17 developed countries with per capita incomes in excess of \$800 all of which experienced mild inflation ranging between 3% and 8% per annum, they found a positive relationship between inflation and growth, and changes in the inflation explained about 48% of changes in the rate of growth. But the evidence concerning LDCs was inconclusive although there appears to be a negative relationship between inflation and growth for countries which experienced an annual rate of inflation in excess of 10% per annum.

Therefore, Thirlwall and Barton have concluded their studies by arguing that the outcome of the relationship between inflation and growth will eventually depend on the economic level of social preference under the analysis and its socio-political conditions.

Thus, Glezakos (1978)⁽²⁾ has also empirically tested the

(1) A P Thirlwall and C A Barton (1971) op. cit.

(2) C. Glezakos (1978), "Inflation and Growth: A Reconsideration of the Evidence from the LDCs", The Journal of Developing Areas, Vol 12, January, pp 171 - 182.

relationship between inflation and growth using cross section data for 41 LDCs for the period 1953 - 68. But he has included a measure of unanticipated changes in the rate of inflation as an explanatory variable to explain variations in the rate of growth. However, the empirical findings from his study show a statistically significantly negative relationship, which may indicate that the rate of inflation has a negative effect on growth, but still remains insignificant at 5% level. He also concluded his study by arguing that

"it should be recognised that each country has its own economic, social and institutional characteristics. Furthermore, economic growth is the result of the combination of a wide variety of contributing factors."

(Glezakos 1978, p.179)

A recent empirical study by Hanson (1980)⁽¹⁾ who has investigated the long standing question of the relationship between growth and inflation for five Latin American countries, over the period 1950 - 74 using a quasi-rational or consistent expectation approach and, the conclusion derived from his finding is that he has drawn the distinction between expected and unexpected inflation, and found the increasing growth during the short-term disequilibrium is caused by unexpected inflation. His empirical findings also show a positive correlation between unanticipated inflation which has been also contrary to earlier findings by Glezakos (1978).

(1) J. A. Hanson (1980), "The Short-Run Between Growth and Inflation in Latin America: a quasi-rational or consistent expectations approach", American Economic Review, 70, pp 972 - 89.

A more recent empirical study of the relationship between growth and inflation is done by the International Monetary Fund (I.M.F) (1982)⁽¹⁾ and the data is taken from 112 non-oil developing countries for the period 1969-81 and the conclusion derived from this study is that:

"For the most part, it has been found that relatively low inflation rates have been associated with relatively high growth rates and that reductions, or at least relative reductions, in inflation have been associated with an improvement or relative improvement in growth rates"

(I.M.F. 1982, 134)

It is also concluded that there are

"many factors besides inflation affect a country growth performance - its endowment of natural resources, the skill level of its labour force, the size and quantity of its capital stock, the commodity composition of its output, the weather, the terms of trade, the balance of payment and investment and saving characteristics of the economy"

(I.M.F. 1982, p.134)

Thus, we should also point out that there are a number of complicating factors in the economy besides the inflation rate, which are difficult to capture adequately in the regression models. One possible difficulty may also arise when one attempts to test the relationship between growth and

(1) International Monetary Fund (1982), "World Economic Outlook: a Survey by the Staff of the IMF", Occasional Paper No. 9, Washington DC IMF.

inflation by a linear regression technique, where actually the relationship which is in existence is a U-shaped relationship, i.e. non-linear. Another possible difficulty arises with the interpretation of the result in particular, the interpretation concerning the direction of the causality between inflation and growth.

Therefore, it is a well known fact that the rate of growth of an economy is influenced by a number of important factors. However, let us examine the main factors which have led to the rate of growth of GDP in Jordan.

First of all, let us examine the general performance, the obstacles, and the factors which have contributed to the economic growth in Jordan.⁽¹⁾ During the period 1966 - 85 Jordan has enjoyed a bouyant economic growth. If we look at table 5.3 we can see the GDP at current prices increased from 170.5 million JD in 1966 to 1573.3 million JD in 1985 whereas the real GDP increased from 328.137 million JD in 1966 to 698.313 million JD in 1985. But the annual average growth rate of GDP at current prices was 12.4% while the compound growth rate of real GDP was 4.1% during this period. However, this period has witnessed the introduction of development planning into Jordan which has succeeded in establishing the basis of infrastructure and a number of industries.

(1) For more details see John Rebert (1984), "Jordan Economic Growth in the 1970s: Policies for Responding to the External Stimulus", Development Policy Review, 12 (2) Nov. pp. 154 - 179.

TABLE 5.3
 NOMINAL AND REAL GDP AT
 MARKET PRICE FOR THE PERIOD
 (1966 - 1985)

YEAR	GDP AT MARKET PRICE	REAL GDP *
1966	170.500	328.137
1967	131.200	247.407
1968	156.100	293.796
1969	183.400	323.171
1970	174.400	287.409
1971	186.200	293.002
1972	207.200	308.517
1973	217.300	292.208
1974	247.300	277.211
1975	312.100	312.100
1976	421.600	378.194
1977	514.200	402.725
1978	632.200	462.438
1979	753.000	482.692
1980	984.300	567.909
1981	1164.200	623.700
1982	1321.200	658.854
1983	1422.700	675.642
1984	1499.400	685.565
1985	1573.300	698.313

* Deflated by CPI

(1) CBJ Yearly Statistical Series
 (1964-83), Special Issue No. 20, 1984
 (2) CBJ Monthly Statistical Bulletin,
 Vol 23, No. 6, June 1987.

Jordan has been performing well in spite of the limited natural resources and dependence on outside friends support, which in recent years has been coming increasingly from oil-Arab countries, and with almost 20% of its labour force working abroad.

Thus Jordan's achievement was very successful inspite of many disruptions in the economy. Let us examine the impact of these disruptions. Firstly, the Arab-Israeli War (1967), which has presented a new social and economic problems to the economy, for example, the absorption of the refugees into the economy. The government was then faced with the problem of improving services for the population without a matching increase in resources. Besides that, the annual average growth rate of the Jordanian population (East Bank only) had reached the level of 4.8% during the period of 1961 - 1979.⁽¹⁾ This growth in the population rate placed Jordan amongst the highest nations in the world. Such problems have created a high demand for housing in towns which implies high rent and an increase in the demand for food, as well as creating a shortage in water, at a time when water resources are insufficient. Any shortage of water supplies have, therefore, had a negative impact on general development efforts and consequently, the shortages in the water supply have become one of Jordan's most crucial problems.

(1) A. Zaghal (1984), "Social Change in Jordan" Middle Eastern Studies 20 (4), October, p.53

In addition, June 1967 also witnessed the arrest of the development momentum and increased the allocation of scarce resources to military expenditure at the expense of the development efforts.

Other economic consequences of the war, were the loss of the West Bank to Israel, and the loss was not only of efficient farming and fertile agricultural land but also of significant importance, the growing tourist industry which was a very important factor in earning, i.e. foreign exchange.

Thus, Jordan's trade (1967-73) relations, especially the sale of phosphates (the main natural resources) to Turkey and Europe, were hindered by the 1967 war because of the closure of the Suez Canal. Moreover, the post-war period witnessed shelling by the Israelis of the East Jordan Valley, particularly the East Ghor Canal Irrigation area, the country's major development projects. Farmers were forced out of the Jordan Valley, the most productive area, and consequently, delays occurred in the further development of the area. This has affected the contribution of agriculture to GDP.

We should indicate that the instant problems brought by the War in 1967 were met by aid from Arab countries, otherwise the country would have faced severe problems beyond recovery. It should also be pointed out that Jordan's economic future in the long-run will eventually depend on the nature of a peace settlement with Israel. Hence, peace in the area could encourage more foreign investment into Jordan, increase the GDP

contribution through earnings from tourism expansion and an increase in agricultural exports, and will allow Jordan to reduce its defence burden which could release substantial resources to be invested in the productive sector and consequently on economic development.

The Jordanian economy was also disrupted between 1968-71 due to the domestic hostilities between the Palestinian commandos and the Jordanian Army which brought economic life to a standstill in an atmosphere of suspicion as well as the consequence that aid was suspended and cut off altogether by Kuwait and Libya in 1971. Moreover, the period witnessed clashes with Syria which were followed by the closure of the Syrian border until 1972.

The economy was similarly disrupted by the October 1973 War between the Arab and Israelis, although Jordanian territory was not directly involved.

Much of the increase in GDP at current prices since 1973 has been caused by rising prices, particularly as a consequence of rising oil prices. The impact of this consequence is pointed out by Jorgenson (1982)⁽¹⁾. His argument is that the growth of GDP for the economy as a whole can be broken down into the contribution of capital, labour inputs and

(1) D. W. Jorgenson (1982) "Energy Prices and Productivity Growth", in Lars Matthiessen (ed) (1982) The Impact of Rising Oil Prices on World Economy, Macmillan, p.28.

productivity growth. Thus, the 1970s have witnessed an increase in the price of energy. The impact of such an increase, therefore, may slow the growth of productivity relative to other productive inputs, i.e. the relative price of capital labour, energy and material inputs have changed completely.

The annual average growth rate of real GDP was, however, 4.1% during the 1966-1985 period whereas the country has witnessed a high rate of inflation during the 1970s (19.4% in 1974). This has influenced the growth rate of GDP in Jordan. Also, the implications of inflation has aroused concern in Jordan and consequently to the creation of a Ministry of Supply, in order to deal with the problems resulting from inflation such as price regulation and food stuffs subsidies.

The 1980s have witnessed a decline in both Arab and USA aid, which has had a very negative impact on the Jordanian economy, i.e. the successive balance of payments deficit between 1982 - 1985, which has registered a 118.27 Million JD, 141.32 Million JD, 104.13 Million JD and 99 Million JD respectively. Hence it has forced Jordan to make greater use of international financial markets, to finance its budget deficit. The decline in Arab aid was due to the refusal to pay by Libya and Algeria for ideological reasons, and money stopped coming from Iraq towards the end of 1982 because of the cost of their War with Iran (Gulf War). Thus, the budgetary contribution from the U.S.A. ceased in 1981, due to the refusal by Jordan to participate in the Camp David Accords.

The period has also witnessed a fall in the price of oil and a recession in the Arab oil producing countries⁽¹⁾ which has had adverse effect on the demand for the Jordanian product, especially in the Iraqi market. Thus, the fall in the remittance earning by Jordanians working in these countries have a negative impact on the growth of Jordan's economy.

The purpose of this next section is to examine the factors which have contributed to the economic growth.

5.3 The Contribution of the Foreign Sector

Jordan is an open economy (see Table 5.4) and the trade sector plays a major part in the national economy both in terms of its contribution to the GDP and in meeting its requirement for both for consumer and capital goods.

Consequently, the role of imports is considered very significant in terms of the social, political and economic factors. Hence, importation has created a number of jobs, through the need for distribution and the sale of foreign goods. Thus, there are also some writers who even believe that the availability of goods has helped to reduce the inflationary pressure and consequently to keep away a popular cause of discontent.

(1) See for details, (1986), Lloyds Bank (1986) Jordan Economic Report.

TABLE 5.4
EXTERNAL TRADE SECTOR DURING 1966-1985 IN MILLION JD

YEAR	EXPORTS		IMPORTS (CIF) (2)	TRADE BALANCE (3)	GNP AT MARKET PRICE (4)	TRADE BALANCE AS % OF GNP (5)	IMPORTS AS % OF GNP (6)	TOTAL EXPORTS AS % OF GNP (7)	TOTAL IMPORTS + EXPORTS AS PROPORTION OF GNP
	DOMESTIC EXPORTS	RE-EXPORTS							
	TOTAL (1)								
1966	8.76	1.64	68.21	-57.81	185.70	31.13	36.73	5.60	42.33
1967	9.98	1.34	55.05	-43.73	142.50	30.69	38.63	7.94	46.57
1968	12.17	2.09	57.49	-43.23	166.40	25.98	34.55	8.57	43.12
1969	11.92	2.83	67.75	-53.00	197.40	26.85	34.32	7.47	41.79
1970	9.32	2.85	65.88	-53.71	187.00	28.72	35.23	6.51	41.74
1971	8.82	2.62	76.63	-65.19	199.40	32.69	38.43	5.74	44.17
1972	12.61	4.40	95.31	-78.30	221.00	35.43	43.13	7.70	50.83
1973	14.01	4.97	108.25	-89.27	241.50	36.96	44.82	7.86	52.68
1974	39.44	10.31	156.61	-106.86	279.30	38.26	56.07	17.81	73.88
1975	40.14	8.80	234.01	-185.07	376.00	49.22	62.24	13.01	75.25
1976	49.55	19.90	339.50	-270.05	562.40	48.02	60.37	12.35	72.72
1977	60.29	21.81	454.52	-272.42	660.10	41.27	68.86	12.44	81.30
1978	64.13	26.78	458.94	-368.03	781.00	47.12	58.76	11.64	70.40
1979	82.56	38.35	585.68	-468.77	921.30	50.88	63.57	13.12	76.69
1980	120.11	51.47	715.98	-544.40	1190.10	45.74	60.16	14.42	74.58
1981	169.03	73.61	1047.51	-804.87	1482.70	54.28	70.65	16.36	87.01
1982	185.58	78.95	1142.50	-877.97	1673.40	52.47	68.27	15.81	84.08
1983	160.08	50.50	1103.31	-892.73	1769.30	50.46	62.36	11.90	74.26
1984	261.05	29.60	1071.34	-780.69	1854.50	42.10	57.77	15.67	73.44
1985	255.35	55.54	1074.50	-763.61	1849.20	41.07	57.11	16.81	74.92
Average						40.47	52.65	11.44	64.09

Figures are rounded and (-) mean negative

Source

(1) Department of Statistics; Statistical Yearbook No. 35, 1984

(2) IMF, IFS, April 1987

Looking at Table 5.4 it shows that the value of commodity imports in current prices have increased from 68.21 Million JD in 1966 to 1074.5 million in 1985. This, however, represents an annual average growth rate of 15.61% which outstripped the average growth rate of GNP of 12.8% per annum for the period of 1966 - 85.

However, there is reason to believe that the growth in the value of imports may be due to the following:

- (1) The increase in income, especially the contribution of remittance from workers abroad and other transfer payments.
- (2) Rapid economic development, which itself increases the demand for capital and intermediate goods since it is essential for a large industrial investment, the growth of domestic manufacturing and construction activities.
- (3) The world witnessed a rise in commodity prices, accompanied by oil prices, which have affected the world prices as a whole.
- (4) A Rapid increase in the demand for food and other consumer goods, as a result of high growth in population.
- (5) The government has adopted a liberal policy.

- (6) The country has also witnessed a demonstration effect which can be shown by the change in the course of consumption, i.e. luxury consumption goods and non-essential commodities.⁽¹⁾

Whereas the value of domestic commodity exports at current prices increased from 8.76 million JD in 1966 to 255.35 Million JD in 1985. This increase represents a compound growth rate of 19.4% per annum. While the value of re-exports increased from 1.64 Million JD in 1966 to 55.54 Million JD in 1985, this represents an annual average growth rate of 20.03% during that period.

Anyhow, the reason behind such an increase may be due to the following reasons:

- (1) Jordan attempts to strengthen its relations with Arab countries, the geographical importance for a transition point and service centre, especially when the civil war in the Lebanon was started. Such moves have been very important in terms of

(1) C. B. Millham and M. S. Amerah, (1977), Rationalization of Imports in Jordan, Economic Research Department, Royal Scientific Society, Amman, Jordan, p.13.

exports, and its contribution to GDP, for example in 1980 and 1981, has witnessed an increase as a result the Iraqi expenditure on imports from Jordan and of transit facilities. This has thereby led to a rapid demand in exports and consequently, a massive boost to the Jordanian economy. From looking at Table 5.5 we can see that Jordan's exports to Arab countries have increased from 5.65 Million JD in 1966 to 131.53 Million JD in 1985. This represents an annual average growth rate of 18.02% during the period. In general, Jordan's exports with Arab countries as a proportion of total exports is very high.

- (2) Phosphate plays an important role in domestic exports, and particularly in 1974-75, which has witnessed an increase in its demand and its world prices.⁽¹⁾
- (3) The reopening of the Suez Canal in 1975, which has facilitated the trade with Europe and North America through the only port in Jordan (Aqaba) which has expanded and reduced the costs of land routes which have in the past affected the flow of trade on the development of the Jordanian economy.

(1) M. P. Mazur (1979), Economic Growth and Development in Jordan, Croom Helm, London, p.123.

TABLE 5.5
GEOGRAPHICAL DISTRIBUTION OF DOMESTIC EXPORTS DURING
1966 - 1985 in Million JD

YEAR	DOMESTIC EXPORT (1)	ARAB COMMON MARKET (2)	OTHER ARAB COUNTRIES (3)	TOTAL EXPORT TO ARAB COUNTRIES (4)	$\frac{4}{1} \times 100$
1966	8.760	2.600	3.050	5.650	64.500
1967	9.980	2.250	4.240	6.940	65.030
1968	12.170	2.680	5.490	8.170	67.130
1969	11.920	3.110	5.390	8.500	71.300
1970	9.320	3.000	4.170	7.170	76.930
1971	8.820	2.760	3.930	6.690	75.850
1972	12.610	3.670	5.480	9.150	72.560
1973	14.010	4.420	5.650	10.070	71.880
1974	39.440	5.930	12.500	18.430	46.730
1975	40.140	7.030	9.870	16.900	42.100
1976	49.550	10.080	12.830	22.910	46.240
1977	60.290	13.620	22.440	36.060	59.810
1978	64.130	16.440	26.180	42.620	66.460
1979	82.560	25.930	29.810	55.740	67.510
1980	120.110	42.450	30.460	72.910	60.700
1981	169.030	74.750	39.730	114.470	67.720
1982	185.580	80.560	42.750	123.310	66.450
1983	160.080	30.580	56.470	87.050	54.380
1984	261.050	72.050	60.520	132.570	50.780
1985	255.350	74.170	57.360	131.530	51.510

SOURCE

CBJ : Yearly Statistical Series (1964-1983) special issue, 20

CBJ : Monthly Statistical Bulletin, Vol, 23, No.6, June, 1987.

- (4) The composition of domestic exports have experienced a basic change, as well as the motivation for expanding exports was attributed to the development plan for the industrial sector. Thus, the impact of labour shortages in the market in the 1970s have produced the use of a comparatively sophisticated and capital intensive technology in many of the industries which have provided the Jordanian products to be strong enough to compete successfully in foreign markets, especially in those neighbouring Arab countries which have witnessed a massive imports bill.

Likewise, the balance of trade deficit has increased from 57.81 Million JD in 1966 to 763.61 million JD in 1985, which represents a compound growth rate of 14.55% during the period (1966 - 85) (see Table 5.4).

5.4 The Contribution of the Productive Sector

Table 5.6 represents a detailed account of the components of Jordan's GDP and relative importance to GDP.

On the productive sector, we can see as for the commodity producing sectors, the agriculture income in current prices increased from 27.6 Million JD in 1966 to 113.1 Million JD in 1985 represents a compound growth rate of 7.7% during the period

YEAR	GDP AT FACTOR	VALUE ADDED IN COST AGRICULTURE	(2) OF GDP	VALUE ADDED IN MINING MANUFACTURING	(2) OF GDP	VALUE ADDED IN ELECTRICITY & WATER SUPPLY	(2) OF VALUE GDP ADDED IN CONSTRUCTION	(2) OF TOTAL GDP PRODUCTIVE SECTORS	(2) OF GDP	VALUE ADDED IN WHOLESALE TRADE RESTAURANTS & HOTELS	(2) IN GDP

1966	149,600	27,600	18.400	17,300	11.600	2,000	1,300	9,300	6,200	56,200	37,600	28,900	19,300
1967	115,600	23,400	20.200	13,800	11.900	1,200	1,000	6,100	5,300	44,500	38,500	23,100	20,000
1968	138,200	16,200	11.700	16,200	11.700	1,500	1,100	9,700	7,000	43,600	31,500	25,600	18,500
1969	162,500	22,500	13.800	18,800	11.600	1,600	1,000	10,700	6,600	53,600	33,000	34,300	21,100
1970	154,700	15,600	10.100	15,900	10.300	1,900	1,200	7,700	5,000	41,100	26,600	32,200	20,800
1971	166,000	23,900	14.400	16,400	9.900	2,200	1,300	7,400	4,500	49,900	30,100	33,000	19,900
1972	182,800	26,600	14.600	18,500	10.100	2,500	1,400	9,200	5,000	56,800	31,100	35,700	19,500
1973	188,900	17,600	9.300	21,100	11.200	2,800	1,500	15,200	8,000	56,800	30,100	38,100	20,200
1974	242,400	30,300	12.500	40,500	16.700	3,000	1,200	16,800	6,900	90,600	37,400	42,300	17,500
1975	303,100	26,000	8.600	56,000	18.500	3,100	1,000	19,200	6,300	104,300	34,400	66,900	22,100
1976	378,400	37,300	9.900	67,800	17.900	3,900	1,000	26,600	7,000	135,600	35,800	80,100	21,200
1977	439,900	41,700	9.500	78,100	17.700	5,500	1,300	36,800	8,400	162,100	36,800	94,200	21,400
1978	551,200	58,600	10.600	94,300	17.100	7,200	1,300	51,000	9,300	211,100	38,300	102,600	18,600
1979	668,600	43,600	6.500	121,600	18.200	10,100	1,500	70,500	10,500	245,800	36,800	123,600	18,500
1980	893,200	69,400	7.800	167,100	18.700	17,100	1,900	97,500	10,900	351,100	39,800	166,500	18,600
1981	1041,100	75,100	7.200	208,300	20.000	21,000	2,000	110,600	10,600	415,000	39,900	196,700	18,900
1982	1169,600	81,800	7.000	230,300	19.700	25,300	2,200	121,900	10,400	459,300	39,300	210,900	18,000
1983	1242,300	110,000	8.900	214,500	17.300	28,300	2,300	126,800	10,200	479,600	38,600	228,000	18,400
1984	1316,000	99,600	7.600	250,800	19.100	33,500	2,500	127,000	9,600	510,900	38,800	241,300	18,300
1985	1367,900	113,100	8.300	245,900	18.000	31,500	2,300	124,400	9,100	514,900	37,600	256,000	18,700

Source : Calculated from

(1) Central Bank of Jordan, Yearly Statistical Series
(1964 - 1983) Special Issue No. 20, 1984.

Department of Research and Studies, Amman, 1984

(2) Central Bank of Jordan, Monthly Statistical Bulletin
Vol 23, No. 6, June 1987.

Table 5.6 continued. i

YEAR	VALUE ADDED TRANSPORT AND COMMUNICATION	(2) IN VALUE ADDED IN FINANCING REAL ESTATE SERVICE	(2) IN VALUE ADDED IN GOV PRODUCERS OF GOVT. SERVICE	(2) IN VALUE ADDED IN GOV OTHER SERVICES	(2) IN GOV SECTORS	TOTAL SERVICE SECTORS	(2) IN GOV INDIRECT TAXES PRICE	+ NET GOP AT MARKET PRICE	+ NET FACTOR INCOMES FROM ABROAD	GNP AT MARKET PRICE				
1966	14.440	9.600	2.800	1.900	22.000	14.700	25.300	16.900	93.400	62.400	20.900	170.500	15.200	185.70
1967	8.200	7.100	12.300	10.600	24.500	21.200	3.000	2.600	71.100	61.500	15.600	131.200	11.300	142.50
1968	12.900	9.300	15.000	10.900	36.400	26.300	4.700	3.400	94.600	68.500	17.900	156.100	10.300	166.40
1969	14.400	8.900	13.800	8.500	40.500	24.900	5.900	3.600	108.900	67.000	20.900	183.400	14.000	197.40
1970	14.300	9.200	18.000	11.600	42.500	27.500	6.600	4.300	113.600	73.400	19.700	174.400	12.000	187.00
1971	14.600	8.800	18.400	11.100	43.600	26.300	6.500	3.900	116.100	69.900	20.200	186.200	13.200	199.40
1972	17.300	9.500	19.600	10.700	45.900	25.100	7.500	4.100	126.000	68.900	24.400	207.200	13.800	221.00
1973	17.900	9.500	21.900	11.100	46.700	24.700	8.500	4.500	132.100	69.900	29.400	218.300	32.200	241.50
1974	22.800	9.400	22.500	9.300	54.300	22.400	9.900	4.100	151.800	62.600	4.900	247.300	32.000	279.30
1975	24.900	8.200	30.000	9.900	65.200	21.500	11.800	3.900	198.800	65.600	9.000	312.100	63.900	376.00
1976	32.500	8.600	36.800	9.700	81.700	21.600	14.700	3.900	245.800	65.000	43.200	421.600	140.800	562.40
1977	35.900	8.200	48.000	10.900	84.400	19.200	18.700	4.300	281.200	63.900	74.300	514.200	145.900	660.10
1978	59.300	10.800	67.000	12.200	95.000	17.200	21.600	3.900	342.500	62.100	81.000	632.200	148.800	781.00
1979	62.900	9.400	91.100	13.600	129.100	19.300	24.200	3.600	430.900	64.500	84.400	753.000	168.300	921.30
1980	79.700	8.900	105.900	11.900	170.200	19.100	30.400	3.400	552.700	61.900	91.100	984.300	205.800	1190.10
1981	102.700	9.900	111.200	10.700	191.200	18.400	37.300	3.600	639.100	61.400	123.100	1164.200	318.500	1482.70
1982	123.500	10.600	129.200	11.000	218.500	18.700	45.400	3.900	727.500	62.200	151.600	1321.200	352.200	1673.40
1983	138.400	11.100	135.600	10.900	232.000	18.700	50.900	4.100	784.900	63.200	180.400	1422.700	346.600	1769.30
1984	143.500	10.900	144.500	11.000	238.400	18.100	62.400	4.700	830.100	63.100	183.400	1499.400	355.100	1845.50
1985	152.200	11.100	153.300	11.200	254.800	18.600	68.400	5.000	886.700	64.800	205.400	1573.300	275.900	1849.20

1966 - 1985, while the share of agriculture in GDP is declining.

This increase was achieved in spite of successive drought seasons (i.e. the agricultural sector depends largely on the weather conditions).

This increase was a result of significant developments during the period of the 5 years development plan. Most noticeably the expansion of irrigated areas and the rise in productivity, which was due to the application of modern techniques which in themselves have reduced the effect of weather fluctuation on output.

Improved marketing has also helped to increase the exports of vegetables and the government has encouraged farmers by a guarantee to buy all products at subsidised prices and offer them other incentives.

The income from the industrial sector has also increased from 17.3 Million JD in 1966 to 245.9 Million JD in 1985, which represents an annual average growth rate of 15% during the period.

This increase is due to the tremendous expansion in establishing new industrial firms such as oil refining cement and processing phosphate rock (which has increased in actual output and a rise in export prices, particularly in 1976). Also the sector has witnessed the use of modern techniques such

as the capital intensive. Above all, the government has encouraged potential investors in industry through the exemption of investment. We should also point out that the share of manufacturing and mining sectors in GDP have risen from 11.6%, 20%, 18% in 1966, 1981, and 1985 respectively and this sector has outstripped agriculture as the main contributor to GDP and this trend is likely to continue.

The construction sector has also increased from 9.3 million JD in 1966 to 124.4 Million JD in 1985, which represents a compound growth rate of 14.6% during the period. The share of construction in GDP also increased from 6.2 Million JD in 1966 to 9.1 Million JD in 1985.

This increase is very significant to the development process. In spite of the fluctuation in the price of materials and labour costs which has undergone a rapid increase, the increase in this sector was a result of an increase in economic activity by the government and the construction boom due to the demand in housing which has greatly increased and the overflow of petro-money into Jordan which has reflected itself in the construction sector. In addition to that, the Civil War in Lebanon in 1976 which made Jordan a refuge for both persons and capital, have caused a land and construction boom as well as adverse effect on this sector, by speculation in real estate and consequently a sharp increase in rent and housing costs.

The income from the total productive sectors have increased from 56.2 Million JD in 1966 to 514.9 Million JD in 1985. This

represents an annual average growth rate of 12.3% during the period while its share of GDP was effected due to the many disruptions of the economy particularly during the period 1968 - 73.

On aggregate the income from the service sector has increased from 93.4 Million JD in 1966 to 886.7 Million JD in 1985. This represents a compound growth rate of 12.6% during the period. While its share in the GDP was stable, except the period 1968 - 73 which was almost 70% of the GDP.

In 1985 the picture remains almost unchanged and the Jordanian economy is still predominant by services sectors. This increase was a result of participation of all sectors. One important factor in the service sectors is the financing and real estate service which witnessed an increase from 2.8 Million JD in 1966 to 153.3 Million JD in 1985, which represents a compound growth rate of 23.4% during the period.

This increase was due to the rapid growth in both the size and sophistication following relaxed control. Additional specialised credit institutions such as investment companies, which includes several insurance companies, postal-saving systems, social security fund and the financial market were being established to diversify the service available by channelling financial resources into productive investment. Thus, the period has also witnessed an increase in the volume of trade which is accompanied with an increase of financing trade transaction.

Thus, the expansion of the banking sector also attributes to the economic creditability of Jordan in western businesses, i.e. gaining access to the Euro dollar market for credit. Thus, it is also due to the expansion of financing facilities, which itself is a result of a high degree of liquidity.

In addition to that, the period has witnessed a rise in budget support from friendly countries and workers remittance abroad and the budget deficit itself was accompanied by a rapid increase in the money supply and the banking system.

There are other major factors which made a significant contribution to GDP at market prices.

The period has witnessed rapid changes in net indirect taxes which have increased from 20.9 million JD in 1966 to 205.4 Million JD in 1985. This represents an annual average growth rate of 12.8% during the period.

Another major factor into the GNP is the net factor income from abroad (including remittance from Jordanians working abroad) which have increased from 15.2 million JD in 1966 to 275.9 Million JD in 1985, which represents a compound growth rate of 16.5% during the period.

5.5 The Expenditure Side of the Economy

We should also look at the expenditure side of GDP which

represents the demand side.

Looking at Table 5.7 we can see that there is a rapid increase in private expenditure on consumption from 149.50 Million JD in 1966 to 1414.7 Million JD in 1985, which represents an annual average growth rate of 12.56% during the period.

At the same time, its share of GDP at the market price increased from 87.68% to 89.9% in 1966 and 1985 respectively.

Whereas the government expenditure on consumption has increased from 39.2 million JD in 1966 to 405.9 Million JD in 1985, this represents an annual average growth rate of 13.0% during the period. Thus, the period also witnessed an improvement in its share into (with respect of) GDP at market prices, which represents an increase from 23% in 1966 to 25.8% in 1985. Hence, a high level which represents a weakness in the national economic structure may reveal the failure of output to meet the domestic demand and consequently this may give the external factor a role to play. Hence, imports reduce the pressure on the output response of domestic economy and, at the same time, contain inflation by removing a source of excess demand despite its adverse affect on chronic deficit in the balance of trade.

However, the increase in both private and government sectors on consumption expenditure is due to the increase in

TABLE 5.7
SOURCE OF AND USES\GDP (1966-1985) in Million JDs

YEAR	EXPORT	GOVERNMENT CONSUMPTION	GROSS FIXED CAPITAL	INCREASE IN STOCK	PRIVATE CONSUMPTION	LESS IMPORTS	GDP M.P.	NET FACTOR FROM INCOMES ABROAD	GNP M.P.
1966	32.100	39.200	27.700	-1.300	149.500	76.600	170.500	15.200	185.700
1967	20.800	44.000	24.000	-1.160	103.800	59.800	131.200	11.300	142.500
1968	18.900	55.900	27.000	.500	127.400	73.600	156.100	10.300	166.400
1969	20.600	64.000	35.800	3.900	156.800	97.700	183.400	14.000	197.400
1970	17.600	58.700	25.200	-3.100	152.800	79.800	174.400	12.000	187.000
1971	17.800	60.400	30.700	4.500	161.700	88.900	186.200	13.200	199.400
1972	37.000	68.300	36.300	6.000	177.400	117.800	207.200	13.800	221.000
1973	52.400	80.000	47.200	-8.000	183.100	136.400	218.300	23.200	241.500
1974	80.400	97.700	63.200	2.400	199.800	196.100	247.300	32.000	279.300
1975	118.900	110.100	87.900	.900	295.400	301.100	312.100	63.900	376.000
1976	182.900	155.900	138.000	12.200	362.600	430.000	421.600	140.800	562.400
1977	228.000	156.600	197.000	5.500	470.500	543.400	514.200	145.900	660.100
1978	264.600	190.000	229.100	-6.100	560.400	605.800	632.200	148.800	781.000
1979	339.600	235.300	294.500	-14.500	722.600	824.500	753.000	168.300	921.300
1980	468.800	243.800	397.800	6.300	829.300	961.700	984.300	205.800	1190.100
1981	629.800	285.900	564.800	23.100	1053.200	1392.600	1164.200	318.500	1482.700
1982	667.900	326.100	597.300	22.000	1219.600	1511.600	1321.200	352.200	1673.400
1983	638.200	348.300	502.800	7.300	1347.000	1421.000	1422.700	346.600	1769.300
1984	743.200	376.900	485.600	-	1374.900	1481.200	1499.400	355.100	1845.500
1985	778.100	405.900	426.800	16.800	1414.700	1469.000	1573.300	275.900	1849.200

SOURCE I.M.F. I.F.S. YEARBOOK 1987

the population size, foreign aid, remittance from Jordanians working abroad and income.

We can also see that capital formation is an important factor in the development process and has witnessed a rapid increase from 27.7 million JD in 1966 to 426.8 Million JD in 1985. This represents a compound growth rate of 17.8% during the period, at the same time, its share to GDP at market prices also increased from 16.25% in 1968 to 27.1% in 1985.

This increase is due to a massive economic and social project which was implemented by the development plan 1976-80. We should also point out that the massive increase in government expenditure sustained investments shows the existence of powerful demand side influence and if it is to be effective, it requires a supply side response, and at the same time, without expenditure incentives the supply side would not grow at a remarkable level.

5.6 The Contribution of the Foreign Resources

Let us also examine the impact of foreign resources (i.e. aid investment and remittance) on the GDP.

The inflow of foreign resources is considered to be very

important for the economic development in most LDCs⁽¹⁾, and Jordan's case is no different. It is important because it finances imports of capital and intermediate goods which are essential to sustain economic development. Besides this, it also increases the supply of resources available to the country and consequently reduces the bottlenecks in the supply side. At the same time, it contributes to purchasing power through the multiplier effect and consequently to the acceleration of potential economic growth.

In addition to that, foreign aid represents the main source of finance for government deficit, otherwise it would find it difficult to finance expenditure and would then force the government either to reduce its expenditure or to impose taxes and increase its borrowing. Such enforcement may have an adverse effect on economic growth and possibly, on political stability.

On the other hand it has reduced the tax efforts and hastened consumption which has, thereby, increased demand for imports and consequently increased trade deficit. It has thus made Jordan very dependent on foreign aid, the continuity of which it has little say in and thus is politically determined.

(1) For more details see:

P. N. Rosenstein-Roden (1961), "International Aid for Underdeveloped Countries", Review of Economics and Statistics, Vol 43, No. 2, pp. 107 - 38.

H. B. Henery and A. M. Strout (1966), "Foreign Assistance and Economic Development", American Economic Review, September, Vol. 56(4), Part 1, pp. 679-733.

R. McKinnon (1964), "Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation", The Economic Journal, June, Vol. 74, p.388-409.

We should also point out that the association between foreign aid and economic development has been examined by many economists both on theoretical and empirical grounds but it is still, nevertheless, a controversial issue and beyond the topic of investigation in this thesis.

With regard to this issue it has, however, been argued by Khatib (1987)⁽¹⁾ in an empirical study, that foreign aid has a favourable effect on economic development and consequently on the economic growth of Jordan.

Looking at Table 5.8 which shows that the net total of foreign inflow increased from 44.69 Million JD in 1966 to 624.98 Million JD in 1985, would represent an annual average growth rate 14.9% during the period. We can see the volume of these foreign resources increased rapidly in 1975, accompanied by the start of rapid economic growth. Also, the inflow of spending power from abroad was very significant in relation to GDP.

Moreover, the balance of payments has traditionally been characterized by a huge balance of trade deficit which was partly offset by the increase in the net total foreign inflows, which consequently improves the position of the balance of

(1) F Khatib (1987), Foreign Aid and Economic Development in Jordan: An Empirical Investigation, paper presented at Conference on Politics and the economy of Jordan, convened in the University of London (S.O.A.S.) on the 19th May, 1987, p.12

TABLE 5.8
THE RELATIVE IMPORTANCE OF FOREIGN INFLOW DURING THE PERIOD
(1966 - 85) IN MILLION JDs

YEAR	AID **			REMITTANCE				NET TOTAL		TRADE BALANCE (8)	GOP AT MARKET PRICE (9)		7 x100 8	7 x100 9
	GROSS TOTAL INFLOW	PRIVATE		CENTRAL GOVERNMENT INFLOW (4)	NET TOTAL INFLOW 5=(3+4)	GROSS INFLOW	OUTFLOW	NET INFLOW (6)	FOREIGN INFLOW 7=(5+6)					
		INFLOW (1)	OUTFLOW (2)								NET (3)			
1966	34.090	2.650	-	2.650	31.440	10.600	-	10.600	44.690	-57.810	170.500	77.300	26.210	
1967	53.930	2.350	-	2.350	51.580	6.550	-	6.550	60.480	-43.720	131.200	138.330	46.090	
1968	54.480	1.410	-	1.410	53.070	4.100	-	4.100	58.580	-43.230	156.100	135.500	37.530	
1969	47.340	1.550	-	1.550	45.790	6.920	-	6.920	54.260	-53.000	183.400	102.370	29.590	
1970	40.650	1.570	-	1.570	39.080	5.540	-	5.540	46.190	-53.710	174.400	86.000	26.490	
1971	36.610	1.120	-	1.120	35.490	4.970	-	4.970	41.580	-65.190	186.200	63.780	22.330	
1972	68.290	2.330	-	2.330	65.960	7.410	-	7.410	75.700	-78.300	207.200	96.680	36.530	
1973	64.600	2.510	-	3.510	61.090	14.700	-	14.700	79.300	-89.270	218.300	88.830	36.330	
1974	85.850	2.420	0.110	2.310	84.430	24.130	-	24.130	110.870	-106.760	247.300	103.850	44.830	
1975	140.360	2.350	0.560	1.790	138.010	53.250	-	53.250	193.050	-185.070	312.100	104.310	61.860	
1976	127.850	5.100	1.300	3.800	122.750	136.410	-	136.410	262.960	-270.050	421.600	97.370	62.370	
1977	168.750	1.810	2.920	-1.110	166.940	154.750	15.000	139.750	305.580	-272.420	514.200	112.117	59.430	
1978	107.180	4.550	0.670	3.880	102.630	159.380	20.000	139.380	245.890	-368.030	632.200	66.810	38.900	
1979	320.690	2.640	6.260	-3.620	318.050	180.420	24.000	156.420	470.850	-464.770	753.000	101.310	62.530	
1980	401.000	10.150	2.250	7.900	390.850	236.680	46.000	190.680	589.430	-544.400	984.300	108.270	59.880	
1981	432.460	17.130	1.660	15.470	415.330	340.890	52.000	288.890	719.690	-804.870	1164.200	69.140	61.820	
1982	375.360	11.640	2.070	9.570	363.720	381.870	62.400	319.470	692.760	-877.970	1321.200	66.450	52.430	
1983	296.790	7.230	1.860	5.370	289.560	402.900	72.800	330.100	625.030	-892.730	1422.700	70.010	43.930	
**1984	282.560	20.860	3.800	17.060	261.700	475.000	97.500	377.500	656.260	-780.690	1499.400	84.060	43.770	
**1985	317.540	26.360	2.530	23.830	291.180	402.920	92.950	309.970	624.980	-763.610	1573.300	81.840	39.720	

* Preliminary ** Includes Government Budget Supports and Aid to Other Organisations

SOURCE: CENTRAL BANK OF JORDAN YEARLY STATISTICAL SERIES (1964 - 1983)

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payments. We should also point out that without the huge remittance earning by Jordanians working abroad, then we would expect the imports to be much lower.

However, the increase in foreign aid was a result of an increase in the price of oil which has benefited the Arab-oil countries, as well as making them generous to grant aid to Jordan. Hence, it has a geopolitical position as confrontation with Israel.

Thus, the rapid growth in remittance into Jordan was due to the expansion of economic activity by the Arab Gulf State which embarked on a course of ambitious development. This consequently led to an increase in employment for Jordanian workers, the high wage rate in the Arab oil-exporting countries, and the improved facilities and incentives offered by the Central Bank of Jordan to the worker by sending and bringing back their money into Jordan.⁽¹⁾ This is also due to the security and the attraction of investment climate in Jordan in particular the industrial sector, land and the housing sector.

5.7 The Contribution of the Labour Force

The contribution of the labour force into the growth of the Jordanian economy was significant.

(1) For more details see B Saket (1983), Economic Use of Remittances: The Case of Jordan, Royal Scientific Society, March, Amman.

Manpower has increased in size and in its efficiency and quality. Given the lack of natural resources in Jordan it gives manpower an important role to play in the economy. Hence, manpower is considered to be the most treasured of natural resources.

Besides this Jordan is playing an important role in providing manpower services to the Arab gulf states which is estimated at 250,000 (Five Year Plan 1980-1985) and most of them are a skilled labour force. Their remittance has, however, helped to sustain economic growth in Jordan, but their absence has helped to reduce the unemployment and consequently this has caused a shortage in manpower, particularly in the agriculture and construction sectors and the country became an importer of unskilled labour which has caused a depression in wages in the country which may have been considered to be of benefit to a specific sector of the economy.

5.8 The Policy of Environment

The growth in the Jordanian Economy was attributed to the policy of environment which has been set up by the government. Hence Jordan adopted an economic system based on a free enterprise system. Thus, the growth is due to the maintenance and the cooperation of both the private and the public sector.

The government plays a significant role in promoting the private sector, by creating a political climate and the

economic conditions intended to encourage private investment, i.e. by granting incentives such as the exemption from income and social welfare taxes.

Moreover, the government took an active role in the basic infrastructure of the economy which is unattractive to the private sector due to its limited financial resources and in some cases, faces the threat of bankruptcy. Thus, the government undertook an initiative to participate in the large industrial projects.

This was also an incentive and an appropriate entrepreneurial climate for private investment (5 Year Plan 1981-1985, p.2). Hence entrepreneurship was widely recognised by the government as a major role in promoting and sustaining economic growth in both the commodity producing service and notably, the financial sectors.

Thus, the 1970s have witnessed significant changes which have affected the growth of the Jordanian economy, ie the liberal monetary procedure by lifting exchange controls in order to adjust to the external shocks and to relax constraints on the development of foreign currencies and the import regime of liberalisation which attempted to meet the demand for capital and intermediate goods which are essential for the development process. The government also adopted a policy of encouraging foreign investment as well as what was already being actively sought for it [encourage and investment law

1972⁽¹⁾], by creating facilities such as a tax haven and exemption from the customs duties.

5.9 Conclusion

We conclude our analysis by recapitulating that the availability of data on price levels have restricted us to choose the cost of living index as an indicator of the general price level, in spite of its limitations.

During the 1950s and the 1960s, Jordan was enjoying relative price stability, with prices increasing at an average rate of 2% whilst during 1966 - 1985, Jordan has experienced a significant rise in price increases with prices increasing at an average rate of 8.03% in spite of government interference, for example, government subsidies on essential commodities and rent control. At the same time, during 1966 - 1985, Jordan has enjoyed a bouyant economic growth with an annual average growth rate of 12.4% and 4.1% at current prices and at constant prices respectively, inspite of its lack of raw materials and fuel.

As for the result of the association between the percentage rate of change in the consumer price index and the percentage rate of change in real GDP using the correlation matrix is found to be negatively related. While using the regression analysis (ordinary least squares) indicates that the

(1) See, for more details An Encouragement of Investment Law, 1972 and 1984, Ministry of Industry and Trade, Amman, Jordan.

inflation rate has a negative impact on growth rate of real GDP, but the inflation coefficient is found to be insignificant both at the 5% and the 10% level.

With regard to the estimated result of the impact of the growth rate of real GDP on inflation (using CORC) in Jordan is found to be negatively related and significant at 5% level. However, the conclusion derived from this model is that an increase in the rate of change in real output can play a significant role in reducing the rate of change in the price level.

However, the relationship between economic growth and inflation "will" entirely depend on the level of economy and its socio-political condition and hence both are determined by many different factors.

Finally the reason behind a rapid growth in Jordan may be attributed to several factors, namely political stability which is enhanced by loyalty of the army despite the existence of divisions in social and political issues. Therefore, without stability then the country would not be able to meet the needs and the ambitions of its people, neither would it achieve rapid economic development.(1)

The growth also attributed to economic factors which has emerged from the rapid increase in government expenditure which

(1) R. F. Nyrop (ed) (1980), Jordan: A Country Study, The American University, Washington DC.

is maintained by investment activities in both public and private sectors.

In addition to that it was a result of successful means of getting foreign resources in the form of grants and loans to finance its government expenditure and consequently to enhance the process of economic development.

Thus, the growth in the economy was a result of enjoying an adequate international reserve, which was due to the inflow of external resources, i.e. the growing remittance of Jordanian's working abroad and the aid from the Arab oil producing countries and also other friendly countries (USA) to Jordan which is still a major contribution to the balance of payment surplus and into the economy as a whole.

Furthermore, the rapid growth is also attributed to government policy in encouraging indigenous entrepreneurship and foreign investment. Hence the government has realised the role which it can play in the process of economic development. Thus, the strength and stability of the Jordanian currency which was a result of an increased level of foreign reserve which has proved to be very important in its support for the development process, not to mention the quality and the skill of the labour force which is also very significant to the Jordanian economy.

CHAPTER 6

The Contribution of Government to the Inflationary Process in
Jordan

Having earlier, in chapter 5, investigated the relationship between inflation and economic growth in Jordan, in this chapter we will examine the role of the government in the inflationary process in Jordan. This will involve an inquiry into some analytical and empirical arguments related to the contribution of government expenditure in Jordan. This chapter will also provide some insight of the characteristics of revenue and the impact of direct and indirect tax on the inflationary pressure in developing countries, identifying the features of the tax revenue system in Jordan and the reason behind the growing domestic revenue in Jordan.

Thus, the inquiry also involves a citation of the empirical argument related to the influence of inflation on government expenditure revenue and the budget deficit, and the question of the impact of budget deficit on inflation which will be associated with an inquiry into the question of financing the budget deficit, the reason behind the growing fiscal deficit in LDCs, and the budget deficit in Jordan and how it is financed ?

It is widely accepted by many economists that an increase in government spending tends to contribute to the inflationary process.⁽¹⁾

According to the Keynesian formulation, it is argued that an increase in government expenditure will induce more inflationary pressure, through the increase in the aggregate demand, unless it is compensated by tax increases or by tighter monetary policy.

Thus, it has also been proposed by the monetarist formulation, that an increase in government expenditure will only be conducive to greater inflation if it is supported by an increase in the money supply.

We should also point out that an increase in government expenditure per se will not necessarily lead us to expect more inflation. Indeed, it also depends on many factors, namely,

- (1) the nature of financing government expenditure which can be financed by taxation (ie direct and indirect); or by borrowing (from either foreign or domestic), or by resorting to printing money;

(1) For more details see G. Maynard and W. Van Ryckeghem (1975), A World of Inflation, New York: Barnes and Noble, Chapter 6.

- (ii) The composition of government expenditure;
- (iii) The general state of the economy; and the relative importance of government full-employment objective,
- (iv) In the long run, the relative effect of government expenditure on consumption and output depends on, i.e. the marginal propensity to consume⁽¹⁾

6.1 Government Expenditure in Jordan

Let us examine the government expenditures in Jordan

Government expenditure in Jordan is under two headings:

- (1) current expenditure
- (2) capital expenditure.

Looking at Table 6.1 we can see that defence and internal security, financial administration and social services, and the form of wages and salaries are the main component of the current expenditure. In light of this, the current expenditure has increased rapidly from 28.307 million JD in 1966 to 541.662 million JD in 1985. This, represents a compound growth rate of 16.8% during the period, but in percentage terms, the current expenditure of total government expenditure has witnessed fluctuations, i.e. 73.33%, 57.89% and 66.64%, in 1966, 1977, and 1985 respectively. This is an average of 66.5% during the period (1966 - 1985).

(1) For more details see A Peacock and G K Shaw (1971), 'The Economic Theory of Fiscal Policies', University of York, Studies in Economics, No. 5, and J Barkley Rosser, Jr. (1983) 'Infrastructure Investment and Inflation in Saudi Arabia, Economic Forum, Summer, Vol. 14, Part No. 1, pp.143 - 147.

TABLE 6.1

Component of the Government Expenditure for the period 1966 - 1985 (in million JDS)

Type of Expenditure	Economic Development			Social Services			Culture & Information Services			Communication and Transport Services		
	Recurring	Capital	Total	Recurring	Capital	Total	Recurring	Capital	Total	Recurring	Capital	Total
*1966	1.096	5.786	6.882	5.221	0.823	6.044	-	-	-	1.359	1.874	3.233
1967	1.448	10.043	11.491	7.505	2.108	9.613	-	-	-	1.796	3.219	5.015
1968	1.516	7.321	8.837	8.069	1.893	9.962	-	-	-	1.772	4.623	6.395
1969	1.533	11.430	12.963	8.725	3.675	12.400	-	-	-	1.778	2.799	4.577
1970	2.224	10.370	12.594	8.905	1.311	10.216	1.175	0.538	1.713	1.195	1.326	2.521
1971	2.143	7.878	10.021	8.781	0.655	9.436	1.342	0.357	1.699	1.204	0.449	1.653
1972	3.222	16.562	19.784	9.353	0.569	9.922	1.395	0.322	1.717	1.434	1.178	2.612
1973	3.432	24.498	27.930	10.179	0.678	10.857	1.753	0.691	2.444	1.626	1.014	2.640
1974	3.973	27.509	31.482	16.700	1.673	18.373	2.093	0.487	2.580	2.242	0.854	3.096
1975	5.321	44.325	49.646	20.483	3.448	23.931	3.336	0.952	4.288	3.239	4.772	8.011
1976	6.868	36.955	43.823	25.818	5.841	31.659	3.698	0.811	4.509	3.887	11.791	15.678
1977	7.992	89.602	97.594	30.088	5.457	35.545	5.019	1.627	6.646	4.818	13.026	17.844
1978	9.011	97.844	106.855	35.395	5.518	40.913	5.273	2.036	7.309	5.589	15.648	21.237
1979	10.851	104.204	115.055	47.339	8.775	56.114	6.271	2.371	8.642	7.369	28.201	35.570
1980	10.879	131.233	142.112	53.442	10.245	63.687	6.505	1.171	7.676	7.912	24.726	32.638
1981	12.632	138.808	151.440	67.080	12.345	79.425	8.592	1.949	10.541	9.957	20.448	30.405
1982	13.988	137.091	151.079	76.278	18.257	94.535	8.940	3.852	12.792	10.426	21.365	31.791
1983	15.263	130.646	145.909	80.025	6.904	86.929	8.529	0.977	9.506	11.708	20.191	31.899
1984	14.258	122.512	136.770	82.717	5.094	87.811	9.445	1.449	10.894	16.262	12.693	28.955
**1985	15.189	155.807	170.996	88.893	6.937	95.830	8.767	1.735	10.502	17.091	6.335	32.426

Source: Central Bank of Jordan CBJ Yearly Statistical Year Special Issue No. 20 (1964-1983) and various issues

*Nine months

** Preliminary

Component of the Government Expenditure for the period 1966 - 1985 (in million JDs)

* nine months
** preliminary

TABLE 6.1 continued.... ii Component of Government Expenditure for the period 1966 - 1985 (in million JDS)

Type of Expenditure	International	Affairs	Finance Administration	Grand Government Expenditure	Total of Government Expenditure	% of Recurring in Total Government Expenditure	% of Capital in Total Government Expenditure	GDP at Market Price	% of Government Expenditure in GDP	Real Government Expenditure (1)	
Year	Recurring Capital	Total	Recurring Capital	Total	Recurring Capital Total						
x1966				28.307	10.293	38.600	73.330	26.670	170.500	22.640	74.288
1967				44.659	23.496	68.155	65.530	34.470	131.200	51.950	128.521
1968				57.186	23.334	80.520	70.020	28.980	156.100	51.580	151.547
1969				65.231	23.179	88.410	73.780	26.220	183.400	48.210	155.788
1970	0.900	0.093	5.866	7.960	13.826	80.706	73.140	26.860	174.400	46.280	133.000
1971	0.993	0.074	6.756	12.903	19.659	60.706	73.000	27.000	186.200	44.650	130.840
1972	1.085	0.192	8.098	11.802	19.900	70.467	69.460	30.540	207.200	48.960	151.060
1973	1.226	0.075	11.171	13.732	24.903	78.608	65.770	34.230	218.300	54.740	159.973
1974	1.483	0.060	23.694	12.302	35.996	103.603	70.660	29.340	247.300	59.290	164.356
1975	1.884	0.470	32.432	24.827	57.259	125.692	61.350	38.165	312.100	65.640	204.864
1976	2.391	0.566	37.454	20.401	57.855	185.894	70.820	29.180	421.600	62.260	235.460
1977	2.598	0.455	47.254	31.603	78.857	195.587	57.890	42.110	514.200	65.700	264.598
1978	3.279	0.070	47.475	26.425	73.900	212.891	58.890	41.110	632.200	57.180	264.435
1979	3.792	0.210	107.596	47.953	155.549	321.335	62.310	37.690	753.000	68.480	330.554
1980	4.220	0.360	110.107	56.479	166.586	336.053	59.670	40.330	984.300	57.210	324.915
1981	4.538	0.699	119.612	78.650	198.262	391.468	60.500	39.500	1164.200	55.580	346.673
1982	5.118	2.754	137.462	62.573	200.035	442.968	63.870	36.130	1321.200	52.500	345.856
1983	5.056	0.700	128.354	88.778	217.132	453.675	64.330	35.670	1422.700	49.570	334.935
1984	5.241	1.428	154.565	86.152	240.717	488.092	67.710	32.290	1499.400	48.070	329.571
x1985	5.462	1.614	172.415	94.714	267.129	541.662	66.640	33.660	1573.300	51.660	360.784
							66.500	33.500		53.100	

* nine months

** preliminary

(1) Deflated by consumer price index

Likewise, development projects and the repayment of foreign and domestic loans were the main items in capital expenditure.

Thus, capital expenditure has also increased from 10.293 million JD in 1966 to 271.186 million JD in 1985. This, however, represents an annual average growth rate of 18.8% during the period. The share of capital expenditure in the aggregate government expenditure has increased and witnessed fluctuations of i.e. 26.67%, 42.11% and 33.6% in 1966, 1977 and 1985 respectively. But on average is 33.5% during the period (1966 - 1985). This, is due to the declining importance of defence expenditure, which belongs to current expenditure. Moreover, it is also due to a structural change which reflects itself in the intensified development and which is greatly enhanced by the continuing access of foreign grants to finance it.

Total government expenditure at current prices has, at the same time witnessed a rapid increase from 38.60 million JD in 1966 to 812.848 million JD in 1985. Despite the recent sudden drop in the income in the form of aid from Arab Countries. This, however, represents a compound growth rate of 17.4% Which has far exceeded the compound growth rate of the price level (8.03%) during the same period (1966 - 1985). But this increase is not entirely real. Indeed, some of it is due to higher prices which occurred in 1974 and 1975, and hence, as prices rose real government expenditure fell. Therefore, real government expenditure has increased from 74.288 million JD in 1966 to 360.784 million JD in 1985. This represents an average

growth rate of 8.7%, which is almost half the nominal annual average growth rate and has also exceeded the annual average growth rate of price level during the same period.

The increase in government expenditure at current prices can be better viewed if we measure it against GDP at market prices. This ratio has witnessed rapid changes, where 22.64%, 68.48% and 51.66% in 1966, 1979, and 1985 respectively. But on average the proportion of government expenditure to GDP at market price during the period (1966 - 1985) is 53.1%.

This, however, represents a very high ratio if it is compared with most other developing countries. This is due to the direct participation of government in economic development. Therefore, the greater the degree of government participation, the greater is the spending pressure.

In view of that, the major factors which were responsible for the rapid growth in government expenditure are⁽¹⁾:

- (1) Jordan has experienced huge military expenditures due to the political threat following the 1967 war and the internal disturbance in 1970 - 1971. However, defence and internal security has increased from 17.12 million JD in 1966 to 323.417 million JD in 1985. This, however,

(1) See Issa J. Ibrahim (1983), The Structure of Jordanian Economy : An Econometric Investigation, unpublished thesis, University of Southampton, U.K.

represents a compound growth rate of 14.7% during the period, whereas the share of defence and internal security in total government expenditure was declining (except 1968). i.e. 44.4%, 47.8%, 36% 28.6% in 1966, 1968, 1974, and 1985 respectively. We should also point out however that the share of defence spending would be higher if military equipment costs were included.

(ii) Jordan has witnessed a rapid increase in population. This increase is due to the natural growth of the population and influx of Palestinian refugees as a result of the June 1967 War. The 1970s have also witnessed an increase in internal migration and a rapid growth in urbanisation and consequently an increase in the demand for expenditures on health, education, housing and other services.

(iii) The rapid increase in government expenditure is also attributed to the rising rate of inflation and the increase in the price of oil. This has meant that a higher payment has to be made for the same volume of goods and services and a higher cost of government operations. For example, high price levels, have intensified the demand for higher wages and salaries by government employees. In addition the actual number of government employees has also increased. Salaries, wages and allowances have thus increased from 37.714 million in 1977 to 112.87% in 1985⁽¹⁾. This, represents a compound growth rate of 14.7% during the period.

(1) CBJ Monthly Statistical Bulletin, Vol. 23, No. 5, May 1987.

The share of salaries, wages and allowances in the total government expenditure is increasing i.e. 11.2%, 12.1% and 13.9% in 1977, 1980, and 1985.

- (iv) The government was very active in implementing the Five Year Economic Development plan, which, in turn, requires a higher level of government expenditure on development projects. Thus, government current expenditure also increased due to the need for maintaining the operation of these projects, which is considered to be essential for the process of the economic growth of the economy.
- (v) The rapid growth in government expenditure is also dependent on the availability of money to finance it. This has, however, been met through the continuing access of foreign resources and, by the same token, government expenditure has increased as a result of the increased obligation of the repayment of loans and interest.
- (vi) Another reason behind the growth of government expenditure was the rapid growth in subsidies for essential foodstuff and petroleum products which have taken place since 1974. But we should also point out that not all subsidies were registered in the budget, due to the accounting difficulties. However, the aim behind these subsidies were political and economic factors. The political objective can be gained through increasing public expenditure and reducing taxes, which consequently contributes to the public sympathy with the regime, thereby to increase the political support and consequently to political stability.

Whereas on economic grounds, it has been used to insulate the poor household from the impact of rising prices and consequently to achieve overall price stability.

However, the vast increase in government expenditure comes through the relative increase in demand, which itself was a result of the increased income, and inter alia.

Eventually, the effects of these expenditures through the multiplier, will force the government to expand the money supply and will generate a flow of additional income, output, trade, consumption and augmenting the tax bases as well as creating an excess demand and therefore contributing to the inflationary process.⁽¹⁾

To measure quantitatively the contribution of government expenditure into the price level in Jordan we therefore can specify this relationship in the following form:

$$\Delta \ln P_t = \alpha + B_1 \Delta \ln GE_t, B_1 > 0$$

where

$\Delta \ln P_t$ = the difference in the natural logarithm,

which represents a continually compound

relative rate of change in the price level.

(1) See for more details, M. Said Nabulsi (1977), Inflationary Pressures in the Arab World, a paper presented to the Conference on Monetary Affairs held in Cairo, 15th January 1977.

$\Delta \ln GE_t$ = the difference in the natural logarithm, which represents a continually compound relative rate of change in the value of the government expenditure.

Applying ordinary least square technique (OLS) using annual data for the period 1968 - 1985 the estimated result however is as follows :-

$$\Delta \ln P_t = 0.0513 + 0.2106 GE_t$$

(3.69) (2.69)

$$R^2 = 0.312$$

$$\bar{R}^2 = 0.269$$

$$F_{1,16} = 7.24$$

$$D.W. = 1.43$$

$$N = 18$$

Figures in parenthesis are t-statistics.

The estimated result by (OLS) indicates that about 31.2% of the variation $\Delta \ln GE_t$, the estimated coefficient had the expected positive sign and reveal significant at 5% level. Also the value of D.W. indicates the absence of autocorrelation among residuals.

The conclusion, however, can be derived from the empirical result that an increase in $\Delta \ln GE_t$ can contribute to the inflationary process in Jordan. Such evidence is supported by the fact that government expenditure was growing at a rate of 17.4% per annum which outpaces the compound growth rate of

price level of 8.03% per year over the period 1966 - 1985. Thus, the goodness of fit of the model reveals that there are other important variables which could play an important role in generating the inflationary process in Jordan.

6.2 The Nature of Government Tax Policy in Developing Countries

This next section will examine the impact of government tax policy on inflation rate. But before we go any further, let us examine the nature of revenue in developing countries with special reference to the taxation system in Jordan.

In advanced countries, the tax structure is widely based, and the major part of tax revenue is attributed to a progressive income tax. While in most developing countries, the tax structure is narrow based, and inelastic with respect to changes in income and the bulk of tax revenues comes from regressive indirect taxes rather than progressive direct taxes.⁽¹⁾

The reasons behind their dependence on indirect tax is because it is easy to collect and easy to administer than direct tax.

(1) For more details see S Ghatak (1978) Development Economics, Longman, London pp. 91 - 93.

Thus, it appeals more than the income taxes in most developing countries, because it is related to spending rather than earning. Hence, it effects consumption and, moreover, will affect directly the consumer demand and, consequently, the aggregate demand. Thus, it is believed to have a less harmful effect on saving and investment which in turn is considered to be an essential part of economic growth.

In addition, most LDCs are heavily dependent on indirect taxes. This is because there is quite a small proportion of wages and salaries in the national income. This has also made it difficult for any potential increase in income taxes.

Among these reasons, indirect tax could be made progressive, especially when it constitutes items such as luxury goods which are either home produced or foreign produced. Therefore it is subjected to a higher level of excise or import duties. Thereby, any levy of these taxes on imported luxury goods which entails to discourage the demand for it, and consequently reduce the foreign exchange constraint which widely prevails in most LDCs.

And yet, the tax system in LDC is commonly characterised by the following features :

- (i) Most of the indirect taxes were based on the value of goods and services. Custom and excise duties are examples of indirect taxes. But most of these valuation are 2 - 3 years old.

- (ii) Widespread price control by the government on basic products which are the main source of taxation. Thus, it is widely dominant in LDCs during the inflation to impose import control through exchange licensing systems, due to insufficient foreign exchange.
- (iii) Long collection lags which occur between the tax assessment and the actual payment of taxes; and also the taxes are not frequently adjusted to keep up with the rate of inflation.
- (iv) The structural administration is very weak and perhaps the tax officer is incompetent and enjoys a high degree of discretionary power, in addition to that, the low wages in most LDCs makes it an easy target for temptation by taking bribes.
- (v) The evasion of tax is widely common in most LDCs, only honest taxpayers pay, but this is a very small proportion of the population. Apart from that, the taxpayer is not confident in the government, neither does (s)he agree with government policies nor believe the promises made will be implemented.⁽¹⁾

(1) For more details see Md. Akhtar Hossain (1986), 'Dynamics of Inflation in Bangladesh Economy', Discussion Paper 13/86, August, School of Economics, La Trobe University, Australia and A. Hart (1970) "Fiscal Policy in Latin America", Journal of Political Economy, Vo. 78, pp 857 - 889.

In light of the characteristics of revenue in LDCs, it has been argued by many structuralists that the cause of inflation in these countries is due to its structural rigidity, i.e. the inability to raise adequate revenue.

Thus, it has also been argued by Lewis (1964)⁽¹⁾ that the marginal tax/GDP ratio in LDCs is less than the average ratio. This means that any increase in GDP would cause tax revenue to decline as a percentage of GDP which will eventually leave behind more purchasing power in the economy and thereby contribute to inflationary pressure.

Thus, the impact of direct taxes in inflationary pressure has been examined by Kabir (1984)⁽²⁾ where he stated that:

"a higher direct tax reduces pressure on prices in two ways. First, the higher direct tax reduces the disposable income and thereby reduces demand for final goods. Prices in general go down in response to the lower demand. Second, a higher direct tax increases the tax revenue, and for a constant level of government spending, reduces the magnitude of budget deficit. Thus, the money supply is reduced and that has an additional downward pressure on

(1) W. A. Lewis (1964), "Closing Remarks", in Inflation and Growth in Latin America (ed) W. Baer and I Kerstenetzky, Homewood II, Irwin, pp. 21 - 23.

(2) M Kabir (1984), "An Anatomy of Inflation in Bangladesh" Journal of Economic Development, Vol. 9, Part 2, pp. 111 - 43.

prices. This latter result would, however, be reversed if the additional tax revenue were used to increase government expenditure instead of decreasing government deficit"

(Kabir, 1984 p.127).

Given the dependence of most LDCs on the indirect taxes, particularly the cumstom duties, it has been argued by Downes (1985)⁽¹⁾ that it can also contribute to the inflation pressure. Hence, it has a direct effect on consumption. But this, however, depends on the degree of elasticity of demand for goods and services. As the elasticity falls, the impact of indirect taxes is likely to increase, and thereby any sustained increase in indirect tax will have an effect on the rate of inflation.

6.3 The structure of Domestic Revenue in Jordan

Let us examine the features of the tax system in Jordan.

(1) It has been stated by Dajani (1983)⁽²⁾ that

"taxes... are not a part of the country's heritage, except for Zakat, a religious tax which is one of the five basic tenets of Islam" (Dajani, p.31).

(1) A S Downes (1985), "Inflation in Barbados: An Econometric Investigation", Economic Development and Cultural Changes, April, 23 (3), pp. 521 - 532.

(2) Mazen K Dajani (1983), "Taxation and Investment in Jordan", Bulletin for International Fiscal Document, Amsterdam, Vol. 37, No. 1, January, pp. 31 - 34.

Thus, some religious people would rather pay the Zakat for poor people than to the government. However, these payments are not recorded in the domestic revenue. Also, some taxpayers resent the payment of income tax for their lack of confidence in the government promised policies and in the allocation of tax burdens.

(2) Most businessmen avoid tax, by using complicated methods and consequently this makes it difficult for the administration to identify and measure their income, i.e. Fraud !

(3) Thus, most capital gains and all agriculture income and the income of Jordanians working abroad are excluded from income tax by Law.

Also, the Jordan system is characterised by administrative weakness i.e. some tax collectors lack of competence and inefficiency. Problems arise from understaffing which makes it difficult to manage; pay and the morale of assessors is low, tax officers enjoy excessive discretionary power, and sometimes unclear instruction and inadequate penalties on overdue payment.⁽¹⁾ Above all, the corruption factor may have also added to these problems. However, in tackling these problems, the government have come up with a New Law, and have suggested the dismissal of most of the tax officers and to recruit new staff to replace them.⁽²⁾

(1) See M. P. Mazer (1979), Economic Growth and Development in Jordan, p. 57, Croom Helm, London p.57.

(2) See M. Dajani (1983), op. cit. pg. 31.

However, looking at Table 6.2 we can see that domestic revenue is derived from two main sources, namely the tax revenue (direct and indirect taxes) which, on average contributed 73.76% during the 1966-1985 period while non-tax contributed 26.24% during the same period.

6.3.1 Direct Tax

The direct tax includes income tax and taxes on property sales, departure fees and 30% stamp duties.

And, inspite of the structure of rigidity in the tax system, direct income tax witnessed an increase from 1.962 million JD in 1966 to 67.368 million JD in 1985. This, however, represents a compound growth rate of 20% during the period.

Thus, the proportion of direct tax in the total tax revenue has increased from 10.95% in 1966 to 21.23% in 1985 and on average is about 15.15% during the same period which is lower than that of indirect taxes (on average 84.85%). This, however, is characteristic of most developing countries. Thus, the share of total direct tax in the total domestic revenue is also increased from 8.42% in 1966 to 15.57% in 1985 and on average is about 11.23% during the same period (1966 - 1985). In spite of the resulting consequences of June 1967, which deprived Jordan of a major source of public revenue in the West Bank.

TABLE 6.2
CENTRAL GOVERNMENT DOMESTIC REVENUES FOR THE PERIOD 1966 - 1985
(IN MILLIONS JDs)

YEAR	TAX REVENUES					NON-TAX REVENUES					GRAND TOTAL			
	INDIRECT TAXES					TOTAL TAX REVENUE	POST TELEGRAPH *PHONE	INTEREST AND PROFITS	MISCELLANEOUS	TOTAL NON-TAX REVENUE				
	CUSTOMS	EXCISE	LICENSES	FEES	ADDITIONAL TAX							TOTAL		
													DIRECT INCOME TAX	TAXES OTHER TAX (1)
*1966	8.356	4.598	1.259	1.752	15.965	1.818	0.144	1.962	17.927	1.309	1.705	2.369	5.383	23.310
1967	8.199	5.054	1.010	1.852	16.115	2.055	0.102	2.157	18.272	1.287	2.055	3.883	7.225	25.497
1968	8.846	5.519	1.410	1.497	17.272	1.777	0.044	1.821	19.093	1.004	2.883	3.289	7.176	26.269
1969	10.650	6.084	2.175	1.808	20.715	2.239	0.038	2.277	22.992	1.067	4.641	3.820	9.528	32.520
1970	9.103	5.094	1.876	1.540	18.966	2.471	0.023	2.494	21.460	1.011	4.819	2.970	8.800	30.260
1971	7.684	6.872	2.132	2.211	20.406	2.845	0.053	2.898	23.304	1.155	5.120	6.176	12.451	35.755
1972	9.543	7.780	2.552	2.693	24.488	3.202	0.600	3.262	27.750	1.102	3.832	9.875	14.809	42.559
1973	12.191	7.773	3.904	3.956	30.220	3.847	0.055	3.902	34.122	1.300	5.330	5.430	12.060	46.182
1974	16.850	8.985	4.975	4.120	37.830	5.387	0.364	5.751	43.581	1.563	8.470	12.130	22.163	65.744
1975	20.902	10.657	5.910	7.668	48.783	9.277	0.085	9.362	58.145	2.234	10.831	11.418	24.483	82.628
1976	39.385	9.097	10.605	12.664	77.637	9.339	2.094	11.433	89.070	2.275	10.099	6.143	18.517	107.587
1977	63.995	9.875	13.103	8.367	101.747	13.243	2.749	15.992	117.739	3.453	12.422	8.635	24.510	142.249
1978	61.354	6.999	13.296	13.404	101.229	18.561	3.491	22.052	123.281	7.592	14.358	13.257	35.207	158.488
1979	72.060	10.567	15.591	17.061	123.286	22.384	5.424	27.808	151.094	8.866	15.689	12.246	36.801	187.895
1980	78.031	13.210	18.902	19.541	139.802	27.887	6.976	34.863	174.665	11.978	21.173	18.332	51.483	226.148
1981	94.069	16.888	25.175	36.543	184.200	39.381	8.791	48.772	232.972	12.667	45.017	18.543	76.227	309.199
1982	109.748	24.109	24.807	37.997	209.349	43.672	10.106	53.778	263.127	20.721	53.016	25.178	98.915	362.042
1983	120.569	35.301	25.753	42.042	237.131	46.017	10.457	56.474	293.605	23.374	58.888	24.101	106.363	399.968
1984	118.047	37.192	28.719	44.512	245.020	48.701	11.717	60.418	305.438	33.333	33.012	39.888	106.233	411.671
**1985	117.959	45.811	28.284	42.423	249.957	54.412	12.956	67.368	317.325	38.267	28.603	40.337	107.207	424.532

* NINE MONTHS ** PRELIMINARY

(1) INCLUDES TAX ON PROPERTY DEPARTURE FEES PROPERTY SALE AND 30% OF STAMP DUTIES

Source : CBJ YEARLY STATISTICAL SERIES (1964 - 1983) NO 20
SPECIAL ISSUE AND CBJ MONTHLY STATISTICAL BULLETIN, VOL. 23 No. 5, May, 1987

TABLE 6.2 Continued...

YEAR	THE SHARE OF TOTAL INDIRECT TAX IN THE TOTAL	THE SHARE OF TOTAL DIRECT TAX IN DOMESTIC	THE SHARE OF TOTAL TAX REVENUE IN DOMESTIC	THE SHARE OF TOTAL NON-TAX IN THE DOMESTIC	GDP AT MARKET PRICE	TOTAL OF INDIRECT TAX AS % OF GDP	TOTAL OF DIRECT TAX AS % OF GDP	REVENUE AS % OF GDP	TOTAL NON-TAX REVENUE AS % OF GDP	TOTAL DOMESTIC REVENUE AS % OF GDP
1966	89,050	10,950	68,490	8,420	76,910	9,360	1,150	10,510	3,160	13,670
1967	88,200	11,800	63,200	8,460	71,660	12,280	1,640	13,920	5,510	19,430
1968	90,500	9,500	65,750	6,930	72,680	11,060	1,170	12,230	4,600	16,830
1969	90,100	9,900	63,700	7,000	70,700	11,300	1,240	12,540	5,200	17,740
1970	88,380	11,620	62,680	8,240	70,920	10,880	1,430	12,310	5,050	17,360
1971	87,600	14,400	57,070	8,110	65,180	10,960	1,560	12,520	6,690	19,210
1972	88,250	11,750	57,540	7,660	65,200	11,820	1,570	13,390	7,150	20,540
1973	88,600	11,400	65,430	8,450	73,880	13,840	1,790	15,630	5,520	21,150
1974	86,800	13,200	57,540	8,740	66,280	15,300	2,330	17,630	8,960	26,590
1975	83,900	16,100	59,040	11,330	70,370	15,630	3,000	18,630	7,840	26,470
1976	87,160	12,840	72,160	10,630	82,790	18,410	2,710	21,120	4,390	25,510
1977	86,400	13,600	71,530	11,240	82,770	19,790	3,110	22,900	4,770	27,670
1978	82,110	17,890	63,870	13,910	77,780	16,010	3,490	19,500	5,570	25,070
1979	81,600	18,400	65,600	14,800	80,400	16,370	3,700	20,070	4,890	24,960
1980	80,040	19,960	61,810	15,410	77,220	14,200	3,540	17,710	5,230	22,970
1981	79,060	20,940	59,570	15,780	75,350	15,820	4,190	20,010	6,550	26,560
1982	79,600	20,400	57,820	14,850	72,670	15,840	4,070	19,910	7,490	27,400
1983	80,760	19,240	59,290	14,110	73,400	16,670	3,970	20,640	7,480	28,120
1984	80,220	19,780	59,520	14,680	74,200	16,340	4,030	20,370	7,090	27,460
1985	78,770	21,230	58,880	15,870	74,750	15,890	4,280	20,170	6,810	26,980
mean	84,850	15,150	62,520	11,230	73,760	14,390	2,700	17,090	6,000	23,080

Total tax revenue is equal to the direct tax and indirect tax
Domestic revenue is equal tax revenue plus non-tax revenues

Thus, the total direct tax in GDP in terms of percentage has increased from 1.15% in 1966 to 4.28% in 1985 and 2.7% on average during the period. But this very small ratio is due to the characteristics of the tax system in most developing countries which Jordan's tax system is no different.

Above all, the increase in relative importance of direct taxes to total tax revenue, and GDP can be considered as an indication of an improvement in the tax system especially after the introduction of the new income tax law in 1982.

6.3.2 Indirect Tax

Like many other developing countries, Jordan is heavily dependent on indirect tax, which includes custom duties, excise, and licenses. However, indirect taxes have witnessed an increase from 15.965 million JD in 1966 to 249.957 million JD in 1985. This, however, represents an annual average growth rate of 15.6% during the period. While the proportion of total indirect tax in the total tax revenue declined from 89.5% in 1966 to 78.77% in 1985 (and on average during the same period is still very high 84.85%). Thus, the share of total indirect tax in domestic revenue has also decreased from 68.49% in 1966 to 58.88% in 1985 and on average is about 62.52% during the same period.

But the percentage of the total indirect tax in the GDP has increased from 9.36% in 1966 to 15.89% in 1985 and on average is about 14.39% which is higher than that of direct tax (2.7%

on average) during the period.

6.3.3 Non-Tax

The main source of non-tax revenue is derived from the Post Office, telegram and telephone services, and interest earned by the Central Bank on foreign exchange reserves, and also the government share of profit in participating in companies, and miscellaneous receipts.

Thus, the total non-tax revenue has increased from 7.936 million JD in 1966 to 107.207 million JD in 1985. This, however, represents a compound growth rate of 14.7% during the period. While the share of non-tax in the total domestic revenue has witnessed fluctuations. Among other things, this was a result of the cancellation of the payment of Tapline transit fees in 1974 and consequently it has affected the domestic revenue and through the period (1966-1985), on average, its contribution to domestic revenue is still greater than that of direct tax, which is 26.24% for non-tax and 11.23% for direct tax respectively.

In spite of the improvement in the domestic revenue, Jordan's domestic revenue depends on other major factors:-

- (1) Jordan is an open economy, so it is bound to be affected by the world outside, and particularly the income from the indirect tax which comes mainly from custom duties, which itself is determined by the price and income elasticities

of demand for imports which prevails in the international market. However, the rapid increase in imports which have become more predominant since the 1970s and consequently have led to the increase in the income from import fees.

(2) Thus, there is also another factor which could influence the domestic revenue. The Jordanian economy has witnessed a rapid increase in income which has arisen from the increase in economic activity which has been accompanied by a rise in the number of employed, which in a sense, may have contributed to the total income taxes. Thus, the economy also witnessed an increase in investment and savings which are dominated by the non-wage income group. Consequently, this may have increased the income business and subsequently to profit and thereby to the total income taxes.

(3) Also, domestic revenue can be influenced by the rapid increase in remittance of Jordanians working abroad who have assigned a large part of it in investment in land and real estate as a means of protection against inflation. Apparently, this has contributed to the total income tax through tax on property and the sale of property and at the same time, a large part of the remittances were assigned for consumption purposes and in particular on imported durable consumers goods which are heavily taxed and consequently added to the income from indirect tax.

(4) In addition to this, through the 1970s Jordan has witnessed

a rapid increase in the rate of inflation which has fluctuated. This, however, may reduce private consumption and consequently lead to a decline in receipts from indirect tax. At the same time, the increase in inflation has moved taxpayers to a higher income bracket and consequently to higher payments in direct income tax.

Thus, the high rate of inflation during the 1970s has increased the government tendency to impose price control on basic product, which are a major source of taxation. However, the government has intervened in the market, i.e. price controls on foodstuffs and subsidies on petroleum products which have taken place during 1974.

(5) Domestic revenue is also influenced by the economic activities in Jordan such as the contribution of domestic product in terms of excise and licenses have increased and consequently the income increase from the total indirect tax. Thus, domestic revenue can be influenced by the contribution of export taxes. But, the tax from exports in Jordan is insignificant. This may be due to the nature of products which are highly concentrated on primary products. And the supply of some of the products depends on the weather conditions and at the same time, on political instability, i.e. the closure of the Suez Canal and the Syrian border have affected exports and consequently have had an effect on the income from indirect tax.

(6) Furthermore, political instability has been a very

important factor in determining the domestic revenue and, in particular, on the income which is derived from direct taxes. The consequence of the June 1967 War, was the disruption of the economy as it deprived Jordan of a major source of public revenue and, as a result revenue has declined.⁽¹⁾

(7) Thus, the Exemptions Law can affect the growth of domestic revenue. Under the Encouragement Investment Law of 1972 which involves most of the imported capital, intermediate goods and foodstuffs have been exempted from tax, except on luxury goods. In addition, the exemption has been extended to include a foreign investment "tax haven" for certain years. The reason behind the exemption was that it was considered an essential part in promoting investment in the economy and, subsequently, to economic development. Moreover, the exemptions did not stop here, extending even to those who have great political power accompanied by high income.

(8) The growth of domestic revenue is also influenced by the tariff policy, but at the same time it may also be recognised as a means to correct the position of the balance of payment, to protect infant industries and to encourage import substitution. Consequently, this would affect the income from custom duties, import fees, and would thereby effect the growth of domestic revenue.

(1) CBJ: 5th Annual Report 1968, Amman, pp 22-23.

(9) Finally government attitudes may have been relaxed towards the enforcement of income tax, due to the inflow of foreign aid, despite a continuous claim by the government to reduce its reliance on foreign aid. Pillai (1983)⁽¹⁾ has, however, found that the flow of foreign aid in general exerts a negative impact on revenue in Jordan. It can also be added that the flow of foreign aid depends on political consideration in which Jordan has no say in its control, and therefore, the government should be aware of any disruption of this source. Hence, without the continuous flow of foreign resources, the fiscal system in Jordan cannot be run smoothly for any longer.

6.4 Budget Deficit

The consensus among economists is that budget deficit is a sign of excess demand in the economy, which has been generated by the expansion of government spending.

Thus, a substantial increase in budget spending can be seen as a source of inflationary pressure, unless the economy is undergoing substantial slack, excess capacity and unemployment. But the essential thing is how this deficit is financed, and this depends on the structure of government expenditure. The impact of government deficit spending will, therefore, depend on the relative effects on consumption and output.

(1) Vel Pillai (1982 - 1983), "External Economic Dependence on Fiscal Imbalances in Developing Countries: A Case Study of Jordan", The Journal of Development Studies, Vol.19, pp 5-18.

The neo-Keynesian however takes the view that deficits are inflationary only if the economy is at or near full employment. Under these conditions, therefore, the direct crowding effect of the budget deficit will be accompanied by inflation.

Monetarists, on the other hand, take the view that deficits are inflationary if the deficit is covered by new money creation. For example, an advance from the Central Bank to finance government expenditure will generate income, and the result will be inflationary in terms of the expansion in money supply. But it is not inflationary if this deficit is financed through the sale of debt, particularly when government allows interest rates to rise and the public are encouraged to buy bonds by making them more attractive, accompanied by the condition of the availability of funds to the private sector. This will eventually have a negative impact on investment or consumption demand and therefore will exert downward pressure on the aggregate demand and more specifically on the increase in demand coming from the government deficit spending.

This kind of crowding effect therefore, involves changes of one thing for another and consequently an equivalent amount of private sector and the deficit does not exert a noticeable impact on the excess aggregate demand.

Moreover, government budget deficits can also be financed through the borrowing from the commercial banks. But the impact of this type of finance depends on the conditions in which the borrowing has taken place.

However Thirlwall (1974)⁽¹⁾ has pointed out that ignoring compulsory savings by taxation, there are five main ways of financing a budget deficit:

"...the issue of new currency; net borrowing from the Central Bank, net borrowing from the commercial banks, net borrowing from the public, and running down foreign exchange reserves, or borrowing from abroad. What effects these different methods of borrowing have depends on whether the funds represent transfers of current saving or an increase in the money supply and/or its velocity of circulation. The issue of new currency and borrowing from the Central Bank are normally regarded as the most inflationary, followed by borrowing from the commercial banks. Borrowing from the public is assumed to be the least inflationary. In fact, borrowing from the public can be as inflationary as borrowing from the banks if it merely activates idle money and does not cut down the current consumption of the public" (Thirlwall 1974, p.14).

As to the borrowing from abroad, it cannot be directly inflationary, hence it may lead to more command over the additional supply of resource in the form of imports. But it may be inflationary if the borrowing from abroad leads to the increase in domestic money supply without paralleled increase in real output. Such impact would also prevail if accompanied by a weak policy of sterilization. Similarly, the running down of foreign reserves can be inflationary but that depends on how the reserves are used, whether they are used to finance imports of capital equipment which are considered essential for economic development, or used to finance unproductive items such as consumer goods which tends to contribute to the inflationary process.

(1) A. P. Thirlwall (1974) Inflation, Saving and Growth in Developing Countries, Macmillan Press, London.

However, the arguments of the structuralists emerge from the characteristics of the tax system which has prevailed in most LDCs such as stagnant or slowly growing revenue, accompanied by not having the choice between borrowing either from the banking system or from private individuals due to limited income and an absence of a well developed financial market. This has led the government in LDCs to resort to borrowing from the Central Bank to finance the deficit which has arisen from the ever increasing expenditure and given supply inelasticities in some sectors and downwardly rigid prices in others, such financing leads to perpetual inflation.

It has also been pointed out by Heller (1980)⁽¹⁾ that government expenditure and revenue are themselves influenced by the inflationary process. In fact empirical studies by Aghevli and Khan (1977, 1978)⁽²⁾ and Dutton (1971)⁽³⁾ have demonstrated that in many LDCs inflation may augment the government deficit, because under these conditions (inflationary), government expenditure adjusts more rapidly than government tax

(1) P. S. Heller (1980), "Impact of Inflation on Fiscal Policy in Developing Countries", I.M.F. Staff Papers, Vol. 27, No. 4, pp.712 - 48.

(2) B. B. Aghevli and M. S. Khan (1977) "Inflationary Finance and Economic Growth", Journal of Political Economy, Vol. 85, No. 6 Dec. pp. 1295 - 1307. Also, (1978) "Government Deficits and Inflationary Processes in Developing Countries", I.M.F. Staff Paper, Vol. 25, No. 3, Sept. pp 383 - 416.

(3) D. S. Dutton (1971) "A model of Self-Generating Inflation: The Argentine Case", Journal of Money, Credit and Banking, Vol. 3, May, pp. 245 - 262.

and non-tax revenue, and this will widen the budget deficit. Thus, the budget deficit is financed through the extension of Central Bank credit. This may be considered a prime cause of self-generating inflation pressure.

The reason why government expenditure adjusts more than government revenue under inflationary circumstances in LDCs, has been pointed out by Aghevli and Khan 1978.⁽¹⁾ They argue:

"Even if government fully recognised the need to restrain expenditure during periods of inflation, they find it difficult to reduce their commitments in real terms. *...Real government expenditure cannot be reduced as revenue declines, hence a large share of government spending are assigned to the payment of wages, salaries and social security benefit.*⁽²⁾ " On the other hand, in contrast to the situation in most developed countries, where nominal revenues often more than keep pace with price increases, in developing countries they lag substantially behind.⁽³⁾ The contrast arises both because of low nominal income elasticities of the tax system and long lags in tax collection in developing countries. In any event, the tax system in developing countries depends rather heavily on indirect tax, and in particular, on foreign trade taxes. Further, indirect taxes in developing countries are often specific, and even when they are ad valorem the adjustment of base values for some of these taxes is not frequent enough to keep pace with inflation" (Aghevli and Khan, 1978, p391).

This, however, has been confirmed by many writers, most

(1) B B Aghevli and M S Khan (1978) op. cit. Parikh et. al.

(2) The words in italic are the authors.

(3) For more details see V. Tanzi (1977), "Inflation Lags in Collection and Real Value of Tax Revenue", I.M.F. Staff Papers, Vol. 24, March, pp. 154 - 67.

noticeable Sundrem (1973),⁽¹⁾ Batavia and Lash (1983)⁽²⁾ and Parikh et. al. (1985)⁽³⁾ for Indonesia during the Soekarno era. Parikh et. al. have indicated that:

"the mounting inflation, culminating in hyper inflation, of Soekarno years was triggered off by the revenue shortfalls in the 1950s... The government of the time was neither willing nor able to prune expenditure and instead resorted to money creation to finance the budget deficit. Once the inflation had begun government attempts to maintain real expenditure levels in the face of rising prices to further an increase in the budget deficit and further monetary expansion" (Parikh et. al. 1985, p. 407)

In addition it has also been indicated by Dutton (1971)⁽⁴⁾ that

"nominal government expenditures increase as the price of goods and services increase even if real expenditure remains fixed, but the nominal value of sale taxes, income taxes, and property taxes are paid at their assessed nominal levels. The payment of these taxes is sometimes deferred a considerable length of time after their assessment, so that by the time they are paid their real value has depreciated. The result of this institutional characteristic is that a positive rate of price increase over the period causes the nominal deficit to be larger than it otherwise would have been". (Dutton 1971, p.245)

Therefore, we should indicate that there are many factors behind fiscal deficit in LDCs. These factors may be a result of either a political or structural weakness in the economic institution, or social-political structure of the economy

(1) R Sundrum, (1973) "Money supply and prices: A Reinterpretation", Bulletin of Indonesian Economic Studies, 9 (3) November, pp 73 - 86.

(2) B. Batavia and N. N. Lash (1983) "Self-Perpetuating Inflation: The Case of Turkey", Journal of Economic Development, Vol. 8, PT 2, Dec. pp. 149 - 66.

(3) A. Parikh, B. Booth and R. Sundrum (1985), "An Econometric Model of the Monetary Sector in Indonesia", Journal of Development Studies, Vol. 21, No. 3, pp. 206 - 221

(4) D. S. Dutton (1971), op. cit.

which are beyond the complete control of government at least in the short run.⁽¹⁾

Thus, Tanzi (1982)⁽²⁾ has also classified the factor behind the fiscal deficit in LDCs, in which he has considered the following:

- " (i) export boom;
- (ii) price inelastic tax system;
- (iii) public enterprise performance;
- (iv) increased expenditure produced by political exigencies or administrative weaknesses, and
- (v) worsening terms of trade" (Tanzi, 1982, p.1069)

6.4.1 Budget Deficit in Jordan

However, looking at Table 6.3 we can see that the overall budget deficit in Jordan has rapidly increased from 5.407 million JD in 1966 to 200.516 million JD in 1985. This, however, represents a compound growth rate of 20.9% during the period.

The reason behind this increase is due to the fact that government expenditure has increased faster than domestic

(1) For more details see T. Morrison (1982) "Structural determinants of the government budget deficit in developing countries, World Development, Vol. 10, No. 6, pp. 467 - 473.

(2) See for more details V. Tanzi (1982), "Fiscal Disequilibrium in Developing Countries", World Development, Vol. 10, December, pp. 1060 - 1082.

TABLE 6.3
THE OVERALL BUDGET DEFICIT IN JORDAN (1966-1985)

YEAR	REVENUES		TOTAL	TOTAL	THE
	DOMESTIC	FOREIGN	REVENUE	GOVERNMENT	OVERALL
	REVENUE	GRANTS	*1	EXPENDITURE	BUDGET (-) SURPLUS (+)
					*2
1966	23.310	9.883	33.193	38.600	-5.407
1967	25.497	40.409	65.906	68.155	-2.249
1968	26.269	40.113	66.382	80.520	-14.138
1969	32.520	38.377	70.897	88.410	-17.513
1970	30.260	35.424	65.684	80.706	-15.022
1971	35.755	35.387	71.142	83.148	-12.006
1972	42.559	44.455	87.014	101.452	-14.438
1973	46.182	43.608	89.790	119.511	-29.721
1974	65.744	57.651	123.395	146.622	-23.227
1975	82.628	100.609	183.237	204.864	-21.627
1976	107.587	66.238	173.825	262.484	-88.659
1977	142.249	122.202	264.451	337.839	-73.388
1978	158.488	81.699	240.187	361.510	-121.323
1979	187.895	210.302	398.197	515.664	-117.467
1980	226.148	204.834	430.982	563.144	-132.162
1981	309.199	206.312	515.511	647.100	-131.589
1982	362.042	199.582	561.624	693.545	-131.921
1983	399.968	196.682	596.650	705.274	-108.624
1984	411.671	106.108	517.779	720.805	-203.026
1985	424.532	187.800	612.332	812.848	-200.516

*1 budget support and economic and technical assistance

**2 Narrow definition which is based on the difference between the total revenue (Domestic Revenue + Foreign Grants) and the Government expenditure.

Source: CBJ Yearly Statistical Series (1964 - 1983) Special Issue No. 20 1984, and CBJ Monthly Statistical Bulletin, June 1967, Vol. 23 No. 6, June.

revenue. Thus, the budget deficit has also increased inspite of the increase in the flow of foreign budget support which is accompanied with an increase in domestic revenue.

But we should also point out that the inflow of aid in the form of budget support (from Arab oil producing countries and from other donors) is very important in determining budget deficit in Jordan. However, among other factors, the recent fall in the price of oil has reduced the assistance which has been promised by the Arab oil producing countries to Jordan. Consequently this has lead to an increase in the recent budget deficit.

6.4.2 Financing the Budget Deficit

The opportunity to finance the budget deficit by domestic borrowing from the private sector non-bank are very limited in most developing countries and Jordan is no exception.⁽¹⁾ The reason behind this could be due to the nature of the following:

- (i) In LDCs, personal saving relative to income is smaller than those in developed countries;
- (ii) Savers in LDCs preferred to put their saving in land, gold and in foreign exchange in order to protect themselves against inflation. While buying government securities at a prevailing rate of interest would involve a negative rate of return.

(1) see for more details, Richard Goode (1984), Government Finance in Developing Countries, The Brooking Institution, Washington DC pp 198 - 200.

TABLE 6. 4

GOVERNMENT SOURCE OF REVENUE AND RECEIPTS (1966 - 85) (in millions of JDs)

YEAR	INTERNAL BORROWING (1)	FOREIGN BORROWING (2)	SDRs	EXPECTED LOANS AND TECHNICAL ASSISTANCE	LOANS REPAID TO CENTRAL GOVERNMENT	FOREIGN GRANTS (3)	DOMESTIC REVENUE	TOTAL
1966		2.165			.219	9.883	23.310	35.358
1967		4.292			.099	40.409	25.497	70.417
1968		5.438			.648	40.113	26.269	71.919
1969	8.400	4.724			.415	38.377	32.520	84.669
1970	4.200	2.072			.070	35.424	30.260	72.371
1971	12.100	3.551	1.839	1.591	.135	35.387	35.755	90.298
1972	5.000	7.400	1.103			44.455	42.559	100.652
1973	6.750	11.446		2.000	.160	43.608	46.182	109.986
1974	13.000	15.211		1.172		57.651	65.744	152.938
1975	7.000	16.155				100.609	82.628	206.392
1976	13.000	19.888				66.238	107.587	206.713
1977	15.000	58.511				122.202	142.249	337.962
1978	16.000	90.697				81.699	158.488	346.884
1979	32.500	37.624				210.302	187.895	468.171
1980	18.000	71.566		4.469		204.838	226.148	525.017
1981	18.000	75.731			7.226	206.312	309.199	616.468
1982	28.200	65.271			.150	199.582	362.042	655.245
1983	28.825	76.801		.332	2.876	196.682	399.968	705.484
1984	25.500	122.196			12.956	106.108	411.671	678.431
1985	26.000	189.597			32.700	187.800	424.532	860.629

(1) Includes Treasury Bill, government bonds, and public corporations bonds

(2) includes Development Loans

(3) Budget Support and Economic and Technical Assistance

Source: CBJ Yearly Statistical series (1964-83), Special Issue No. 20, 1984

CBJ Monthly Statistical Bulletin Vol 23, No. 6. June 1987

(iii) Also savers in most LDCs are not familiar with government securities. But, even if they are, they are doubtful in dealing with them.

Given that we can see from Table 6.4 that the government main source of finance is coming partly from domestic borrowing (mainly in the form of an advance from the Central Bank, Treasury Bills and Government Bonds), and from foreign grants in the form of budget support and economic and technical assistance, and by foreign borrowing in the form of development loans, and from domestic revenue.

6.5 Conclusion

We may conclude our analysis by recapitulating that an increase in government expenditure per se will not necessarily lead us to expect more inflation, hence it depends on many factors.

However, government expenditure in Jordan has witnessed a rapid increase, with an average growth rate of 17.4% which has also far exceeded the average growth rate of the price level of 8.03% during the period 1966 - 1985. Thus, on average the proportion of government expenditure to GDP was 53.1% during the same period.

In fact, the growth of government expenditure in Jordan was a result of many significant factors, namely the political threat, increase in population, inflation, the government's active role in implementing the three and five year development

programmes, the availability of foreign resources, and increasing government subsidies for essential foodstuff and petroleum products.

With regard to the empirical findings of the regression analysis, of $\Delta \ln P_t$ against $\Delta \ln GE_t$, using annual data for the period 1968 - 1985, which reveals that an increase in government expenditure can have a considerable impact on the inflationary process in Jordan. Thus, the empirical evidence (goodness of fit of the model) exhibits that an increase in government expenditure alone is not enough to explain the inflationary process in Jordan, hence it is only explained 31.2% of the variation in $\Delta \ln P_t$ and 68.8% would be due to other factors.

Thus, we have highlighted the characteristics of revenue and the impact of both direct and indirect tax on the inflationary pressure in developing countries, and also the features of the tax system in Jordan were also identified.

However, direct tax, indirect tax, and non-tax has witnessed a rapid increase with an average growth rate of 20%, 15.6% and 14.7% respectively during the period 1966 - 1985. In addition, the relative importance of direct tax in the total domestic revenue, and in GDP has increased during the same period. This, however, represents an improvement in the tax system. But, the relative importance of total indirect tax in domestic revenue has fallen, while relative importance in GDP has increased.

Therefore, there are many significant factors which could influence Jordan's domestic revenue, namely, the openness of the Jordanian economy which, accompanied by the price and income elasticities of demand for imports which prevails in the international market, the increasing income from the increasing economic activities, remittance, inflation, political instability, exemption law, tariff policy, and government attitudes which is associated with the inflow of foreign aid.

In our analysis, we have also stated the argument that budget deficits can be considered to be a sign of excess demand in the economy which is generated by the expansion of government spending. Thus, the impact of the increasing budget deficits on inflation depends on the state of the economy as well as the nature and condition of financing the budget deficit.

Moreover, we have cited some empirical arguments related to the effect of inflation on government expenditure, revenue and budget deficit and we have also indicated that there are many factors behind fiscal deficit in LDCs. These factors however may be a result of either a political or structural weakness in the economic institution, or the social-political structure of the economy which are beyond the control of government, at least in the short run.

Furthermore, the overall budget deficit in Jordan has increased rapidly, with an average growth of 20.9% during the

period 1966 - 1985 inspite of the increasing inflow of foreign budget support. Given the limited opportunity to finance the budget deficit in Jordan, the size of the overall budget deficit will be dependent among other factors, on the future inflow of budget support.

CHAPTER 7

The Contribution of the Monetary Expansion to the Inflationary Process in Jordan

Having earlier explained the contribution of government to the inflationary process in Jordan, our main concern in this chapter is to examine the contribution of monetary expansion to the inflationary process in Jordan.

This, however, will involve an inquiry into the parallelism between the annual average rate of change in the money supply and the annual average rate of change in the price level.

In this chapter, we will try and explain the reason behind the expansion of the money supply in order to be able to judge whether or not these increases in the money supply are as a result of domestic policies or of external factors. Apart from this we will conduct an empirical study of the contribution of money supply to the inflationary process.

Thus, we will try to examine the composition of the money supply and the relative importance of its component to the money supply, the behaviour of the commercial banks and monetary authorities and finally, investigate the nature of the activities of the commercial banks.

The monetarists take the view that inflationary pressure in the economy will arise as a result of an excessive growth in the money supply which has exceeded the growth of real output.

Yet, in an expanding economy, the money supply should be increased to keep economic transactions running smoothly. But if the money supply increases greater than the needs of the economy, then it is likely to have an inflationary tendency. Although an increase in the money supply may appear to be inflationary, much of it depends on the overall state of the economy. Hence, the capacity of the economy to absorb the increase in the money supply is determined by the real output and money-income ratio.

Looking at Table 7.1 we can see that the annual rate of change in money supply (M_1 definition) is greater than the annual rate of changing price levels, except in 1971, 1984, and 1985. On average the annual rate of change in the money supply during the period 1966 - 85 far exceeded the annual rate of change in price levels, i.e. 15.81% and 8.13% respectively.

Prior to 1973, the annual rate of change in M_1 was fully absorbed by the rapid annual rate of change in nominal GDP. This trend can be seen in the ratio of the money supply (M_1) to nominal GDP, which has increased from 32.86% in 1966, 58.34% in 1970, and 55.51% in 1972. Thus, between 1973 - 75, the annual rate of change in M_1 rapidly increased and excessively exceeded the annual rate of change in nominal GDP. This may indicate that the annual rate of change in M_1 could not be fully absorbed by the annual rate of change in nominal GDP, and this has been reflected in the prices (i.e. inflation rate was the highest during this period 11.24%, 19.41%, and 12.1% in 1973, 1974, and 1975 respectively).

TABLE 7.1

THE RATE OF CHANGE (REAL GDP, NOMINAL GDP, CONSUMER PRICE INDEX M1, M2) AND RATIO
MONEY TO GDP, AND VELOCITY FOR THE PERIOD 1966 - 1985

Year	Annual Rate of Change in Real GDP	Annual Rate of Change in Nominal GDP	Annual Inflation Rate	Annual Rate of Change in Money Supply (M1)	Annual Rate of Change in Money Supply (M2)	M1/GDPx100	Velocity = GDP/M1
1966						32.860	3.040
1967	-24.600	-23.040	2.060	34.270	24.080	57.340	1.740
1968	18.750	18.980	0.190	16.930	15.670	56.360	1.770
1969	10.000	17.490	6.810	9.370	9.210	52.460	1.910
1970	-11.070	-4.910	6.930	9.600	8.660	60.470	1.650
1971	1.950	6.770	4.730	2.400	4.630	58.000	1.720
1972	5.300	11.280	5.680	6.510	8.410	55.510	1.800
1973	-5.280	5.360	11.240	21.060	20.200	63.790	1.570
1974	-5.130	13.280	19.410	23.490	24.840	69.530	1.440
1975	12.560	26.200	12.100	30.610	31.190	71.960	1.390
1976	21.180	35.080	11.477	23.270	31.200	65.670	1.520
1977	6.490	21.960	14.530	19.550	23.610	64.370	1.550
1978	14.830	22.950	7.070	13.410	29.730	59.380	1.680
1979	4.380	19.110	14.110	25.910	27.430	62.770	1.590
1980	17.650	30.720	11.100	25.830	27.380	60.420	1.650
1981	9.820	18.280	7.690	17.970	19.810	60.270	1.660
1982	5.640	13.490	7.430	12.230	18.940	59.600	1.680
1983	2.550	7.680	5.010	10.400	15.090	61.110	1.640
1984	1.470	5.390	3.870	1.030	8.820	58.580	1.710
1985	1.860	4.930	3.010	-3.430	6.670	53.910	1.850
Average	4.650	13.210	8.130	15.810	18.710	59.220	1.730

NB Computation is by the author

Source : CENTRAL BANK OF JORDAN (CBJ) YEARLY STATISTICAL SERIES (1964-1983) SPECIAL ISSUE NO 20
and CBJ: MONTHLY STATISTICAL BULLETIN 23(6), June 1987

Thus, this trend can also be seen in the ratio of the money supply (M_1) to nominal GDP, which has registered a significant increase from 63.79%, 69.53% and 71.96% in 1973, 1974 and 1975 respectively. But on average, the annual rate of change in the money supply (M_1) during the period (1966 - 1985) is greater than the annual rate of change in nominal GDP, i.e. 15.81% and 13.21% respectively.

Also, on average, the annual rate of change in the money supply (M_1) during the period (1966 - 1985) has exceeded the annual rate of change in Real GDP, i.e. 15.81% and 4.65% respectively and this may indicate that the monetary expansion could not be absorbed and that this therefore may be reflected in price rises.

But we should also point out that the parallelism between the annual average rate of change in the money supply and the annual average rate of change in price level is not quite strict, hence an increase in the money supply is not always sufficient to explain inflation rates. Inflation may, therefore, also be explained by many other factors in the economy.

In relating the annual growth rate in the money supply to the annual growth rate in price levels, we have to take into consideration the annual rate of change in Real GDP and also the velocity of money in circulation in the economy and the possibility of lags between the annual rate of change in price levels and the annual rate of change in the money supply.

However, the period between 1973 - 77 has witnessed a decline in the velocity of money in circulation. Such a decline may indicate the effect of the money supply on prices (and this can be seen by looking at the rate at which inflation has rapidly increased).

Thus, the period 1981 - 85 has demonstrated an increase in the velocity of money in circulation, which has accompanied a decrease in the inflation rate.

The point we would like to make is that the impact of money supply on prices depends on whether there is a rise in the real output or a decline in the velocity of circulation of money.

Thus, we should also indicate that the velocity of money in circulation can be influenced by many factors:

- (i) GDP may have increased due to price increases, particularly when there is a bad harvest. Followed by an increase in demand for agricultural output, consequently, shortages will arise and this will be likely to create a higher price level. So price increases can push up the velocity.
- (ii) process of monetization in the economy can influence the money supply and consequently the velocity.⁽¹⁾

(1) For more details see A G Chandavarker (1977), "Monetization of Developing Economies", I.M.F. Staff Papers, Vol. 24, No. 3, pp.665 - 721 and B. B. Bhattacharya (1974), "Demand and Supply of Money in Developing Economy: A Structural Analysis for India", Review of Economics and Statistics, Vol. 56, No. 4, pp. 502 - 510.

- (iii) changes in velocity can be a result of the rapid economic development of the banking system, which may come through the implementation of development programmes, i.e. Five Year Plan, which entails an expansion of monetary expenditure by the public and the private sector.⁽¹⁾
- (iv) political stability and confidence in the national currency can have a major influence on the velocity. Hence, an increase in confidence of the national currency will lead to an increase in the liquidity preference by the public, and consequently, the velocity will decline.

7.1 Factors Leading to the Expansion of the Money Supply

If inflation is partly caused by an excessive increase in the money supply then the next step is to examine the source of this increase. Thus, by doing so, we would be able to judge whether or not these increases in the money supply are as a result of domestic policies or by external factors.

Monetary growth in Jordan was affected by the following factors. Namely, the net foreign assets, credit to the private sectors, credit to municipalities and public entities, and by the credit to government.

(1) For more details see J. Melitz and H. Correa (1970), "International Differences in Income Velocity", Review of Economics and Statistics, Vol. 52, No. 1, pp. 12 - 17.

Political stability in recent years has enormously increased Jordan's ability to borrow from abroad, and also to increase its attractiveness to foreign investors. Hence the inflow of capital is not determined by interest rates in the usual sense, but by political consideration.

Looking at Table 7.2 we can see that throughout the years, net foreign assets in Jordan are considered to be very important factors in determining the expansion of the money supply. However, net foreign assets have increased from 64.216 millions JD in 1966 to 425.588 millions JD in 1985. This also represents a compound growth rate of 10.46% during this period. Thus, this growth was mainly attributed to the inflow of foreign resources in the form of transfer payments and foreign loans, or in the form of remittance by Jordanians working abroad.

Whereas the relative importance of net foreign inflow in terms of the proportional annual average of net foreign inflow to money supply (M_1) is 50.19%, the relative importance of net remittance in terms of the proportional annual average of net remittance to the money supply is 24.85% during the period 1966 - 1985.

In general, the impact of foreign resource inflow on the money supply and inflation has emerged from providing liquidity to the banking sector, which in turn has made it possible for the banking system to provide credit, and consequently to an increase in the money supply. Thus, by

FACTORS CONTRIBUTING TO THE EXPANSION OF MONEY SUPPLY AND TO THE RELATIVE IMPORTANCE
OF THE INFLOW OF FOREIGN RESOURCE INTO MONEY SUPPLY IN MILLIONS : FOR PERIOD 1966 - 1985

7.8

Year	Net Foreign Asset	Credit to Private Sector	Credit to Municipalities and Public Entities	Credit to Government & semi-govt Institutions	Net Foreign Inflow (NFI) **	Money Supply (M1)	NR $\frac{M_1}{M_0} \times 100$	NFI $\frac{M_1}{M_0} \times 100$
1966	64.216	37.204	2.579	0.075	10.600	56.033	18.920	60.840
1967	89.756	36.877	2.921	-	6.550	75.237	8.710	71.680
1968	105.269	38.319	3.684	-	4.100	87.977	4.670	61.920
1969	95.188	43.468	2.936	7.714	6.920	96.221	7.190	49.200
1970	93.681	43.614	2.829	13.215	5.540	105.462	5.250	38.540
1971	89.644	44.919	3.254	24.275	4.970	107.997	4.600	33.900
1972	97.638	47.934	4.424	22.989	7.410	115.024	6.440	59.370
1973	103.988	59.311	5.841	42.086	64.600	139.248	10.560	46.390
1974	113.376	81.253	9.010	42.398	24.130	171.964	14.030	50.440
1975	163.869	120.830	11.576	48.690	53.250	224.604	23.710	62.240
1976	178.157	196.428	21.413	61.555	136.410	276.869	49.270	45.710
1977	250.232	229.816	31.562	82.858	139.750	330.987	42.220	50.100
1978	300.479	313.757	42.013	115.091	139.380	375.370	37.130	28.370
1979	363.845	444.998	44.184	120.436	156.420	472.652	33.090	66.520
1980	473.903	541.644	53.275	169.920	190.680	594.771	32.060	67.040
1981 *	488.215	702.325	64.009	200.838	288.890	701.656	41.170	61.400
1982	426.380	875.015	93.086	245.481	319.470	787.503	40.570	47.400
1983	464.724	1042.311	108.928	280.381	330.100	869.417	37.970	33.920
1984	401.265	1204.714	113.443	311.443	377.500	878.391	42.980	31.730
1985	425.588	1269.147	147.943	324.609	309.970	848.222	36.540	37.130
Average							24.850	50.190

* Revised

** Includes government budget supports and Aid to Other Organisation

Source: Central Bank of Jordan (CBJ): Yearly Statistical Series 1964 - 1983. No. 20, Special Issue
CBJ: Monthly Statistical Bulletin, Vol. 22, No. 10, October 1986

providing foreign exchange currency, it consequently increases the potential for the government to increase its expenditure and, thereby exerts pressure on the price level. Its impact does, however, depend on the nature of the sterilization policy.

Moreover, many monetary theorists have emphasized that the inability of monetary authorities to neutralize the inflow of foreign exchange leads to an increase in the domestic money supply, generating stock disequilibrium in the money market which consequently increases the price level. (1) Meanwhile, if there is a strong sterilization policy, then the impact of inflow of foreign exchange on money supply and inflation will reduce this to a minimum.

But Medio (1984)(2) has argued that

"sterilization of money inflow by means of open market operation required sophisticated and well-developed money and financial markets which are largely non-existent in most LDCs" (Medio 1984, p.65)

With regard to weak sterilization policy, Jordan is no different from the rest of the developing countries. This, however, has been emphasized by Assa.(3) Thus, it is also argued that this weakness of sterilization has emerged due to the following reasons:-

(1) For more details see E. J. Sheehey (1979), "On The Measurement of Imported inflation in Developing Countries", Weltwirtschaftliches Archiv, 115 (1), pp. 68 - 79.

(2) A Medio (1983/84), "World Inflation and LDCs", Economic Forum, Winter, Vol. 14, Part 2, pp. 59 - 95.

(3) For more details see Assa, J. Ibrahim (1983), op. cit. p.140

(i) sterilization presented real difficulties in the 1970s, because the surplus in the balance of payments, which was mainly due to the capital inflow, was a result of large transfer payments.

(ii) thus, Jordan in the 1970s witnessed a large inflow of remittance from Jordanians working abroad.

(iii) limited effectiveness of the instrument of monetary policy which has emerged from the limited size and under developed nature of the financial market and the non-flexible interest rates.

(iv) the weak control of the central bank over money supply has emerged from the existence of high liquidity and reserves of the commercial banks. (This is discussed in more detail later).

Thus, one of the main factors behind the increase in the money supply in Jordan is the increased demand for bank credit in the private sectors which includes loans and advances, bills discounted, overdrafts, corporate bonds and domestic investment. Apart from its contribution to the money supply the rise in bank credit to the private sector could create excess demand for goods and services and consequently, price levels will increase. However, credit to the private sector has increased from 37.204 million JD in 1966 to 1269.147 million JD in 1985. This represents a compound growth rate of 20.4% during the period.

This rapid growth was mainly a result of increasing participation of the private sector in the country's economic

development, and, because it was widely recognized by government as a major role in promoting and sustaining economic growth in both the commodity producing service and notably, the financial sectors. Thus, the low cost borrowing made borrowing more attractive. Also, the rapid expansion in bank credit to the private sector was because the commercial banks experienced a rise in liquidity and reserves.

Moreover, the expansion in the money supply was also due to an increase in credit to municipalities and public entities, which includes loans and advances. However, credit to municipalities and public entities have increased from 2.579 million JD in 1966 to 147.943 millions JD in 1985. This represents an annual average growth rate of 23.75% during the period.

Another factor which also led to the expansion of the money supply was due to government and semi-government borrowing from the banking system (which includes advances, Treasury bills and government bonds) which has effectively started to take place since 1969, and has witnessed an increase from 7.714 million JD in 1969 to 324.609 million JD in 1985. This, represents a compound growth rate of 26.3% during the period. Thus, this growth was as a result of increasing government reliance on the banking system to finance the increasing demand of their expenditure on the development programme (3 and 5 Year Plans).

In comparison with the rest of the factors, this indicates a high growth rate. But this does not represent the true

picture, since it only takes the period 1969 - 1985, while the growth rate of the rest of the factors takes the period of 1966 - 1985. Therefore, in order to consider which are the most important factors that led to the expansion of the money supply, we should be aware of this fact.

There is another reason to believe that the expansion of the money supply in many LDCs was as a result of the absence of effective monetary and financial discipline. Such discipline, has emerged from stagnant or slowly growing revenues, and an under-developed financial market. Therefore, governments in these countries have resorted to printing more money in order to finance the increasing demand of their expenditure. Thus, such a means of finance is considered to be inflationary and this will, therefore, have an affect on their expenditure. Consequently, the government is forced to increase the growth rate of the money supply in order to keep interest rates down and to sustain the real value of their expenditure.

However, to measure quantitatively the contribution of the money supply to the inflationary process in Jordan, we can therefore specify this relationship in the following form:

$$\Delta \ln P_t = \alpha + \beta_1 \Delta \ln MS_t \quad \beta_1 > 0$$

where $\Delta \ln P_t$ = the difference in the natural logarithm,

which represents a continually compound

relative rate of change in the price level.

$\Delta \ln MS_t$ = the difference in the natural logarithm,
 which represents a continually compound
 relative rate of change in the value of the
 money supply.

Applying ordinary least square technique (OLS) using annual
 data for the period 1968 - 1985. However, the estimated result
 of both money supply definition (M_1 and M_2) are as follows:

$$\Delta \ln P_t = 0.0298 + 0.375 MS_t (M_1)$$

(2.13) (4.22)

Figures in parenthesis are t.statistics.

$$\begin{aligned} R^2 &= 0.527 \\ \bar{R}^2 &= 0.497 \\ F_{1,16} &= 17.81 \\ D.W. &= 1.67 \end{aligned}$$

$$\Delta \ln P_t = 0.0163 + 0.385 MS_t (M_2)$$

(0.867) (3.73)

Figures in parenthesis are t.statistics

$$\begin{aligned} R^2 &= 0.464 \\ \bar{R}^2 &= 0.43 \\ F_{1,16} &= 13.88 \\ D.W. &= 1.93 \end{aligned}$$

The empirical findings indicate that money supply M_1
 definition has better prediction of the relationship between

money supply and price level and also reveals that about 52.7% of the variation in $\Delta \ln P_t$ are explained by the $\Delta \ln MS_t$ (M_1) and the estimated coefficient had the expected positive sign and revealed to be significant at 5% level. Also, the value of D.W. indicates the absence of autocorrelation among residuals.

The conclusion, however, derived from the empirical findings is that an increase in $\Delta \ln MS_t$ can play an important factor in the inflationary process in Jordan. Such evidence is supported by the fact that on average the annual rate of change in money supply (M_1 definition) during the period 1966 - 85 has far exceeded the annual rate of change in the price level, i.e. 15.81% and 8.13% respectively. Thus, the empirical evidence (goodness of fit of the model) also shows that the model is incomplete which may also explain that there are other important factors which could play an important role in producing inflationary process in Jordan.

7.2 The Composition of the Money Supply

It is not sufficient to relate inflation to the overall money supply or its growth rate without looking into the composition of the money supply and the relative importance of its component to the money supply.

Table 7.3 shows the component of the money supply in Jordan. However, the money supply (M_1) which is defined as currency in circulation and demand deposits, have witnessed a rapid increase from 56.033 million JDs in 1966 to 848.222

TABLE 7.3

MONEY SUPPLY AND QUASI MONEY IN MILLION OF JDs FOR THE PERIOD (1966 - 1985)

Year	Currency Issued (1)	Currency held by Banks (2)	Currency with public (CC) (3)	Currency Demand (DD) ** (4)	Money Supply (M1) (5)	Quasi Money (QM) (6)	Money Supply (M2) (7)	$\left(\frac{DD}{M1}\right) \times 100$	$\left(\frac{CC}{M1}\right) \times 100$	$\left(\frac{QM}{M2}\right) \times 100$
1966	31.883	1.551	30.332	25.701	56.033	19.785	75.818	45.870	54.130	26.100
1967	53.018	1.499	51.519	23.718	75.237	18.836	94.073	31.520	68.480	20.020
1968	65.310	1.764	63.546	24.431	87.977	20.837	108.814	27.770	72.230	19.150
1969	73.144	1.852	71.292	24.929	96.221	22.616	118.837	25.910	74.090	19.030
1970	84.410	1.980	82.430	23.032	105.462	23.667	129.129	21.840	78.160	18.230
1971	84.595	1.587	83.008	24.989	107.997	27.114	135.111	23.140	76.860	20.070
1972	83.379	1.909	81.470	33.554	115.024	31.450	146.474	29.170	70.830	21.470
1973	99.548	2.067	97.481	41.767	139.248	36.814	176.062	30.000	70.000	20.910
1974	117.974	2.524	115.450	56.514	171.964	47.831	219.765	32.860	67.140	21.760
1975	141.921	2.968	138.953	85.651	224.604	63.747	288.351	38.130	61.870	22.110
1976	164.930	3.575	161.355	115.514	276.869	101.443	378.312	41.720	58.280	26.810
1977	192.436	4.447	187.989	142.998	330.987	136.656	467.643	43.200	56.800	29.220
1978	224.607	5.150	219.457	155.913	385.370	231.322	606.692	41.530	58.470	38.130
1979	281.897	6.507	275.390	197.262	472.652	300.448	773.100	41.730	58.270	38.060
1980	358.564	6.936	351.628	243.143	594.771	389.996	984.767	40.880	59.120	39.600
1981	420.872	8.563	412.309	289.347	701.656	478.224	1179.880	41.240	58.760	40.530
1982	480.528	10.548	469.980	317.523	787.503	615.844	1403.347	40.320	59.680	43.880
1983	528.613	12.565	516.048	353.369	869.417	745.740	1615.157	40.640	59.560	46.170
1984	542.554	12.031	530.523	347.868	878.391	879.271	1757.662	39.600	60.400	50.020
1985	545.042	13.249	531.793	316.429	848.222	1026.621	1874.843	37.300	62.700	54.760
Average								35.720	64.280	30.850

* Defined as Time + Saving deposit

** Deposits with the Central Bank of Jordan, Commercial Banks and Housing Bank by Municipalities and Public Entities and by the private sector.

Source : CBJ Yearly Statistical Series (1964 - 1983), Special Issue No. 2 and CBJ Monthly Statistical Bulletin, October 1986, Vol. 22, No. 10.

million JD in 1985. This, however, represents a compound growth rate 15.37% during the period (1966 - 1985).

But this increase may not represent the true picture. Hence, the money supply has witnessed a decline in 1985. This was partly due to the drop in foreign exchange reserves which was the result of the reduction in the Arab aid, accompanied by a low level of economic activities which pushed down the demand deposit and ultimately boosted saving deposits.

With regard to quasi-money (which is defined as time plus saving deposits) which has also witnessed a rapid increase from 19.785 million JDs in 1966 to 1026.621 million JD in 1985, and this represents a compound growth rate of 23.1% during this period.

Meanwhile M_2 (which is defined as M_1 plus quasi-money) has also witnessed an increase from 75.818 million JD in 1966 to 1874.843 million JD in 1985. This, however, represents a compound growth rate of 18.4% which exceeds the growth rate of M_1 15.37% during this period.

However, this increase in the growth rate of M_2 was attributed to the rapid increase in quasi-money. This can be seen by looking at the ratio of quasi-money to M_2 , which increased from 26.1% in 1966 to 54.76% in 1985 and on average, the proportion of quasi-money to M_2 is 30.85% during the period.

Also, let us examine the impact of currency held by the public and the demand deposits on the money supply. Money supply (M_1) is the sum of the total of the currency held by the public plus the demand deposits. Therefore, the volume of currency can be determined by the behaviour of general public holdings, while the level of demand deposits can be influenced by banks' behaviour. Also, the monetary authorities can influence both the currency with public and demand deposits. The increase in demand deposits ratio (demand deposits as a proportion of the money supply (M_1)) equals the decrease in the currency ratio (currency held by the public as a proportion of the money supply (M_1)).

Moreover many economists and bankers in the LDCs have paid attention to the currency held by the public and its significant role in determining the volume of money supply.⁽¹⁾ However in the banking system, the bank reserve is considered to play an important part in their operation and on the basis of fractional reserves, the commercial banks reserve will be determined by the flow and withdrawal of currency into commercial banks.

Therefore, a higher preference for holding currency by the public will reduce the flow of deposits, banks reserves, and consequently will thin out the monetary base (which is defined

(1) For more details see J. Danial Khazzoom (1966) The Currency Ratio in Developing Countries, Frederic A Praeger, New York p.3.

as the commercial banks reserve plus currency in the hands of the public) and eventually, exert a contractionary effect on the money supply. Whereas low preference for holding currency will add to the flow of demand deposits and bank reserves, a rise in the actual commercial bank reserves would encourage the commercial banks to grant credit. This will have an expansionary effect on the money supply, unless it is offset by changes in legally required reserves, which are determined by the total deposits, or by changes in the excess of bank's reserves which are mainly influenced by the following factors. Namely, the interest rates on bank loans, Central banks' discount rate, economic and non-economic, and total deposits.

Thus, Khazzoom⁽¹⁾ has argued that there is an inverse relationship between the economic growth and the trend in the currency ratio. This belief is based on the growth of banks, which in turn, is associated with economic growth. Therefore, a decline in the currency ratio may be as a result of the increasing degree of economic development.

Generally speaking, the behaviour of the currency ratio is also influenced by many other factors, namely, the process of monetization, the growth of the banking system, inflation, geographical factors, i.e. rural areas and urbanization, and income distribution and political stability.

(1) J. Danial Khazzoom (1966) op. cit. p.8

Jordan has witnessed a high currency ratio during the 1967 - 1973. The reason was attributed to the political instability and economic situation which has prevailed in Jordan during that period.

For example, the 1967 Arab-Israeli war and the Civil War in 1970 was reflected in a situation of uncertainty and consequently encouraged the public to hold more cash. Thus, the impact of the Arab-Israeli war on the Jordanian economy was the occupation of the West Bank of Jordan. Apart from that, the Jordanian Dinar became the legal and preferred currency for the people in the West Bank.

Also, in 1967 and 1970 we have witnessed a drop in demand deposits, because of the public withdrawal of bank deposits and their desire to hold cash instead. Hence it may be less risk-taking during these periods of war.

Besides, fixed and low interest rates on saving deposits in Jordan made it unattractive to the public given the fact that Jordan had also experienced a high inflationary period, i.e. 19.1% in 1974 and the maximum yield on savings deposits did not exceed 6.5%. This had therefore added to its unattractiveness because the rate of return on deposits will not be positive.

While the currency ratio was steadily declining during 1975 - 85, the reasons were due to the use of currency in circulation becoming less attractive, particularly when this

involved large amounts of money and the increase in price speculation on land and buildings which has taken place since 1975. The country has also experienced political stability, the public becoming more confident in the banking system as well as receiving higher incomes. The public were now more prepared to give up cash holdings in favour of deposits during this period.

7.3 The Behaviour of the Commercial Banks and the Monetary Authority

Let us examine the behaviour of the commercial banks in Jordan through its liquidity ratio, reserve ratio, excess liquidity ratio and excess reserve ratio.

First of all let us begin with a definition and a calculation of these ratios.

The required liquidity ratio is a certain percentage of the total deposit of commercial banks. While the total (actual) liquidity ratio is calculated on the basis of the total liquidity assets of commercial banks to its short term liabilities.⁽¹⁾ However, the total liquidity assets of commercial banks is to include the following items such as the domestic assets (vault cash, balances with CBJ, balance with local banks and Treasury bills and government bonds), foreign assets (balances with banks abroad, investment abroad and cash

(1) For more details see Assa, J Ibrahim (1983), op. cit. p.164.

in foreign currency), while the total short term liabilities is to include public sector deposits (government and semi-government deposits, municipalities and public corporations' deposits), private sector (resident and non-resident) loans from CBJ and from local banks and bills payable.

Also, the total (actual) reserve ratio is defined as the balances with CBJ divided by the total deposit of commercial banks, and the required reserve ratio is defined as a certain percentage of the total deposits of commercial banks.

Historically speaking, monetary authorities had imposed a reserve requirement on commercial banks in order to protect themselves against insufficient liquidity. But it has been increasing in use as a means for controlling the money supply and credit and in order to reduce inflation. Hence, an increase in the legal reserve requirement will limit or even reduce the capability of commercial banks to grant credit facilities, and consequently will have a contractionary effect on the money supply. While a reduction in the legal reserve requirement will expand the capability of commercial banks to grant credit facilities, and consequently this will have an expansionary effect on the money supply.

Looking at Table 7.4 however, we can see that actual (total) liquidity has registered a significant decline in 1969, 1973, 1976 and 1979, and this may attribute to the following events such as the introduction of Treasury bills in 1969, the

Year	Total Liquid Asset	1	liabilities	2	Total Short- term	Actual (total) Liquidity	Required Liquidity Ratio	4	Excess Liquidity Ratio	5=(3-4)	Balances With CBJ	6	Total Deposit	7	Actual Reserve Ratio	8=($\frac{6 \times 100}{7}$)	Required Reserve Ratio	9	Excess Reserve Ratio	10=(8-9)
1966*	22.710		53.682		42.300	25.000			17.300		13.275		52.842		25.122		7.000		18.220	
1967*	24.535		53.741		45.650	25.000			20.650		16.944		53.388		31.740		7.000		24.740	
1968*	24.657		54.664		45.100	25.000			20.100		15.686		54.181		28.950		7.000		21.950	
1969	23.510		57.944		40.570	25.000			15.570		12.584		57.399		21.920		7.000		14.920	
1970	24.565		58.371		42.080	25.000			17.080		12.863		57.674		22.300		7.000		15.300	
1971	28.332		60.828		46.580	25.000			21.580		14.862		59.653		24.910		10.000		14.910	
1972	38.994		73.784		52.850	25.000			27.850		17.267		72.888		23.690		10.000		13.690	
1973	42.642		83.827		50.870	25.000			25.870		16.759		85.754		19.540		10.000		9.540	
1974	52.776		116.415		45.330	25.000			20.330		21.968		115.062		19.090		12.000		7.090	
1975	83.302		173.938		47.890	30.000			17.890		32.911		168.714		19.500		12.000		7.500	
1976	104.884		253.875		41.310	30.000			11.310		50.644		250.032		20.260		13.500		6.760	
1977	154.683		323.941		47.750	30.000			17.750		63.147		314.841		20.060		13.500		6.560	
1978	273.906		460.319		59.500	30.000			29.500		76.555		448.510		17.070		13.500		3.570	
1979	306.766		603.581		50.820	30.000			20.820		95.123		593.136		16.040		14.500		1.540	
1980	446.521		822.799		54.270	30.000			24.270		109.640		808.478		13.200		12.500		.700	
1981	522.078		997.360		52.340	30.000			22.340		106.559		977.648		10.900		9.500		1.400	
1982	528.363		1214.631		43.500	30.000			13.500		107.947		1169.479		9.230		9.500		-.270	
1983	678.632		1467.614		46.240	30.000			16.240		121.455		1397.821		8.690		8.500		.190	
1984	766.657		1698.085		45.150	30.000			15.150		124.197		1603.070		7.750		7.500		.250	
1985	919.269		1856.810		49.510	30.000			19.510		148.617		1747.168		8.510		7.500		1.010	

*estimate: NB: the legal reserve requirement have been calculated by the author which is derived from two kinds of deposit, time saving deposit and demand deposit divided by two i.e. $(12\%+15\%/2=13.5\%$ for 1976-78), $(13\%+16\%/2=14.5\%$ for 1979), $(11\%+14\%/2=11.5\%$ for 1980), $(8\%+11\%/2=9.5\%$ for 1981-82), $(7\%+10\%/2=8.5\%$ for 1983) and $(6\%+9\%/2=7.5\%$ for 1984-85).
Source: CBJ: Yearly statistical series (1964-1983), Special Issue No. 20
CBJ: Monthly Statistical Bulletin 12(2) December 1985.

introduction of government bonds in 1973, increasing a measure of Central Bank of Jordan to curtail credit expansion in 1976 and 1979, and the establishment of the Amman Financial Market.

All these, however, have contributed to the decline and this may also indicate the availability of Treasury bills. Government bonds have made it possible for the commercial banks to invest their excess liquidity and consequently have made it beneficial for the fiscal authorities, through providing them with money, to finance their budget deficit and, at the same time, have channelled their financial resources to productive projects. Above all, the establishment of Amman Financial Markets have made it possible to direct private liquidity away from speculative investments like real estate and into productive enterprise.

While the legal liquidity ratio of (25%) was initially imposed by CBJ for the first time in 1969 and has been raised to 30% in 1975 in order to reduce the excess liquidity ratio of commercial banks, the legal reserve requirement, which was set up in 1969, was raised to 10% in 1971 and 12% in 1974 in order to curtail credit expansion and excess reserves and thus to cope with inflation.

Thus, the CBJ has also gone even further by adopting the argument which was put forward by Brimmer (1971)⁽¹⁾ that the

(1) A. F. Brimmer (1971), "Central Bank and Economic Development: The Record of Innovation", Journal of Money, Credit and Banking, 3, pp. 789 - 792.

legal reserve requirement in developing countries should be linked to differentiate between the composition of the total deposits of commercial banks in order to influence the allocation of credit in favour of the productive sector, and also to limit and control bank credit.

This kind of policy discrimination between the composition of total deposits was adopted by the CBJ in 1976, (15% on demand deposits and 12% on saving deposits) specifically to curtail credit expansion. In 1979, the legal reserve requirement was also increased to 16% on demand deposits and 13% on savings deposits in order to reduce credit facilities and to reduce inflation.

During the 1980s, the CBJ has adopted a reduction in the legal reserve requirement, i.e. 14% on demand deposits and 11% on time-saving deposits in 1980, in order to enable the commercial banks to grant credit facilities for those in the productive sector.

However, the monetary policy in influencing the volume of credit and money supply in Jordan has not proven to be effective through the required liquidity ratio and required reserve ratio, because commercial banks have always maintained high actual liquidity and reserves which far exceeded that required by the CBJ.(1)

(1) For more details see Marwan Hayek and Sami Zreikat (1976), The Financial System in Jordan, Economic Department, Royal Scientific Society, Amman, Jordan.

Moreover, commercial banks in Jordan maintain an excess liquidity and reserves could be due to the following factors:

- (i) Jordan witnessed political uncertainty in the 1967 war and the civil war in 1970. Under the state of uncertainty bank management became over-cautious.
- (ii) Commercial banks have adopted a conservative policy in credit extension. This, however, is a reflection of their demand of large security for granting loans to customers and in particular to those in agricultural and industrial projects.
- (iii) Jordan is still characterised by limited size and the underdeveloped nature of money markets. The structure of interest rates and their levels are also characterised by inflexibility (i.e. very low yield on bank lending).
- (iv) Commercial banks in Jordan are no different from those operating in many LDCs, they find it difficult to predict the behaviour of the demand for currency. This, however, has forced commercial banks to keep a higher ratio of actual reserves, in order to meet the different possibility of changing demand for money.
- (v) Until 1974, the CBJ used to pay interest rates on commercial bank's reserve deposits with the CBJ. This has consequently reduced the cost of keeping a large

excess in reserve.

7.4 Commercial Bank Credit and Its Allocation

Let us now examine the nature of commercial banking activities.

The banking system in Jordan has witnessed considerable changes in the volume of credit extended to economic sectors. Thus, one of the features of credit facilities extended by the commercial banks was mainly in a form of loans and advances to both the private and public sector.

Looking at Table 7.5 we can see that credit facilities by the commercial banks have increased from 38.981 million JD in 1966 to 1247.416 million JD in 1985. This, however, represents a compound growth rate of 20% during this period. The reason behind this growth was, however, mainly due to the following factors⁽¹⁾:

- (i) The increase in prices may have to be matched by more credit, and in particular, to financing the increasing demand for imports. Likewise, when the economic situation is faced by rising prices, domestic economic transactions require more credit.
- (ii) The state of the economy has a role to play in the credit expansion. Prior to 1973, Jordan underwent an

(1) For more details see National Planning Council (1976) General Report, of the Jordan Development Conference held in Amman, May 31-June 2, Working Papers, Vol III, p.10.

TABLE 7.5

SECTORAL DISTRIBUTION OF OUTSTANDING COMMERCIAL BANK CREDIT (in Million JDs) FOR THE PERIOD 1966-1985

Year	Total Credit	% Annual Rate of Change	Share of Municipalities and Public Corporation		Share of Agriculture		Share of Mining		Share of Industry		Share of Foreign Trade		Share of Construction	
			Value	% Share	Value	% Share	Value	% Share	Value	% Share	Value	% Share	Value	% Share
1966	38,981		2,579	6.610	0.613	1.570	0.030	0.080	4,723	12.110	20,327	52.140	3,267	8.380
1967	38,886	-0.240	2,921	7.510	0.767	1.970	0.014	0.036	4,232	10.880	17,352	44.620	5,022	12.910
1968	40,997	5.430	3,684	8.980	0.654	1.600	0.010	0.024	4,012	9.780	17,076	41.650	6,090	14.850
1969	45,389	10.710	2,936	6.460	0.717	1.580	0.152	0.330	4,052	8.920	19,059	42.000	7,099	15.640
1970	45,548	0.350	2,829	6.210	0.583	1.280	0.729	1.600	4,029	8.840	16,890	37.080	11,228	24.650
1971	46,928	3.030	3,029	6.450	0.799	1.700	0.672	1.430	3,916	8.340	18,964	40.410	10,506	22.380
1972	50,590	7.800	3,602	7.200	0.804	1.590	0.291	0.575	4,354	8.600	21,458	42.410	10,671	21.090
1973	61,817	22.200	3,673	5.940	2,061	3.330	0.386	0.620	5,873	9.500	25,079	40.570	14,442	23.360
1974	84,950	37.420	5,046	5.940	3,745	4.400	0.371	0.440	10,087	11.870	30,302	35.670	19,966	23.500
1975	126,744	49.200	7,281	5.740	3,608	2.850	0.283	0.220	14,831	11.700	51,372	40.530	31,491	24.840
1976	207,091	63.400	12,261	5.920	5,162	2.490	0.332	0.160	21,808	10.530	81,614	39.410	50,042	24.160
1977	244,055	17.850	17,919	7.340	8,311	3.400	0.233	0.095	26,599	10.900	81,427	33.360	65,784	26.950
1978	332,799	36.360	24,023	7.210	12,706	3.820	1.711	0.510	36,578	11.000	100,531	30.200	100,541	30.210
1979	465,059	39.740	27,756	5.960	17,361	3.730	4.038	0.860	56,477	12.140	134,236	28.860	150,994	32.460
1980	563,856	21.240	31,851	5.640	17,205	3.050	4.357	0.770	68,718	12.180	166,956	29.610	180,758	32.060
1981	721,317	27.930	45,000	6.240	19,386	2.680	6.827	0.950	82,437	11.420	225,791	31.300	201,036	27.870
1982	887,171	23.000	64,499	7.270	24,630	2.770	14,069	1.580	98,532	11.100	284,944	32.110	216,753	24.430
1983	1030,922	16.200	65,434	6.350	25,626	2.480	20,542	2.000	118,428	11.500	276,650	26.830	271,345	26.320
1984	1184,825	14.930	85,064	7.180	25,659	2.170	27,416	2.310	142,372	12.010	296,097	25.000	324,055	27.350
1985	1274,416	7.560	117,188	9.190	26,298	2.060	32,070	2.500	157,165	12.330	308,555	24.210	331,569	26.017
Average			6,770		2,530		0.850		10,780		35,900		23,460	

Source: CBJ: Yearly Statistical Series (1964-1983), Special Issue No. 20, and
CBJ: Monthly Statistical Bulletin 23 (6), June 1987

TABLE 7.5 CONTINUED.....i

Year	Share of Transportation		Share of Tourism, Hotels and Restaurants		Share of Financial Institutions		Share of Professional and Private Individuals		Share of Other	
	Value	% Share	Value	% Share	Value	% Share	Value	% Share	Value	% Share
1966	2.146	5.500	0.993	2.540	0.330	0.850	2.247	5.760	1.726	4.420
1967	1.774	4.560	1.101	2.830	0.196	0.500	2.138	5.500	3.369	8.660
1968	1.789	4.360	0.999	2.430	0.188	0.460	2.456	6.000	4.039	9.850
1969	1.554	3.420	1.003	2.210	0.193	0.420	3.066	6.750	5.558	12.240
1970	2.426	5.320	0.978	2.140	0.184	0.400	4.142	9.100	1.530	3.360
1971	2.616	5.570	0.886	1.880	0.254	0.540	3.278	7.000	2.008	4.280
1972	2.421	4.780	0.924	1.830	0.342	0.680	3.894	7.700	1.829	3.610
1973	2.192	3.540	1.379	2.230	0.599	0.970	4.555	7.360	1.578	2.550
1974	5.293	6.230	1.527	1.790	0.739	0.870	5.815	6.840	2.559	3.010
1975	3.691	2.910	1.783	1.400	0.336	0.260	7.402	5.840	4.666	3.680
1976	7.779	3.750	2.518	1.210	0.557	0.270	11.365	5.480	13.653	6.600
1977	11.083	4.540	3.422	1.400	0.585	0.240	13.075	5.350	15.617	6.400
1978	8.379	2.510	6.612	1.980	1.184	0.360	21.212	6.370	19.322	5.800
1979	13.040	2.800	9.657	2.070	4.756	1.020	29.662	6.380	17.082	3.700
1980	14.479	2.560	11.843	2.100	8.699	1.540	38.717	6.860	20.273	3.600
1981	23.286	3.230	15.890	2.200	9.359	1.300	60.834	8.430	31.471	4.360
1982	32.887	3.710	20.485	2.310	19.602	2.210	69.596	7.840	41.174	4.640
1983	50.483	4.900	25.683	2.500	25.637	2.480	108.096	10.500	42.998	4.170
1984	58.482	4.940	23.716	2.000	29.592	2.500	121.459	10.250	50.913	4.300
1985	64.029	5.020	29.825	2.340	26.933	2.100	127.563	10.000	53.221	4.180
Average		4.200		2.070		1.000		7.270		5.170

economic slack, which was mainly due to political instability, i.e. the 1967 Arab-Israeli war and the civil war in 1970. Moreover, this period of economic stagnation was accompanied by a decreasing or low growth rate in credit extension, i.e. 0.24% and 0.35% in 1967 and 1970 respectively while, after 1973, Jordan experienced an economic boom which was accompanied by political stability and reflected in a high growth rate. This growth was, however, a result of implementing the Three and Five Year plan for economic development which required a large credit extension in order to finance large projects.

- (iii) Interest rates in Jordan are fixed and relatively low in relation to high inflation rates. This can be explained in terms of the low returns on bank deposits (which in a sense reduces bank costs and consequently enables them to reduce their charges on bank loans). Thus the private sector is encouraged to borrow money from banks, especially when they expect prices to rise, because they prefer to be in debt rather than in credit. The real interest rate could be very low or even negative.

The inflationary effect of the increased bank credit to economic sectors emerged not only from the increase but also from its concentration in unproductive sectors. Hence it creates excess demand in these sectors of the economy and consequently this may have an effect on their prices. Therefore, maldistribution of commercial bank credit could

eventually add to the inflationary process.

With regard to sector distribution of credit by the commercial banks. One striking feature of their credit allocation is their preference to finance domestic and foreign trade. This can be seen from the high relative share of bank credit extended to domestic and foreign trade. However, this ratio (see Table 7.5) accounted for 52.14% in 1966, 44.62% in 1967, 42.41% in 1972 and 40.57% in 1973.

But the relative importance of credit in this sector has started to decline since 1975 and accounted for 28.86% in 1979, and 26.83%, 25% and 24.21% in 1983, 1984 and 1985 respectively. The decline, however, was a result of a continuous pressure adopted by the CBJ since the beginning of the Three Year Plan in 1973, by urging the commercial bank to increase credit facilities for the productive sector at the expense of the trade and commercial sector.⁽¹⁾

Thus, it is also significant to note that on average the share of bank credit going to finance domestic and foreign trade was 35.9% during the period (1966-1985). This, however, leads us to say that the commercial bank credit went to finance the domestic and foreign trade. This was very significant

(1) For more details see:

CBJ Tenth Annual Report (1972) p.110-11, and
CBJ Eleventh Annual Report (1974), pp. 33 - 36.

since it was labelled first in terms of the order of the allocation for commercial bank credit.

Regarding the construction sector, however, the relative share of the commercial bank credit going to construction accounted for 8.38% in 1966, which then started to increase steadily until 1970. This increase may be partly due to the natural growth of the population and by the inflow of refugees when they exert pressure on the demand for housing.

Thus, the period between (1973 - 1981) has also witnessed a rapid increase in the relative share of commercial bank credit in this sector. This was mainly due to the boom in the purchasing of land and the building of residential and luxury housing. Also, this period has witnessed the implementation of Three and Five Year Plans, which have required a large amount of money to finance the housing projects. But the period between 1981 - 1982 witnessed a decline which was mainly due to the decrease in construction activities. However, on average the share of bank credit going to finance construction was 23.46% during the period 1966 - 85. This may, however, indicate that the construction sector's share of credit was significant and labelled a second in terms of the order of the allocation of commercial bank credit.

Concerning the industrial sector, and despite the early stages of industrial development in Jordan, the relative share of the commercial banks' credit going to the industrial sector account for 12.11% in 1966, and then started to decline

steadily until 1972. This decline was associated with political instability which made it unattractive to finance the industrial sector.

But the relative share of credit to this sector has risen between 1972 - 1974. This was mainly due to the attention given by the commercial banks which was the result of various policies by the CBJ and government to encourage industrialisation. Thus, the period between (1977 - 80) and (1983 - 85) has also witnessed an increase in the relative share of credit to the industrial sector. This may be attributed to the emphasis of the Five Year Plan on the importance of the role of the industrial sector in achieving economic development. However, on average, the share of bank credit going to finance the industrial sector was 10.78% during the period (1966 - 1985). This may reveal that the industrial sector share of credit was significant, and labelled a third in terms of the order of the allocation of commercial bank credit.

There is also another striking feature of commercial banks credit allocation, which is that they are reluctant to finance the agricultural sector. They believe it involves a risk element and that this is reflected in the uncertainty of its production and difficulties in extending and collecting loans. This can be revealed by the low relative share of bank credit extended to the agricultural sector.

However, this ratio accounted for 1.57% in 1966, 1.97% in 1967 and 1.28% in 1970, and then started to increase in 1973,

reached its highest ratio in 1974, and then started to decline. In 1977 it started to pick up again until 1979, and after this has generally witnessed a declining ratio, reaching 2.06% in 1985. But on average the share of bank credit going to finance the agricultural sector rose by 2.53% during the period (1966 - 1985). This may indicate that the agricultural sector share's of credit has never been of much significance.

The above analysis clearly shows that an increase in the volume of credit facility has failed to be accompanied by a fair distribution of credit amongst all sectors of the economy and, despite its emphasis by the Three and Five Years Plans, to be distributed in favour of all productive sectors.

7.5 Conclusion

We may conclude our analysis by summarising that the monetarists take the view that inflationary pressure in the economy will arise where excessive growth in the money supply has exceeded the growth of real output, and yet an increase in the money supply may appear to be inflationary, but much of it depends on the state of the economy.

However, Jordan has experienced a rapid increase in the money supply, and on average, the annual rate of change in the money supply (M_1 definition) during the period 1966 - 1985 has far exceeded the annual rate of change in the price level, i.e. 15.81% and 8.13% respectively.

At the same time, on average, the annual rate of change in the money supply has also far exceeded the annual rate of change in real GDP, i.e. 15.81% and 4.65% respectively during the same period and this may indicate that monetary expansion in Jordan could not be absorbed and that this therefore may be reflected in price rises.

But we have also indicated in our analysis that the parallelism between the annual average rate of change in the money supply, and the annual average rate of change in price level is not quite strict, hence an increase in the money supply is not always sufficient to explain inflation. Inflation may, therefore, also be explained by many other factors in the economy.

In our analysis, we have also examined the main factor which could have influenced the expansion of the money supply, namely, the net foreign assets, credit to the private sector, credit municipalities and public entities, and by credit to government and semi government institutions, where they have registered a compound growth rate of 10.46%, 20.4%, 23.75% and 26.3% respectively, during the period 1966 - 1985 (except for the 26.3% which was during the 1969 - 1985).

With regard to the empirical findings of the regression analysis of $\Delta \ln P_t$ against $\Delta \ln MS_t$ (M_1 definition), using annual data for the period 1968 - 1985 which demonstrates that an increase in money supply can have a considerable impact on the inflationary process in Jordan. Thus, the empirical evidence

(goodness of fit of the model) also shows that money supply alone is not enough to explain the inflationary process in Jordan, hence it has only explained 52.7% of the variation in $\Delta \ln P_t$ and 47.3% would be due to other factors.

In our analysis we have also investigated the composition of the money supply and the relative importance of its component to the money supply. However, money supply (M_1 definition), quasi-money and money supply (M_2 definition) have increased and registered a compound growth rate of 15.37%, 23.1% and 18.4% respectively during the period (1966 - 1985).

Thus, we have examined the impact of currency held by the public and the demand deposits on the money supply. However, their relative share of importance is found to be with an average of 64.28% and 35.72% respectively during the period (1966 - 1985) and the reasons behind a higher preference for holding currency have also been identified.

At the same time, the behaviour of the commercial banks and the monetary authorities through liquidity ratio, reserve ratio, excess liquidity ratio, and excess reserve ratio were assessed. However, despite the introduction of Treasury bills in 1969, the introduction of government bonds in 1973, increasing the measure of the CBJ to curtail credit expansion in 1976 and 1979, and the establishment of the Amman Financial Market, the monetary policy in influencing the volume credit and money supply in Jordan has not proven to be effective through the required liquidity ratio and required reserve

ratio, because commercial banks have always maintained a high actual liquidity and reserves which have far exceeded that required by the CBJ. However, the reasons behind this have also been identified.

Furthermore, we have examined the nature of commercial banking activities, which has involved an inquiry into the commercial bank credit and its allocation. However, the credit facilities by the commercial banks has witnessed a rapid increase, with an average growth rate of 20% during the period 1966 - 1985. Thus, the reasons behind this growth has also been investigated.

Finally, one striking feature of the distribution of credit by the commercial bank is their preference to finance domestic and foreign trade, and their reluctance to finance the agriculture sector, this however, can be seen from their relative share in the total credit extended by the commercial bank. For example, the share of the bank credit going to finance domestic and foreign trade, construction, industrial and agriculture were an average of 35.9%, 23.46%, 10.78% and 2.53% respectively during the period 1966 - 1985. This, however, may indicate that the increase in the volume of credit was not accompanied by a fair distribution of credit among sectors of the economy, and inspite of the emphasis by the three and five years development plan to distribute credit in favour of the productive sector.

CHAPTER 8

The Contribution of Foreign Trade Prices to Jordan's Inflation

Having previously stated the contribution of the monetary expansion to the inflationary process in Jordan, our main objective in this chapter is to examine the contribution of foreign trade prices to Jordan's inflation.

However, this chapter will involve a review of historical changes which may have contributed to world inflation and will involve an examination of the argument related to the inflationary process as a result of changes in the price of trade goods. Thus, this chapter will also involve an investigation of the importance of foreign trade to LDCs and with special reference to Jordan. Moreover, the investigation will also cover to what extent domestic prices may be influenced as a result of Jordan's international transaction with the rest of the world, this relationship will be tested with the aid of regression analysis.

8.1 Historical Change (Records)

First of all, during the period 1966 - 1985, the world has witnessed a number of unprecedented changes which have, in turn, contributed to a sharp rise in both import and export prices.⁽¹⁾

(1) G. Maynard and W. Van Ryckeghem (1975) A World of Inflation, Barnes and Noble, Great Britain, Chapter 10.

- (i) The devaluation of sterling against the US dollar and other currencies in November 1967. This, however, has caused a sharp rise in the U.K. foreign trade price in 1968, and consequently has been followed by acceleration of domestic inflation. Thus, following the devaluation of Sterling, the British government were forced to adopt a stop-go policy. The result of demand restraint policies and devaluation was a balance of payment surplus in 1969 and this has continued 'til 1971. At the same time, the U.S.A. started moving into an economic slump and the German boom was cooling off, world trade was slowing down and with it, British exports. But in June 1972, Sterling was allowed to float in order to solve balance of payment problems.
- (ii) Thus, the French franc also devalued in August 1969, and consequently made a sharp rise in French export and import prices in 1969. This was followed by a re-evaluation of the Deutschemark and other major currencies against the dollar, which took place in the course of 1971 and which was also accompanied by a rise in export and import prices in nearly all O.E.C.D. countries. The successive re-evaluation of the Deutschemark did, however, cause a fall in Germany's import prices but it is significant to note that export prices did not fall and continued to rise.⁽¹⁾

(1) G. Maynard and W. van Ryckeghem (1975) op. cit. p.221

- (iii) Also, the world has witnessed several changes in the exchange rate following the breakdown of Bretton Woods monetary system at the end of 1971⁽¹⁾ which was associated with a massive capital flow of US dollars out of the United States in 1971 to Europe and Japan because of anticipation of a devaluation of the US dollar, the suspension of the dollar's convertibility into Gold, the great deficit in the US balance of payment, the expansion of the US money supply following the high expenditure on the Vietnam War, and the rapid expansion of world reserves in 1971 - 1973. (In spite of a growing unwillingness by countries who enjoy a surplus in the balance of payments to go on financing the US deficit by accumulating dollars in their reserves). These events were, however, also associated with a sharp rise in world inflation.
- (iv) Throughout the world, food prices have accelerated violently during 1972 - 1973, and consequently have contributed to the increase in the general price level. This may be attributed to a decline of per capita world agricultural production, accompanied by an increase in the demand for food given its inelastic supply. Thus, it is also due to bad weather conditions and subsequently poor food harvest (in the

(1) G. Maynard and W van Ryckeghem (1975), op. cit. p.60.

USSR and Brazil frost).⁽¹⁾

- (v) Thus, during 1972-74, all major industrial countries have experienced a rise in their economic activities, which consequently have led to the increase in the demand for basic metals, in particular following the major international crisis of 1971 and mistrust in the US dollar and in the value of currencies which have created a speculative and precautionary demands for many commodities. It is also strengthened by demand pressure from the international synchronous boom of 1973.
- (vi) Moreover, the world has also witnessed a sharp increase in the price of oil during the periods of 1973 - 74 and during 1979 - 80. Thus, the world market has shifted from near competitive to near monopoly price. However, such events have created many problems for non-oil producing countries.
- (vii) However, the sharp oil price increase has induced recession in the industrial countries, which was associated with a falling in aggregate demand and boosting cost-push inflation.⁽²⁾ Hence, the adverse

(1) Phillip Cagan (1980) "Imported Inflation 1973 - 74 and the Accommodation Issue", Journal of Money, Credit and Banking, 12, p1 - 16.

(2) Jaleel Ahmad (1984) Floating Exchange Rate and World Inflation, Macmillan London, p.150.

According to Ahmad there is an apparent paradox associated with the oil price increase of 1973-74 that it has contributed to the inflationary process through the cost of production but at the same time has also reduced the excess demand. This is therefore a deflationary process.

effect has fallen on cost production and consequently their export prices increase and subsequently shrink the demand for their exports, thereby reducing their ability to import and intensifying the pressure on their balance of payments.(1)

- (viii) One should also point out that there are other factors which were associated with an increase/decrease in the price of oil. Oil prices are priced in terms of US\$. Any change in the exchange rate of US\$, and the price of foreign oil therefore, should not be ignored since appreciation of the dollar increases the foreign price of oil, which decreases foreign demand; and increases the foreign oil supply leading to a reduced dollar price of oil.(2)
- (ix) Following the exchange rate crisis the industrial world has been forced to adopt tariff protection against imports and subsidies to export. The purposes of these policies were to break the regulative impact of international competition on the national price level.

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- (1) For more details see Edward R Fried and Charles L Schultze (1975), Higher Oil Prices and the World Economy, the Adjustment Problem, The Brookings Institution, Washington DC and A Abbot (1984), "The Recycling of Surplus Oil Fund, Economica Internazionale (May-August-Nov), 34 (2-3-4), pp.202-221.
 - (2) P. Stephen, et. al. (1986), "Exchange Rate and World Oil Prices, Federal Reserve Bank of Dallas Economic Review, March, p1-20.
Richard G Sheehan and Neil Kelly (1983), "Oil price and world inflation, Journal of Economic and Business, 35, pp 235-238 and R Kitching (1983) "Don't Blame the Arabs", Rivita Internazionale Di Scienze Economiche E Commerciali, 3(6) p 561-65.

- (x) During the 1970s the world has also witnessed rapid changes in trade union movement. Their members have become aware of bargaining power and their influence has become stronger as has their demand for more pay. More pay has led to an increase in the unit cost given the low productivity and has subsequently put some pressure on prices.
- (xi) However, the world in the 1970s has witnessed an excessive liquidity following the recycling of oil funds and the huge expansion of europa-markets which are bound to have an effect on the prices.

8.2 The Inflationary Process as a Result of Changes in the Price of Trade Goods

Any economy which is engaged in overseas trading is bound to be exposed to inflationary impulses from the world outside. Hence one country's exports are another country's imports, and an increase in a country's export price (which may have been a result of higher costs of domestic production, which in turn was the result of higher prices of imported materials) is likely to put upward pressure on price levels of its trading partners through increase in import prices, regardless of course of increases which may have been a result of increases in demand or reductions in supply.⁽¹⁾

(1) Jaleel Ahmed (1984) op. cit. p.49

The impact of import prices increases on the final goods and intermediate products which tends to contribute to the consumer and wholesale price indices, presumably with time in importing countries.⁽¹⁾

In so far as import substitution (for certain domestic goods with relatively the same nature) are concerned, a rise in the price of imports at regular intervals provokes a sympathetic trend in the prices of competing domestic goods.

Thus, following the initial increase in both import prices and the price of domestic goods, this is likely to provoke a chain of repercussions, such as upward pressure on wages and hence, on unit costs and prices of a whole range of goods and services.

The effect of import prices on domestic prices depends on many factors, namely:

- (i) domestic rate of inflation relative to trading partners;
- (ii) the rate of change in the cost of production in the trading partners;
- (iii) a complex interplay of income and substitution effects caused by the initial price changes;
- (iv) price elasticities for imported goods;
- (v) whether the importing country is adopting a flexible

(1) Peter D Jonson (1976), "World Influences on the Australian Rate of Inflation" in M Parkin and G Zis (1976) Inflation in Open economies, Manchester University Press, p.239-258.

or fixed change rate regime, import control and quotas;

- (vi) the ability of importing country to sterilize the increase in foreign reserve.⁽¹⁾
- (vii) The amount of imports and their relative importance in GNP, and the marginal propensity to import.
- (viii) The nature of imported goods (i.e. essential or luxury) and the process of economic development, accompanied by the availability of foreign exchange.
- (ix) The degree of substitution, and
- (x) The relative importance of foreign trade in GNP i.e. the openness of the economy.

8.3 The Importance of Foreign Trade

The importance of foreign trade to LDCs has emerged from being unable to produce capital goods and intermediate inputs which are considered to be essential to the process of their economic development (Cairncross).⁽²⁾ Thus, such incapability is associated with limited resources. Thus, most LDCs are characterized by high growth rates in population, and consequently they are forced to import in order to meet the

(1) See William R Cline (1981) "Introduction" in William R Cline and Associate, World Inflation and Developing Countries, Brookings Institution, Washington DC p.9.

(2) A. K. Cairncross (1976), "Contribution of Trade to Development in G. M. Meier (1976), Leading Issues in Economic Development, Oxford University Press, New York, pp 712 - 716.

needs of the economy. Moreover, financing imports in LDCs usually meet with a critical challenge for them given the availability of foreign exchange. Hence, their export proceeds are inadequate to cover the foreign exchange requirement of the imports bill. A trade deficit is therefore coming into existence.

In addition, the LDCs have become vulnerable to the direct inflationary impact which emerges from the rising foreign trade prices, and being unable to substitute more expensive foreign produced ones for cheaper home produced goods.(1)

However, Jordan is a small open economy, whereas production bases are below the minimum level of their requirement. Consequently, the external sector is playing a major part in the national economy in both terms of its contribution to GDP and in meeting its requirement for both consumer and capital goods.(2) Thus, the role of imports is considered to be very significant in terms of social, political and economic factors. Hence, importation has created a number of jobs through the need for distribution and the sale of foreign goods. Besides, there are also some writers who even argued that the availability of goods has helped to reduce the inflationary pressure and consequently to keep away a popular cause of discontent.

(1) G. Maynard and W Van RycKeghem (1975) op. cit. p.47.

(2) See Ministry of Planning (1986). The Year Plan for Economic and Social Development 1986 - 1990, National Press, Amman, Jordan, p.15.

Moreover, most developing countries are characterized by the high size of the foreign trade sector in relation to GNP. At the same time, Kindleberger (1962)⁽¹⁾ has argued that the smaller the country, the higher its involvement in international trade.

The openness of the Jordanian economy is indicated by the ratio of foreign trade (exports and imports) to GNP, which has witnessed a rapid increase from 42.33% in 1966 to 87.01% in 1981. Afterwards, it has started to decline and by 1985 it was 74.92% (see Table 8.1). However, the reason behind this decline was mainly a result of the contraction of exports and imports which have both been affected respectively by the recession of the European export market and the drop in the international commodity prices.

The Table 8.1 also indicates that between 1966 and 1985, foreign trade as a percentage of GNP constitutes an average of 64.09%. This remarkably high figure demonstrates the degree of dependency of the Jordanian economy on the international market which consequently makes the economy highly sensitive to the external movement of prices unless it is offset by exchange rate appreciation or by adopting other policies to rectify these movements.

(1) C. P. Kindleberger (1962), Foreign Trade and the National Economy, Yale University Press, New Haven and London.

TABLE 8.1

BALANCE OF TRADE

DURING 1966 - 1985 in million JD

Year	Imports (CIF)	DOMESTIC RE-EXPORTS EXPORTS	BALANCE OF TRADE		GNP AT MARKET PRICE	IMPORT AS % OF GNP	DOMESTIC RE-EXPORT AS % OF GNP		TOTAL EXPORTS AS % OF GNP	BALANCE TRADE OF DEFICIT		FOREIGN TRADE AS % OF GNP
(1)			(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
1966	68.21	8.76	1.64	10.40	57.81	36.73	4.72	.88	5.60	31.13	42.33	
1967	55.05	9.98	1.34	11.32	43.73	38.63	7.00	.94	7.94	30.69	46.57	
1968	57.44	12.17	2.09	14.26	43.23	34.55	7.31	1.26	8.57	25.98	43.12	
1969	67.75	11.92	2.83	14.75	53.00	34.32	6.04	1.43	7.47	26.85	41.79	
1970	65.88	9.32	2.85	12.17	53.71	35.23	4.98	1.53	6.51	28.72	41.74	
1971	76.63	8.82	2.62	11.44	65.19	38.43	4.42	1.31	5.74	32.69	44.17	
1972	95.31	12.61	4.40	17.01	78.30	43.13	5.70	1.99	7.70	35.43	50.83	
1973	108.25	14.01	4.97	18.98	89.27	44.82	5.80	2.06	7.86	36.96	52.68	
1974	156.61	39.44	10.31	49.75	106.86	56.07	14.12	3.69	17.81	38.26	72.88	
1975	234.01	40.14	8.80	48.94	185.07	62.24	10.68	2.34	13.02	49.22	75.25	
1976	339.50	49.55	19.90	69.45	270.05	60.37	8.81	3.54	12.35	48.02	72.72	
1977	454.52	60.29	21.81	82.10	272.42	68.86	9.13	3.30	12.44	41.27	81.30	
1978	458.94	64.13	26.78	90.91	368.03	58.76	8.21	3.43	11.64	47.12	70.40	
1979	585.68	82.56	38.35	120.91	468.77	63.57	8.96	4.16	13.12	50.88	76.69	
1980	715.98	120.11	51.47	171.58	544.40	60.16	10.09	4.33	14.42	45.74	74.58	
1981	1047.57	169.03	73.61	242.64	804.87	70.65	11.40	4.96	16.36	54.28	87.01	
1982	1142.50	185.58	78.95	264.53	877.97	68.27	11.09	4.72	15.81	52.47	84.08	
1983	1103.31	160.08	50.50	210.58	892.73	62.36	9.05	2.85	11.90	50.46	74.26	
1984	1071.34	261.05	29.60	290.65	780.69	57.77	14.07	1.60	15.67	42.10	73.44	
1985	1074.50	255.35	55.54	310.89	763.61	58.11	13.81	3.00	16.81	41.07	74.92	
Average						52.65	8.77	2.67	11.44	40.47	64.09	

Figures are rounded

Source: (1) Department of Statistics: Statistical Year Book, No. 35, 1984

(2) IMF, IFS April 1987

8.4 The Growth of Jordanian Imports

Looking at Table 8.1 shows that the value of commodity imports in current prices have increased from 68.81 million JD in 1966 to 1074.50 million JD in 1985. This represents an annual average growth rate of 15.62% which outstripped the average growth rate of GNP of 12.85% per annum for the period 1966 - 1985. The average propensity to import (import/GNP) has increased from 36.73% in 1966 to 58.11% in 1985, and on average it represents 52.65% over the same period.

Thus, the marginal propensity to import can be computed by using regression technique ordinary least squares (OLS) for the period 1966-1985, whereas M is defined as the absolute value of imports, and GNP is the absolute value of Gross National Product at market prices. However, this technique is used to investigate the variation in M as GNP varies.

Therefore, the estimated marginal propensity to import (MPI) can be seen in the following equation :

$$M = -35.63 + 0.65 \text{ GNP} \dots \quad (1)$$

(-1.98) (35.27)

The number in parenthesis are T. statistics.

$$\begin{aligned} R^2 &= 0.986 \\ \bar{R}^2 &= 0.985 \\ DW &= 1.06 \\ F_{1,18} &= 1244 \\ N &= 20 \end{aligned}$$

We can see from equation (1) that the estimated coefficient β is a positive sign and very significant at 5% significant level. The value of DW indicates the existence of auto correlation which may be caused by omitted variables or incorrect function form applying linear estimated to a curvilinear relation. Equation (1) also indicates that 98% of variation of M is explained by GNP.

However, equation (1) indicates that the MPI regression coefficient of 0.65 which implies that as GNP increases by one dinar, 65% of it will be spent on imports. This is a good demonstration of a growing demand for imports.(1)

Using the Cochrane-Orcutt Technique for correcting first order serial correlation error (CORC), we get the following result:

$$M = -29.49 + 0.64 \text{ GNP} \dots\dots\dots (2)$$

$$(-0.88) \quad (20.91)$$

$$R^2 = 0.962$$

$$\bar{R}^2 = 0.96$$

$$DW = 1.77$$

$$F_{1,17} = 437$$

$$\text{Final Value of Rho} = 0.46$$

$$T. \text{ Statistics for Rho} (2.29)$$

(1) For more details see M Smadi and M Amerah (1979), Composition of visible imports: an industrial development potential, Economic Research Department, Royal Scientific Society, April, Amman, Jordan, and M. Share (1987), Jordan's Grade and Balance of Payments Problem, paper presented at Conference on Politics and the Economy in Jordan convened in the University of London (SOAS), 19th May, 1987, p.1 - 21.

Having used the correction method for the first order autocorrelation, the estimated β shows a slight decline, but still a positive sign and significant at 5%, and the constant has become insignificant, and the value of DW indicates that there is no autocorrelation which exists. But we should also notice a slight decline in $\bar{R}^2$.

Moreover, many LDCs are vulnerable to inflation because of high income elasticity for imports which is mainly as a result of industrialisation and development. In Jordan's case, the income elasticity for imports, can be computed for the period under investigation by using OLS and variables are estimated in terms of natural logarithms of base e. The result can be seen in the following equation

$$\ln M = -2.10 + 1.23 \ln GNP \dots\dots\dots(3)$$

(-9.66) (35.5)

$$\begin{array}{ll} R^2 & = 0.986 \\ \bar{R}^2 & = 0.985 \\ DW & = 0.54 \\ F_{1,18} & = 1259 \\ N & = 20 \end{array}$$

The above equation (3) indicates that the estimated coefficient β is holding a positive sign and is highly elastic and very significant at 5% significant level. The value of DW indicates the existence of autocorrelation, the reason may be due to factors which we previously mentioned. However, equation (3) indicates that 98.5% of variation in imports is explained by

GNP.

While using CORC, the result is as follows :

$$\ln M = -1.27 + 1.10 \ln \text{GNP} \dots \dots \dots (4)$$

$$(-1.90) \quad (11.3)$$

	R^2	= 0.88
	$\bar{R}^2$	= 0.87
	DW	= 2.14
	$F_{1,17}$	= 128
	N	= 19
Final Value of	Rho	= 0.8
T. Statistics for	Rho	= 5.97

Equation (4) shows the estimated (β) has declined, but still holding a positive sign and still significant at 5%, and the constant has become an insignificant, and the value of DW indicates there is no autocorrelation which exists. But we could also notice a fall in $\bar{R}^2$.

As far as the factors which have contributed to the increasing demand for imported goods over the period 1966 - 1985, these were as follows :

- (1) The increase in GNP and the increased income, especially the contribution of remittance from workers abroad and other transfer payments.
- (2) Rapid economic development which itself requires capital and intermediate goods hence is being an essential for a large industrial investment, the growth of domestic manufacturing and construction activities.

- (3) The world has witnessed a rapid rise in commodity prices, accompanied by a sharp increase in oil prices, which have made imports more costly, especially after 1973 and have affected the world prices as a whole.
- (4) A rapid increase in the demand for food and other consumer goods as a result of rising per capita income, on the one hand and high growth in population on the other.
- (5) The Jordanian government has adopted a liberal policy.
- (6) Jordan has also witnessed a demonstration effect which can be shown in the change in the course of consumption, i.e. luxury consumption goods and non-essential commodities.⁽¹⁾

8.5 The Growth of Jordanian Exports

Looking back into Table 8.1 we can see that the value of domestic commodity exports at current prices has increased from 8.76 million JD in 1966 to 255.35 million JD in 1985. This, however, represents a compound growth rate of 19.4% per annum. While the value of re-exports have increased from 1.64 million JD in 1966 to 55.54 million JD in 1985. This, however, represents an annual average growth rate of 20.04% during that period.

(1) See for more details:

C B Millham and M S Amerah (1977), Rationalisation of Imports in Jordan, Economic Research Department, Royal Scientific Society, Amman, Jordan p.13

Thus, domestic exports as a proportion of GNP has increased from 4.72% in 1966 to 13.81% in 1985, and on average this ratio was about 8.77% for the period 1966 - 1985. At the same time, the re-exports as a percentage of GNP has also increased from 0.88% in 1966 to 3.0% in 1985, and on average it represents 2.67% during the same period.

Anyhow, the reason behind this increase may be due to the following reasons:

- (1) Jordan attempts to strengthen its relations with Arab countries, the geographical importance for a transition point and service centre, especially when the civil war in the Lebanon was started. Such moves have been very important in terms of exports and its contribution to GDP, for example in 1980 and 1981 has witnessed an increase as a result of Iraqi expenditure on imports from Jordan and of transit facilities. this has thereby led to a rapid demand in exports and consequently a massive boost to the Jordanian economy. From looking at Table 8.2 we can see that Jordan's exports to Arab countries have increased from 5.65 million JD in 1966 to 131.53 million JD in 1985. This represents an annual average growth rate of 18.02% during the period. Thus, on average Jordan's exports with Arab Countries as a proportion of total domestic exports is 62.28% during the period 1966 - 1985 and this represents a high ratio, making Jordan exports heavily dependent on the demand from Arab Countries.

TABLE 8.2
GEOGRAPHICAL DISTRIBUTION OF DOMESTIC EXPORTS DURING 1966-1985 in million JD

Year	DOMESTIC EXPORTS	ARAB COMMON MARKET	OTHER ARAB COUNTRIES	TOTAL EXPORTS TO ARAB COUNTRIES	$\frac{4}{1} \times 100$
	(1)	(2)	(3)	4=(2+3)	
1966	8.76	2.80	3.05	5.65	64.50
1967	9.98	2.25	4.24	6.94	65.03
1968	12.17	2.68	5.49	8.17	67.13
1969	11.92	3.11	5.39	8.50	71.30
1970	9.32	3.00	4.17	7.17	76.93
1971	8.82	2.76	3.93	6.69	75.85
1972	12.61	3.67	5.48	9.15	72.56
1973	14.01	4.42	5.65	10.07	71.88
1974	39.44	5.93	12.50	18.43	46.73
1975	40.14	7.03	9.87	16.9	42.1
1976	49.55	10.08	12.83	22.91	46.24
1977	60.29	13.62	22.44	36.06	59.81
1978	64.13	16.44	26.18	42.62	66.46
1979	82.56	25.93	29.81	55.74	67.51
1980	120.11	42.45	30.46	72.91	60.70
1981	169.03	74.75	39.73	114.47	67.72
1982	185.58	80.56	42.75	123.31	66.45
1983	160.08	30.58	56.47	87.05	54.38
1984	261.05	72.05	60.52	132.57	50.78
1985	255.35	74.17	57.36	131.53	51.51
Average					62.28

Source: (1) CBJ: Yearly Statistical Series (1964 - 1983), Special Issue, No. 20
(2) CBJ: Monthly Statistical Bulletin Vol 23, No. 6, June 1987.

- (ii) Phosphate plays an important role in domestic exports and particularly in 1974-75, which has witnessed an increase in its demand and its world prices.⁽¹⁾
- (iii) The reopening of the Suez Canal in 1975 which has facilitated the trade with Europe and North America through the only port in Jordan (Aqaba) which has expanded and reduced the costs of land routes which have in the past affected the flow of trade on the development of the Jordanian economy.
- (iv) The composition of domestic exports have experienced basic changes as well as the motivation for expanding exports was attributed to the development plan for the industrial sector. Thus, the impact of labour shortages in the market in the 1970s has produced the use of a comparatively sophisticated and capital intensive technology in many of the industries which have provided the Jordanian products to be strong enough to compete successfully in foreign markets, especially in these neighbouring Arab countries which have witnessed a massive imports bill.

(1) M P Mazur (1979), Economic Growth and Development in Jordan, Croom Helm, London p.123

8.6 Jordan's Trade Deficit

Since the early days of recording trade statistics, trade deficit has been a characteristic feature of Jordan's balance of payments. However looking back into Table 8.1 we can see that the deficit in the balance of trade has increased from 57.81 million JD in 1966, to 763.61 million JD in 1985, which represents a compound growth rate of 14.55% during the period (1966 - 1985). While the proportion of trade in GNP has also increased from 31.13% in 1966 to 41.07% in 1985, and on average the trade deficit as a percentage of GNP represents 40.47% during the same period (1966-1985). However, having pointed out the growth rate of trade deficit, let us also examine the main factors which were responsible for the chronic trade deficit, which are as follows :

- (i) The expansion of trade deficit was a result of growing demand for foodstuffs, which in turn, was attributed to the inability of agricultural production to satisfy the increasing demand. This was due to fluctuations in weather conditions (drought and frost in late 1972 and early 1973), combined with inefficient and the underdeveloped nature of the agricultural sector. Thus, these factors had also a negative impact on a number of agricultural exports.
- (ii) Trade deficit is attributed to the political instability which was associated with the Arab-Israeli war in 1967, followed by a massive influx of refugees, the occupation of the West Bank of Jordan to Israel,

which is the main source of agricultural products. Thus, the period 1967 - 71 has also witnessed a shelling of the East Ghor Canal Irrigation area by the Israelis which was the main source of agricultural products in the East Bank of Jordan. Therefore, the political instability has created a new problem arising from the absorption of refugees into the economy, i.e. by accelerating the demand for food and at the same time disrupting the country's major agricultural development projects and consequently the supply side of agricultural products. Moreover, during the period 1972 - 73 Jordan's export activity had slowed down as a result of the closure of the Jordan-Syrian borders and the October 1973 war between the Arab and Israelis, although Jordanian territory was not directly involved.

- (iii) Jordan has also witnessed a high and growing growth rate in the population which was also accompanied by the influx of Lebanese nationals after 1976, and consequently this has contributed to the growing trade deficit.
- (iv) The expansion of the trade deficit in Jordan was as a result of the implementation of the three and five years development programme, which has put upwards pressure on the demand for imports of capital goods and raw materials, which are considered to be an essential part of infrastructure projects for the

industrial sector and for enhancing the development process in Jordan as a whole.

- (v) Trade deficit is also as a result of a liberal foreign trade policy, accompanied by the absence of an effective import policy to reduce imports and in particular the unnecessary items.
- (vi) The chronic trade deficit in Jordan could also be related to the underdeveloped nature of the industrial sector, which was also accompanied by a meagre resource endowment, and the existence of a low import substitution process in Jordan makes the country unable to satisfy the ever growing domestic demand for imports.(1)
- (vii) The persistent increase in trade deficit was a reflection of the increase in per capita income which was as a result of the increasing remittance from the Jordanians working abroad, and the inflow of foreign aid which is intended to finance government expenditure, which has accelerated the consumption as well as changed the consumption pattern and consequently the demand for more imports.(2)
- (viii) The highest level of trade deficit during the period under investigation amounted to 892.73 million JD in

(1) Ministry of Planning (1986), op. cit. p.15.

(2) See CBJ Twentieth Annual Report (1983), p.49

1983. This was as a result of sluggish export activities, which can be attributed to the following factors:

- (a) because of the lower demand for Jordanian agricultural product and manufacturing product by the neighbouring oil Arab countries, which in turn was as a result of fallen oil revenue. The demand for Jordan's products have also fallen due to greater foreign competition, i.e. Turkey's exports in relation to Jordanian agricultural exports.
- (b) The value of the phosphate export has declined from 57.145 million JD in 1982 to 51.611 million JD in 1983. This, however, represents a drop of 9.7% from previous years, which was as a result of the slowing down of the world demand. Consequently, phosphate export prices fell by 13.1% and the volume of phosphate exports rose by only 4%.⁽¹⁾
- (c) The adverse effect of Iraq-Iran war has fallen on the Jordanian exports to Iraq which have witnessed a sharp decrease from 66.58 million JD in 1982, to 26.011 million JD in 1983, which, however, represents a drop of 60.9% from the previous year.
- (d) Thus, the re-export activities have also witnessed a decline from 78.95 million JD in 1982

(1) CBJ (1983) OP. CIT. P.49

to 50.50 million JD in 1983, which however, represent a drop of 36% from the previous year.

- (ix) A rise in the trade deficit was also a result of changes in the exchange rates. Jordan is an open economy and dependent on foreign imports. Therefore it is bound to be affected by the fluctuations in exchange rates of major world trading currencies. It must, thereby, be exposed to inflationary impulses (import inflation) from trading partners, unless it is offset by exchange rate appreciation or special measures such as tariff reduction or subsidies adopted.⁽¹⁾

With regard to the United States dollar, the dinar value of the dollar moved up from 0.29812 in 1980 to 0.3940 in 1985. This, however, represents a decline in the dinar value against that of the dollar by an annual average rate of 5.74% during the period 1980 - 1985 (see Table 8.3). This, however, represents an appreciation of the dollar which has added to the increase in prices and consequently Jordan has had to pay more for the same goods.

- (x) Above all, the expansion in the trade deficit is also attributed to the increase in the price of many commodities (whether in the form of finished goods or

(1) M P Mazur (1979) op. cit. pg 137.

TABLE 8.3
US\$ EXCHANGE RATE PER DINAR During 1966-1985

Year	Per Dinar *	The price US \$ in JD
1966	2.8000	.35714
1967	2.8000	.35714
1968	2.8000	.35714
1969	2.8000	.35714
1970	2.8000	.35714
1971	2.8000	.35714
1972	2.8000	.35714
1973	3.0462	.32828
1974	3.1113	.32141
1975	3.1393	.31854
1976	3.0122	.33198
1977	3.0375	.32922
1978	3.2733	.30550
1979	3.3299	.30030
1980	3.3543	.29812
1981	3.0293	.33011
1982	2.8384	.35231
1983	2.7555	.36297
1984	2.6036	.38408
1985	2.5379	.39402

* Par Rate/Market Rate

IMF : IFS Year book 1987

raw materials) which were also associated with many factors: the massive international liquidity, the increase in transport cost (shipping), the lag between world production and increasing demand for certain primary commodities, and the outbreak of the energy crisis. Therefore, higher world prices have made imports more costly and in particular in 1982 and 1983, which represents 11.78% and 13.78% of GNP respectively (see Table 8.4). This has become a burden on the national economy⁽¹⁾ and thereby has contributed to the trade gap deficit.

Finally, Jordan's economy remained dependent on foreign trade. It was therefore bound, in the 1970s, to be exposed to inflation in the price of imported goods. Table 8.5 shows that the unit value of imports has increased from 44.9% in 1966 to 147.2% in 1985. This represents an annual average growth rate of 6.49% during the period (1966 - 1985), and this too was bound to have an effect on raising the general level of the cost of living in Jordan. Hence, an increase in the unit value of imports is likely to be passed on to the consumers and thus affect their purchasing power.

(1) For more details see:

Pierantonio Ciampicali (1984), 'The Adjustment of Oil Shocks in Western European Countries', in Bela Csikos-Nagg et. al., (1984) The Economics of Relative Prices, The Macmillan Press Limited. pp 259-262, and

C R Blitzer (1984), 'Energy Demand in Jordan: A Case Study of Energy Economy Linkages', Energy Journal, Vol. 5, Part 4, pp. 1

THE PRICE OF CRUDE OIL AND ITS RELATIVE IMPORTANCE IN 1966 - 1985

Year	CONVERSION US CENTS PER DINNAR IMPORTS (CIF) (1)	PRICE OF CRUDE OIL S. ARABIA (Ras-Tanura) in US \$ (2)	PRICE OF CRUDE OIL IN JD	THE VALUE OF CRUDE OIL IN MILLION JD	TOTAL IMPORTS (CIF)	GNP AT MARKET PRICE	THE VALUE OF CRUDE OIL AS % OF TOTAL IMPORTS	THE VALUE OF CRUDE OIL AS % OF GNP
1966	2.8000	1.33	.475	2.433	68.21	185.7	3.57	1.31
1967	2.8000	1.33	.475	2.150	55.05	142.5	3.91	1.51
1968	2.8000	1.30	.464	2.166	57.49	166.4	3.77	1.30
1969	2.8000	1.28	.457	2.619	67.75	197.4	3.87	1.32
1970	2.8000	1.30	.464	2.524	65.88	187.0	3.83	1.35
1971	2.8000	1.65	.589	4.137	76.63	199.4	5.40	2.07
1972	2.8000	1.90	.6786	3.312	95.31	221.0	3.47	1.50
1973	2.8000	2.70	.8829	3.335	108.25	241.5	3.08	1.38
1974	3.11931	9.76	3.129	3.59	156.61	279.3	2.29	1.29
1975	3.12391	10.72	3.432	22.794	234.01	376.0	9.74	6.06
1976	3.01065	11.51	3.823	34.373	339.50	562.4	10.12	6.11
1977	3.03914	12.40	4.080	37.014	454.52	660.1	8.14	5.61
1978	3.26647	12.70	3.888	43.383	458.94	781.0	9.45	5.55
1979	3.32787	17.26	5.187	68.954	585.68	921.3	11.77	7.48
1980	3.34405	28.67	8.573	113.916	715.98	1190.1	15.91	9.57
1981	3.00628	32.50	10.811	174.657	1047.51	1482.7	16.67	11.78
1982	2.83694	33.47	11.798	230.653	1142.50	1673.4	20.19	13.78
1983	2.74631	29.31	10.673	205.534	1103.31	1769.3	18.63	11.62
1984	2.59886	28.47	10.955	203.954	1071.34	1854.5	19.04	11.62
1985	2.54294	27.65	10.873	192.640	1074.50	1849.2	17.93	10.42
Average							9.54	5.60

(1) UNS: International Trade Statistics Yearbook 1984, Vol. 1.

(2) IMF: IFS Yearbook 1987, See Commodity Price

TABLE 8.5
CONSUMER PRICE INDEX (CPI) AND UNIT VALUE INDEX OF IMPORTS
FOR THE PERIOD 1966 - 1985

YEAR	CPI 1975 = 100	VALUE INDEX OF IMPORTS 1975=100	Annual % Δ in	
			CPI	UNIT VALUE OF IMPORTS
1966	51.96	44.9		
1967	53.03	47.4	2.06	5.57
1968	53.132	47.4	0.19	0
1969	56.75	48.7	6.81	2.74
1970	60.68	52.6	6.93	8.01
1971	63.549	56.4	4.73	7.22
1972	67.16	56.4	5.68	0
1973	74.707	62.8	11.24	11.35
1974	89.21	76.9	19.41	22.45
1975	100.00	100	12.1	30.04
1976	111.477	97.4	11.5	-2.6
1977	127.68	98.7	14.53	1.33
1978	136.71	96.2	7.07	-2.53
1979	156.00	103.8	14.11	7.9
1980	173.72	128.2	11.10	23.51
1981	186.66	156.4	7.696	22.0
1982	200.53	156.00	7.43	-0.26
1983	210.57	144.9	5.01	-7.11
1984	218.71	152.2	3.865	5.04
1985	225.30	148.2	3.01	-2.63
			8.13	6.96

From the International Trade Statistics Yearbook, Vol. 1984
CBJ: Yearly Statistical Series (1964-1983), Special Issue No. 20
CBJ: Monthly Statistical Bulletin 23 (6) June 1987.

On the other hand the consumer price index increased from 51.96% in 1966 to 225.30% in 1985. This represents a compound growth rate of 8.03% during the same period (1966 - 1985). At the same time, on average the annual rate of change in unit value of imports is also more closely paralleled with the average annual percentage change in CPI.

However, to measure quantitatively the contribution of the imported price to the inflationary process in Jordan we can therefore specify this relationship in the following form:-

$$\Delta \ln P_t = \alpha + \beta_1 \Delta \ln P_m_t \dots\dots\dots \beta_1 > 0$$

Where $\Delta \ln P_t$ = the difference in the natural logarithm,
which represents a continually compound
relative rate of change in the price level.

$\Delta \ln P_m_t$ = the difference in the natural logarithm,
which represents a continually compound
relative rate of change in imported prices
(for more details see Chapter 10).

This relationship has been tested with the aid of regression analysis of ordinary least square technique (OLS) using annual data for the period 1968 - 1985. However, the estimated result of imported price measured by both index of unit value of imports and calculated imported price index are as follows:-

$$\Delta \ln P_t = 0.0657 + 0.23 P_{mt} (v_1 \dots \dots) \quad (1)$$

(6.05) (2.42)

$$\begin{aligned} R^2 &= 0.269 \\ \bar{R}^2 &= 0.223 \\ F_{1,16} &= 5.89 \\ D.W. &= 1.27 \\ N &= 18 \end{aligned}$$

$$\Delta \ln P_t = 0.047 + 0.421 P_{mt} (v_3 \dots \dots) \quad (2)$$

(4.94) (4.87)

$$\begin{aligned} R^2 &= 0.597 \\ \bar{R}^2 &= 0.573 \\ F_{1,16} &= 23.78 \\ D.W. &= 1.078 \\ N &= 18 \end{aligned}$$

The empirical findings indicate that the calculated import price index exhibits a better prediction of the relationship between imported prices and a general price level and reveals that about 57.7% of the variation in $\Delta \ln P_t$ are explained by the $\Delta \ln P_{mt} (v_3)$ and the estimated coefficient had the expected positive sign and is revealed to be significant at the 5% level. But the value of D.W. indicates the presence of autocorrelation among the error terms. Therefore, an autocorrelation test using the Cochrane-Orcutt method has been carried out and gave the following result:

$$\Delta \ln P_t = 0.583 + 0.331 P_{mt} \quad (v_3) \dots\dots (3)$$

(4.83) (4.45)

$$R^2 = 0.569$$

$$\bar{R}^2 = 0.540$$

$$F_{1,15} = 19.83$$

$$D.W. = 1.80$$

$$N = 17$$

$$\text{Final Value of Rho} = 0.445$$

$$T. \text{ Statistic for Rho} = 2.05$$

Although the above test indicates that there is a slight decline in $\bar{R}^2$, the other statistical criteria have improved. The t-statistics for V_3 are significant at 1% level, and the value of D.W. has improved. The relationship between the calculated imported price level and the general price level shows that about 56.9% of the variation in $\Delta \ln P_t$ is explained by the $\Delta \ln P_m (v_3)$, and 43.1% would be due to other important factors. This is a very plausible result considering that Jordan is a highly open economy where the share of the foreign sector in GNP is very highly significant (an average of 64.09% during 1966 - 1985) and the period under investigation has witnessed a sharp increase in prices abroad.

8.7 Conclusion

We may conclude our analysis by recapitulating that the world has witnessed a number of unprecedented changes which have, in turn, contributed to the sharp rise in import and export prices.

Thus, any economy which is engaged in overseas trading is

bound to be exposed to inflationary impulses from the world outside, but much of its effect depends on many factors.

We have indicated the significant importance of the foreign trade in LDCs, with special reference to Jordan. However, Jordan is a small open economy, whereas the foreign trade as a percentage of GNP constitutes an average of 64.09% during the period 1966 - 1985. This was a remarkably high figure which demonstrates the degree of dependency of the Jordanian economy on the international market, which consequently makes the economy highly sensitive to the external movement of prices unless it is offset by exchange rate appreciation or by adopting other policies to rectify these movements.

However, the value of the commodities imported in Jordan has witnessed a rapid increase with an annual average growth rate of 15.62% which outstripped the average growth rate of GNP of 12.85% per annum for the period 1966 - 1985. Thus, the average propensity to import (import/GNP) is represented by an average of 52.65% over the same period. While the marginal propensity to import which has been estimated using both the OLS and CORC which both indicates a high level of GNP is spent on imports. This is a good demonstration of a growing demand for imports.

Moreover, many LDCs are vulnerable to inflation because of high income elasticity for imports. In Jordan's case the income elasticity for imports has been estimated by using both OLS and CORC, and in both cases it is found to be very elastic.

In our analysis, we have pointed out the reasons for the increasing demand of imported goods over the period 1966 - 1985.

As far as the value of domestic commodity exports, and reexports are concerned they have increased with an average growth rate of 19.4% and 20.04% respectively during the period 1966 - 1985. Thus, we have also identified the reasons behind this increase.

Since the early days of recording trade statistics, trade deficit has been a characteristic feature of Jordan's balance of payments. However, the deficit in the balance of trade has increased, with an annual average growth rate of 14.55% during the period 1966 - 1985. Thus, we have also pointed out the reasons behind this increase.

Finally, Jordan's economy has still remained dependent on foreign trade. It was therefore bound in the 1970s to be exposed to inflation in the price of imported goods.

However, the unit value of imports and consumer price index have increased with annual average growth rate of 6.49% and 8.03% respectively during 1966 - 1985. At the same time, on average the annual rate of change in unit value of imports is also closely paralleled with an average annual percentage change in CPI i.e. 6.96% and 8.13% respectively during 1966 - 1985. With regard to the empirical findings of the regression

analysis of $\Delta \ln P_t$ against $\Delta \ln P_m_t$ (v_3), using annual data for the period 1968-1985, which shows that an increase in the calculated import price level can have a considerable impact on the inflationary process in Jordan. Thus, the empirical findings (goodness of fit of the model) also shows that imported price alone is not enough to explain the inflationary process in Jordan, hence it is only explained by 56.9% of the variation in $\Delta \ln P_t$ and 43.1% would be due to other important factors.

CHAPTER 9

Other Contributory Factors which could be held responsible for
the Inflationary Process in Jordan

Having earlier stated the contribution of foreign trade process to Jordan's inflation, our main objective in this chapter is to examine other contributory factors which could be responsible for the inflation process in Jordan.

However, the first section of this chapter will involve an examination of the nature of the labour market and its impact on the movement of the price level, which will also involve an inquiry into the conditions which have led to wage increases. Moreover, an empirical investigation using regression analysis will also be applied to measure to what extent the general price level may be influenced as a result of wage increases.

The second section of this chapter will involve an investigation of the relative importance of the agricultural sector in economic development, and we will try to identify the factors behind the shortage in food production and examine the impact of food shortages on the general price level, this relationship will be tested with the aid of regression analysis.

9.1 The Labour Market - Cost and Demand Pressure

With the state of rising prices, workers try to maintain their share in the real national income by demanding a wage increase, and also in order to sustain their standard of living. However, the extent to which workers can maintain their share in the real national income depends upon the speed of wage increases, and this in turn depends upon the level of employment, the productivity of labour and their bargaining power.

Cost pressure on prices emerging from the wages side is thought to be less strong in the LDCs than in the developed countries. The reason behind this, is the existence of surplus labour in the form of actual or disguised unemployment in the LDCs which have been accompanied by consistent competition among labour, and consequently enhance the employer's position and not having to bid for them by offering higher wages. This, however, would be expected to reduce their bargaining power.

Another reason is that the bulk of the labour force in the LDCs are employed in agriculture and primary production, which tends to lack the education among labour in these sectors and tends to be less organised. The degree of influence on prices by labour unions is therefore expected to be very low and also influenced by the prevailing economic conditions. Nevertheless, some rises in wages take place within the process of rising prices, although the wage-lag is often well marked.

This may lead us to expect that the demand pressure in the LDCs is a more important force behind inflation than cost-pressure.⁽¹⁾

However, complete wage statistics in Jordan are not available for all the years and all the sectors of the economy. Therefore, the analysis of wage behaviour must be explained through changes in the size of compensation employees in the national income, or through the changes in the size of labour cost in the total cost of GDP at market prices. We are also describing the conditions which have led to wage increases.

Looking at Table 9.1 we can see that labour costs in terms of compensation of employees have increased from 57.5 million JD in 1966 to 688.9 million JD in 1985. This, represents a compound growth rate of 13.96% during the period. However, the rapid increase in wages and salaries could be attributed to an increase in the level of employment.

Thus, on average, the relative share of importance of compensation of employees in the total cost of GDP is 40.25% during the period (1966 - 1985). While the general price level represented by the consumer price index has increased from 51.96% in 1966 to 225.30% in 1985. This represents a compound growth rate of 8.03% during the period (1966 - 1985). Which is far less than the compound growth rate of the compensation of employees (13.9%).

(1) For more details see G Maynard and W. van Ryckeghem (1975). A World Inflation, New York: Barnes and Noble, pp. 183 - 185.

THE SIZES OF LABOUR COST (WAGE AND SALARY) IN THE GOP, AND INFLATION
FOR THE PERIOD 1966 - 1985

YEAR	GOP AT MARKET PRICE *	COMPENSATION OF EMPLOYEES *	COMPENSATION OF EMPLOYEES /GOP (%)	CONSUMER PRICE INDEX (CPI)	ANNUAL RATE OF CHANGE IN EMPLOYEE COMPENSATION	ANNUAL RATE OF CHANGE IN CPI
1966	170.60	57.50	33.70	51.960	-21.00	2.060
1967	131.20	45.40	34.60	53.030	39.65	0.190
1968	156.10	63.40	40.61	53.132	15.46	6.810
1969	183.40	73.20	39.91	56.750	-1.50	6.930
1970	174.40	72.10	41.34	60.680	3.05	4.730
1971	186.20	74.30	39.90	63.549	11.44	5.680
1972	207.20	82.80	39.96	67.160	7.00	11.240
1973	218.30	88.60	40.58	74.707	21.00	19.410
1974	247.30	107.20	43.35	89.210	25.46	12.100
1975	312.10	134.50	43.10	100.000	26.17	11.477
1976	421.60	169.70	40.25	111.477	12.85	14.530
1977	514.20	191.50	37.24	127.680	20.42	7.070
1978	632.20	230.60	36.48	136.710	31.48	14.110
1979	753.00	303.20	40.27	156.000	35.20	11.100
1980	984.30	409.90	41.64	173.320	15.66	7.690
1981	1164.20	474.10	40.72	186.660	16.07	7.430
1982	1321.20	550.30	41.65	200.530	9.83	5.010
1983	1422.70	604.40	42.48	210.570	7.51	3.870
1984	1499.40	649.80	43.34	218.710	6.02	3.010
1985	1573.30	688.90	43.78	225.300		
Average			40.25		14.83	8.130

* In Millions of JD5

Source: CBJ Yearly Statistical Series 1964-1983, Special Iss83, Special Issal Issue

CBJ Monthly Statistical Bulletin Vol. 23, No. 6, June 1987.

Table 9.1 also reveals that, on average, the rate of change in compensation of employees (14.83%) is greater than the rate of change in the price level (8.13%) during the period (1966 - 1985). Thus, it also reveals that there is no evidence of parallelism between them. This may be due to the existence of so many factors, namely, the wage-lag due to contract, the low degree of bargaining power in Jordan and the level of employment which may have a different level of influence on both the rate of change in price levels and the rate of change in the compensation of employees.

The availability of data on the labour force in Jordan is limited and mostly is based on estimates. A manpower survey in 1975, showed the labour force in the East Bank around 382,000 of which 374,000 were employed. But, the labour force was estimated at around 502,000 in 1985.⁽¹⁾ The growth of the labour force was a result of a large increase in the population in particular the rising number of teenagers, and an increase in womens' participation which in turn was a result of greater independence of teenagers accompanied by changing values and attitudes towards women working for wages. However, factors behind the increase in womens' participation was as a result of the emphasis by the Five Year Plan (1976 - 80) on female education, accompanied by the movement of better family planning.

(1) Figure for 1975 see Richard F Nyrop (1980), Jordan: A Country Study, The American University, Washington DC, pp 111, and for 1985 figure see Five Year Plan for Economic and Social Development 1986 - 1990, Ministry of Planning, p.60.

Another reason behind the increase in womens' participation was to earn more income for the family which in turn maintained the real standard of living of a family during the inflationary period.

Despite all of these changes, the labour force was still characterised by a low crude participation out of the 1980 population of 2.2 million. The labour force was 0.43 million 19.5%.(1) The main bulk of employment in the labour force is represented by public administration and defence.

However, the period under study has witnessed considerable shifts in intersector employment. This evidence is shown in Table 9.2, which indicates a sharp decline in agricultural and construction employment in 1985 in favour of trade banking services, and transportation and communication and manufacturing.

The decline in agricultural employment was as a result of the nature of the agricultural sector in Jordan, which still mainly depends on rainfall. In recent years Jordan has witnessed a sharp fall in rainfall and this has had a negative impact on agricultural employment.(2)

(1) See J Robert (1984), op. cit. p.160.

(2) See Page 60 in A. S. Zaghal (1984), "Social Change in Jordan", Middle Eastern Studies, 20, (4), p.53 - 75.

LABOUR FORCE BY SECTOR IN THOUSANDS OF WORKERS
1975, 1979, 1982 AND 1985

SECTOR	1975*		1979		1982		1985**	
	Number	%	Number	%	Number	%	Number	%
Agriculture,	7.30	19.00	46.728	11.50	45.50	9.90	39.237	7.80
Mining and Quarrying								
Manufacturing	27.40	7.00	34.935	8.60	45.10	9.90	53.053	10.60
Electricity and Water	2.10	.50	2.472	.60		1.10	5.526	1.10
Construction	40.00	10.40	52.645	13.00	60.00	1.30	55.263	11.00
Trade	25.20	6.50	41.541	10.30	44.00		50.239	10.00
Transportation and Communication	19.00	4.90	28.977	7.20	32.00	7.00	47.225	9.40
Financial Service	3.30	.80	8.673	2.10	11.40	2.50	17.132	3.40
Public Administration,								
Defence and Social Service	184.80	48.20	189.303	46.70	211.70	46.60	234.718	46.70
	374.00		405.274		454.50		502.393	
Unemployment	8.00	2.10						
Total Labour Force	382.80							

* estimate based on survey ** estimate

Source: For 1975 figures see R F Nyrop (1980)

Jordan A Country Study, The American University, Washington DC

Appendix A, p.243

For 1982 figures see Lloyds Bank, Jordan Economic Report, 1986 p.5

For 1985 figures see Five Year Plan for Economic and Social Development

1980 - 1990, Ministry of Finance p.63.

The decline is also as a result of the young people who tend to look down on agricultural employment given the existence of job opportunities somewhere else, with better pay and better working conditions. Meanwhile, the decline in construction employment is mainly as a result of the general economic recession.

9.1.1 The Labour Market Conditions in Jordan

Jordan, like many developing countries, lacks the availability of a complete series of data on the unemployment level. The existing data on unemployment is mostly based on estimates. Unemployment has been a problem and had witnessed considerable changes during the last 20 years. After the occupation of the West Bank, followed by the internal crisis, the unemployed were estimated to be around 14% in 1970. By 1973, it was estimated to be around 8%. This decline was attributed to the expansion of the military and civil service. By 1975, the World Bank 1976⁽¹⁾ estimated the level of unemployment in Jordan to be around 2%, accompanied by an increase in the price level. This decline was also due to the excess demand in the labour market, which in consequence was as a result of the increasing demand for labour which was a product of the implementation of Jordan's Development Plan (1973 - 1975) and (1976 - 80).

(1) World Bank (1976), A Country Economic Memorandum on Jordan (New York, Report No. 1738 - JO).

Another reason for this decline was that after the oil price increase in 1973 - 74, the Arab oil producing countries had increased their income, and consequently, had witnessed a rapid increase in economic activities. This has led to an increase in demand for Jordanian labour.

Thus, Jordanian labour is attracted by high wages and salaries in these countries. They were welcomed by these countries since the Jordanian labour force is better educated and more highly skilled than most of its Arab neighbours. This has encouraged Jordanian labour to emigrate to these countries.

Jordanians working in the Arab Gulf States were estimated to be around 250,000 in 1979 and in 1985 it has been estimated that this figure has increased to 339,000 workers.⁽¹⁾

Both internal and external demand for labour has affected the rate of unemployment in Jordan and has given an impetus to labour's claims and help to push up salary and wage levels in Jordan as employers attempt to retain their employees. In particular those who have faced a shortage of skilled labour, i.e. construction and industry. Thus, the shortage in the field of construction was fuelled by the rising volume of remittance by the Jordanians working abroad.

The increase in the demand for labour both internally and externally has resulted in importing manpower from other Arab

(1) Figure from Five Year Plan for Economic and Social Development 1986 - 1990, Ministry of Planning, p.60.

and non-Arab countries who enjoy high elastic supply of labour and willingness, at least of unskilled workers, to accept employment at lower wages (20%-30%) than levels accepted by Jordanian workers.⁽¹⁾ In 1973, foreign workers amounted to 376 by 1978 this had increased to 18,785 by 1980 to 70,000, by 1981 to 93,402 and by 1985 were estimated to have risen to 143,000.⁽²⁾

The majority of foreign workers were unskilled workers, mostly employed in construction, agriculture and service. Thus, foreign workers were attracted by the high wage rate in Jordan in comparison to their own countries. At the sametime, Jordanian firms were looking for cheap alternatives to their domestic labour.

It has been argued that the inflow of foreign workers and their concentration in big cities of Jordan may have caused pressure to fall on goods and services and housing rent, and consequently price levels have increased. Others would argue that despite their social consequences, their existence has helped to reduce the bottlenecks in the labour market and consequently on wage inflation. Although this argument was resented by the embryonic trade union movement.

The 1980s have witnessed an increase in the rate of unemployment accompanied by a decrease in the rate of inflation. The unemployment rate was estimated at around 4% in

(1) See for more details F X Kirwan (1981) 'The Impact of Labour Migration on the Jordanian Economy, International Migration Review, Vol. 15, Part 56, p.671 - 695.

(2) Figures taken from Ministry of Labour estimate.

1983.⁽¹⁾ Also, after 1983 the Jordanian economy experienced a slowing down in economic activities as well as the Gulf States which in turn limited job opportunities for Jordanian labour in these countries. Thus, the unemployment rate has been estimated at 8% in 1985⁽²⁾ whereas the inflation rate was declining to 3% in 1985.

The rate of unemployment is expected to increase after the sharp fall in oil prices in 1986, which has reduced the income of the Gulf States. Consequently there has been a slowing down of economic activities of these States and also a reduction in the demand for Jordanian labour. The demand for labour will also decrease when large numbers of students complete their courses and return home to take up employment, as it is common practice to terminate the contract of foreign workers and replace them with nationals.

However, to measure quantitatively the contribution of the wages to the inflatinary process in Jordan, we therefore can specify this relationship in the following form:

$$\Delta \ln P_t = \alpha + \beta_1 \Delta \ln W_{1t} \dots \dots \dots \beta_1 > 0$$

where $\Delta \ln P_t$ = the difference in the natural logarithm,
 which represents a continually compound
 relative rate of change in the price
 level.

(1) Lloyds Bank, (1986), Jordan Economic Report, p.5.

(2) Figure from Five Year Plan for Economic and Social Development, 1986 - 1990, Ministry of Planning, p.60.

$\Delta \ln W_{1t}$ = the difference in the natural logarithm,
 which represents a continually compound
 relative rate of change in the calculated
 annual wage per employee (see for more
 details chapter 10).

This relationship has been tested with the aid of regression analysis of ordinary least square technique (OLS), using annual data for the period 1968 - 1985. However, the estimated results are as follows :-

$$\Delta \ln P_t = 0.0666 + 0.154 W_{1t}$$

(4.36) (1.2)

$$\begin{aligned} R^2 &= 0.0835 \\ \bar{R}^2 &= 0.026 \\ F_{1,16} &= 1.46 \\ D.W. &= 0.996 \\ N &= 18 \end{aligned}$$

The above result shows that D.W. is quite low, which indicates the existence of autocorrelation among the error terms. Therefore, an autocorrelation test using the Cochrane-Orcutt method (COCR) for correcting first order serial correlation of the error has been carried out, which gave the following results:

$$\Delta \ln P_t = 0.0792 + 0.077 W_{1t}$$

(4.41) (0.725)

$$\begin{aligned} R^2 &= 0.0338 \\ \bar{R}^2 &= -0.0305 \\ F_{1,15} &= 0.525 \\ D.W. &= 1.79 \\ N &= 17 \end{aligned}$$

Final Value of Rho = 0.43
 T.statistics for Rho = 1.98

The test does not indicate any improvement with the exception of the value of D.W. which indicates the absence of autocorrelation among residuals. In fact, the statistical criteria has become worse than before. However, one possible explanation for this is that wage variables may not be accurately measured, and the relationship between $\Delta \ln P_t$ and $\Delta \ln W_{1t}$ may be a curvilinear fashion but not in linear. A second possible explanation is the availability of foreign workers who are prepared to accept lower wages, which consequently reduces the effect of wages on prices. A third possible explanation is that the bargaining power by wage earning in Jordan is very weak, accompanied with wage-lag due to contract. A fourth possible explanation is that the model which we used is incomplete, i.e. there are other important variables missing which could have a significant impact on the price level.

The following section will examine the role of the agricultural sector in economic development and its impact on the inflationary process.

9.2 Agricultural Policy and Food Deficit

In the past, developing countries have placed too much emphasis on industrialization. But until recently, developing countries have started to appreciate the importance of agriculture in economic development. Hence, the importance of agriculture is derived from the following reasons⁽¹⁾ :-

- (i) economic development is characterised by a rapid increase in the demand for agricultural products and failure to increase food supplies in pace with growth of demand (which may have been a result of rising income) can seriously create excess demand for agricultural products, and consequently to a price increase in their agricultural products, and subsequently this will contribute to the general inflationary process in the economy.
- (ii) expansion of exports of agricultural products may be one of the most promising means of increasing income and earning of foreign exchange.

(1) For more details see S Ghatak and K Ingersent (1984), Agricultural and Economic Development, Wheatsheaf Books Limited, Great Britain, pp. 26 - 74, and A. B. Zahlan (ed) (1985) The Agricultural Sector of Jordan Policy and System Studies, published for the Abdul Hameed Shoman Foundation, Amman, by Ithaca Press, London.

- (iii) many developing countries enjoy a surplus labour in the agricultural sector, and this may help manufacturing and other sectors of the economy to expand their labour force, by pulling back on the surplus of labour in the agricultural sector.
- (iv) since agriculture is a dominant sector in the economy of many LDCs, it can also play an important role by making a net contribution to the capital requirement for overhead investment and expansion of secondary industry.
- (v) thus, a rise in the net cash income of the farm population can play a significant role in stimulating industrial expansion.

9.2.1 Food Production in Jordan⁽¹⁾

Food production is strongly associated with the agricultural sector in Jordan. Thus, most of the agricultural products are food stuffs in which are included cereal, vegetables, fruits, livestock, poultry etc.

In theory, agricultural production depends on many factors, namely the labour input, capital input, the type of soil and the acreage under production, the availability of water resources, the suitability of climatic conditions, and the technological progress.

(1) For more details see H. A. K. Salah (1987) Water Resource and Food Production in Jordan, paper presented at Conference on Politics and the Economy in Jordan, convened in the University of London (S.O.A.s) on 19th May 1987, p.6.

The following Table (9.3) shows a fluctuation in the annual percentage change in total food production and per capita food production, as well as the total agriculture product and per capita of agriculture production.

These fluctuations may be a result of the variation in rainfall and other climatic conditions. Thus, there are also other factors which could be responsible for these fluctuations such as price, employment, income, and demand.

Nevertheless, it is important to emphasise the role of food and agricultural production in the economic development of Jordan. First of all, the agricultural sector has provided a direct income for about 18.4% of the population in 1966, 20.2% in 1967 and afterwards the agricultural sector direct income for population has witnessed a decline. But generally speaking it represents a source of income of 10.45% to population during the period (1966 - 1985) (see Table 9.4).

Thus, it also has provided employment for 19% of labour in 1975, 11.5% in 1979, 9.9% in 1982, and 7.8% in 1985 (see Table 9.2) And yet in the base year of 1975, the food items in Jordan account for 48.2% of the weight in the consumer price index which by all means is considered very significant in the consumer basket.

However, Table 9.4 shows that for the five years (1966 - 70), the average agricultural product at current prices has

TOTAL AND PER CAPITA FOOD PRODUCTION INDEX AND
TOTAL AND PER CAPITA AGRICULTURAL PRODUCTION INDEX
FOR THE PERIOD 1966 - 1985 IN JORDAN

YEAR	TOTAL FOOD PRODUCTION INDEX 1974-76=100	ANNUAL % CHANGE	PER CAPITA FOOD PRODUCT INDEX 1974-76=100	ANNUAL % CHANGE	TOTAL AGRICULTURAL PRODUCTION INDEX 1974-76=100	ANNUAL % CHANGE	PER CAPITA AGRICULTURAL PRODUCTION INDEX 1974-76=100	ANNUAL % CHANGE
1966	163.280	-	158.110	-	161.180	-	156.020	-
1967	154.900	-5.130	145.600	-7.910	153.860	-4.540	144.360	-7.470
1968	104.670	-32.400	94.700	-34.960	104.670	-31.970	95.040	-34.160
1969	113.040	8.000	99.160	4.710	113.040	8.000	99.530	4.720
1970	83.730	-25.930	71.140	-27.990	84.780	-25.000	72.630	-27.020
1971	117.220	40.000	97.370	36.350	116.180	37.040	96.840	33.330
1972	128.700	9.800	103.630	6.420	128.740	10.810	103.120	6.480
1973	82.010	-36.280	82.510	-20.380	82.520	-35.900	83.010	-19.500
1974	124.080	51.300	126.700	53.560	124.080	50.360	126.710	52.640
1975	82.660	-33.380	82.360	-35.000	83.030	-33.080	82.720	-34.720
1976	93.260	12.800	90.960	10.440	92.890	11.880	90.590	9.510
1977	93.230	-.030	89.020	-2.130	93.130	.260	89.050	-1.700
1978	117.310	25.830	109.590	23.110	117.130	25.770	105.430	18.400
1979	94.290	-19.620	85.950	-21.570	94.770	-19.100	86.390	-18.060
1980	143.570	52.260	127.250	48.050	143.950	51.900	127.570	47.670
1981	133.030	-7.340	114.190	-10.220	133.940	-6.950	114.970	-9.880
1982	135.980	2.220	112.660	-1.340	136.740	2.100	173.280	-1.470
1983	152.640	12.250	118.030	4.770	156.360	14.350	118.610	4.710
1984	153.610	.630	117.710	-.270	153.780	-1.650	118.040	-.480
1985	156.240	1.710	115.380	-1.980	155.060	.830	114.510	-3.000

Calculated by the author:
FOA PRODUCTION YEARBOOK, Vol. 29,
1975, Vol. 30. 1976, Vol. 31 1977, Vol. 38, 1984, Vol. 39, 1985

AGRICULTURAL SECTOR AND ITS RELATIVE IMPORTANCE, AGRICULTURAL IMPORTS AND ITS RELATIVE IMPORTANCE, AGRICULTURAL EXPORTS AND AGRICULTURAL TRADE DEFICIT IN MILLION JDs FOR PERIOD (1966 - 1985)

YEAR	AGRICULTURAL SECTOR	Value Added in Agriculture	% of GDP	AGRICULTURAL Total Imports (CIF)	Total Domestic Exports According to SITC	GDP at Market Price	AGRICULTURAL Imports to Total Imports (%)	AGRICULTURAL Imports to Domestic Exports (%)	AGRICULTURAL Imports to GDP (%)	Food and Animal Exports #2	Agricultural Trade Deficit #1-#2
1966	149.60	27.60	18.40	17.54	68.21	8.76	19.77	200.20	10.29	4.053	13.480
1967	115.60	23.40	20.20	13.64	55.05	9.98	16.34	136.62	10.39	4.639	8.996
1968	138.60	16.20	11.70	15.75	57.49	12.17	17.72	129.37	10.09	5.560	10.185
1969	162.50	22.50	13.80	17.84	67.75	11.92	18.22	149.64	9.73	5.492	12.345
1970	154.70	15.60	10.10	18.68	65.88	9.32	21.28	200.47	10.71	4.663	14.021
1971	166.00	23.90	14.40	20.13	76.63	8.82	21.45	228.17	10.81	3.683	16.442
1972	182.80	26.60	14.60	27.30	95.31	12.61	23.63	216.46	13.17	4.773	22.523
1973	188.90	17.60	9.30	30.81	108.25	14.01	28.46	219.94	14.11	4.650	26.163
1974	242.90	30.30	12.50	42.74	156.61	39.44	27.29	108.37	17.28	9.565	33.175
1975	303.10	26.00	8.60	49.42	234.01	40.14	21.12	123.12	15.83	10.203	39.217
1976	378.40	37.30	9.90	81.38	339.50	49.55	23.97	164.23	19.30	16.379	65.000
1977	439.90	41.70	9.50	75.92	454.52	60.29	16.70	125.93	14.76	20.643	55.278
1978	551.20	58.60	10.60	87.57	458.94	64.13	19.08	136.55	13.85	16.336	71.232
1979	668.60	43.60	6.50	108.28	585.68	82.56	18.49	131.15	14.38	21.239	87.041
1980	893.20	69.40	7.80	118.79	715.98	120.11	16.59	98.90	12.07	23.495	95.294
1981	1041.10	75.10	8.20	167.93	1047.51	169.03	16.03	99.35	14.24	33.035	134.895
1982	1169.60	81.80	7.00	191.92	1142.50	185.58	16.80	103.42	14.53	39.144	152.780
1983	1242.30	110.00	8.90	180.37	1103.31	160.08	16.35	112.67	12.68	36.277	144.089
1984	1316.00	99.60	7.60	184.32	1071.34	261.05	17.20	70.60	12.29	41.761	142.556
1985	1367.90	113.10	8.30	175.78	1074.50	255.35	16.36	68.84	11.17	43.558	132.226
Average	48.00	10.85				19.64		141.20		13.08	

#1 Imports by commodity according to SITC which mainly include live animals, meat, dairy products and eggs, wheat and flour of wheat, rice, sugar, fruits, vegetables and nuts, (coffee, tea, cocoa and spices).

#2 Exports by commodity according to SITC which mainly includes food and live animals, fruits and nuts and vegetables.

Source: (1) CBJ Yearly Statistical Series (1964-1983), Special Issue No. 20, 1984.

(2) CBJ, Monthly Statistical Bulletin, Vol. 23, No. 6, June 1987.

risen from 21.06 million JD⁽¹⁾ to 24.88 million JD for the period (1971 - 1975), 50.12 million JD for the period (1976 - 1980) and 95.92 million JD for (1981 - 1985).

In spite of the upward movement in the average of agricultural products, on average the share of agricultural product in GDP has fallen from 14.84% for the period (1966 - 1970) to 11.88% for the period (1971 - 1985) 8.88% for the period (1976 - 80) and has reached 7.8% for the period (1981 - 1985).

This fall was a result of many factors, among these factors is the labour migration from this sector as well as the unfavourable rainfall. However, taking this as a whole (1966 - 1985), one finds that on average, the agricultural product constitutes 10.85% of the GDP. Moreover, the domestic agricultural sector in Jordan has failed to produce foodstuff in sufficient quantities to meet the increasing demand of the country's population, in spite of the fact of a large agricultural sector. Therefore in order to satisfy their increasing demand for food, the country has become dependent on food imports, which has undoubtedly become a burden on the Jordanian economy and in particular on the balance of payments.

(1) This figure is derived for the period (1966 - 70) is based on simple average, i.e. $[(27.6 + 23.4 + 16.2 + 22.5 + 15.6) / 5 = 21.06]$. Thus it is also used to catch up the fluctuations.

9.2.2 Agricultural Imports⁽¹⁾

Jordan has witnessed a rapid increase in the agricultural import bill (see Table 9.4) which shows that on average, yearly agricultural imports at current prices have risen from 16.688 million JD for the period (1966 - 1970) to 34.079 million JD for the period (1971 - 1975), 94.387 million JD for the period (1976 - 1980) and 180.06 million JD for the period (1981 - 1985).

Although there has been an upward trend in the average value of agricultural imports at current prices their average share of food imports in the total value of imports has risen from 18.67% for the period (1966 - 1970) to 24.9% for the period (1971 - 1975). But this percentage had fallen to 18.97% and 16.55% for the period (1976 - 1980) and (1981 - 1985) respectively. However, taking the period as a whole (1966 - 1985), one finds that on average the agricultural imports constitute 19.84% of the total value of Jordan's imports.

The Table 9.4 also shows that on average the yearly amount of agricultural imports to the total domestic exports has risen from 163.3% for the period (1966 - 1970), to 179.2% for the period (1971 - 1975). But for the periods (1976 - 1980) and (1981 - 1985) this percentage had fallen to 131.35% and 90.98%

(1) For more details see H A K Salah (1987) op. cit. pp 1-26 and Adeeb K Haddad (1985), The Demand for Agricultural Products, pp.40-67 in A B Zahlan (editor) (1985, op. cit.

respectively. However, for the whole period (1966 - 1985), one finds that on average, the agricultural imports to the total domestic export was around 141.2%. Thus, the Table 9.4 also indicates that on average the yearly consumption of agricultural imports in GDP has increased from 10.24% for the period (1966 - 1970) to 14.24% and 14.87% for the periods (1971 - 1975) and (1976 - 80) respectively. But for the period (1980 - 1985), it had fallen to 12.98%. However, for the whole period (1966 - 1985), one finds that, on average the agricultural imports consumed 13.08% of GDP.

Moreover, Jordan's agricultural balance of trade was always in deficit. However, the agricultural deficit here can be measured by the total agricultural import minus the total agricultural exports. Thus, there is also another alternative measure which is the difference between domestic agricultural consumption and domestic agricultural production.⁽¹⁾

Table 9.4 also indicates that on average, the annual value of the agricultural deficit at the current price has risen from 11.81 million JD for the period (1966 - 1970) to 27.5 million JD, 74.77 million JD, and 141.31 million JD for the period (1971 - 1975), (1976 - 1980) and 1981 - 1985) respectively.

Moreover, let us examine the main factor which has been responsible for the rapid growth in the agricultural deficit.

(1) For more details see Adeeb K. Haddad (1985) op. cit. p.49

But before we go any further, let us also point out that during the last twenty years Jordan has experienced a substantial social and economic transformation which could be held responsible for the expansion of domestic demand for foodstuffs. These factors are as follows:

- (i) The population in Jordan (East Bank) was increasing at a high rate, 4.8% during the period (1961 - 79) and 5% during (1966 - 1985) see Table 9.5. Thus, this figure had placed Jordan amongst the highest growth rate nations in the world, which was a result of high natural growth rate in population as well as the influx of Palestinian refugees (due to the Israeli occupation of the West Bank of Jordan in 1967). This has thereby put pressure on the demand for food which can only be met by imported foodstuffs.
- (ii) Jordan had experienced an increase in the average per capita income, which in turn has contributed to the expansion of consumption and agricultural deficit. However, Table 9.5 shows that for the period between (1966 - 1970), the average per capita income has witnessed a fluctuation, which was mainly attributed to the political instability which the country had experienced. But the average per capita income at current prices has increased from 123.8 JD in 1970 to 714.64 JD in 1984. However, this represents a compound growth rate of 13.3% during the period (1970 - 1984).

TABLE 9.5
 GNP, GNP PER CAPITA AT CURRENT PRICE FOR THE PERIOD
 1966 - 1985

YEAR	GNP MARKET PRICE	EAST BANK POPULATION	GNP PER CAPITA EAST BANK AT CURRENT PRICE
1966	185.700	1.062	174.860
1967	142.500	1.360	104.780
1968	166.400	1.410	118.010
1969	197.400	1.480	133.380
1970	187.000	1.510	123.840
1971	199.400	1.560	127.820
1972	221.000	1.620	137.270
1973	241.500	1.680	143.750
1974	279.300	1.740	160.520
1975	376.000	1.810	207.730
1976	562.400	1.890	297.570
1977	660.100	1.970	335.080
1978	780.000	2.060	379.130
1979	821.300	2.130	432.540
1980	1190.100	2.220	536.080
1981	1482.700	2.310	641.860
1982	1673.400	2.399	697.540
1983	1769.300	2.495	709.140
1984	1854.500	2.595	714.640
1985	1849.200	2.690	687.430

Source: (1) CBJ Yearly Statistical Series 1964 - 1983, Special Issue No. 20 and

(2) CBJ: Monthly Statistical Bulletin, Vol. 23, No. 6, June 1987

(3) Department of Statistics, Statistical Year Bookook, No. 31, 1980, No. 35, 1984, and No. 37, 1986.

- (iii) During the last twenty years Jordan has also experienced a growing urbanisation, which in turn has contributed to the increasing demand for food consumption. The increase in urbanisation, however, was a result of the influx of Palestinian refugees as well as the rural-urbanisation migration which was not based on an increasing productivity but as a result of low farm income, few amenities and young people increasingly looking down on agricultural work and wanting more comfortable work in the cities.
- (iv) Another factor which has made Jordan a food deficit country is because the agricultural land (in particular the rain-fed) is characterized by a fragmentation which has come about as a result of inheritance laws. This, however, has obstructed the introduction of modern agricultural practice and discouraged investment. As a consequence, the expansion of the domestic agricultural production has been restrained.
- (v) Jordan has also suffered from limited water resources coupled with fluctuations in rainfall and dry weather conditions (i.e. drought) which has limited the expansion of agricultural production. Hence, the agricultural production in Jordan depends heavily on rainfall.

- (vi) There is also the political instability between 1967 - 1971 to consider. In 1967 the Arab-Israeli war resulted in the occupation of the West Bank and the loss of a thriving agricultural sector there. This was followed by the shelling of the East Ghor Canal (Irrigation area, the country's major development project and the most productive area) by the Israelis. Consequently, this forced farmers to flee and, subsequently, has contributed to the expansion of agricultural deficit.
- (vii) Finally, the growth in the value of the agricultural deficit is also attributed to a world commodity shortage that has brought significant increases in the price of agricultural products.

Having pointed out these major factors behind the increase in the demand for food and the expansion of food deficit in Jordan it is also important to note that some of these factors have created an excess demand for food and consequently have put pressure on the general price level. The structuralists have also related inflation in LDCs to the high growth rate in population coupled with the under developed nature of the agricultural sector to respond to the changing supply and demand conditions. Therefore, excess demand for food is likely to exert pressure on the price of food and subsequently on the

general price level is also likely to pull up food prices and generate demand for wage increases.⁽¹⁾

However food prices could have contributed to the general price pressure in the economy because the share of expenditure on food to total consumer expenditure is very high. It is also because most food products are relatively price inelastic and this rise in the relative price of food raises the general price level.

Table 9.6 shows the general price level (CPI) and food price (in the CPI) has maintained an upward movement, which may indicate an excess demand in the economy as a whole and the excess demand for food in particular.

To examine the impact of food prices on a general price level therefore we must first take into account the annual percentage change for CPI and food prices, and then take the difference between them. The Table also shows that the annual percentage change in food prices has far exceeded the annual percentage change in CPI in 1969, and between the period 1970 - 1976, this may indicate a large excess demand for food and have subsequently exerted high pressure on food prices.

However, to measure quantitatively the contribution of food prices to the inflationary process in Jordan, we therefore can

(1) See for more details M Kabir (1984) "Anatomy of Inflation in Bangladesh", Journal of Economic Development, Vol. 9, Part 2, pp. 121 - 43.

TABLE 9.6
 CONSUMER PRICE INDEX (CPI - ALL ITEMS), FOOD PRICE
 (FOOD ITEMS IN CPI) AND THEIR ANNUAL % CHANGE
 FOR THE PERIOD (1966-1985)

YEAR	CPI ALL ITEM	FOOD ITEMS IN CPI WEIGHT 48.2%	ANNUAL % CHANGE		
			ALL	FOOD	DIFFERENCE = 1 - 2
			ITEMS	ITEMS	
			IN CPI	IN CPI	
			1	2	
1966	51.960	37.320			
1967	53.030	38.100	2.060	2.090	-.030
1968	53.132	38.170	.190	.180	.010
1969	56.750	44.540	6.810	16.690	-9.880
1970	60.680	47.557	6.930	6.770	.160
1971	63.549	50.720	4.730	6.650	-1.920
1972	67.160	54.500	5.680	7.450	-1.770
1973	74.707	65.110	11.240	19.470	-8.230
1974	89.210	85.340	19.410	31.070	-11.660
1975	100.000	100.000	12.100	17.180	-5.080
1976	111.477	114.618	11.500	14.620	-3.120
1977	127.680	130.877	14.530	14.190	.340
1978	136.710	135.687	7.070	3.680	3.390
1979	156.000	143.587	14.110	5.820	8.290
1980	173.720	159.198	11.100	10.870	.230
1981	186.660	172.090	7.696	8.100	-.404
1982	200.530	180.220	7.430	4.720	2.710
1983	210.570	184.847	5.010	2.570	2.440
1984	218.710	188.535	3.865	2.000	1.865
1985	225.300	192.675	3.010	2.200	.810
AVERAGE			8.130	9.280	

Calculated by the author

(1) CBJ, Yearly Statistical Series (1964 - 1982)

Special Issue No. 20, 1984

(2) CBJ, Monthly Statistical Bulletin, Vol 23,
 No. 6, June, 1987.

specify this relationship in the following form:

$$\Delta \ln P_t = \alpha + \beta_1 \Delta \ln RPF_t \dots \dots \dots \beta_1 > 0$$

where $\Delta \ln P_t$ = the difference in the natural
 logarithm, which represents a
 continually compound relative rate
 of change in the price level.

$\Delta \ln RPF_t$ = the difference in the natural
 logarithm, which represents a
 continually compound relative rate
 of change in the calculated relative
 price of food (see for more details
 chapter 10).

This relationship has been tested with the aid of
 regression analysis (OLS) using annual data for the period 1968
 - 1985. However, the estimated result is as follows :

$$\Delta \ln P_t = 0.077 + 0.070 RPF_t$$

(7.28) (1.04)

$$\begin{aligned} R^2 &= 0.063 \\ \bar{R}^2 &= 0.005 \\ F_{1,15} &= 1.08 \\ D.W. &= 0.82 \end{aligned}$$

The above result shows that D.W. is quite low, which
 indicates the presence of autocorrelation among the residuals.
 Therefore, an autocorrelation test using CORC for correcting
 first order serial correlation of the error has been used,

which gave the following results:

$$\Delta \ln P_t = 0.0835 + 0.0718 \text{ RPF}_t$$

$$(5.03) \quad (1.29)$$

$$R^2 = 0.0995$$

$$\bar{R}^2 = 0.0395$$

$$F_{1,15} = 1.66$$

$$\text{D.W.} = 2.16$$

$$N = 17$$

$$\text{Final Value of Rho} = 0.494$$

$$\text{T.statistics for Rho} = 1.41$$

The above result shows that the estimate β is slightly improved but still insignificant at 5% and 10% level, and the value of D.W. indicates that no autocorrelation exists. Therefore, the conclusion derived from these findings is that the relative price of food does not hold to be responsible for the inflationary process in Jordan.

One possible explanation for this is that the variable employed in our regression analysis is that it does not reflect the accurate measurement of the relative price of food, and the relationship between $\Delta \ln P_t$ and $\Delta \ln \text{RPF}_t$ may be a curvilinear fashion but not in linear. A second possible explanation is that agricultural prices might not be determined by the market forces but rather these have been influenced by a political factor such as the price control system. A third possible explanation is that the government efforts to subsidise and increase the volume of food imports accompanied with natural factors which may have been an influential factor in determining the price of food, hence favourable weather

conditions may become instrumental in the fall of the price of food. These factors, however, might cause the price of food to remain lower than it has been. Finally, the model did not perform well, due to missing variables, which could have a significant impact on the prices.

9.3 Conclusion

We may conclude our analysis by summarizing that with the state of rising prices, workers try to maintain their share in the national income by demanding a wage increase. But this will depend on many factors, namely the level of employment, the productivity of labour and workers bargaining power.

However, the cost pressure on prices as a result of wages is thought to be weaker in LDCs than in the developed countries. Therefore, the reasons for this weakness has been identified.

Our analysis regarding the wages was confined to the changes in the size of compensation of employees. However, the compensation of employees has increased with an annual average growth rate of 13.96% which has also far exceeded the annual average growth rate of the consumer price index 8.03% during

the period 1966 - 1985. At the same time, on average, the rate of change in the compensation of employees was 14.83% which was far greater than the rate of change in the price level (8.13%) during the same period 1966 - 1985. This may reveal that there is no evidence of parallelism between them.

As far as the labour market is concerned, both internal and external demand for labour has affected the rate of unemployment in Jordan and has given an impetus to labour's claims and help to push up salary and wages levels in Jordan as employers attempt to retain their employees, and has resulted in importing manpower from other Arab and non-Arab countries.

With regard to the empirical findings of the regression analysis of $\Delta \ln P_t$ against $\Delta \ln W_{1,t}$, using annual data for the period 1968 - 1985, which exhibits that an increase in the calculated annual wage per employee in Jordan could not have any significant impact on the price level. However, the reason for this has been identified.

With regard to the role of the agricultural sector, many developing countries nowadays start to appreciate the importance of agriculture in economic development.

However, Jordan for the past 20 years has witnessed a fluctuation in the annual percentage change in the total food production and per capita food production as well as the total agricultural product and per capita of agricultural production. These fluctuations may be a result of the variation in rainfall and other climatic conditions, or other factors such as price

employment, income and demand.

Moreover, the agricultural product at current prices on average of five years has witnessed a rapid increase, while on average of five years the agricultural product in GDP has fallen. This fall was a result of many factors, among these factors is the labour migration from this sector as well as the unfavourable rainfall.

Furthermore, the domestic agricultural sector in Jordan has failed to produce foodstuff in sufficient quantities to meet the increasing demand of the country's population. Therefore, in order to satisfy their increasing demand for food, the country has become dependent on food imports, which has undoubtedly become a burden on the Jordanian economy and in particular on the balance of payment.

In addition to that, the main factors behind the growing agricultural deficit were identified, and we also indicated that some of these factors have created an excess demand for food and consequently have put pressure on food prices and on the general price level.

However, the annual percentage change in food prices has far exceeded the annual percentage change in the consumer price index in 1969, and between the period 1970 - 1976, this may indicate a large excess demand for food and has subsequently exerted high pressure on food prices.

Finally, according to the empirical findings of the regression analysis of ΔInP_t against ΔInRPF_t , using annual data for the period 1968 - 1985, which indicates that an increase in the calculated relative price of food could not be held responsible for the inflationary process in Jordan. However, the reason for this has been identified.

CHAPTER 10

Empirical Study of Inflation in Jordan

Having earlier analytically and empirically stated the factors which may be held responsible for the inflationary process in Jordan, in this chapter, we will empirically examine the monetarist hypothesis using the basic Harberger model followed by a combined model (using the basic Harberger model appended by structural factors), the structuralist arguments will be examined by using regression analysis in order to identify the most significant variable underlying the inflationary process in Jordan, and finally we will empirically assess the contribution factor model.

10.1 The Formation of the Monetarist Model

The starting point of the empirical analysis begins by transforming the liquidity preference equation (ie simple Quantity Theory of Money) such as

$$M_t V_t \equiv P_t Y_t \dots\dots\dots (A.1)$$

where

P = is the price level

Y = is the real income

V = the velocity of money

M = is the exogenous determined nominal stock of money

The Quantity Theory of Money, however, relates to the rate of change in prices during a certain period to the immediate

past rates of change in the quantity of money. The Theory is implicitly also based on the following assumptions:

- i) full employment is maintained through full wage and price flexibility
- ii) a stable velocity of money function exists and;
- iii) no interaction with the rest of the world is allowed for (ie a closed economy).

$$\text{Then } \Delta \ln P_t = \alpha_1 \Delta \ln M_t + \alpha_2 \Delta \ln M_{t-1} + \dots + \alpha_n \Delta \ln M_{t-\tau}$$

.....(A.A)

where $\Delta \ln P_t$ and $\Delta \ln M_{t-\tau}$

therefore, the difference in the natural logarithm, which indicates the relative rate of change in the price level during period t and in money supply lagged $t-\tau$ period respectively.

Therefore, in an equilibrium situation one would expect that under ceteris paribus conditions a sustained change in the rate of monetary expansion will eventually lead to a proportionate rate of change in prices after a period of adjustment.

Following studies by Vogel (1974)⁽¹⁾ in which he used equation (A.1) and by manipulation and expressed it in terms of M we get the following equation:

(1) R C Vogel, (1974), op. cit.

$$M = \frac{PY}{V}$$

$$M = P Y V^{-1} \dots\dots\dots (A.2)$$

Thus Vogel (1974) also assumed a simple demand function of the following form:

$$V^{-1} = Y^{\alpha} C^{\beta} \dots\dots\dots (A.3)$$

where C is the expected cost of holding real balances

Then, substitute (A.3) into (A.2) we get the following:

$$M = PY Y^{\alpha} C^{\beta} \dots\dots\dots (A.4)$$

$$M = PY^{1+\alpha} C^{\beta} \dots\dots\dots (A.5)$$

Take the natural logarithm of both sides of equation (A.5), we obtain,

$$\text{Log } M = \text{Log } P + \text{Log } Y + \alpha \text{Log } Y + \beta \text{Log } C \dots\dots\dots (A.6)$$

Express (A.6) in term of Log P

$$\text{Log } P = \text{Log } M - \text{Log } Y - \alpha \text{Log } Y - \beta \text{Log } C \dots\dots\dots (A.7)$$

$$\text{Log } P = \text{Log } M - (1+\alpha) \text{Log } Y - \beta \text{Log } C \dots\dots\dots (A.8)$$

Then differentiate both sides with respect to time. For example the natural logarithmic of the first difference

$$d (\text{Log } P)/dt = (\text{Log } P_t - \text{Log } P_{t-1}) \text{ is}$$

however that it represents a continually compound relative rate of change in the price level. Therefore, the rate of change of these variables are represented in lower case letters.

$$p_t = m_t - (1+\alpha) y_t - \beta c_t \dots\dots\dots (A.9)$$

Equation (A.9) incorporates the basic elements of the monetarist approach to inflation: money, real income, and the

expected cost of holding real balances. In addition the nature of the relationships is clear and straightforward. The increase in the rate of change in money supply relative to output and cost of holding real balances will generate an increase in the rate of change of price levels. Also, the increase in the rate of change of real income will cause decreases in the rate of change in the price level via the increase in the demand for real balances (which involves a withdrawal of the purchasing power from the market for goods and services, and consequently weakens the inflationary tendencies).

Similarly, the rate of change in the price level is assumed to be inversely related to the expected cost of holding real balances. The implication here is that if prices are expected to rise, then opportunity cost of holding money is expected to rise, because the expected decline in the purchasing power of money. When this occurs then people are more likely to adjust their asset portfolio in favour of real assets. Consequently, expenditure on real assets will increase and this will lead to the bidding of already increasing prices. It is, therefore, when the expected cost of holding cash is rising, that people will try to lower their cash balances, consequently, the demand for money will fall, and expenditure will increase which thereby tends to increase the upward pressure on prices.

Equation (A.9) assumes instantaneous adjustment of monetary changes and no money illusion. But increases in the money supply do not effect prices instantaneously, so in order to

capture this effect, money balance with different lags should be introduced as explanatory variables, and allowing for the opportunity cost of holding money measured by the deterioration in the purchasing power of money (hence purchasing power of money is decreased by increases in the prices). Harberger (1963)⁽¹⁾ used the changes in the past inflation ($P_t - P_{t-2}$) as a measurement of the cost of holding money.

But in our empirical investigation, we will use the expected rate of inflation as a proxy for the opportunity cost of holding money represented by the relative rate of change in the price level, lagged one year. The reason behind using this measurement is because interest rates do not accurately reflect the cost of holding money in developing countries which in turn is due to underdeveloped money markets and excessive government controls. (For example the yields in government securities have been kept constant, deliberately being maintained at a low level in order to reduce interest payments on public debt and in order to accelerate private investment).

This, however, has been emphasized by Ghatak 1981⁽²⁾ that interest rates are not appropriate to be included in the money demand function for LDCs due to the following reasons:

- "(a) limited size of the organised financial market;
- (b) the institutional pegging of interest rates;
- (c) limited array of financial assets and
- (d) limited degree of substitution between money and financial assets in comparison with the economically developed countries" (Ghatak 1981, p.27)

(1) A C Harberger (1963), op. cit.

(2) S Ghatak (1981), Monetary Economics in Developing Countries, London, Macmillan.

He also argued that the opportunity cost of holding money will be the expected rate of inflation rather than interest rates, and the reason for this is that wealth holders in the LDCs can hold either money or real goods such as buildings, land etc. This argument has also been suggested earlier by Park (1973).⁽¹⁾

Thus, we have reason to believe that the relative rate of change in price level lagged one year represents the expected rate of inflation because in the developing countries, the system of collecting and publishing statistical data is inefficient and slow so that the economic agents are likely to form their future expectation of this variable on the basis of past inflation rates alone, and the coefficient on expected inflation (α_4) is expected to be positive and to lie between zero and one, provided it has been generated on the assumption of adaptive expectation hypothesis.

Thus, velocity trend is represented by a constant term. Therefore, the monetarist model can be tested in the following form:

$$P_t = \alpha_0 + \alpha_1 m_t + \alpha_2 m_{t-1} + \alpha_3 y_t + \alpha_4 P_{t-1} \dots \quad (A.10)$$

where m_{t-1} is the relative rate of change in the money supply lagged one year and p_{t-1} is the expected rate of inflation presented by the relative rate of change in the price level lagged one year.

(1) Y C Park (1973), "The Role of Money in stabilization policy in Developing Countries", I.M.F. Staff Papers, 20, p.379 - 418.

The theoretical restriction on the coefficients are as follows:

trends in velocity are reflected in α_0 being different from zero or if the velocity is constant over the sample period, α_0 will equal zero. The coefficient on the relative rate of changes in real income, α_3 is expected to be negative, and equal to -1 assuming there is a unitary elasticity between real income and real cash balances; α_4 is expected to be greater than zero and since, in the long run, money supply and prices are closely associated, the sum α_1 and α_2 (assuming there is two years lag in the impact of money supply) should not be significantly different from 1 (i.e. to equal unity).

Therefore, the monetarists contend that inflation is basically a monetary phenomenon, which in turn, is based on the argument that the causal relation runs from money to prices and output. Their contention is also based on the fact that any persistent increase in money supply relative to output is a sufficient condition for inflation. Thus, the magnitude and length of inflation is dependent on the magnitude and persistence of monetary expansion. Also, the occurrence of inflation is assumed to be independent of the level of employment in the economy. In addition to that, it is the increase in the rate of change of money supply which produces continuous upward pressure in the rate of change in price level. Furthermore, monetarists postulate that the money

supply is exogenously determined, and can be controlled by the monetary authorities.

10.2 Empirical Result: Monetarist Model

Table 10.1 presents the empirical results on the monetarist explanation of inflation in Jordan applying ordinary least squares and using annual data for the period 1968 - 1985. Equation (M_1) represents the highest $\bar{R}^2$ (0.65) and the explanatory variables suggested by the theoretical consideration bear the correct sign.

Moreover, the constant term (intercept) sometimes interpreted to represent velocity (see Akhtar 1975⁽¹⁾) is not significant at 5% level suggesting no trend in velocity (but it is significant at the 10% level⁽²⁾), as at this level of significant it is also suggested that there is an upward trend in velocity and prices would rise under the condition of zero growth in money supply, real income and the cost of holding money represented by the lagged inflation rate).

As to the coefficient of the rate of change in money supply is revealed to be statistically significant at the 5% level although its magnitude did not approach the theoretical limit of +1, but it remains to be the most significant variable of

(1) M A Akhtar (1975, op. cit.

(2) 5% level (two tailed test: 10% level (two tailed test).

Equation	Constant	M_t	M_{t-1}	M_{t-2}	Y_t	P_{t-1}	F_{t-1}	V_3	F-statistics	R^2	R^2	D.W.	S.E. of the P_{t-1}	D.H	Final Value (ρ)
OLS M1	0.024** (1.81)	0.366* (3.79)	-	-	0.277* (2.81)	0.25 (1.38)	-	-	F3,14=11.54	0.712	0.65	2.61	0.18175	-2.03	
OLS M2	0.0283 (1.74)	0.399* (3.31)	-0.0678 (-0.48)	-	-0.192 (1.74)	0.248 (1.32)	-	-	F4,13=8.23	0.717	0.63	2.73	0.18703	-2.54	
OLS M3	0.0205 (0.997)	0.412* (3.29)	-0.103 (-0.667)	0.072 (0.642)	-0.206** (-1.79)	0.253 (1.32)	-	-	F5,12=6.37	0.726	0.612	2.75	0.19165	-2.73	
OLS M4	0.0179 (0.906)	0.364* (3.65)	-	0.045 (0.44)	-0.246* (-2.60)	0.254 (1.36)	-	-	F4,13=8.21	0.716	0.629	2.55	0.18752	-1.92	
CORC M5	0.0213* (2.69)	0.409* (6.26)	-	-	-0.186* (-3.21)	0.207 (1.55)	-	-	F3,13=32.43	0.89	0.865	1.92	0.13308	0.197 (-2.03)	
CORC M6	0.022* (2.22)	0.418* (5.26)	-0.025 (-0.24)	-	-0.176* (-2.21)	0.219 (1.61)	-	-	F4,12=25.37	0.894	0.859	1.97	0.13654	0.075 (-2.26)	
CORC M7	0.0281** (2.023)	0.39* (4.138)	0.049 (0.32)	-0.0621 (-0.60)	-0.163** (-1.915)	0.174 (1.15)	-	-	F5,11=16.29	0.891	0.841	1.92	0.15138	0.21 (-1.90)	
CORC M8	0.0268** (2.07)	0.408* (6.09)	-	-0.0389 (-0.56)	-0.0158* (-2.3)	0.198 (1.44)	-	-	F4,12=25.24	0.894	0.858	1.98	0.13752	0.05 (-2.07)	

Note: OLS = Ordinary Least Squares, CORC = Cochrane-Orcutt correction for autocorrelation, P_t = The Rate of Inflation which is measured by continuous Compound Relative Rate of Change in Consumer Price Index, M_t = The current continuous compound relative rate of change in money supply defined as currency in circulation plus demand deposit, Y_t = The current continuous compound relative rate of change in real GDP at market price, P_{t-1} = A continuous compound rate of change in consumer price index lagged one year as a proxy for cost of holding money, F_3 = A continuous compound relative rate of change in relative price of food, V_3 = A continuous compound relative rate of change in the calculated imported price index, F-value is for testing the null hypothesis that all right-hand side variable as group except the constant term have zero coefficient. R^2 the coefficient of determination, R^2 is the coefficient of determination adjusted for degree of freedom. D.W. is the Durbin-Watson statistic to test for detecting serial correlation, S.E. of P_{t-1} is the standard error of the relative rate of change in price level lagged one year, D.H. = Durbin h statistic is used to detect serial correlation in the presence of the lagged dependent variable in the right-hand side of the equation and ρ is the Cochrane-Orcutt estimate of estimate of serial correlation. The t-values are given in parentheses.

* Significant at the 5% level.

** Significant at the 10% level.

the rate of inflation in Jordan (other things being equal to the larger the size of the coefficient the more important the variable) and seems to suggest the increases in money supply in the economy had a significant impact on prices in the same year.

The coefficient of the rate of change in real income is also significant at 5% level, although its magnitude did not reach its theoretical value of -1. The reason behind this, is the possibility that income represents a mix of demand and supply factors, and the variable measured in current rather than permanent income⁽¹⁾. Although lagged income variables and other measurement⁽²⁾ to represent the permanent income was experimented with and rejected for being contrary to theoretical expectations, consistently bear the plus sign.

Thus, the coefficient of the lagged inflation is not significant on the 5% and not even at the 10% level. This, however, may be interpreted as reflecting the fact that interest rates in Jordan do not affect the holding of real cash balances which may suggest that the demand for money is generally inelastic with respect to interest rates, or that the lagged inflation rate does not represent a good proxy for the expected costs of holding cash or it may suggest that the Jordan experience has consisted of years in which the inflation rate was too low to make expectation very important.

(1) See for more details Sheehey (1979) "On the Measurement of Imported Inflation in Developing Countries", Weltwirtschaftliches Archiv, 115, (1) pp 68 - 79.

(2) See for more details Krishan G Saini (1982), op. cit.

Thus, the result of D.W. statistics lies between $4 - d_u < D.W. < 4 - d_l$ which indicates an inconclusive outcome ($4 - 1.69 < 2.61 < 4 - 0.93$). Moreover, there are two main interpretations for the inconclusive outcome. On the one hand, many researchers would interpret this as an acceptance of null hypothesis of no autocorrelation and thereby do not call for any further action. On the other hand, if the outcomes lie in the inconclusive region many researchers would consider this as inappropriate and suspect the existence of autocorrelation, thereby calling for further corrective procedures, in most cases finding, and including the regressor in the equation, or finding the correct function form, or trying to find the appropriate measurement in both the dependent and explanatory variables. Or using the Cochrane Orcutt iterative method (CORC) only when these direct methods are not feasible.⁽¹⁾

Thus, we should not be impressed by the $\bar{R}^2$ in the equation when it includes lagged dependent variables among its variable, hence it makes the D.W. test for autocorrelation invalid.

For example, the computed value of D. W. tends to be bias towards the two. Thus, the D. W. test may not indicate serially independent errors even if serial correlation is present. Moreover, the presence of serial correlation often leads to inconsistent estimates. Therefore we need to

(1) See for more details H J Cassidy (1981), Using Econometrics: A Beginners Guide Prentice Hall Co. Reston, Virginia, Chapter 7.

compute the Durbin-h statistics.(1)

However, Durbin-h statistics are defined as :-

$$h = \left(1 - \frac{D.W.}{2} \right) \sqrt{\frac{N}{1-N [\text{var}(\hat{B})]}}$$

Where $\text{var}(\hat{B})$ is estimated as the square of the standard error of the coefficient of lagged dependent variables, N is the number of observation

$$h = \left(1 - \frac{2.61}{2} \right) \sqrt{\frac{18}{1-18(0.03303)}} = -2.03$$

Since the computed value of Durbin-h < -1.96 we can reject the null hypothesis that there is no negative first-order autocorrelation at the 5% level of significance.

Since Durbin-h statistics showed the presence of autocorrection in the residuals, it was therefore corrected by using the Cochrane-Orcutt iterative method (CORC). These results are also shown in Table 10.1. However with Cochrane Orcutt correction for autocorrelation equation (5) indicating the highest R^2 (0.865 the results have improved from the earlier results by using OLS.(2) However, the explanatory variables

(1) For more details see J J Johnston (1972), Econometric Methods (2nd edition), McGraw Hill, Chapter 10.

R S Pindyck and D L Rubinfeld (1981) Econometric Models and Economic Forecasts (2nd ed.) McGraw Hill International Book Co. 194-195.

D N Gujarati (1988), Basic Econometrics (2nd ed.) McGraw-Hill International Book Co. 525 - 527.

(2) Although applying CORC improved the results it does not make it necessarily true, hence the presence of autocorrelation may be due to missing variables. We later conducted a new version of the model by including structural factors (such as the rate of change in the relative price of food, and the rate of change in the imported price level) to the basic Harberger model.

have exhibited the correct signs and all variables are significant at 5% level with exception of the p_{t-1} which was not even significant at 10% level of significance.

We also notice a decrease in the magnitude of both y_t and p_{t-1} , while the magnitude of current money supply (m_t) has increased. But generally speaking m_t and y_t still did not reach its theoretical values of +1, -1 respectively. Therefore, the change in current money supply can be considered one of the primary sources of inflation. The constant, however, indicates an upward trend in velocity and the implication here is that under the condition of all other factors are held constant, velocity would add a very small proportion into the inflationary process.

After using the CORC, the score of D.W. statistics suggests that regression does not suffer from remaining significant first order serial correlation. Such a conclusion would be misleading, hence the presence lagged dependent variable is still included as an explanatory variable in the equation. Consequently to make sure of the validity of the D.W. statistics we have computed the value of Durbin-h, which we have found to be lying between $-1.96 < 0.197 < 1.96$. We therefore cannot reject the hypothesis at 5% level, that there is no positive first order autocorrelation.

These results did not coincide with the empirical findings by Ibrahim (1983).⁽¹⁾ The conclusion derived from his study

(1) Assa A. Ibrahim, (1983), op. cit. p.237.

that the explanatory power of the equation is acceptable and evidence reveals serial correlation in the residual and after correcting for the first order correlation (ARI), he found that all the estimated coefficients have exhibited the correct sign and are statistically insignificant at 5% with the exception of the rate of change in real GNP, and the lagged rate in the price level. The conclusion from his findings is that changes in current money supply and lagged two years was not the primary source of inflation, indicating that the response of change in price to change in the money stock and income is far from equilibrium.

The difference in the conclusion may arise from the difference in the period under investigation, the author covers the period 1968-1985, while Ibrahim has covered the period 1960-1979. Thus, in Ibrahim's work the dependent variable was derived from two periods (actual data for the consumer price index (CPI) for the period 1969-79, and implicit index number of prices for the period 1960 - 68 as a proxy for CPI. Thus, he also used real GNP and money supply broadly defined to include private sector demand and time deposit. On the other hand, real GDP at market price (deflated by CPI) and money supply narrowly defined to include currency with the public and demand deposit has been used in the author's empirical work.

10.3 Criticisms of the basic monetarist Harberger Model

Despite the fact that there has been some improvement in the explanation of inflation in Jordan (in particular after

correcting the first order serial correlation). The monetarist Harberger model in context of a closed economy may not be adequate to explain the inflation in developing countries in general and in particular Jordan due to the following factors

- (i) The common practice of identifying the major determinants of inflation in LDCs is based on a model which is explicitly derived from a statistically stable money function, and with the absence of that, the relationship between actual growth in the money supply and inflation would be neither reliable nor predictable. Therefore, what is also needed is to analyse the underlying money demand function and to assess the temporal stability of demand for money function.
- (ii) The empirical findings of the monetarist model can be criticised on the assumption of a closed economy, hence it failed to accommodate the affect of recent outbreaks of world-wide inflation on domestic inflation. Therefore, the model is not appropriate in case of a highly open economy such as Jordans where the share of the foreign sector in GNP is significantly high.
- (iii) In order to obtain unbiased and consistent parameter estimates using single equation estimates it is critically important that the independent variables of the equation are indeed exogenous to prices (i.e. that there is no reverse causation or feedback of the

dependent variable upon the independent variable of the equation.

Among the independent variables in the equation, money supply is considered to be the most likely candidate to violate the statistical exogeneity assumption. Hence, monetary expansion during the major part of our observation period has been the result of considerable increases in government expenditure which mainly came about to accommodate the government's objective of sustaining economic development in the country.

Thus, money supply in Jordan also depends on the movement of foreign exchange and its movements depend on the political stability. In addition, we have found earlier (chapter 7) that monetary policy in Jordan is passive and limited in its effect. Therefore, the assumption of money supply to be exogenously determined and controllable by the monetary authorities cannot be totally justified.

- (iv) The inadequacy of the basic (Harberger) monetarist may arise from insufficient specification of the variable. The choice of scale of real income variables in the demand function are either presented by the actual (measured) income or permanent income. Thus, changes in real income are treated as exogenous to changes in money supply and prices and are yet to be resolved. However, the prevalent economic school of thought

suggests that in the short run income can be influenced by money supply.⁽¹⁾

(v) Moreover, the assumption that the economy is always at full employment, which can be maintained through the full wage and price flexibility is not realistic in most LDCs (and Jordan is no different). Hence most LDCs are experiencing widespread unemployment (surplus labour or disguised or hidden unemployment, especially in agriculture) and the bargaining power of the trade unions is very weak or even non-existent.

(vi) The model can also be criticised on the grounds that there is nothing definite on the number of lagged changes in the money supply. Thus, the speed of the money supply adjustment depends on the period chosen for analysis. Furthermore, the model does not take into account the necessity of overshooting (and dampening) of prices in response to money changes. In addition, multicollinearity may arise in the estimation when we include many values of the same money supply at successive points in time, if the adjustment is not a rapid one.⁽²⁾

Moreover, the shortcoming in the basic Harberger

(1) See for more details J B Nugent and C Glezakos (1978) op. cit. p.432.

(2) See for details, A C Diz (1970), op. cit. p.113
J R Behrman (1973) "Price Determination in an Inflationary Economy: The Dynamics of Chilean Inflation Revisited", in R. S. Eckaus and P N Rosenstein Rodan (eds), Analysis of Development Problems, Amsterdam, North-Holland, pp. 369 - 397.

model arises from the assumption that the money market is always in equilibrium and is very unrealistic in developing countries, hence the financial market is not well developed. Therefore, the weak nature of the financial market and the extreme lack of financial assets results in an adjustment process which requires considerable time instead of instantaneous clearance.

Furthermore, the basic Harberger model may be inadequate either due to the missappropriate measurement of the expected cost of holding money represented by the lagged inflation or that individuals have not yet adopted their holding of cash balances to reflect the depreciation of money. The expected cost of holding money (or the net utility of holding money) in Jordan however, is influenced by many factors, namely the attitude of Islam towards interest taking (although the interest rate payable on the bank deposits are inflexible).

The convenience value of holding money balances (to facilitate daily purchases of goods and services, to hold as a precaution against unforeseen emergencies and so on). The political uncertainty arises from the Arab-Israeli war (hence currency with the public is usually influenced by political considerations rather than by market interest) the level of inflation (Jordan has experienced a low level compared with the experience of high inflation in Latin American Countries), and the propensity to hoard any wealth in the form of Gold, Jewellery and land. However, land

in Jordan has become an even more popular investment in the middle of the 1970s, and thereby land prices have witnessed a rapid increase as a result of among other things individuals attempting to reduce their holdings of cash.

10.4 The Combined Model

Given the above criticisms it has led us to believe that there are other factors which can have an influence on domestic inflation. To test this validity, however, we introduced the rate of change in the relative price of food and the rate of change in the imported price index into the basic Harberger model.

According to structuralists hypothesis that food bottlenecks may arise from many factors, namely the population growth, growth of living standards and urbanization. Thus, an agricultural shortage or surplus would lead to changes in agricultural prices. Food bottlenecks are thereby assumed to cause a spurt in inflation because agricultural prices in developing countries adjust more rapidly than other (non-farm prices) and consequently, agriculture has become a leading sector. Inflation is therefore assumed to be positively related to the rate of change in the relative price of food whereas the relative price of food is defined as the price of food component of the consumer price index (CPI) divided by

the CPI.(1)

The calculation of the relative price of food is based on the same calculation that has been advocated by Bhalla (1981)(2):-

$$\text{Relative Price of Food} = \frac{P_r (1-W_1) \text{ FPI}}{(\text{CPI} - W_1 \text{ FPI})}$$

P_r = FPI/CPI where FPI and CPI are food and consumer prices indexes respectively⁽³⁾

W_1 = the weight of food prices in the consumer price index

We have earlier indicated (see Chapter 8) that the world has experienced several changes, namely the crisis in major world exchange rate, the breakdown of the Bretton Woods monetary system, a sharp increase in the food prices followed by a voilent increase in oil prices.

We have also stated that any country which is engaged in overseas trading is bound to be exposed to inflationary impulses from the world outside (because one country's exports

(1) For more details see S M Wachter (1976), op. cit. p.88, and R J Gordon (1975), "Alternative Responses of Policy to External Supply Shocks", Brookings Papers on Economic Activity, (1), pp.183-206.

See also V. Argy (1979), op. cit. p.77

(2) S S Bhalla (1981), op. cit. p.82

(3) Figures for FPI and CPI are obtained from the cost of living Index. See CBJ: Yearly Statistical Series (1964 - 1983) Special Issue No. 20 and CBJ: Montly Statistical Bulletin, Vol 23, No. 5, May 1987.

are another country's imports). Thus, given the fact that Jordan is a small open economy, it is in turn bound to be affected by the sharp increase in prices abroad. But these effects depend on many factors. To capture the effect of imported prices we therefore include the rate of change in imported prices in order to measure the influence of the imported prices on domestic prices.⁽¹⁾ Thereby inflation is assumed to be positively related to the rate of change in imported prices, whereas the imported price is calculated on the basis of the following formula:

$$\begin{aligned} \text{Import Price} &= \sum_{i=1}^n P_{it} W_{it} \\ 1975 = 100 \end{aligned}$$

where P_{it} = F.O.B. export prices index for each trading partner i in period t ⁽²⁾

W_{it} = the share of country i in Jordan's total import in period t ⁽³⁾

(1) For more details see Gosta Edgren, Karl-Olof Faxen, and Clas-Erik Odhner 81969) "Wages, Growth and the Distribution of Income", Swedish Journal of Economics, Vol. 71, Sept, pp. 133 - 60.

M Parkin (1977) "A 'monetarist' Analysis of the Generation and Transmission of World Inflation: 1958 - 71", American Economic Review, Vol. 67, No. (1) (papers and proceedings, 1976), pp. 164 - 71 and Jaleel Ahmad (1984), op. cit. p.49

(2) P_{it} is derived from data on export price indices in terms of US dollars for each country (which are obtained from IMF:IFS Yearbook 1986) which they are then expressed in terms of Jordanian currency (Figures on exchange rates, conversion factor imports, US dollar per dinar are obtained from UNs: International Trade Statistics Yearbook 1984, Vol. 1.

(3) the figures on the proportion of imports for each country to total imports are obtained from CBJ : Yearly statistical series (1964 - 1983, Special Issue No. 20 and CBJ : Monthly Statistical Bulletin, Vol 23, No. 5, May 1987.

10.5 Empirical Results: Combined Model

Table 10.2 represents the empirical results of the Combined Model using OLS for the period 1968 - 1985.

All equations in Table 10.2 indicate that when the rate of change in the relative price of food are included in the basic monetarist (Harberger) model, the explanatory power of the equation shows a slight improvement and its estimated coefficient have exhibited the correct sign but it is not significant either at the 5% or at the 10% level. While all equations reveal that when the rate of change in imported prices are included in the basic monetarist (Harberger) model, the value of $\bar{R}^2$ shows an appreciable improvement and its estimated coefficient has exhibited the correct sign and is significant at the 5% level.

However, equation (C9) in Table 10.2 represents the highest $\bar{R}^2$ (0.789) and the regression coefficients have exhibited the correct sign with the exception of the rate of change in money supply lagged one year.

The coefficient of the current rate of change in money supply and lagged two years is revealed to be statistically insignificant at the 5% level. But they are significant at the 10% level which implies that increases in the money supply in the economy had a significant impact on prices in the same year and lagged two years.

With regard to the coefficient of the rate of change in the

No. of the Equation	Constant	M t	M t-1	M t-2	Y t	P t-1	F 3	F 3	F-statistics	R ²	R ²	D.W.	S.E. of the P _{t-1}	D.H.
0L5 C1	0.0212 (1.58)	0.334* (3.36)	-	-	-0.211* (-2.615)	0.304 (1.63)	0.048 (1.14)	-	F4,13=9.17	0.738	0.658	2.42	0.18591	-1.45
0L5 C2	0.0212** (1.88)	0.229* (2.37)	-	-	-0.143** (-1.93)	0.236 (1.55)	-	0.226* (2.63)	F4,13=14.05	0.812	0.754	1.98	0.15245	0.055
0L5 C3	0.0192 (1.67)	0.213* (2.18)	-	-	-0.137** (-1.83)	0.2768 (1.74)	0.0351 (0.97)	0.213* (2.45)	F5,12=11.39	0.826	0.753	1.89	0.15821	0.314
0L5 C4	0.026 (1.617)	0.372* (3.073)	-0.0815 (-0.58)	-	-0.168 (-1.526)	0.303 (1.59)	0.05 (1.159)	-	F5,12=7.03	0.745	0.640	2.58	0.19082	-2.09
0L5 C5	0.0237 (1.72)	0.25** (2.12)	-0.0408 (-0.34)	-	-0.124 (-1.28)	0.235 (1.49)	-	0.223* (2.50)	F5,12=10.50	0.814	0.736	1.99	0.15796	0.0285
0L5 C6	0.0223 (1.61)	0.24** (2.02)	-0.052 (-0.43)	-	-0.111 (-1.13)	0.277 (1.69)	0.0368 (0.98)	0.209* (2.31)	F6,11=8.88	0.829	0.735	1.92	0.1638	0.236
0L5 C7	0.0169 (0.83)	0.386* (3.09)	-0.123 (-0.80)	0.0829 (0.748)	-0.183 (-1.61)	0.314 (1.61)	0.0528 (1.19)	-	F6,11=5.74	0.758	0.626	2.64	0.195	-2.41
0L5 C8	0.0044 (0.276)	0.246* (2.30)	-0.1169 (-1.0)	0.168** (1.88)	-0.14 (-1.59)	0.247 (1.71)	-	0.277** (3.22)	F6,11=11.19	0.859	0.780	1.78	0.1436	0.588
0L5 C9	0.00266 (0.166)	0.235** (2.21)	-0.1307 (-1.14)	0.171** (1.94)	-0.127 (-1.45)	0.2913** (1.98)	0.0388 (1.16)	0.263* (3.085)	F7,10=10.09	0.876	0.789	1.84	0.14648	0.433
0L5 C10	0.01419 (0.716)	0.331* (3.227)	-	0.0506 (0.497)	-0.233* (-2.47)	0.3104 (1.62)	0.048 (1.131)	-	F5,12=6.69	0.743	0.637	2.37	0.196	-1.35
0L5 C11	0.0017 (0.108)	0.193** (2.066)	-	0.136 (1.63)	-0.187* (-2.50)	0.248 (1.72)	-	0.2738* (3.185)	F5,12=13.21	0.846	0.782	1.685	0.14369	0.842
0L5 C12	-0.00019 (-0.0118)	0.177** (1.88)	-	0.136 (1.63)	-0.181* (-2.40)	0.288** (1.94)	0.025 (1.03)	0.261* (3.02)	F6,11=11.25	0.860	0.784	1.641	0.14841	0.98

* Significant at the 5% level. ** Significant at the 10% level.

real income reveals not to be significant either at 5% or at the 10% level which may indicate that an increase in real income would not have an effect on the price level.

As far as the coefficient of the lagged inflation is concerned it has become significant only at the 10% level (whereas it was not significant at even the 10% level using the basic Harberger model) and in terms of its magnitude is considered the most explanatory variable that can exert pressure on the rate of change in the price level in Jordan. This may, however, reflect the effect of the expected rate of inflation on the cost of holding real money.

But the coefficient of the rate of change in the relative food price is revealed to be very small and is not significant at both 5% and 10% levels. This, however, has appeared to indicate that the rate of change in the relative price of food was not a major contributory factor into the inflation process in Jordan.

One possible explanation of this variable employed in our regression analysis is that it does not reflect the accurate measurement of the relative price of food which has arisen from food bottlenecks. Another possible explanation is that agricultural prices might not be determined by the market forces but rather these have been influenced by a political factor, such as the price control system. The government efforts to subsidise and increase the volume of food imports and the natural factor which may have been an influential

factor in determining the price of food, hence favourable weather conditions may become instrumental in the fall of the price of food. These factors, however, might cause the price of food to remain lower than it has been.

Thus, the coefficient of the rate of change in the calculated imported price level appears to be very significant at 5% and it has shown to be the first in terms of the significant level and a second in terms of the magnitude which has exerted significant pressure on the rate of change in price level in Jordan. This, however, is a very plausible result considering that Jordan is a highly open economy (the share of foreign supply in GNP is very highly significant) and the period under investigation has witnessed a sharp increase in prices abroad.

However, we have also noticed that the introduction of the import price affects the coefficient of money supply variables which may indicate at least the existence of collinearity if not interdependence between the money supply and the import price.

The computed value for Durbin-h lies between $-1.96 < 0.433 < 1.96$ which therefore we cannot reject the hypothesis at 5% level that there is no evidence of positive first order autocorrelation. This, however, as we have earlier indicated is that the presence of autocorrelation in equation (m_1 in Table 10.1) using OLS was a result of excluding a relevant explanatory variable such as the rate of change in the relative

price of food and the rate of change in the imported price level.

The second highest $\bar{R}^2$ (0.784) is seen in equation (C12) which seems to represent the final specification of the model. The estimated coefficients of the explanatory variables have exhibited the correct sign and significant at the 10% level with the exception of the rate of change in the money supply lagged two years, and the rate of change in the relative price of food. The result also indicates that in terms of the magnitude the lagged inflation remains the most significant contributing factor of inflation. The rate of change in imported price level is a very close second (but first in terms of significant level). Thus, the computed value of Durbin-h lies between $-1.96 < 0.98 < 1.96$ which, in terms, we accept the hypothesis at 5% level that there is no evidence of positive first order autocorrelation.

The conclusion derived from the Combined Model (equation C12) is that the inflation problem in Jordan has to some extent monetarist origins. That is to say that an increase in the rate of change in the money supply in Jordan can exert some pressure on the inflation rate in the short term, and therefore, anti-inflation policy based on restraining the rate of change in the money supply can play an effective role in fighting against inflation in the short run although its magnitude is still considered small. It is also virtually not completed in full in the current period, which also implies that it requires a relatively long time to have an effect on

the inflation rate which in turn implies that only a series of anti-inflation monetary policies consisting of sustaining a reduction in the rate of change in the money supply which has experienced a sharp increase since the early part of 1972.

Therefore, the desirable reduction in the rate of change in the money supply can be achieved if we fully understand the source of the rate of change in the money supply. The question of what causes higher growth in the money supply still remains a controversial issue in most developed countries. In Jordan, however, the monetary growth was affected by the following factors, namely the net foreign assets, credit to the private sector, credit to municipalities and public entities, and by the credit to government.

However, an effective control over money supply growth, and hence inflation in Jordan requires the rationalization of domestic government expenditure which has escalated following the implementation of the economic development plans. Although it is difficult, hence financing a budget deficit has still remained outside the control of the monetary authorities and thereby domestic inflation is likely to continue.

Moreover, the authorities in Jordan may fall into the illusion if they only consider a reduction in the rate of change in the money supply is sufficient to fight inflation. Hence, imported prices which have mainly originated from abroad is found to be much quicker than the rate of change in the money supply in affecting the rate of change in price levels in

Jordan. This does not, however, come as a surprise, hence Jordan is considered a highly open economy and is burdened by the essential requirement for the development plan, and accompanied by weak sterilization policy. Therefore, import inflation is likely to continue.

Furthermore, the public expectation of higher inflation seems to play a significant role in sustaining the inflation in Jordan. Therefore, policy makers in Jordan should be aware of this factor which has a significant impact on the public's decision to hold money. However, the government should mitigate the public inflation psychology by trying to inform the public about the expected inflation, real interest, the real purchasing power, and trying to put the public in the picture about the grave consequences of exaggerating their inflation expectation. After all, one can argue that inflation can be potentially brought under control or at least kept within bounds through a combination of appropriate government policies such as the monetary, fiscal and trade policies.

10.6 Empirical Study of Inflation in Jordan : Structuralist

On the basis of the earlier argument by the structuralist which underlies the cause of inflation in LDCs, we will here try to some extent to apply their argument in order to explain the inflationary phenomenon in Jordan and therefore their hypothesis can be formulated as follows:

$$P_t = B_0 + B_1 Y_t + B_2 D_{1t} + B_3 W_{1t} + B_4 FF_t + B_5 EX_t + B_6 F_{3t} + B_7 V_{3t} + B_8 P_{t-1} \quad (S.1)$$

where as

P_t = A continuous compound relative rate of change in the price level

Y_t = A continuous compound relative rate of change in real GDP at market prices

D_{1t} = is deficit rate(1)

W_{1t} = A continuous compound relative rate of change in the calculated annual wage(2)

FF_t = A continuous compound relative rate of change in the net foreign asset(3)

EX_t = A continuous compound relative rate of change in the price of foreign exchange measured in domestic currency (US\$ per dinar)(4)

F_{3t} = A continuous compound relative rate of change in the relative price of food

V_{3t} = A continuous compound relative rate of change in calculated imported price level

P_{t-1} = A continuous compound relative rate of change in price level lagged one year as a proxy for other factors.

(1) which is measured on the same calculation as Argy (1970) op. cit. p.81, that is

D_{1t} = the deficit rate (budget deficit divided by GDP in the previous period, i.e. DE/Y_{t-1} where DE =amount of deficit financed by the creation of base money.

$DE = RM_t - RM_{t-1}$

RM_t = base money (high powered money)

Y_{t-1} = GDP at market price in previous period

Data for RM_t are obtained from I.M.F.:I.F.S. Year Book 1986. Line 14 represents the domestic component of the monetary base (a term often used interchangeably with high powered money). Line 14 represents also reserve money in the Central Bank.

(2) Net compensation of employee (NCE) = Total compensation of employee minus agriculture compensation of employee

Annual wages per employee = $NCE/Total\ employment$ excludes agriculture

To derive these figures see: CBJ: Yearly Statistical Series (1964 - 1983) Special Issue No. 20

CBJ: Monthly Statistical Bulletin (Oct 1986), Vol. 22, No. 10

ILO: Yearbook of Labour Statistics (1980)

(3) Figures for Net Foreign assets see:

CBJ: Yearly Statistical Series (1964 - 1983), Special Issue No. 20, Section on Monetary Survey of the Banking System

(4) Data for US\$ per Dinar are obtained from I.M.F.:I.F.S. Yearbook 1986, Line rh (Par Rate/Market Rate).

The nature of the relationship is that all explanatory variables are assumed to be positively related with inflation with the exception of the rate of change in real output, which tends to reduce the inflation as it increases.

However, when deficit rate (D_{1t}) increases, the government's absorption of domestic output will increase which must be met by either an increase in the rate of change in real output or the rate of change in price level or both.

But where D_{1t} and the rate of change in real output are used together in the regression analysis to allow for the fact that changes in D_{1t} are not inflationary to an extent they are absorbed by changes in real output.⁽¹⁾

10.7 Empirical Result : Structuralist

Table 10.3 represents the empirical results of the structuralist explanation of inflation in Jordan using OLS for the period 1968 - 1985.

However, an attempt has been made to specify the structuralist model, by assessing the relative importance of these explanatory variables in explaining the price level in Jordan. But variables that have virtually no effect are excluded from the model such as wages, net foreign assets and exchange rates.

(1) See V Argy (1979), op. cit. p.82 and M A Akhtar (1975) op. cit. p.146 - 147.

However, the reason for wages is that it may be possible that the wage variable is not accurately measured. Or, on the other hand, that the availability of foreign workers who are prepared to accept lower wages, which consequently reduce wages effect on prices. While the reason for net foreign assets were as expected in the sense Jordan never suffered from a balance of payments problem with the exception of the period between (1982-85) and this may be attributed to the rapid inflow of foreign aid in the form of loans and grants, from the Arab oil producing countries, USA, other western countries, and the World Bank.

This, however, may be due to a rapid increase in remittances of Jordanians working in oil rich countries, particularly in the Arab countries following the violent increase in oil prices. Also, Jordan has adopted a liberal foreign trade policy accompanied by the absence of import controls.

Moreover, the reason behind the insignificant role of the exchange rate is that during the period under investigation the exchange rate was relatively stable (despite the dinar devaluation in 1972 in line with the US\$). The stability value of the dinar, was a result of the official exchange policy which has been trying to build up the confidence in the national currency through maintaining a large foreign reserve, which was mainly a result of a large inflow of foreign aid in the form of loans and grants to Jordan, and therefore, their existence has helped to sustain the stability of the dinar,

otherwise the exchange value of the dinar would have been lowered, which consequently would have an effect on the domestic price level.

However, equation (S.12) in Table 10.3 represents the final form of price function. Thus it also represents the highest $\bar{R}^2$ (0.778) and the regression coefficients have exhibited the correct sign.

The coefficient of the current rate of change in real output is revealed to be insignificant at 5% level but rather significant at the 10% level. This, however, may indicate that an increase in real output would reduce the price level, given other variables are held constant.

With regard to the coefficient of the deficit rate, it appears to be very significant, other things being equal, the larger the size of the coefficient the more important the variable, thereby this variable has exerted very significant pressure on the rate of change in the price level. This, however, has a very plausible result considering the government expenditure in Jordan is increasing over the total domestic revenue, and this increase was a result of a huge military expenditure that has been associated with political instability, the rapid increase in population which thereby has increased the demand for expenditure, therefore the government expenditure has increased due to the increases in the inflation rate, and government expenditure has also increased as a result of implementing the development plans. The financing of such a

budget deficit was coming partly from domestic borrowing, (mainly in the form of an advance from the Central Bank, Treasury Bills and Government Bonds) which has led to an expansion of the money supply and consequently creates an inflationary condition.

Thus, financing the government expenditure also comes from foreign grants in the form of budget support, and from both economic and technical assistance, and by foreign borrowing in the form of development loans, and from domestic revenue.

But the coefficient of the rate of change in the relative price of food appears to be statistically insignificant at both 5% and 10% levels respectively. The first possible explanation for this is that the variable employed in our regression analysis may not be an accurate measure of the food prices which has emerged from food bottlenecks.

The second possible explanation is that there is the likelihood of multicollinearities between the explanatory variables. The third possible explanation is that the agriculture prices in Jordan were not determined by market forces but rather by a political factor (such as price control on foodstuff, government subsidies and government efforts to increase the volume of food imports) in order to insulate the poor household from the impact of rising prices and consequently to achieve overall price stability and subsequently to achieve political stability. These factors, however, might have caused the price of food to remain lower

than it had been.

While the coefficient of the rate of change in the calculated imported price level is found to be very significant at 5% and this may therefore indicate that imported price levels are one of the primary sources of inflation in Jordan.

This, however, has not come as a surprise, hence Jordan still remains a high open economy and its development programmes still remain dependent on the imported equipment, let alone Jordan's heavy dependence on foodstuffs and crude oil, the prices of which have undergone a sharp increase during the period under investigation. Therefore, Jordan's inflation rate is bound to be exposed to inflationary impulses from the world outside.

Thus, the coefficient of the lagged dependent variable is found to be insignificant at 5% and 10% respectively. This, however, may be due to its large standard error in relation to its estimated coefficient. Or indeed, other factors could not generate an inflationary pressure in Jordan.

The computed value for Durbin-h lies between $-1.96 < -0.36 < 1.96$ which therefore indicates that we can accept the hypothesis that there is no evidence of negative first order auto correlation at 5% level.

The conclusion derived from the regression results, in the particular equation S.12 appear to support the structuralist

view (with some exception variable) which underlies the cause of inflation in Jordan. Thus, the empirical findings of the structuralist model also yields a considerably better result than basic monetarist (Harberger) model using OLS. But it yields an almost similar result of the combined model (the final form) in explaining the behaviour of the price level in Jordan.

The policy implication of the structuralist empirical findings suggests that the growth in real output, can reduce the inflationary pressure in the Jordanian economy. Therefore, the production capacity should be utilised, structural changes, especially the sector which constitutes bottlenecks should be expanded and constraints should be removed and there should also be an attempt to improve the quality of production resources through the use of advanced technical methods. These, however, can be promoted by the public investment policies.

The structuralist empirical finding also suggests that a budget deficit rate can have a major impact on aggregate demand, and consequently, on the rate of inflation in Jordan. Therefore, in order to reduce the inflationary pressure in Jordan, it is necessary in a sense to limit the increase in government expenditure through a process of rationalisation. But reducing the rate of growth in government expenditure may not be the most favourable policy in the view of both the government and the general public, but elimination of non-essential expenditure and to divert these expenditures to

more productive and more urgent uses might prove to be ideal. For example, an increase in government investment in basic infrastructure would eventually contribute to the social aggregate supply and may lead to a reduction of inflation pressure.

Simultaneously, tax revenue should be potentially utilized. Therefore the government should consider raising additional tax revenue by reorienting the tax structure, eliminating the structural deficiencies facing the tax system. Although increased taxation may temporarily help to hold inflation, therefore, it cannot be pushed very far with economic implications for diminishing demand. In a country like Jordan which is still trying to increase its industrialisation, it is necessary, therefore, to search for tax revenues (direct and indirect) which do not allow the suppression of economic growth by harsh cuts in aggregate demand, or the discouragements of strategic capital imports which is still considered crucially important for the economic development of the Jordanian economy.

Finally, the results also indicate the rate of change in the calculated imported price level can be considered an important source of inflationary pressure in Jordan. But there is little the Jordanian government can do about the foreign prices, hence they are outside their control. However, there may be some possible measures to reduce its effects on the inflation rate. What is necessary is an emphasis on the reduction of imported consumer goods in general and luxury

goods in particular, and the manufacturing industries should be encouraged, especially those which use domestic raw material in order to lower the rate of the growth of imports.

10.8 Empirical Study of Inflation in Jordan: The Contribution Factor Model

In the light of the earlier analytical and empirical examinations of the contribution factors which are held to be responsible for the inflationary process in Jordan, we will, in this section, attempt to assess and specify the combination of these factors. The assessment, however, is based on the relative importance of these explanatory variables in explaining the changes in price level. But variables that have virtually no effect are excluded from the model (the reason for their insignificance have been mentioned earlier).

However, the contribution factors model in general can be specified in the following form:

$$P_t = \beta_0 + \beta_1 Y_t + \beta_2 GE_t + \beta_3 MS_t + \beta_4 V_{3t} + \beta_5 W_{1t} + \beta_6 F_{3t} + \beta_7 P_{t-1} \dots \dots \dots (F)$$

$$\beta_1 < 0. \text{ and } \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7 > 0$$

Where as

P_t = A continuous compound relative rate of change
in the price level.

Y_t = A continuous Compound relative rate of change
in real GDP at market prices.

GE_t = A continuous compound relative rate of change

in the value of the Government expenditure.

MS_t = A continuous compound relative rate of change
in money supply (M_1 definition).

V_{3t} = A continuous compound relative rate of change
in the calculated imported price index.

W_{1t} = A continuous compound relative rate of change
in the calculated annual wage per employee.

F_{3t} = A continuous compound relative rate of change
in the calculated relative price of food.

P_{t-1} = A continuous compound relative rate of change
in the price level lagged one year (as a proxy
to represent other factors).

10.8.1 Empirical Result: The Contribution Factor Model

Table 10.4 represents the empirical results of the contribution factor model of inflation in Jordan applying OLS and using annual data for the period 1968 - 1985.

However, equation (F.9) in Table 10.4 represents the highest $\bar{R}^2$ (0.788) and the regression coefficients have exhibited the correct sign.

The coefficient of the current rate of change in real output is revealed to be statistically significant at 5% level. This, however, may indicate that an increase in real output would bring about a reduction in the price level, given that other variables are held constant.

No. of Equation	Constant	γ_t	ΔE_t	ΔS_t	V_{3t}	W_{1t}	F_{3t}	P_{t-1}	F. statistics	R^2	-2 R	D.W.	S.E. of of the P_{t-1}	D.h.
0.5 F.1	0.0841*	-0.0657*							F1,16=0.252	0.0155	-0.046	0.741		
0.5 F.2	0.0557*	-0.196**	0.261*						F2,15=5.72	0.433	0.357	1.46		
0.5 F.3	0.0312*	-0.238*	0.104	0.361*					F3,14=11.78	0.716	0.656	2.18		
0.5 F.4	0.0284*	-0.155**	0.0795	0.248*	0.212*				F4,13=13.16	0.802	0.741	1.38		
0.5 F.5	0.0276*	-0.172**	0.0731	0.243*	0.206*	0.0408			F5,12=9.93	0.805	0.724	1.47		
0.5 F.6	0.0265*	-0.177**	0.0678	0.237*	0.193**	0.0706	0.0302		F6,11=8.05	0.814	0.713	1.20		
0.5 F.7	0.0156	-0.19*	0.089	0.133	0.18**	0.0545	0.0457	0.308**	F7,10=9.38	0.868	0.775	1.91	0.1536	0.2517
0.5 F.8	0.0281*	-0.15**	0.0792	0.246*	0.206*	-	0.0182	-	F5,12=9.97	0.806	0.725	1.19		
0.5 F.9	0.0165	-0.17*	0.098	0.137	0.189*	-	0.037	0.317**	F6,11=11.52	0.863	0.788	1.89	0.14862	0.3
0.5 F.10	0.0187	-0.177*	0.096	0.155	0.202*	-	-	0.273**	F5,12=13.33	0.847	0.784	2.12	0.14472	-0.322

* Significant at the 5% level.

** Significant at the 10%.

With regard to the coefficients of the rate of change in government expenditure and money supply has appeared not even to be significant at 10% level. Actually, the reason is due to the existence of multicollinearity between these variables. (For more details of the contribution of government expenditure and money supply see equations F.2 and F.3 respectively).

While the coefficient of the rate of change in the calculated imported price level has been found to be statistically significant at 5% level, and this may therefore indicate that imported price levels are one of the main sources of inflation in Jordan. But this does not come as a shock, hence Jordan has still remained a highly open economy and its development programmes still remain dependent on the imported equipment, let alone the fact that Jordan is heavily dependent on foodstuffs and crude oil, the prices of which have undergone a sharp increase during the period of investigation, which has also been accompanied by a weak sterilization policy. Therefore Jordan's inflation rate is bound to be exposed to inflationary impulses from abroad.

With regard to the coefficient of the rate of change in the relative price of food, this has not been found to be statistically significant at even 10% level (the reasons for this have been pointed out earlier).

As far as the coefficient of the lagged dependent variable (as a proxy for other factors) is concerned, it is found to be significant at the 10% level. This, however, may indicate that

there are still other factors which could have a considerable impact on the price level in Jordan.

The computed value for Durbin-h lies between $-1.96 \leq 0.30 \leq 1.96$ which therefore indicates that we can accept the hypothesis that there is no evidence of positive first order autocorrelation at 5% level.

The second highest $\bar{R}^2$ (0.784) is seen in equation (F.10) which seems to represent the final specification of the model. The estimated coefficients of the explanatory variables have exhibited the correct sign and significant at 5% and 10% levels with the exception of the coefficients of government expenditure and money supply (that is due to the multicollinearity which exists between them).

The result also indicates that in terms of the magnitude the lagged dependent variable remains the most significant contributing factor of inflation. Whereas the rate of change in the imported price level is a very close second (but first in terms of significance level).

Thus, the computed value of Durbin-h lies between $-1.96 \leq -0.322 \leq 1.96$ which, in terms, we accept the hypothesis at 5% level that there is no evidence of negative first order autocorrelation.

Finally, the conclusion derived from the empirical findings of the contribution factor model, in this particular equation

(F.10) is that, it yields a considerably better result than basic monetarist (Harberger) model using OLS. But it yields an almost similar result of both the combined model (the final form) and the structuralist model in explaining the behaviour of the price level in Jordan. Thus, the policy implication of the empirical findings of this model can be to some extent similar to those suggested earlier.

CHAPTER 11

Summary, Conclusion and Suggestion :-

In this chapter, we give a summary of the thesis, which involves a recapitulation of the most important points, as well as the conclusion that has been drawn from the empirical investigation in each chapter. Thus, this chapter will also offer some suggestions, which will be based on the most important issues to emerge from each chapter of our study.

11.1 Summary and Conclusion

In spite of the fact that inflation appears today to be a world-wide phenomenon, in many of the LDCs, it has become more than a passing phenomenon. Inflation in these countries poses a grave threat to the economic and the political system. However, since the early 1970s inflation has been one of the pressing economic problems facing Jordan. Thereby, the purpose of this study as stated in Chapter one, has been to investigate the cause of inflation in Jordan over the period 1968 - 1985.

Chapter two addressed the question of why the study of inflation in developing countries is important. This chapter has, acknowledged many important issues. First of all, like many economic concepts, the problems associated with inflation arises not from an explanation of it, but rather from trying to define it. In fact, there remains no single definition of inflation that is generally accepted.

Although it has been customary in the past that inflation is seen as an economic phenomenon, nowadays it has witnessed a growing awareness that a study of its causes and consequences, cannot be confined to economic analysis alone. However, any attempt which involves keeping away the discussion of social, political and institutional factors will merely conceal the real issues involved.

Secondly, there are many difficulties which arise when one attempts to study the rate of inflation in LDCs. These difficulties have emerged from data on price increases which should be treated with some caution, hence data in most LDCs are still characterised by paucity, inadequacy and even when it is available, it is hard to obtain an accurate data which has been objectively estimated. Thus, the study of inflation in LDCs is not an easy task. Particularly when one tries to apply the concepts and theories which have originated in the economic and institutional setting of western, industrialised economies.

Finally, the conclusion derived from both arguments of for and against inflation is that inflation by no doubt can create social and economic problems for society if it is left unchecked. Thus, policy makers should be aware of such consequences and it should become their responsibility to restrict the growth in the rate of inflation within tolerable limits to the society which implies within the limit that it does not create serious and harmful effects on the social and on the economy.

In Chapter three we reviewed the theoretical literature of the causes of inflation in LDCs. We have been primarily concerned with two schools of thought, namely the structuralist and the monetarist and the debate between them has been highlighted. It was pointed out that the LDCs have experienced a long history of inflation and that the LDCs are more prone to inflationary pressures than developed countries. Thus, the two main schools of thought were discussed which mainly concerned the origins and the nature of inflation in LDCs. The structuralists on the one hand have claimed that the basic forces of inflation in LDCs are structural in nature and the inflation is a supply phenomenon. Thus the structuralists have argued that inflation in LDCs was as a result of a number of obstacles, bottlenecks and constraints that have prevailed in these countries.

Moreover, the structuralists do not deny that inflation could not be sustained with monetary expansion but regard this as irrelevant. Hence, price stability could only be achieved by monetary means at heavy costs such as stagnation and underemployment resources. In the structuralist view, a reduction in the money supply would only attack the symptoms of inflation, but not the underlying cause of inflation.

The monetarists, on the other hand, argue that the cause of inflation in LDCs arises as a result of the monetary expansion in excess of real income growth. Also, the monetarists hold the view that the only effective way of reducing inflation by

curbing the excess demand through monetary and fiscal policies, control of wage increases, and the elimination of over valued exchange rates. Thus, the monetarists do not deny the existence of structural rigidities and bottlenecks in LDCs but they argue that most of the alleged supply inelasticities and bottlenecks are not autonomous or structural in nature, they are instead, a result of price and exchange rate distortions which are created by inflation itself and by government attempts to reduce it.

In chapter four our study then moved to consider the empirical studies concerning the causes of inflation in LDCs. In view of the previous empirical studies of inflation in many LDCs, it has been found that these studies were subjected to serious limitation and shortcomings. However, the monetarists on the one hand were criticised for the treatment of high correlation between the monetary variables and the inflation rate as a means of evidence of causation and also, for failing to explain the fundamental causal relationships which exist between structural constraints, monetary and inflation.

On the other hand, the structuralists can be criticised for the fact that they often devote insufficient attention to the propagation mechanism in general and the expansion of the money supply in particular (which however is considered to be a necessary condition other things being equal for the manifestation of the spiralling price rises). The structuralist expresses the opinion that an increase in the money supply is merely complaisant and tends to conceal the

broader social economic framework whether this policy option is adopted or forced upon the economy by the government. Both the structuralist and the monetarist have accepted the argument that changes in the money supply happens as a response to political factors but the basic question remains unanswered as to whether or not these changes are actually permitted or are they a cause of the inflationary process.

Furthermore, the various studies described in chapter four revealed the difficulties that can arise in attempting to identify empirically the relative importance of the structural and monetary factors that characterise the inflationary situation in LDCs. Hence, the problem of inflation cannot be separated from the problems of underdevelopment and development.

Thus, the empirical studies on inflation in developing countries by the monetarist model and the combined model have been derived from the money demand function, which has also been surrounded by the following issues: the appropriate definition of the money supply, choosing the appropriate number of lagged in money supply, the stability of demand functions, the appropriate measure of the cost of holding money, the monetization rate, choosing the appropriate income deflator, choosing between the measure of income and the appropriate measure of permanent income, whether or not the money supply and real income are exogeneously determined (which implies whether to use single equation models or simultaneous equation models), and whether or not to assume the economy is closed or

open.

Moving on to chapter five our study addressed the relationship between economic growth and inflation in LDCs, with special reference to Jordan.

In this chapter we have pointed out that the availability of data on price levels has restricted us to choosing the cost of living index as an indicator of the general price level, inspite of its limitations.

During the 1950s, and the 1960s, Jordan was enjoying relative price stability, with prices increasing at an average rate of 2%. During 1966 - 1985, however, Jordan experienced a significant rise in price increases with prices increasing at an average rate of 8.03% inspite of government interference, like, for example, government subsidies on essential commodities and rent control. At the same time, during the same period, Jordan has enjoyed a bouyant economic growth with annual average growth rates of 12.4% and 4.1% at current prices and at constant prices respectively, inspite of its lack of raw materials and fuel.

As for the result of the association between the percentage rate of change in the consumer price index and the percentage rate of change in real GDP using the correlation matrix is found to be negatively related. While using the regression analysis (OLS) indicates that the inflation rate has a negative impact on the growth rate of real GDP, but the inflation

coefficient is found to be insignificant both at the 5% and the 10% level.

With regard to the estimated result of the impact of the growth rate of real GDP on inflation (using CORC) in Jordan is found to be negatively related and significant at the 5% level. However, the conclusion derived from this model is that an increase in the rate of change in real output can play a significant role in reducing the rate of change in the price level. However, the relationship between economic growth and inflation "will" entirely depend on the level of economy and its socio-political condition and both are determined by many different factors.

Finally, the reason behind a rapid growth in Jordan may be attributed to several factors, namely political stability which is enhanced by the loyalty of the army despite the existence of divisions in social and political issues. Therefore, without stability then the country would not be able to meet the needs and the ambitions of its people, neither would it achieve rapid economic development.

The growth also attributed to economic factors which has emerged from the increase in government expenditure which is maintained by investment activities in both public and private sector.

In addition to that it was as a result of the successful means of getting foreign resources in the form of grants and

loans to finance its government expenditure and consequently to enhance the process of economic development.

Thus, the growth in the economy was a result of enjoying an adequate international reserve, which was due to the inflow of external resources, i.e. the growing remittance of Jordanian's working abroad and the aid from the Arab oil producing countries and also other friendly countries (USA) to Jordan which is still a major contribution to the balance of payment surplus and into the economy as a whole.

Furthermore, the rapid growth is also attributed to government policy in encouraging indigenous entrepreneurship and foreign investment. Hence the government has realised the role which it can play in the process of economic development. Thus, the strength and stability of the Jordanian currency which was a result of an increased level of foreign reserve which has proved to be very important in its support for the development process, not to mention the quality and the skill of the labour force which is also very significant to the Jordanian economy.

However, the expansion in the Jordanian economy in the future will depend heavily upon the financial support from its allies, namely, the Arab oil producing countries and western countries. This dependence, however, has its own drawbacks. In particular the problems which are dominating the Arab oil producing donor countries. The 1982 oil gluts caused the Arab oil producing countries, with the exception of Saudi Arabia, to

tighten their belts and their fears that aid to Jordan in the years to come may not be so generous as in the past. The decline in the economy of the Arab oil producing countries, caused by a decline in oil revenue, would affect the earnings of the expatriate Jordanian workers in these countries, and thus hit the income of the Jordanian economy from remittances.

Chapter six progresses to examine the role of the government in the inflationary process in Jordan. It is argued in chapter six that an increase in government expenditure per se will not necessarily lead us to expect more inflation, hence it depends on many factors.

With regard to government expenditure in Jordan, it has been found to be increasing with an average growth rate of 17.4%. This has far exceeded the average growth rate of the price level of 8.03% during the period 1966 - 1985. Thus, on average, the proportion of government expenditure to GDP has been found to represent 53.1% during the same period.

In fact, the growth of government expenditure in Jordan was a result of many significant factors, namely the political threat, increase in population, inflation, the government's active role in implementing the three and five year development programmes, the availability of foreign resources, and increasing government subsidies.

With regard to the empirical findings of the regression analysis of $\Delta \ln P_t$ against $\Delta \ln GE_t$, using annual data for the

period 1968-1985 which reveals that an increase in government expenditure can have a considerable impact on the inflationary process in Jordan. Thus, the empirical findings (goodness of fit of the model) exhibits that an increase in government expenditure alone is not enough to explain the inflationary process in Jordan. Hence, it only explains 31.2% of the variation in $\Delta \ln P_t$ and 68.8% would be due to other factors.

With regard to direct tax, indirect tax and non-tax in Jordan, where they have all been found to be increasing, with an average growth rate of 20%, 15.6% and 14.7% respectively during the period 1966 - 1985. In addition, the relative importance of direct tax in the total domestic revenue, and in GDP has also increased during the same period. But the relative importance of total indirect tax in domestic revenue has fallen, while relative importance in GDP has increased.

Our analysis in this chapter has also indicated that there are many significant factors which could influence Jordan's domestic revenue, namely, the openness of the Jordanian economy which, accompanied by the price and income elasticities of demand for imports which prevails in the international market, the increasing income from economic activities, remittance, inflation, political instability, exemption law, tariff policy, and government attitudes which is associated with the inflow of foreign aid.

Besides this, we have also stated that the argument that budget deficits can be considered to be a sign of excess demand

in the economy which is generated by the expansion of government spending. But its impact on inflation depends on the state of the economy as well as the nature and condition of financing the budget deficit.

Moreover, we have cited some empirical arguments related to the effect of inflation on government expenditure, revenue and budget deficit and we have also indicated that there are many factors behind fiscal deficit in LDCs. These factors, however, may be the result of either a political or structural weakness in the economic institution, or the socio-political structure of the economy which are beyond the control of government, at least in the short run.

Furthermore, overall budget deficit in Jordan has increased rapidly, with an average growth of 20.9% during the period 1966 - 1985 inspite of the increasing inflow of foreign budget support. Given the limited opportunity to finance the budget deficit in Jordan, the size of the overall budget deficit will be dependent among other factors, on the future inflow of budget support.

In chapter seven we moved to examine the contribution of the monetary expansion to the inflation process in Jordan. Our main findings in this chapter can be summarised that the monetarists take the view that inflationary pressure in the economy will arise where excessive growth in the money supply has exceeded the growth of real output, and yet an increase in the money supply may appear to be inflationary, but much of it

depends on the state of the economy.

However, Jordan has experienced a rapid increase in the money supply, and on average, the annual rate of change in the money supply (M_1 definition) during the period 1966 - 1985 has far exceeded the annual rate of change in the price level 15.81% and 8.13% respectively.

At the same time, on average, the annual rate of change in the money supply has also far exceeded the annual rate of change in real GDP i.e. 15.81% and 4.41% respectively during the same period and this may indicate that monetary expansion in Jordan could not be absorbed and that this therefore may be reflected in price rises.

But we have also indicated in our analysis that the parallelism between the annual average rate of change in money supply, and the annual average rate of change in price level is not quite strict, hence an increase in the money supply is not always sufficient to explain inflation. Inflation may, therefore, also be explained by many other factors in the economy.

In our analysis, we have also examined the main factors which could have influenced the expansion of the money supply, namely the net foreign assets, credit to the private sector, credit municipalities and public entities and by credit to government and semi-government institutions. Where they have registered a compound growth rate of 10.46%, 20.4%, 23.75% and

26.3% respectively, during the period 1966 - 1985 (except for the 26.3% which was during the 1969-1985).

With regard to the empirical findings of the regression analysis of $\Delta \ln P_t$ against $\Delta \ln MS_t$ (M_1 definition) using annual data for the period 1968 - 1985, which demonstrates that an increase in money supply can have a considerable impact on the inflationary process in Jordan. Thus, the empirical findings (goodness of fit of the model) also shows that money supply alone is not enough to explain the inflationary process in Jordan, hence it has only explained 52.7% of the variation in $\Delta \ln P_t$ and 47.3% would be due to other factors.

In chapter seven, we also investigate the composition of the money supply and the relative importance of its component to the money supply. However, money supply (M_1 definition), quasi-money and money supply (M_2 definition) have increased and registered a compound growth rate of 15.37%, 23.1% and 18.4% respectively during the period (1966 - 1985).

Thus, we have examined the impact of currency held by the public and the demand deposits on the money supply. However, their relative share of importance is found to be with an average of 64.28% and 35.72% respectively during the period (1966 - 1985) and the reasons behind a higher preference for holding currency have also been identified.

At the same time, the behaviour of the commercial banks and the monetary authorities through liquidity ratio, reserve

ratio, excess liquidity ratio, and excess reserve ratio were assessed. However, despite the introduction of Treasury bills in 1969, the introduction of government bonds in 1973, increasing the measure of the central bank of Jordan (CBJ) to curtail credit expansion in 1976 and 1979, and the establishment of the Amman Financial Market, the monetary policy in influencing the volume of credit and money supply in Jordan has not proven to be effective through the required liquidity ratio and required reserve ratio, because commercial banks have always maintained a high actual liquidity and reserves which have far exceeded that required by the CBJ. However, the reasons behind this have also been identified.

We have also examined the nature of commercial banking activities, and we found that the credit facilities by the commercial banks has increased, with an average growth rate of 20% during the period 1966 - 1985. Thus, the reason behind this growth has also been investigated.

We have also pointed out that one striking feature of the distribution of credit by the commercial bank is their preference to finance domestic and foreign trade, and their reluctance to finance the agricultural sector. This can, however, be seen from their relative share in the total credit extended by the commercial bank. For example, the share of the bank credit going to finance domestic and foreign trade, construction, industrial and agriculture were an average of 35.9%, 23.46%, 10.78% and 2.53% respectively during the period 1966 - 1985. This, however, may indicate that the increase in

the volume of credit was not accompanied by a fair distribution of credit among sectors of the economy, and inspite of the emphasis by the three and five years development plan to distribute credit in favour of the productive sector.

Chapter eight has been designed to show the contribution of foreign trade prices to Jordan's inflation. Our main findings of that chapter can be summarised in that the world has experienced a number of unprecedented changes which have, in turn, contributed to the sharp rise in import and export prices.

Thus, in chapter eight, we also pointed out that any economy which is engaged in overseas trading is bound to be exposed to inflationary impulses from the world outside, but much of its effect depends on many factors.

In our analysis, we have indicated the significant importance of the foreign trade in LDCs, with special reference to Jordan. However, Jordan is a small open economy. Whereas the foreign trade as a percentage of GNP is found to constitute an average of 64.09% during the 1966-1985. This was a remarkable high figure which demonstrates the degree of dependency of the Jordanian economy on the international market, which consequently makes the economy highly sensitive to the external movement of prices unless it is offset by exchange rate appreciation or by adopting other policies to rectify these movements.

With regard to the value of the commodities imported in Jordan, it has been found to be increasing with an average growth rate of 15.62% which outstripped the average growth rate of GNP of 12.85% per annum for the period 1966 - 1985. Thus, the average propensity to import (import/GNP) has been found to represent an average of 52.65% over the same period, while the marginal propensity to import, which has been estimated using both the OLS and CORC where they both indicate a high level of GNP is spent on imports. This is a good demonstration of a growing demand for imports.

Moreover, we also pointed out that many LDCs are vulnerable to inflation because of high income elasticity for imports. In Jordan's case the income elasticity for imports has been estimated by using both OLS and CORC, and in both cases it is found to be very elastic. Thus, we have also outlined the reasons for increasing the demand of imported goods over the period 1966 - 1985.

As far as the value of domestic commodity exports and re-exports are concerned, they have been found to be increasing with an average growth rate of 19.4% and 20.04% respectively during the period 1966 - 1985. Thus, we also identified the reasons behind this increase.

In our analysis, we have found one striking feature, that since the early days of recording trade statistics, trade deficit has been a characteristic feature of Jordan's balance of payments. However, the deficit in the balance of trade has

been found increasing, with an annual average growth rate of 14.55% during the period 1966 - 1985.

Chapter eight also suggests that since Jordan's economy has remained dependent on foreign trade, it was therefore, bound, in the 1970s, to be exposed to inflation in the price of import goods.

However, the unit value of imports and consumer price index have increased with annual average growth rate of 6.49% and 8.03% respectively during 1966 - 1985. At the same time, on average, the annual rate of change in unit value of imports is also closely parallel with an average annual percentage change in CPI i.e. 6.96% and 8.13% respectively during 1966 - 1985.

With regard to the empirical findings of the regression analysis of $\Delta \ln P_t$ against $\Delta \ln P_m_t$ (V_3) using annual data for the 1968-1985, which shows that increase in the calculated import price level can have a considerable impact on the inflationary process in Jordan. Thus, the empirical findings (goodness of fit of the model) also shows that imported price alone is not enough to explain the inflationary process in Jordan, hence it only explains 56.9% of the variation in $\Delta \ln P_t$ and 43.1% would be due to other important factors.

In chapter nine we set out to evaluate other contributory factors which could be held responsible for the inflationary process in Jordan. Our main findings suggest that with the state of rising prices, workers try to maintain their share in

the national income by demanding a wage increase, but this will depend on many factors. Namely, the level of employment, the productivity of labour and worker bargaining power.

However, we have also pointed out that in LDCs the cost pressure on prices as a result of wages is thought to be weaker than in the advanced countries. Therefore, the reasons for this weakness has also been identified.

Our analysis regarding the wages in Jordan, was confined to the changes in the size of the compensation of employees. However, the compensation of employees has been found to be increasing, with the annual average growth rate of 13.96% which has also exceeded the annual average growth rate of the consumer price index 8.03% during the period 1966 - 1985. At the same time, on average the rate of change in the compensation of employees was 14.83% which was far greater than the rate of change in the price level (8.13%) during the same period 1966 - 1985. This may reveal that there is no evidence of parallelism between them.

As far as the labour market is concerned, both internal and external demand for labour has affected the rate of unemployment in Jordan and has given an impetus to labour's claims and to push up salary and wage levels in Jordan as employers attempt to retain their employees and resulted in importing manpower from other Arab and non-Arab countries.

With regard to the empirical findings of the regression

analysis of $\Delta \ln P_t$ against $\Delta \ln W_{1t}$ - using annual data for 1968-1985, which exhibits that an increase in the calculated annual wage per employee in Jordan could not have any significant impact on the price level. However, the reason for this has been identified.

With regard to the role of the agricultural sector, many developing countries nowadays start to appreciate the importance of agriculture in economic development. In our analysis, we have found that Jordan, for the last 20 years, has experienced a fluctuation in the annual percentage change in the food production and per capita food production as well as the total agricultural product and per capita of agricultural production. These fluctuations may be a result of the variation in rainfall and other climatic conditions, or other factors such as price, employment, income and demand.

Moreover, the agricultural product at current prices on average of five years, has witnessed a rapid increase, while on average of five years the agricultural product in GDP has fallen. This fall was a result of many factors, among these factors is the labour migration from this sector as well as the unfavourable rainfall.

Furthermore, the domestic agricultural sector in Jordan has failed to produce foodstuff in sufficient quantities to meet the increasing demand of the country's population. Therefore, in order to satisfy their increasing demand for food, the country has become dependent on food imports, which has

undoubtedly become a burden on the Jordanian economy and in particular, on the balance of payments.

The main factors behind the the growing agricultural deficit were identified in this chapter. It was indicated that some of these factors have created an excess of demand for food and consequently they have put pressure on food prices and the general price level.

However, the annual percentage change in food prices has far exceeded the annual percentage change in the consumer price index in 1969, and between the period 1970 - 1976. This may indicate a large excess demand for food which subsequently exerted high pressure on food prices.

The conclusion derived from the empirical findings of the regression analysis of $\Delta \ln P_t$ against $\Delta \ln RPF_t$, using annual data for the period 1968 - 1985, is that an increase in the calculated relative price of food could not be held responsible for the inflationary process in Jordan. However, the reason for this has been identified.

In Chapter 10 we proceeded to devote our examination to an empirical study of inflation in Jordan. Using a replica of the monetarist (Harberger) model, the structuralist model, the combined model, and conducting some forms of modification. Our main findings indicated that the monetarist explanation of inflation in Jordan using the Cochrane-Orcut correction (CORC), by using annual data for the period 1968-1985, has improved the

results drastically. Especially when it is compared with the results utilizing ordinary least squares (OLS).

Although applying CORC has improved the statistical criteria, it does not make it necessarily true, hence the presence of autocorrelation may be due to missing variables.

Despite the fact that there has been some improvement in the explanation of inflation in Jordan (in particular after correcting the first order serial correlation), the monetarist (Harberger) model in the context of a closed economy has not been adequate to explain the inflation in developing countries in general and in Jordan in particular, due to many factors. These factors, however, have been identified.

The combined model, on the other hand, has taken into account some of the missing variables. This model has performed with better results than the basic Harberger using OLS, and the empirical findings of this model also indicate that the problem of inflation in Jordan has to some extent monetarist origins. That is to say, an increase in the rate of change in the money supply in Jordan can exert some pressure on the inflation in the short term, and therefore anti-inflation policy based on restraining the rate of change in the money supply can play an effective role in fighting against inflation in the short run, although its magnitude is still considered small. It is also virtually not completed in full in the current period, which also implies that it requires a relatively long time to have an effect on the inflation rate

which in turn implies that only a series of anti-inflation monetary policies consisting of sustaining a reduction in the rate of change in the money supply.

However, an effective control over money supply growth and hence inflation in Jordan requires the rationalization of domestic government expenditure. Although it is difficult, hence financing a budget deficit has still remained outside the control of the monetary authorities and thereby domestic inflation is likely to continue.

Moreover, we have also pointed out that the authorities in Jordan may fall into the illusion if they only consider a reduction in the rate of change in money supply is sufficient to fight inflation. Hence imported prices which have mainly originated from abroad is found to be much quicker than the rate of change in the money supply in affecting the rate of change in price levels in Jordan. This does not, however, come as a surprise. Hence, Jordan has still remained a highly open economy and is burdened by the essential requirement for the development plan and accompanied by a weak sterilization policy. Therefore, import inflation is likely to continue.

Furthermore, the empirical findings of the combined model reveals that the public expectation of higher inflation seems to play a significant role in sustaining the inflation in Jordan. Therefore, policy makers in Jordan should be aware of this factor which has a significant impact on the public's decision to hold money.

With regard to the empirical result of the structuralist explanation of inflation in Jordan which were utilizing OLS, by using annual data for the period 1968-1985, by assessing the relative importance of the explanatory variable, at the same time variables that have virtually no effect are excluded from the model.

However, the empirical findings of the structuralist model indicate that an increase in real output would reduce the price level, given that other variables are held constant.

It also indicates that an increase in the deficit rate can exert a pressure on the price level. This, however, has not come as a surprise considering that government expenditure is increasing dramatically over the total domestic revenue and the financing of such budgets was coming partly from domestic borrowing (mainly in the form of advances from the central bank, Treasury bills and government bonds). Thus, financing the government expenditure also comes from foreign grants in the form of budget support, and from both economic and technical assistance, and by foreign borrowing in the form of development loans and from domestic revenue.

The empirical findings of the structuralist model also indicated that the increase in the rate of change of the calculated imported price level is one of the main primary sources of inflation in Jordan. This, however, has not come as a surprise. Hence, Jordan still remains a highly open economy

and its development programme still remains dependent on the imported equipment, let alone Jordan's heavy dependence on foodstuffs and crude oil, the prices which have undergone a sharp increase during the period under investigation which also has been accompanied by a weak sterilization policy. Therefore, Jordan's rate of inflation is bound to be exposed to inflationary impulses from the world outside.

Thus, the empirical findings of the structuralist also yields a considerably better result than basic monetarist (Harberger) model using OLS. But it yields an almost similar result of the combined model (the final form) in explaining the behaviour of the price level in Jordan.

As far as the empirical findings of the contribution factor model is concerned, it reveals that an increase in real output would reduce the price level, given other variables are held constant.

Thus, the empirical findings of the contribution factor model also exhibit an increase in the rate of change in government expenditure and money supply are not significant at the 10% level. Actually, the reason was due to the existence of multicollinearity between variables. While it indicates that an increase in the rate of change in the calculated imported price level is one of the main sources of inflation in Jordan.

Moreover, the empirical findings of the contribution factor

model also yields a considerably better result than basic monetarist (Harberger) model using OLS. But it yields an almost similar result of both the combined model (the final form) and the structuralist model in explaining the behaviour of the price level in Jordan.

However, the conclusion derived from both the theoretical and empirical studies of inflation is that it is naive to attribute inflation in LDCs (and Jordan is no different) to a single cause but rather to many which tend to be very complex and what is true about the effect of inflation for periods (or country) may not be for another, and the problem of inflation cannot be separated from the problems of underdevelopment and development.

Thus, attention should also be given here that the formulation of anti-inflation policy tends to cause serious economic, social and political disturbances. An example of this would be a solution to inflation which would not be consistent with maintaining employment and growth and may be unacceptable politically. However, policies which are directed to reduce inflation may, in fact, lead to many other problems within the economy, so a large amount of information will then be required on many aspects of the inflationary process together with inter-relationships with other economic variables.

11.2 Suggestions:

On the basis of the work undertaken, the following suggestions are offered to guide the Jordanian policy makers and future investigators in their efforts to bring inflation under control, if so desired, at the same time to try to minimize the problem facing the Jordanian economy.

(1) The empirical findings indicate the growth in real output can reduce the inflationary pressure in the Jordanian economy. Therefore, more emphasis should be placed upon increasing domestic product and policies should be geared towards that end. However, attention should be given to structural changes, especially the sector which constitutes bottlenecks, and there should be an attempt to improve the quality of production resources through advanced technical methods. These, however, can be promoted by public investment. At the same time, the government should try to encourage the private sector to challenge their saving to supply funds for productive investment. Thus, relative political stability should always be maintained, hence it is a very influential factor in sustaining the growth of the country.

(2) Thus, the empirical findings also suggests that the budget deficit rate and the growth in government expenditure can have a major impact on aggregate demand and consequently, on the rate of inflation in Jordan. Therefore, in order to reduce the inflationary pressure in Jordan, it is necessary

in a sense, to limit the increase in government expenditure through a process of rationalization. But reducing the rate of growth in government expenditure may not be the most favourable policy in the view of both the government and the general public, but elimination of non-essential expenditure and diverting this expenditure to more productive and more urgent uses might be ideal. For example, an increase in government investment in basic infrastructure would eventually contribute to the social aggregate supply and may lead to a reduction of inflation pressure.

Simultaneously, tax revenue should be potentially utilized. Therefore, the government should consider raising additional tax revenue by reorienting the tax structure, eliminating the structural deficiencies facing the tax system. Although increased taxation may temporarily help to hold inflation. Therefore, it cannot be pushed very far with economic implications for diminishing demand. In a country like Jordan which is still trying to increase its industrialization, it is necessary therefore, to search for tax revenues (direct and indirect) which do not allow the suppression of economic growth by harsh cuts in aggregate demand or the discouragements of strategic capital imports which is still considered crucially important for the economic development of the Jordanian economy.

Above all, attempts should be made to minimize the consequence of revenue instability in Jordan, by easing the

country's dependence on foreign aid as a major source of financing budget deficit, and in order to avoid inflationary conditions, domestic borrowing from the private sector should be urged at the expense of the banking system.

- (3) However, during the period under investigation, Jordan's imports have been rising to a very high level indeed. Thus, the empirical findings have also demonstrated that an increase in the rate of change in the calculated imported price level can contribute to the inflationary process in Jordan. But there is little the Jordanian government can do about the foreign prices - they are outside their control. However, a policy towards imports should be formulated not to control the flow of imports but rather to adopt some possible measure to reduce the problem of trade deficit and the effect of imported prices on the domestic inflation rate. What is necessary is an emphasis on the reduction of imported consumer goods in general and luxury goods in particular. Manufacturing industries should be encouraged, especially those which use domestic raw materials whilst at the same time, trying to protect them from foreign subsidised goods, competition, or dumping practices.

More attention should also be given to the development of the agricultural sector of the economy in order to reduce the imported food stuff, and because of their great potential to earn/save foreign exchange. Thus, exploration

for oil should continue, while there is still hope. Its existence in the country will reduce the demand for imported crude oil (the prices which have undergone a sharp increase during the period under investigation), and consequently will help to solve the major problems of the Jordanian economy.

- (4) Our empirical findings have also indicated that an increase in the rate of change in the money supply in Jordan has been one of the main sources of inflation in Jordan. Therefore, it is not surprising to suggest that restraining the money supply is a necessary condition for the control of inflation. However, the desirable reduction in the money supply can be achieved if we fully understand the source of the rate of change in the money supply.

In Jordan, however, the monetary growth was affected by the following factors, namely, the net foreign assets, credit to the private sector, credit to municipalities and public entities, and by the credit to government.

Meanwhile, an effective control over money supply growth, and hence inflation in Jordan requires a greater efficiency in monetary management, accompanied by a well developed money and capital market, as well as a strong sterilization policy, which Jordan still does not have at present.

However, more attention should be given by the government to developing its own source of finance and local money.

This may consequently eliminate the needs of the Jordanian manufacturing industries to look abroad for their capital requirement, as well as the repayment of interest rates, which will be a blessing to Jordan's economy. At the same time, the repayment of interest rates is likely to grow and ultimately would affect capital movement in the balance of payments. Although the greatest would be public confidence in the money and financial markets, but a start should be made and with reliable professional management. This, however, can be achieved eventually.

In addition, the structure of interest rate should be changed and attempts should also be made to adopt a flexible interest rate policy, if this policy is pursued, then the public's holding of money component would be influenced and diversified, and eventually would help to mobilise domestic saving, reducing the commercial bank excess liquidity. Thus, adopting a flexible interest rate is likely to challenge the flow of remittance of Jordanians abroad into the productive sector of the economy.

Moreover, the monetary authorities, along with the help of commercial banks, should be encouraged to adopt a discrimination policy towards the allocation of credit in favour of extending credit to productive activities consistent with the main objective of the economic development plans.

Furthermore, there is another necessary condition to an

effective control over money supply growth and hence inflation in Jordan, that is, a rationalization of domestic government expenditure which has escalated following the implementation of economic development. Although it is difficult, hence the financing of a budget deficit has still remained outside the control of monetary authorities. Therefore, what is required is cooperation between the Ministry of Finance and the monetary authorities and the Ministry of Planning.

- (5) Our empirical findings suggested that the increase in the rate of change in the relative price of food was not considered a source of inflationary process in Jordan. While the analytical findings of the agricultural sector suggested that the agricultural sector in Jordan has experienced a fluctuation in its output, and food shortages are met by imports. Thus, the agricultural sector in terms of its share of total output and employment indeed has been declining. Therefore, this sector needs to be given a greater emphasis on the development strategy of the country. This can be done by increasing public sector investment in the agricultural sector that removes the fundamental constraints on agriculture, and the needs to provide sufficient water resources, and the public ought to be made aware of the need to conserve water resources as well as being aware of the economic consequence of importing food stuff and food insecurity, and the government should also adopt a policy towards reducing rural-urban migration and people should be induced back to

the farms.

Thus, we should emphasise the necessity to accelerate agricultural development by providing adequate incentives for private investment in agriculture in the form of effective land reforms which implies an improvement in the use of land, greater use of fertilizer, and in some case, introduce farm machinery, and price stabilization measures in order to increase output and income.

(6) Furthermore, the empirical findings also indicate that the public's expectation of higher inflation seems to play a significant role in sustaining inflation in Jordan. Therefore, policy makers in Jordan should be aware of this factor which has a significant impact on the public's decision to hold money. However, the government should mitigate the public inflation psychology by trying to inform the public about the expected inflation, real interest, the real purchasing power, and trying to put the public in the picture about the grave consequences of exaggerating their inflation expectation. After all, one can argue that inflation can be potentially brought under control or at least kept within bounds through a combination of appropriate government policies such as the monetary, fiscal and trade policies.

(7) Finally, more efforts should be devoted towards producing an accurate and standardization of the availability of data. Consequently, if this is implemented, this will lead

to facilitate authentic economic research and analysis. Thus, the author believes that if these suggestions are successfully implemented, they will lead to a minimization of Jordan's economic problems, and consequently it will lessen the inflationary pressure in Jordan.

11.3 Further Study

Having pointed out these suggestions, our study has remained unable to establish the importance of all structural constraints that may confront the Jordanian economy. At the same time, these structural constraints do not easily subject themselves to econometric testing. Therefore, more emphasis should be given in future to identifying and quantifying other structural constraints.

Our study does not claim to offer a complete model of the inflationary process in Jordan. What is required, however, is to develop a simultaneous equation model which takes into account both the aggregate demand and supply for Jordan in which a price inflation equation can be set out.

Further research is needed to be undertaken which includes quantifying the consequence of inflation. This is completely unknown territory since no attempt has yet been made to assess, econometrically, the harmful effects, if any, of inflation on the Jordanian economy.

Finally, another area which is worth further

investigation is the welfare cost, if any, of reducing the rate of inflation in Jordan. However, what is required is to emphasize that economic variables do not work independent of each, but rather they interact. At the sametime, the issue concerning the problem of inflation in Jordan cannot be separated from other economic, social and political problems confronting the Jordanian economy.

APPENDIX

CALCULATED VARIABLES

Year	Calculated Imported Price Index	Calculated Annual Average Wage per	Calculated Relative Price of Food
1966	50.238	829.882	28.726
1967	50.916	884.518	28.782
1968	50.049	946.191	28.764
1969	52.944	1015.715	43.880
1970	55.203	1087.325	43.612
1971	56.523	1137.118	46.990
1972	61.883	1298.848	50.190
1973	69.508	1210.093	64.990
1974	93.154	1236.048	87.611
1975	100.000	1487.074	100.000
1976	104.289	1775.409	103.900
1977	113.514	2038.910	107.440
1978	116.871	2131.428	97.880
1979	137.657	2684.624	77.380
1980	170.127	3438.036	77.225
1981	185.340	3726.548	78.145
1982	206.023	3750.087	72.000
1983	197.076	4019.846	66.600
1984	203.418	4149.621	62.590
1985	209.338	4402.008	60.870

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