THE IMPACT OF PETROLEUM REVENUES ON PUBLIC EXPENDITURE IN NIGERIA WITH REFERENCE TO IRAN, IRAQ AND VENEZUELA

Philip Sulaiman Usman

B.Sc, Ahmadu Bello University, 1971
M.Sc, University of Wales, 1973

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Dedicated to my wife

for patience and encouragement.

APPROVAL PAGE

Doctor of Philosophy Dissertation

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Presented by

Philip Sulaiman Usman, B.Sc., M.Sc.

Major Adviser Gerald Sazama

Associate Adviser Polly Reynolds Allen

Associate Adviser Ramin Ramsaran

The University of Connecticut

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PREFACE

Studies on oil have tended to concentrate on the industry and its operations as well as the amount of revenues that accrue to oil producing countries. There is also a lot of literature concerning the pricing of oil and the general effect of that on global economic transactions. In general there are few studies on how oil countries are spending their revenues to enhance the welfare of their citizens.

Of particular significance is the dearth of comparative studies among oil countries. The objective of this study is a comparison of the expenditure strategy of four oil countries, Nigeria, Iran, Iraq and Venezuela. The study attempts to compare how these countries have approached the enhancement of welfare over time. Of particular importance in the study is the fact that oil is exhaustible and therefore revenues from it cannot be generated indefinitely. Someday the revenue will stop flowing in. If the welfare level is to be enhanced when this happens, the countries must invest their current revenues in appropriate investments that ensure maximum output generation. If not by the time oil runs out, because these economies have had no alternative bases, there will be a decline in welfare levels.

By incorporating the issue of depletion in our analysis, this helps to focus on the necessity to diversify the economies of these countries if welfare is to be enhanced longer than the life of oil. Since welfare maximization depends on increased output generation, in Chapter VI of the study we examine the sectors of the economy - agriculture, industry, infrastructure, education and health - whose performance

significantly affect output levels and consequently welfare.

Attempts have also been made to show how revenues could be wasted thus reducing the chance of generating maximum output. The primary role of the dissertation however remains that of providing a comparative study of the use of oil revenues in order to see what lessons, if any, Nigeria could learn from the other countries.

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CHAPTER I

INTRODUCTION

Crude oil is one of the world's most valuable resources. Its universal importance makes it an issue of interest to consumers and producers. Its value in the production of a large variety of goods and services places it in a category by itself. The recent increases in the price of oil has focused attention mainly on the price side of this commodity. For producing countries the price is certainly important but a more important issue is the use to which the revenues from oil are put by the producing nations.

Economic development literature places much emphasis on the constraints on development in less developed countries (LDCs) particularly on the lack of capital. Capital is not the only missing resource, but most analysts stress that if capital were available, the remaining problems and constraints to development will be taken care of.

The oil producing countries do not face the capital constraint that affects other LDCs. This implies that there is a great opportunity to effectively structure their economics in such a way as to achieve maximum benefits from the development effort. To achieve this goal the oil exporting countries have designed a series of development plans. Each successive plan builds on the previous one and it is hoped that each will increase the economic production capacity. However, oil is a depletable resource. It becomes necessary, therefore, to use the available oil revenues to develop an economy which will insure continuous development after the oil runs out.

Nigerian economy. West Africa No. 3195, October 1978, p. 1985.

runs out. Moreover, it is likely that without proper development of the non-oil sector present welfare levels cannot be sustained in the absence of oil revenues.

The major assumption of this study is that for effective development to take place in these economies, oil revenues must be converted into reproducible capital. This can be achieved by investing oil revenues in agriculture, industry, infrastructure and human capital. In this way, public expenditure enhances welfare, which is the objective of development. This will also provide a strong basis for future revenue generation capacity in these economies.

In maximizing welfare the following factors will be examined: (1) The growth of human capital, (2) Social indices such as incidence of basic diseases (malaria, dysentry, etc.) and the rate of infant mortality, (3) Growth and quality of social and overhead capital such as roads, railways, etc., (4) Employment structure and employment generation capacity of the economies under study.

The Model

If welfare is to be maximized now and in the future, these countries must allocate much of their revenues to investment now, otherwise their capacity to generate future revenues will be jeopardized. That is, in year T, when oil is depleted, these countries must have created an economy which will provide alternative sources of revenue.

In maximizing welfare over time, however, a decision must be made regarding how much goes into consumption vis-a-vis investment. The determinant in this decision process is basically how much policy makers want to achieve for a given economy within a given time period. The

model stresses that if welfare is to be maximized in the long run - after oil runs out - it is necessary to curtail current consumption and increase current investment.

But the ability to invest depends on the absorptive capacity of the economy. If a given economy lacks the capacity to absorb the funds at its disposal there is a high probability that the funds will go mainly into consumption which might raise present welfare but with no guarantee for higher welfare levels in the future or even the capacity to sustain the present level.

Methodology

Using the functional budgetary allocation system, expenditure allocations in consumption and investment activities will be determined. The allocation will reveal the emphasis these countries are placing on present versus future consumption and thus welfare maximization. In the investment sector it will be necessary to disaggregate the expenditures into expenditure on industry, agriculture, transport and communication in order to examine the effectiveness of the expenditures. Consumption expenditures include health, most of education and others usually subsumed under social services expenditure.[2] No attempt will be made to look at efficiency issues because for social expenditures efficiency analysis tends to be inconclusive and subjective. Furthermore, the paucity of the necessary statistical information for these countries makes this approach almost impossible.

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[2]This is the approach used by the U.N. and other international organizations. James O'Connor in "Fiscal Crisis of the State" uses a variation of this also. See, James O'Connor, Fiscal Crisis of the State, New York, St. Martin's Press, 1973, Chapters 4 and 5.

Aside from this general description of the nature of the study, the rationale for several specific aspects of it should be outlined. Oil revenues are exogenously determined, therefore the focus of the study is an examination of the investment performance of the countries in industry, agriculture, transport and communication, health and education. Comparative analysis will be undertaken of these sectors in all these countries. Where applicable U.N. figures were used.

The countries were chosen for four reasons:

(1) All the countries belong to the Organization of Petroleum Exporting Countries (OPEC).

(2) Their level of development and social background are similar.

(3) The public sector is the major sector in these economies.

(4) Each of the countries has a relatively large population in comparison to many of the countries in OPEC. Nigeria (80-90 million), Iran (36 million), Iraq (12 million), Venezuela (14 million).

All four countries have achieved significant growth rates of their economies within the period chosen. Within the four country sample, economic development varied from very rapid in Iran, rapid in Nigeria and Iraq and moderate in Venezuela. Of the four countries, only Venezuela has not been able to meet some of its growth targets in the period chosen. Even then its growth rate was quite high compared to many non-oil LDCs. Each country performed differently in their development. While some did quite well in agriculture, others did better in industry. In all countries there has been a marked effort to improve human capital. Nevertheless there are still important differences in performance in this sector.

The sample countries allow, then, not just a comparative study, but one in which there was considerable variance in overall performance which implies some variance in the attempt to establish bases for self-sustaining development process. This presents an opportunity for some generalizations about the role of oil in meeting the diversification strategy of oil producing LDCs. We can also generalize about the likely effects of 'abundant' capital on the develop strategy of LDCs as a group. Furthermore, by putting Iraq in our sample, we have a comparison in performance between a socialist oriented less developed country and free enterprise less developed economies.

Because the main emphasis of the study is on Nigeria, the time horizon of the analysis had to be limited to the years 1950-1976. Several factors dictated this choice.

Oil was discovered in Nigeria in 1956 and exports began in 1958 but reached significant proportions only in 1961. Venezuela and Iran were important producers as early as 1928. Iraq became an important producer only in the early 1950s. However, in each of these nations the oil industry's contribution to the public sector became significant only in the early 1950s. For "increasing pressure from European consuming nations, the deterioration of balance of crude oil supplies in the United States, the appearance of marginal competition in crude oil production, and other phenomena...combined with the insignificant political influence of producing countries, brought about the price reductions of 1959 and 1960 and the creation of the Organization of Petroleum Exporting countries that immediately followed."[3]

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[3] Taki Rifai, The Pricing of Crude Oil. Economic and Strategic Guidelines for An International Energy Policy. New York, Praeger Publishers, Inc. 1974, p. 3.

Since 1960 the amount of revenues accruing to these countries from oil has increased annually. The seventies in particular are very significant periods of oil price changes and consequently of massive revenue increases for these countries. As a result almost overnight their capital reserves rose beyond their absorption capacity. Thus to compare Nigeria with the other countries we have to start with 1950.

The upper limit on the time scale was dictated by the availability of statistics. For almost all LDCs, basic statistics continue to be very difficult to obtain. Furthermore, Iraq - because of its political leanings - has been laggard in providing economic statistics except through international organizations such as the World Bank and the United Nations.

The period chosen is long enough to provide an opportunity for these countries to undertake the type of projects that will give rise to self-sustained development after oil runs out. Virtually all these countries have completed three to four development plans or the fourth one is in the process of implementation. Besides, by 1975 these countries had experienced a considerable period of growth in industrial activities which have led to some structural changes in output and employment.

Uniqueness of the Study

This study presents a comparative analysis of performance of the economies of some OPEC countries. Many studies of these countries are related either to a discussion of the oil industry only or giving a series of programs that have or are being executed. There has been no comprehensive comparison of the performance of the economies of these countries in spite of the importance of oil revenues to their development

efforts. Furthermore, this study is not regionally oriented. Instead, it incorporates countries in all the major regions represented in OPEC: Middle East, Latin America and Africa. While most studies concentrate on the amount of revenues these countries are collecting and their individual expenditures, there is a lack of comparative analysis of expenditures of OPEC member countries which is the crux of this study.

Outline of the Study

The study proceeds as follows:

Chapter II reviews the literature regarding the role of public expenditure in the economy in the process of welfare maximization. It examines the reasons for public intervention in economic activities with special reference to LDCs. An important reason for public intervention is the fact that the private sector does not have the resources for making the necessary investments. It also discusses very briefly the various criteria of investment for development strategy. It is in this context that such issues as balanced and unbalanced growth strategies are discussed. The current discussion of 'growth with distribution' as being more effective for welfare maximization has also been discussed. This is followed by a brief discussion of the literature on the role of oil in developing strategy for development. The emphasis being the conversion of oil revenues into reproducible capital by undertaking public expenditure in agriculture, industry, infrastructure, health and education. The last section of the chapter deals with studies on oil in these countries in order to show how this study differs from others.

Chapter III provides background information about the countries under study. This information covers mainly operations of these

economies before and after the discovery of oil. This is important to understand the social and economic issues that must be taken into consideration in the process of enhancing development in these countries. The chapter also tries to provide a picture of historical evolution of the economies of these countries.

Chapter IV reviews the historical trend of oil and non-oil revenue levels. This brings to focus the increasing role of oil revenues in the over-all revenue levels in these countries. By so doing, the dependence of these countries on oil revenues is clearly shown. Consequently, the need to urgently diversify these economies is made clear.

Chapter V presents the methodology. This deals with the analysis of consumption and investment variables as a process of welfare maximization. It shows that if welfare is to be maximized after oil runs out these countries must allocate more of their revenues for investment activities now. Some curtailment of present consumption would be necessary in order to achieve this. By putting more emphasis on investment, consumption is postponed into the future. This assumes future welfare maximization. But the effectiveness of investment depends on the absorptive capacity of the economy. The chapter shows that where absorptive capacity does not exist, excessive luxury expenditures, waste etc. will result.

Chapter VI deals with the use of oil revenues in agriculture, industry, infrastructure and human investment. This chapter analyzes the effectiveness of public expenditure in the sectors listed above. Since these sectors are the crucial sectors in the establishment of viable economic bases that can replace oil in revenue generation, the performance of public expenditure with regard to these sectors is very important.

With regard to the agricultural and industrial sectors, the first issue is that of productivity in these sectors. This is measured in terms of the trend in the index of output levels over the years. In the case of agriculture the performance of the food sector becomes an issue of considerable importance. In industry additional issues include the type of industrial structures being developed and the nature of employment structure as a result of such industrial strategy. Of special interest is the trend in the growth of production capacity through the establishment of producer goods industries.

In the transport and communication sector the analysis is related to the volumes of these facilities available and their distribution in the countries. The volume makes these facilities more accessible to the population of these countries. The structure is important in terms of overall economic activities.

In the human investment sector, the analysis focuses on the incidence of basic diseases such as malaria, dysentry, etc.; infant mortality rates; and improvement in preventive medicine. In education, literacy rates as well as the structure of skills evolving as a result of educational expenditures are the issues of special interest.

Chapter VII analyzes issues related to problems of absorptive capacity in these countries. This discusses foreign investments - public and private - and throwaway expenditures i.e. expenditures that merely waste the available revenues such as excessive military expenditures, excessive luxury imports, etc. This involves discussing positive steps undertaken to deal with sudden influx of oil revenues.

Chapter VIII presents a summary and analysis of findings and concludes by drawing up a few lessons Nigeria could learn from the experiences of the other countries.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Rapid economic development is a principal goal of national policy in all nations. The desire for economic development in LDCs results from the need to increase income levels, enjoy the fruits of science and technology, to break the cycle of poverty and of low productivity. However, in LDCs the complex demand of the development process necessitates planning and guidance by the state. Therefore public expenditure plays a crucial role in LDCs in the process of development.

On the above premise, the public sector functions in some way different from that of the developed market economies. For example, in LDCs fiscal policy objectives are primarily long range, and include optimizing capital formation and ensuring that investment is directed into those fields where the social marginal efficiency of capital is highest.[1]

In conventional market economies, the public sector plays a role in the provision of public goods and services because the market has failed to function properly or where there is a policy of rejection of the relevance or outcomes of market processes because the private sector is unwilling to make investments which promise large social gains. Three factors lead to this phenomenon. One, there may be a sharp

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[1] R. B. Bangs, Financing Economic Development: Fiscal Policy for Emerging Countries. Chicago, The University of Chicago Press, 1968, p. 183.

divergence between the opportunity for private gain and social gain. Two, returns from the investment may be too remote or too slow to materialize to attract private investors. Three, the amount of investment involved in the project in question may be too large to be handled by private investors.[2]

In view of the above, liberal public expenditure theory has drawn a distinction between a private consumption good and a public consumption good.[3] In this context, the public sector is expected to provide only the public good, while private goods will be provided by the private sector. Thus, expenditures for public goods are often expected to produce non-appropriable outputs, i.e. a public good whose values accrue to all whether or not they desire it, with the result that explicit analysis of the distributional impact, economic efficiency or individual behavior response generated by the expenditure becomes very difficult.[4] Furthermore, where public outputs are appropriable, the lack of market transactions to serve as a yardstick of value makes it very difficult to determine the actual value of these public outputs.

Nonetheless, whatever economic structure or level of development we are dealing with, it is a fact that "there is a large, relatively stable and broadly uncontroversial government 'sector' of every economy

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[2]Walter W. Heller, "Fiscal Policies for Underdeveloped Countries" in Readings on Taxation in Developing Countries, edited by R. M. Bird and J. Heading, Baltimore, The Johns Hopkins University Press, 1975, p. 8.

[3]Paul A. Samuelson, "Diagrammatic Exposition of a Theory of Public Expenditure." Review of Economics and Statistics, Vol. 37, 1955, p. 350.

[4]Robert H. Haveman and Julius Margolis, Public Expenditure and Policy Analysis. Chicago, Rand McNally College Publishing Company, 1977, p. 3.

in the world. The theory of marginal public expenditure takes as given the legitimacy of government activity, and is concerned with choice making of the public decision maker between competing demands for his limited resources."[5] Thus since the mid-1950's, public economics has become concerned with the effect of public expenditures and other policy decisions on the size and composition of the nations output, the allocation of its resources and the distribution of its income.

It is with respect to the issues of growth and development that public expenditures on LDCs has become most crucial. To achieve their objectives, the public sector in LDCs has increasingly moved into what may be termed "pure" private sector activities in addition to its conventional role. For example, the public sectors in LDCs are actively engaged in textile manufacture, cement, food processing, etc. This implies that public investments in LDCs have gone beyond public capital investments that cannot be provided privately because of widespread enternalities or decreasing costs. It now includes non-externality yielding capital formation. This trend has consequently strengthened the role of the public sector in the economy.[6] Thus, "a responsible government in an underdeveloped country must both choose among the conflicting goals of action and make entrepreneurial decisions about resource allocation."[7]

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[5] Ibid, p. 27.

[6] Richard Musgrave, Fiscal System. New Haven, Yale University Press, 1969, p. 69-90 and Jesse Burkhead and Jerry Miner, Public Expenditure. Chicago, Aldine Publishing Company, 1973, p. 305.

[7] Jesse Burkhead, Government Budgeting. New York, John Wiley and Sons, Inc., 1956, p. 464.

This chapter reviews the literature on the role of the public sector in the development process and the role of oil in providing a basis for development and economic diversification.

Public Expenditure, Development and Welfare Maximization

As already stated, the goal of public expenditure in LDCs is the development of the economy. The importance of this stems from the fact that with development, welfare can be maximized as the level of output of the economy increases. According to Krishnaswamy, "for all countries, the ineluctable elements in a development policy can be grouped under two main requirements: (a) an enlargement of the supply of those factors of production whose relative scarcity is inhibiting growth and (b) attainment of a pattern of factor-use which secures the maximum social net product."[8] Given these requirements, the role of public expenditure aspect of fiscal policy in LDCs has increasingly become allocative. It is concerned with allocating more resources for investment and restricting consumption.[9]

With regard to investment, the public sector functions in deciding which forms of investment to undertake to ensure that the role of growth of the economy is accelerated. This requires public expenditure activities on a broad base. Such a strategy ensures that the available capital in a given economy is directed into maximizing output capacity leading to improved welfare.[10]

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[8] K. S. Krishnaswamy, "The Evolution of Tax Structure in a Development Policy" in Government Finance and Economic Development edited by Alan T. Peacock and Gerald Hauser, Paris OECD, 1965, p. 81.

[9] Raja J. Chelliah, Fiscal Policy in Underdeveloped Countries. London, George Allen and Unwin Ltd., 1969, p. 44.

[10] P. N. Rosenstein-Rodan, Capital Formation and Economic Development. Cambridge (Mass.), The M.I.T. Press, 1964, p. 8.

In recent years the public sectors in LDCs have resorted to development plans to enhance development. Through the use of national development plans, the public sector spend funds in executing productive investment to raise the role of growth of national income substantially in excess of the rise in population so that per capita national income increases. This implies that these public sector investments must provide for the most rapid growth of the productive power of the national economy.[11]

Planning strategy as used by the public sector in LDCs coordinates three issues. One, allocating investment to assure the most rapid growth of production; two, secure balanced development of the various branches of the national economy; three, ensure efficiency in the use of funds. To achieve efficiency in planning, targets to be achieved are set. Such goals help to stimulate effective execution of development plans. The offshoot of effective plan execution is increased output which can lead to welfare maximization for the populations of LDCs.[12] For any developing country effective planning enhances the prospects of insuring that public investment projects make the greatest contribution toward the realization of long term economic progress. Through development planning the public sector can bring about the needed institutional transformation for successful development.[13]

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[11] Oskar Lange, "Economic Development, Planning and International Cooperation" in Leading Issues in Economic Development by Gerald Meier. New York, Oxford University Press, 1976, p. 804.

[12] S. Chakravarty and R. S. Eckaus, "An Appraisal of Alternative Planning Models," in Capital Formation and Economic Development edited by P. N. Rosenstein-Roden. Cambridge (Mass.), The M.I.T. Press, 1964, p. 138-9.

[13] Michael P. Todaro, Development Planning, Models and Methods. Nairobi, Oxford University Press, 1971, p. 4-6.

The attempts to enhance growth and development through development plans have led the public sector in LDCs to engage in a series of marginal choices between different uses of factors or the combination of various factors of production. However, the growth of output per head depends on the one hand on the available natural resources, and on the other hand, on human behavior. If growth is to take place, three conditions must be satisfied. One, there must be the effort to economize, either by reducing cost of any given product or by increasing the yield from any given input of effort, or of other resources. Two, increase of knowledge and its application especially in the rapid accumulation and application of knowledge in production, and thirdly, increasing the amount of capital or other resources per head.[14]

Two broad approaches for enhancing development have been developed to meet the above conditions. One, through capital formation, as exemplified by national development plans in LDCs. Two, through increased input of effort and skill by people. According to Arthur Smithies, the type of growth primarily dependent on capital accumulation can be called the Ricardian growth model, while the type dependent primarily on more skilled effort the Malthusian growth model.[15]

The Ricardian model, requires a much more rigorous limitation of consumption than does the Malthusian growth model. For LDCs the process of development involves striking a balance between the two approaches above. This is corroborated by Bangs who states that "it would appear

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[14] W. Arthur Lewis, The Theory of Economic Growth. Homewood, IL, Richard D. Irwin, Inc., 1955, p. 10-11.

[15] Arthur Smithies, "Rising Expectations and Economic Development." Economic Journal, Vol. 71, 1961, p. 255-72.

that many of the LDCs in their development planning at least, hold an implicit Ricardian concept of growth since they place such heavy emphasis on investment especially in the public sector. This does not mean however that they accept wholeheartedly the other Ricardian prescription e.g. about limiting consumption."[16]

The implication of the above statement is quite clear. While investment is being enhanced, consumption is also allowed to increase in order to maximize the welfare of the people. But the influence of the Ricardian view on economic development has led to the enlargement of public sector investment outlay.

However, if investment is to lead to welfare maximization, an effective method of categorizing public expenditure must be established. This is most crucial because development expenditures must include all growth inducing expenditures. A functional allocation of public expenditure is the most effective way of selecting investments that maximize productivity and thus welfare in the economy. This is because such a process "greatly improves the distribution of government resources between consumption and development purposes, and among the various sectors of the economy."[17]

Investment projects must be chosen in terms of productive efficiency and improved economic organization. These issues are essential because they affect the capacity to increase output in a given economy

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[16] Robert B. Bangs, Financing Economic Development. Chicago, The University of Chicago Press, 1968, p. 20.

[17] Rasheed O. Khalid, "Fiscal Policy, Development Planning and Annual Budgeting," International Monetary Fund Staff Papers. Vol. 16, No. 1, March 1969, p. 65.

and thus the ability to maximize welfare.[18] Enhancing development through public expenditure also requires that governments ensure the growth in productive capacity. For an increase in public expenditure is justified only as long as the stimulating effects of additional expenditure on productive effort including capital formation, lead to increased total economic production. This is the best way for material welfare to be enhanced.[19]

As the functional budgetary process implies, the allocation efficiency between consumption and investment in the budget must be the guiding principle if accelerated growth rate is to be achieved.[20] If welfare is to be maximized, governments in LDCs must direct revenues to effect maximum long run increases in output.[21]

In seeking to increase output, it is pertinent to remember that government investment especially in social overhead capital creates external economies for both the public and private sector. For example, improved roads, and rail transport lower the costs of shipping goods and open up private investment opportunities. Electric power projects will attract additional private investment and make further government investment cheaper. Because of the importance of external economies, "major emphasis should not be placed on the income-producing aspect of

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[18] John H. Adler, "Fiscal Policy in a Developing Country" in Accelerating Investment in Development Economies, edited by Agarwala and Singh. New Delhi, Oxford University Press, 1969, p. 415.

[19] Ibid, p. 416.

[20] Raja J. Chelliah, Fiscal Policy in Underdeveloped Countries. London, George Allen and Unwin Ltd., 1969, p. 38-40.

[21] Jesse Burkhead, Government Budgeting. New York, John Wiley and Sons, Inc., 1956, p. 466.

direct investment by government. The construction of publicly owned steel mill to be operated at a loss may produce more external economies, and indirectly and in the long run more government revenue than the construction and operation of a self-liquidating toll bridge."[22]

This view has also been echoed by Walter Heller who states that balanced economic development depends on assigning priorities to projects according to their contribution to productivity of the economy rather than to their chances of being self liquidating.[23] The central issue therefore is the capacity of government investment to maximize overall output in the economy rather than whether or not a project is paying its way. However investments that maximize overall output of the economy can also pay their way.

In summary we can say if public expenditure is to enhance development and thus maximize the welfare of people in a given society, the public sector must be concerned with the level of expenditure and the structure of the expenditure. Effort must be directed to those areas that ensure overall increase in output of the economy in order to meet current needs as well as future needs.

Investment in the Development Process

If oil producing countries are to have a viable economic base when oil is depleted, they must shape their investment strategies toward this end. It is pertinent therefore to examine some of the investment models

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[22] Ibid., p. 471.

[23] Walter Heller, "Fiscal Policies for Underdeveloped Countries," in Readings on Taxation in Developing Countries, edited by R. M. Bird and O. Oldman. Baltimore, The Johns Hopkins University Press, 1975, p. 9.

that have been suggested in the pursuit of development objectives. The problem of development has led to the formulation of various models each placing emphasis on different aspects of the process. The strategies put forward range from pure capital theory analysis,[24] to such issues as unbalanced growth, big push - balanced growth and so on. One thing shared by all these models is the association of development strategy with physical capital either in industries or in agriculture. The social structure of the development process thus seems to be neglected or is played down considerably.

The Investment Criteria Models. These models have been put forward mainly by Chenery, Galenson and Leibenstein and Otto Eckstein. According to Chenery, investment should be based on the social marginal productivity of capital in its various uses. On this basis efficient allocation of investment resources is achieved only by equating the social marginal productivity of capital in its various uses. While this leads to maximum value of national product, the emphasis is on the productivity of capital and not on that of other factors as well. Moreover, sector analysis and their role on development are not considered since emphasis is placed on aggregate output.

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[24] R. S. Eckaus and Louis Lefeber, "Capital Formation" in Capital Formation and Economic Development, edited by P. Rosenstein-Rodan, Cambridge (Mass.), M.I.T. Press, 1964, p. 83-7. Hollis B. Chenery, "The Application of Investment Criteria," Quarterly Journal of Economics, Vol. 67, 1953 and W. Galenson and H. Leibenstein, "Investment Criteria, Productivity and Economic Development," Quarterly Journal of Economics, Vol. 69, 1955, p. 343-70. Otto Eckstein, "Investment Criteria for Economic Development and the Theory of International Welfare Economics," Quarterly Journal of Economics, Vol. 71, 1957, p. 56-85.

Galenson and Leibenstein on the other hand emphasize the concept of investment based on the marginal per capita reinvestment quotient. This means the correct criterion for investment is that which maximizes the role of savings and thus of reinvestment. With this approach, the best allocation of investment resources is achieved by equating the marginal per capita reinvestment quotient of capital in its various uses. By so doing, future output is maximized because this quotient is affected by factors that directly affect the productivity of labor as well as the allocation of investment. This is achieved in the choice of each unit of investment which requires that a chosen investment unit be that which will give each worker greater productive power than any other alternative. As a result allocation of investment affects total output, distribution of labor force, and social and cultural conditions under which people live.[25] This investment model stresses the goal of development as that of maximizing per capita output or average income at some future point in time.

Hence, this model sees the development process in terms of output capacity only rather than a combination of increased output and the improvement in the living standard of the people in general. While it is true that increased output is the first step in improving welfare, the composition of output and the way it is distributed in an economic system are equally crucial if general welfare is to be maximized. The major drawback on this criterion is that it favors capital -

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[25] Walter Galenson and Harvey Leibenstein, "Investment Criteria, Productivity and Economic Development." Quarterly Journal of Economics, Vol. 69, 1955, p. 365.

intensive projects even where labor is in excess supply.[26]

Eckstein however calls for the use of the marginal growth contribution as a determinant of a project. The project which yields the highest marginal contribution to the growth of output will thus be selected for investment.[27] For LDCs however poor data base makes the application of this criterion difficult.

The implication of all these models is that investment should be undertaken in projects that yield reasonably quick benefits. But as we have seen, it may be necessary if welfare is to be maximized for investments to be made in projects that take quite some time to yield benefits but are crucial because of their overall impact on the economy.

The Big-Push Balanced Growth Model. This strategy for the development of LDCs may be attributed to Ragnar Nurkse and Paul Rosenstein-Rodan. The strategy places emphasis on the role of capital formation in increasing the level of productivity in LDCs. Capital formation is thus seen as the best way to improve the low per capita incomes in LDCs. Another offshoot of the argument is related to market size. Because markets are small in LDCs, capital formation in manufacturing is limited. According to this strategy what is needed is syncronized application of capital to a wide range of different industries. By so doing, a country can break the vicious circle of poverty. This will ensure "that factories themselves, as well as the workers in them, can buy up all the

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[26] Gerald Meier, Leading Issues in Economic Development. New York, Oxford University Press, 1976, p. 431.

[27] Otto Eckstein, "Investment Criteria for Economic Development and The Theory of International Welfare Economics." Quarterly Journal of Economics, Vol. 71, 1957, p. 65-69.

produce either as intermediate goods or for final consumption. This will render all investments profitable."[28] The demand created through this process is envisaged to solve the development trap.

The two assumptions of a closed economy and underemployed resources which underlies this strategy, render the concept questionable. LDCs are not closed economies, neither are resources as unemployed as often imagined. It is conceivable that in LDCs competitive bidding of factor inputs will raise costs and thus diminish the prospects for economies of scale or the increase in national output. Moreover, increased income may not be spent on domestically produced goods but instead on food and imports.[29] Therefore, the domestic industry may not get the benefits expected. If the authorities decided to influence domestic demand by restricting imports, they face the problem of inflation if domestic supply fails to meet demand. In addition, the desire to increase the supply of domestically manufactured goods may override other needs such as housing, sanitation, medical attention and so forth leading to the prospects of undue attention being placed on industrialization.

If this strategy leads to too much emphasis on industrialization without corresponding attention on agriculture, it can lead to trouble. To avoid such trouble, "the big push in industry may have to be

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[28] W. F. Ilchman and R. C. Bhargava, "Balanced Thought and Economic Growth" in The Political Economy of Development and Underdevelopment, edited by Charles K. Wilber. New York, Random House, 1979, p. 35.

[29] Peter Kilby, Industrialization in an Open Economy: Nigeria 1945-66. Cambridge at the University Press, 1969, p. 346.

accompanied by a big push in agriculture as well if the country is not to run short of foodstuffs and agricultural raw materials during the transition to an industrialized society that could perhaps obtain these goods in exchange for industrial exports. Once this fact is admitted, the balanced growth doctrine sounds more like the orthodox theory that structural change must rest on a foundation of raising productivity within the existing structures...until real incomes have risen to a level which justifies structural change."[30]

However, the main weakness of balanced growth strategy is its emphasis on the creation of complementary domestic markets as an inducement to invest. It is not the only way by which markets can be created. Markets can be created by import-restrictions, and where possible, export expansion. And according to Paul Streeten, "the absence of markets is not normally a serious obstacle to development; even where it is, it is by no means the main obstacle and, in any case, balanced growth cannot always remove it."[31]

The strength of the strategy is found in its stress on the investment package, on the need for coordination, and on the structure of an investment complex. By putting stress on the structure of investment, attention is focused on the type of investment that is likely to lead to increased output of a given economy.

Unbalanced Growth Model. According to Hirschman, deliberate unbalancing of the economy in accordance with a well designed strategy is

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[30] Benjamin Higgins, Economic Development: Problems, Principles and Policies. New York, W. W. Norton and Company, 1968, p. 334.

[31] Paul Streeten, "Unbalanced Growth" in Accelerating Investment in Developing Economies, edited by A. N. Agarwala and S. P. Singh. Bombay, Oxford University Press, 1969, p. 59.

the best way to achieve economic growth.[32] While agreeing with the concept of big push and thus the complementarity of investments, he argues that LDCs lack the variety of resources to make the 'big push' possible. "Its application requires huge amounts of precisely those abilities which we have identified as likely to be in very limited supply in underdeveloped countries."[33] This implies that LDCs cannot simultaneously manage balanced investment in industry and agriculture. To solve the problem, Hirschman suggested undertaking a big push in strategically selected industries or sections of the economy. This concept thus emphasizes the need to induce investment decisions. "If certain parts of the economy are made to grow, the shortages in the complementary parts will create pressures for their growth also, forcing investments to be made. The areas which lead the development should be so selected that investments in complementary areas are really compulsive rather than permissive."[34]

On the above basis Hirschman suggested that investments in infrastructure are not directly productive and should be restricted. Governments in LDCs should provide only the barest minimum of infrastructure while private enterprise should be encouraged to invest directly in productive activities. Efficient allocation of resources requires infrastructure investment to lag behind productive investments.

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[32] Albert O. Hirschman, The Strategy of Economic Growth. New Haven, Yale University Press, 1969, p. 36.

[33] Ibid., p. 53.

[34] W. F. Ilchman and R. C. Bhargava, "Balanced Thought and Economic Growth," in The Political Economy of Development and Underdevelopment, edited by C. K. Wilber. New York, Random House, 1979, p. 38.

Moreover, he encouraged industrialization through forward and backward linkages, the use of capital intensive technique of production and the use of complex techniques in production such that if a breakdown should occur it would be serious and hence compel adequate maintenance.[35] The social and administrative factors necessary for the adoption of such a strategy could lead to serious problems. By stressing manufacturing industries as the most productive investment outlets there will most likely develop inadequate social overhead investments especially in urban areas. Unemployment is also likely to increase with the increased use of capital-intensive techniques of production. Income disparities are also likely to widen.

Virtually, all the above strategies assume development basically through industrialization. The role of agriculture is considerably deemphasized. Furthermore, the products of these industries are supposed to be consumer goods geared to urban centers which consequently have limited impact on the total economy. Other factors which complement the development process are also neglected. This reinforces the concept that investment in such sectors as health and education are consumer expenditures rather than seeing such expenditures as truly essential for development to take place.

Thus it is important to stress that development is not only a question of efficient allocation of capital.[36] Neither is it only a

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[35] Ibid., p. 39.

[36] By following the principle of efficiency in resource allocation, especially if rates of return are used as criteria of efficiency, many social productive investments will not be undertaken. It is thus possible for the country to grow and have huge GNP levels in the midst of poverty. See Mahbub ul Haq, "A New Perspective on Development" in The Political Economy on Development and Underdevelopment, edited by C. K. Wilber. Random House, Inc., New York, 1973, p. 270.

question of industrial investment. Rather it is a process that involves the transformation of physical and social structures of society. This implies that development should lead to welfare maximization of all the people in a given society.

If development is to take place therefore, increases in the welfare of the poor have to be weighed against simple growth of GNP. According to Irma Adelman, "the currently accepted definition of development focuses upon the creation of conditions for self-sustained growth in per capita GNP and the requisite modernization of economic, social, and political structures implicit in the achievement of this goal."[37] This implies that while investment to raise the level of GNP is important, the access to the material output is equally important.

Thus "the proper long-term goal of national development policy must be the successive relaxation of the systematic obstacles to the full realization of the human potential of its members. The goals of economic development are then twofold: To provide the material basis for achieving these objectives and to establish the economic conditions for relaxing the other barriers to self-realization (access to education, work satisfaction, status, security, self expression and power)."[38] Through this process individual welfare is maximized both now and in the future.

This new approach to development challenges the "grow first, distribute later," strategy because it has failed to maximize the welfare of people in LDCs. The strategy has been challenged because of "the

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[37] Irma Adelman, "Development Economics - A Reassessment of Goals." The American Economic Review, Vol. 65, No. 2, May 1975, p. 306.

[38] Ibid., p. 306.

marked failure of such a strategy to achieve real human progress in terms of a decrease in poverty, increase in employment, and promotion of more equitable income distribution."[39] In advocating welfare maximization, the current approach is growth with adequate income distribution. This is said to be the cause of the rapid development of Japan, South Korea, Singapore, etc. This approach requires a dynamic sequence of strategies: (a) Radical asset redistribution focusing primarily on land and the setting up of economic and political conditions to ensure that subsequent economic growth is not benefiting one group more than another, (b) Massive accumulation of human capital, far in excess of current demand for skills, (c) Labor intensive growth techniques.[40]

The merit of this approach is that development is not seen only in terms of maximizing investment levels leading to increases in the level of GNP but that the benefits of development should reach everyone in the system in order to maximize welfare.

Oil and the Development Process: Development Theory

The relationship between oil and the development process stems from the fundamental characteristic of oil as a depletable resource. But how soon a given oil reserve gets depleted depends on the rate of exploitation. Nonetheless the fact remains that some day the reserve will be depleted. It is this issue of depletion that raises the question of the proper utilization of oil revenues to enhance the development process.

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[39] Peter J. Henriot, "Development Alternatives: Problems, Strategies, Values," in The Political Economy of Development and Underdevelopment, edited by C. K. Wilber. New York, Random House, 1979, p. 14.

[40] Ibid., p. 16.

An economy depending on an exhaustible resource must create a situation whereby the economy becomes self-sustaining in the absence of the resource. This requires transforming the exhaustible resource into reproducible capital.[41] The rate at which this transformation can take place should be the determinant of optimal policy in extracting resources. However, conservation concepts also play a role in determining optimal policy in extracting resources. Conservation as a strategy in the development process results from the desire to increase the life of the reserve because of the limited absorptive capacity of these countries. Given a price level of the depletable resource, increased output can lead to increased revenue accruing to a country. But the important thing is the capacity to effectively utilize the accrued revenue. Unless this capacity exists the accrued revenue will just be wasted.

Conservation as a strategy has costs, namely, foregone present consumption, the risk of the resource being absolete in the future as a result of the development of substitutes; higher cost of investment in the future, etc. "Resource conservation therefore raises three issues. First, is it possible that in using up one resource we create another of equal value? Secondly, how much would it cost to use up the resource more slowly? And thirdly, how much do we weight the claim of future generations to consume when compared with our own claim?"[42]

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[41] Dartha Dasgupta and G. Heal, "The Optimal Depletion of Exhaustible Resources," Symposium, Review of Economic Studies, 1974, p. 4.

[42] W. Arthur Lewis, The Theory of Economic Growth. Homewood, IL, Richard D. Irwin, Inc., 1955, p. 320.

There is no doubt that exploiting a given resource provides the funds for enhancing the development process. By so doing, exhaustion of a mineral resource may leave a country in a much better position for future development through resource transformation. Thus oil can be made to create resources as valuable as those which are being exhausted but this does not happen unless a country insists that a large part of the proceeds is to be invested in new resources for the enhancement of development.[43]

The above argument is partly supported by Higgins who states that if economic development implies a combination of embodied technical progress and capital formation that leads to an increase in per capita productivity, oil producing nations must accumulate enough productive capital outside the oil sector and must also seek to raise productivity enough in the non-oil sectors to offset the drawing down of oil reserves.[44] To achieve this he goes on to show that oil producing countries should establish "decision functions" to which the whole planning operation can be related. This implies deciding on the division of oil revenues between immediate improvements in economic welfare and capital accumulation.

The above implies that a nation must establish the path of subsidized increases in immediate welfare, and the development program of the nation should be designed within the restraint imposed by this path so as to maximize the stock of capital outside the petroleum sector at

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[43] Ibid., p. 321.

[44] Benjamin Higgins, Economic Development Principles, Problems and Policies. New York, W. W. Norton and Company, 1968, p. 836-838.

the end of a given time period.[45] Through the conversion of oil into production capital, the limitation to growth due to depleting resources can be offset.[46] By so doing the development of the economy will not be hampered because alternative means of generating growth has been established. This model therefore indicates that if development is to be enhanced on the basis of a depletable resource, it must be converted into reproducible capital.[47]

This stress on the diversification of the economic base rests on the premise that it is imprudent for these countries to continue to rely on oil to generate the required resources to meet the needs of the economy. The danger of dependence on one resource stems from the drastic drop in public revenue that accompanies falling prices of that commodity. This happened for example in 1977-78 as a result of the oil glut. Such a revenue fall can have very serious effects on the economy in terms of causing delay or the abandonment of many development projects. Furthermore the desire for economic stability compels nations to diversify their economies in order to minimize their vulerability to exogenous factors.

The diversification strategy can further be strengthened by a nation having a rough estimate of its export revenue in a given time period. Such timing of export revenue will help to minimize any dislocations in economic activities due to changes in the price level in

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[45] Ibid., p. 833.

[46] Joseph Stiglitz, "Growth with Exhaustible Natural Resources: Efficient and Optimal Growth Paths." Review Symposium on the Economics of Exhaustible Resources, 1974, p. 123.

[47] Ibid., p. 128.

the world markets. The timing of export revenue should also be reasonably synchronized with development programs in order to protect the economy from the vagaries of world market price fluctuations.

Economic diversification requires that public expenditure encompass both capital and social investments. This offers the advantage of maximizing social welfare. Capital investments in agriculture, industry and infrastructure play crucial roles in the development of an economy. Agriculture's role in development involves the provision of increased food supplies, enlarged agricultural exports, transfer of manpower from agriculture to non-agricultural activities, contribution to capital formation and increasing rural net cash income as a stimulus to industrialization.[48]

Industrialization on the other hand contributes to development through increased output leading to accelerated growth in income and higher levels of employment.[49] The importance of infrastructure such as transport and communication in economic development stems from their capacity to link the producer with the consumer. A close relationship exists between the volumes of transportation and communication and the levels of economic activity. This close correlation results from the

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[48] Bruce F. Johnston and John W. Mellor, "The Role of Agriculture in Economic Development." The American Economic Review, Vol. 51, 1961, p. 571-81.

[49] Gerald Meier, Leading Issues in Economic Development. New York, Oxford University Press, 1976, p. 659.

fact that most economic activities are possible only if infrastructure is available to make them so.[50]

Lastly, human capital is very crucial in the development process because human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organizations to give rise to national development. As Leibenstein has shown, the purpose of human investment especially in education is the creation of skills and of entrepreneurs. These entrepreneurs whether in industry or agriculture must "be able to perceive (1) buying and selling opportunities in different markets, (2) the possibility of transforming inputs into outputs and (3) determining that activities (1) and (2) will be profitable."[51] The crucial thing is that human investment increases productivity of labor and thus increases output levels leading to increased capacity to maximize welfare in a given economy.

Literature on the Role of Oil in the Development of Countries Included in This Study

At the outset, the following general statement can be made for all the countries under study. Most of the studies on oil have concentrated more on the role of the industry in providing revenue to the public sector. Other specific issues with regard to each country will be explained below.

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[50] Kuhn, Tillo E., "Transport and Communications Systems Planning for Reconstruction and Development," in Reconstruction and Development in Nigeria, edited by A. A. Ayida and H. M. A. Onitiri. Ibadan. Nigerian Institute of Social and Economic Research, 1970, p. 458-59 and Wilfred Owen, "Transportation and Economic Development." The American Economic Review, Vol. XLIX, No. 2, May 1959, p. 180.

[51] Harvey Leibenstein, General X-Efficiency Theory of Economic Development. New York, Oxford University Press, 1978, p. 46.

The major studies on the role of oil in Nigeria have been the works of L. H. Schatzl, Scott R. Pearson and S. A. Madujibeya.[52] These works deal mainly with the oil industry and its general contribution to the economy such as the provision of employment and the industry's purchase of locally produced goods and services, etc. No study has tried to examine in any detail the effectiveness of oil revenues on public expenditure. Only a little reference has been made by Madujibeya to the role of oil in providing funds for the Second and Third National Development plans. There has been no attempt to emphasize the exhaustible nature of oil wealth and to relate this to the need to spend oil revenues effectively to insure future generations of revenue when oil runs out.

Moreover there has been no attempt to relate the availability of the revenue to welfare maximization and thus to development as it affects the masses in order to create the basis for self-sustaining development. Where a passing reference to development process resulting from oil has been made, most of the time the discussion concentrates on the growth in revenue. And the Nigerian situation has largely been discussed in isolation in spite of the influence of other countries' performance on Nigeria given Nigeria's membership in OPEC.

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[52] L. H. Schatzl, Petroleum in Nigeria. Ibadan, Oxford University Press, 1969. Scott R. Pearson, Petroleum and the Nigerian Economy. Stanford, Stanford University Press, 1970. S. A. Madujibeya, The Nigerian Petroleum Industry: Its Development and Economic Significance. Unpublished Ph.D. Thesis, University of London, 1969, and "Oil and Nigeria's Economic Development," African Affairs, Vol. 75, No. 300, July 1976, p. 284-316. Keith Panter-Brick (ed.), Soldiers and Oil. Totowa, Frank Cass Company, Ltd., 1978.

In the case of the other countries, starting with Venezuela, there have been more works relating oil and government expenditure in the process of development.[53] In some cases a specific sector is chosen such as employment, and attempts have been made to relate this to overall development of the country. In some cases the historical evolution of the industry and its foreign relations were dwelt upon. In dealing with the development process emphasis has always been placed on the creation of physical structures. Human investment have not been given due attention. As a result the studies have not been comprehensive. Moreover, the effectiveness of public expenditure has not been investigated in any detail.

The studies by Salazar-Carillo and Mostafa Hassan are probably the most detailed studies relating oil to public expenditure. However even these studies have not been comprehensive enough in dealing with the issue of oil exhaustion and welfare maximization. Thus no emphasis is placed on the necessity to maximize the effectiveness of government expenditure to insure the availability of alternative sources of revenues when oil runs out.

The literature on Iran is quite substantial. The discussion on oil as in the other countries has concentrated more on the industry and its overall performance. However, Fred Halliday's discussion has been

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[53] Philip B. Taylor (Jr.), Venezuela: 1969 Analysis of Progress. Washington, D.C., The John Hopkins University, 1971. Jorge Salazar-Carrillo, Oil in the Economic Development of Venezuela. New York, Praeger Publishers Inc., 1976. Fred D. Levy, Jr., Economic Planning in Venezuela. New York, Praeger Publishers Inc., 1968. Mostafa F. Hassan, Economic Growth and Employment Problems in Venezuela: An Analysis of an Oil Based Economy. New York, Praeger Publishers Inc., 1975. Franklin Tugwell, The Politics of Oil in Venezuela. Stanford, Stanford University Press, 1975.

nationalization compensation and so forth.[55] After the overthrow of Kassem Regime in 1963 much attention was focused on the political turmoils that followed. Other studies have tried to relate government expenditure with the growth in structures especially in industry. Edith Penrose has tried to relate public expenditure to development but the study lacks the stress on exhaustible nature of oil and its implication for welfare maximization.

The literature on Iraq therefore has not related revenue and the consequent public expenditure to welfare maximization. There is virtually no discussion with regard to the effectiveness of oil revenues in the development of alternative sources of revenues when oil runs out.

For all the countries, the major weakness in the oil literature has been the lack of comparative analysis in expenditure patterns in order to draw lessons from other countries. Emphasis continues to be placed on the role of industry in generating revenue but neglecting a comprehensive study of the effectiveness of the use of revenues. And in dealing with development issues, emphasis continues to be placed on physical investment structures with the consequent neglect of human investment.

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[55] Fahim I. Qubain, The Reconstruction of Iraq: 1950-57. London, Stevens and Sons Ltd., 1958. Howard S. Ellis, Private Enterprise and Socialism in the Middle East. Washington, D.C., American Enterprise Institute for Public Policy Research, 1970. H. Charles Treakle, The Agricultural Economy of Iraq. Washington Foreign Regional Analysis Division. Economic Research Service, USDA, 1966. Kathleen M. Langley, The Industrialization of Iraq. Cambridge, Harvard University Press, 1961. Edith and E. F. Penrose, Iraq: International Relations and National Development. Boulder, West View Press, 1978.

This study specifically goes beyond the issue of revenue accrual to the public sectors of these countries. It seeks to examine how these revenues have been used to maximize welfare longer than the life of oil. By comparing the performance of these economies some lessons could be drawn with regards to the effectiveness of their expenditure strategies.

Conclusion

For LDCs public expenditure is a very important way of enhancing development. Hence the availability of revenue to the sector plays a crucial role in determining how fast the development process can take place provided that the funds are spent effectively. The introduction of planning has been an attempt at streamlining the expenditure process so as to achieve specific targets at certain times. Planning has helped to give directions to these economies.

As indicated, because of the responsibility of enhancing development rests with the public sector, both the level and structure of investment have attracted atiention in public expenditure structure. The level is principally determined by the amount of revenue a country can mobilize assuming a given absorptive capacity while the structure is determined by the type of economic base a nation wants to establish. In spite of these considerations, all LDCs accept that for development to take place government expenditure must encompass both consumption and investment activities.

The investment aspect ensures that future revenue generation of the economy is enhanced. To this end, investment must encompass a variety of fields including both physical and human capital. This is

essential because one without the other is not sufficient to ensure economic growth and thus the development of these economies. The crux of the matter however is not whether to pursue balanced or unbalanced development. Rather through investments countries can establish viable economic bases for the future. For oil producing countries, by diversifying their economic activities through investment in both physical and human capital, strong economic bases can be established that will be capable of generating the needed revenues for these economies when oil gets depleted.

Studies therefore should address how effective the uses of revenues have been, based on comprehensive activities, rather than looking at a single activity or how much revenue accrues to the public sector from the oil industry.

CHAPTER III

SOME BACKGROUND INFORMATION ON THE COUNTRIES UNDER STUDY

Introduction

To understand and analyze the development effort of the countries under study we have to be aware of the physical and social environment of each. This requires a brief discussion of some of the factors that have helped to shape these nations. By so doing we will bring into focus the structures of current public expenditures and their influence on welfare maximization. This discussion will establish the position from which each of them embarked on its development effort. Although there are many social and physical aspects which contribute to development process we will concentrate on those which are deemed to be most important for our purposes.

One of the most important social factors is the political system because it affects the pattern of land ownership as well as the means chosen to implement economic policy. Land ownership is very important because of its effect on agricultural investment and consequently on productivity. As will be shown in Chapter VI, Nigeria's experience differs from that of the other countries. Until recently, three of the countries, Iran, Venezuela and Nigeria have had similar political systems. The revolution in Iran prevents us from a detailed description of the current scene. However, during the period of our analysis all three countries have had a mixed economy. Private enterprise was

stressed, but the government controlled the decisions in many sectors of the economy. Nigeria has been independent for only 20 years, Venezuela gained independence in 1821 and Iran has been an independent country for the past several hundred years. Iraq, which gained its independence in 1932 has had a socialized economy since 1958.

Geographically and climatically these countries share certain characteristics. Iran and Iraq and to a lesser extent Nigeria are arid countries which influences the development of agriculture especially in the area of irrigation. General topography influences the development of a road network and other means of transportation as well as population distribution. Population distribution influences the distribution of amenities as well as economic activities which further affects the urbanization structure in a country. The following section will look at these factors in some detail.

Background Information

Nigeria. Nigeria covers an area of 924,000 square kilometers (a bit bigger than Texas and Oklahoma combined) and is situated completely in the tropics. It is a Federal republic and currently has 19 states. Lagos (the capital) area came under British rule in 1862. But the rest of the country did not come under British rule until 1902. This led to the establishment of two protectorates (north and south), which were amalgamated in 1914 to form present Nigeria. Up to the date of independence (October 1, 1960) the country had three regions - north, east and west, with the northern region being two-thirds of the country both in size and population.

The country has a wide range of rainfall levels from about 25 inches in the extreme northern part of the country to 80 inches in the

extreme south. The country has tropical rain forests in the south with open woodland and savannah in the north. The country is traversed by two main rivers - the Niger and Benue. It has little mountainous areas. Over 70 percent of the population lives in rural areas. The society in rural areas in particular, is strongly tied to the land, and land ownership is mostly communally based. The land tenure system has ensured a significant measure of equity in land distribution.

Given the geographical set up, and the fact that most of the population lives in rural areas, the economy of the country has been based on agriculture. Over the years there has developed a clear agricultural specialization in the country. The north being grassland produces mainly annual crops such as ground nuts, cotton and cereals. The south on the other hand produces tree crops such as cocoa, rubber, palm trees (for the production of palm oil) and tuber crops.

Agricultural export commodities were the backbone of the economy up to the early 1960s. The principal export crops were ground nuts, cotton, cocoa, palm oil and kernels, and rubber. The public sector derived funds for budgetary allocations from duties imposed on export of these goods as well as Marketing Board surpluses generated by the difference between world market prices for these commodities and the prices paid to farmers by the boards.[1] Additional public funds were generated through duties imposed on imports that were made possible by reserves accumulated through agricultural exports.

The role of duties in public revenue generation presented policy makers with continuing problems with regard to revenue allocation

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[1] P. T. Bauer, West African Trade. A Study of Competition, Oligopoly and Monopoly in a Changing Economy. Cambridge (Eng.) University Press, 1954.

between the various regions in the country. Starting in the 1950s, the derivation principle became the cornerstone of the revenue allocation formula. The implication of this being that the region from which most revenue was derived got more revenue from the central government.[2] The price levels of the various agricultural commodities on the world market had a direct influence on revenues allocated to the region(s) from which they were derived. When world prices of certain commodities were high the region(s) from which they were produced received more revenue and vice-versa. This approach was carried over after independence. The continuing controversy over revenue allocation and the lopsided federal structure with one region constituting over two-thirds of the country, led to breakdown in political stability which led to a military coup in January 1966. The military from this point became an important force in the determination of both political and economic trends of the country. The army handed over power to an elected government on October 1, 1979.

The Nigerian economy has always functioned along the free enterprise system with the government providing necessary complementary support as the need arises or the provision of facilities to enhance the performance of the economy. The appearance of the military on the political and economic scenes did not change this basic structure.

The military came to power just about the time oil was beginning to contribute significantly to public revenue. In Nigeria oil was first

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[2]For details of the historical evolution of the revenue allocation issue see I. O. Dina, "Fiscal Measures" in Reconstruction and Development in Nigeria edited by A. A. Ayida and H. M. A. Onitiri. Ibadan, Oxford University Press, 1969, p. 34-95.

discovered in 1938. This was followed by sporadic drilling and it was not until 1957 that commercial crude oil production started in the country. The industry was developed by foreign companies from Britain, the United States and Italy. By the mid-1960's, French companies became involved.[3] The exploitation of oil therefore was a foreign concern for most of the history of the industry in Nigeria. Effective public participation in oil production started in 1974 with a 55 percent government participation. The participation rate is currently 60 percent. The emergence of oil as a significant contributor to public revenue intensified the squabbles over revenue allocation and power distribution in the country. This eventually led to the Nigerian civil war with the consequent entrenchment of the military in the political system of the country.

The civil war ended in January 1970, and this period was followed by massive development expenditure to reconstruct the whole economy especially the war affected areas under the auspices of the Second National Development Plan 1970-74. The strategy was to give the nation a balanced development outlook with special emphasis on revitalizing those areas directly affected by the civil war. The massive growth in oil revenues beginning in 1973 has transformed the revenue base of the country and thus its development prospects. From a country barely able to meet its import needs, the country now has the revenue to meet massive imports of necessary inputs for development.

As a result of the oil induced development a considerable amount of indigenous entrepreneurial capacity has been developed which the

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[3] L. H. Schatzl, Petroleum in Nigeria. Ibadan, Oxford University Press, 1969, p. 1-60.

government has sought to enhance recently through the government sponsored indigenization scheme. Thus many Nigerian businessmen are found in medium size construction projects, services and light manufacturing. Oil has also placed agriculture in the position of a net receiver of funds from the publit sector. Revenue from agricultural exports are not as important relatively as they used to be.

For the economy as a whole, the seventies have been a decade of boom compared to previous years. Oil revenues have made it possible for the government to launch big expenditures in both physical and social programs. For example the government has launched the Universal Primary Education Scheme and has substantially increased in absolute amount other expenditures in human investment. And the Third National Development Plan (1975-80) costing about $35 billion is in its last stages of implementation. These levels of expenditure would not have been possible in the absence of oil revenues.

Iran. Iran covers an area of 1.65 million square kilometers. During the period under study, Iran was an absolute monarchy in which the Shah was the royal head of State, the head of executive government and the real source of legislative power. In March 1975 the Iranian constitution of 1907 was modified to consolidate the monolithic unity between the monarchy on the one hand and the State and the government on the other, making Iran a single party political state. This was aimed at facilitating the Shah's control over the development process.

The social structure confers prestige and power depending on the degree of one's closeness to the central government. Thus urban elites have more power than rural elites. The ownership of land used to be a necessary factor in acquiring power. In the days of the Shah, the

closer one was to him, the higher ones status. The extended family structure is very strong. And families seek to establish their influence through spreading their membership in the cadre of professional men, businessmen, and statesmen. The society was divided into three classes referred to as first, second and third levels of society. Membership in each class depends on how close one is to the center of power.[4]

Geographically, the country is made up of a large central plateau surrounded on three sides by rugged mountain ranges.[5] Most of the land area is desert and waste. About 10 percent of the whole is cropland and 18 percent forest and pastures. Annual rainfall range is wide from 0-2 inches in the central desert to about 50 inches in the mountains of the west and southwest.[6] The scanty rainfall is adequate for grain production. While many different crops are grown, wheat and barley are the staple.

The inadequate rainfall has been a major factor in agricultural activities in the country. For this reason qanats (underground water channels) have traditionally been used for irrigation purposes. Draught and floods after sudden storms have contributed significantly to crop failure. In addition to climatic conditions, "the size of the country, and the difficult nature of the terrain also necessitate heavy expenditure on communications, a sine-qua-non to any agricultural development."[7]

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[4]Richard F. Nyrop (ed)., Iran: A Country Study. Washington, D.C., The American University, 1978, p. 154-170.

[5]Ibid., p. xv.

[6]Ehsan Yar-Shater, Iran Faces the Seventies. New York, Praeger Publishers Inc., 1971, p. 5-6.

[7]Ibid., p. 7.

Until recently most of the population was living in rural areas. Currently, the population is about evenly divided between urban and rural areas. About 30 percent of the work force and over 75 percent of total population probably derive their living from agriculture and stock raising. Therefore; agriculture was the major source of income of the country before oil. Revenues from agricultural exports and indirect taxes were the basis of public expenditures.

The central role of agriculture gave rise to a strong landlord based land tenure system in the country. Land ownership as a result gave social prestige, wealth and political power. There were four main groups of large absantee land owners.

(i) The ruling family and the leading members of government (both military and civil). This group obtained their lands through conquest, inheritance, gift, purchase or during the course of office. The landlords were for most part absentee landowners.

(ii) Community leaders. These also acquired land the same ways as above. They too were usually absentee landlords.

(iii) Members of the religious classes. Their landed properties were acquired through grants and pensions from the State, inheritance, purchase and the usurpation of religious property.

(iv) Merchants. Their property derived from purchase and sometimes from their transactions as money lenders.[8]

In this system, the peasant farmed the land and the relation between landlord and peasant was based either on a crop-sharing agreement or a tenancy agreement. The land tenure system led to stagnation in

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[8] Ibid., p. 9-10.

agricultural production because neither land owner nor tenant farmer had much incentive to increase production by using new farming techniques.[9] Moreover the landlords made no effort to provide adequate inputs or infrastructure such as roads, irrigation facilities, etc. A land reform introduced in 1962 as part of the Shah's White Revolution aimed principally at giving ownership of land to the peasants. By so doing it was hoped that the peasants would be motivated to invest in land and thus improve agricultural productivity.[10] It is doubtful, however, if the land reform has worked.

All that the reform did was to extend state control over land with very minimal advantage to the peasants. "Land reform...instead of creating a productive and independent peasantry...led only to further consolidation of the powers of the state over the rural scene... It was the central government rather than the peasant farmer that had gained at the expense of the unseated landlords."[11]

In view of the stagnant nature of agriculture before the advent of oil, the meager resources derived from agricultural exports were not sufficient to provide the needed resources for development. This was so despite Iran's attempts to improve the quality and quantity of manufactures by artisans and craftsmen. Cotton and cotton goods were dominant exports. Until the early 1960's the country remained predominantly agricultural.

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[9]Richard F. Nyrop (ed.), Iran: A Country Study. Washington, D.C., The American University, 1978, p. 335.

[10]Ibid., p. 338-9 and Ismail Ajami, "Agrarian Reform, Modernization of Peasants and Agricultural Development in Iran" in Iran: Past, Present and Future, edited by Jane W. Jacqz. New York, Aspen Institute for Humanistic Studies, 1976, p. 131-157.

[11]Richard F. Nyrop, Ibid., p. 340.

Oil was discovered in 1908 at Masjed-Sulaiman. This led to the formation of the Anglo-Iranian Oil Company for the exploitation of the reserve in 1909. This company was basically a British Company. Difficulties over exact payments to the Iranian government by the company led in March 1951 to the nationalization of the oil industry throughout the country.[12] The result was a temporary standstill in oil production. Development of production did not start until 1954 as a result of an agreement in October of that year between the Iranian government, the National Iranian Oil Company and a consortium of eight international oil companies.

Until 1925 oil revenues went primarily into the private purse of rulers. It was Reza Shah who incorporated oil revenues into a budget to finance government expenditures especially development projects. Thus under the Pahlavi dynasty (Reza Shah and Mohammed Reza Pahlavi) the government became primarily committed to industrialization. Oil money was used to induce rapid modernization of the economy as government planners were made to place emphasis on manufacturing.[13]

From the 1950s on, the role of oil in the economy continued to grow displacing agriculture as a source of public revenue for meeting capital imports for development. The revenues that have accrued to the country have led to massive development plans with big expenditures on physical and human programs in order to induce rapid development.

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[12] Jahangir Amuzegar and M. Ali Fekrar, Iran: Economic Development Under Analistic Conditions. Chicago, The University of Chicago Press, 1971, p. 15.

[13] Richard F. Nyrop (ed.), Iran: A Country Study. Washington, D.C., The American University, 1978, p. 283-7.

Since 1977 however, the massive social transformation generated by huge public expenditure coupled with political suppression led to the current revolution in the country. As a result of this political instability, the growth rate of the economy has been stunted considerably. This has an important influence on this study. All results we will derive are historical in that they do not tell us what is currently happening in Iran. In fact there is hardly any economic growth in Iran at the moment. This also indicates considerable set back for Iran in its attempts to establish alternative sources of revenue when oil runs out. Consequently, with regard to welfare maximization prospects, the economy is currently less capable of achieving that than in the pre-1977 period.

Iraq. Iraq covers an area of 435,000 square kilometers. It is made up of old Turkish provinces of Basrah, Baghdad and Mosul which became a mandated British territory in 1920 after the defeat of the Ottoman empire at the end of World War I. Its statehood began with the establishment of a monarchy in 1932 with the machinery of representative government under a constitutional monarchy. Under the British mandate two political trends developed that influenced the trend of political developments after independence. One, a moderate Iraqi nationalism emphasizing the importance of economic and political development. Two, a militant Arab nationalism "strongly attacking the mandate as a remnant of British imperialism."[14]

The diametrically opposed views of these two groups led to considerable political instability. For example, between 1932-1939 there

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[14] Edith and E. F. Penrose, Iraq: International Relations and National Development. Boulder, Westview Press, 1978, p. 82.

were 12 cabinets. As disorder continued and civilian governments failed to establish effective parliamentary institutions coupled with the suppression of civilian expression of opinion, the army took over power in 1958. According to Edith Penrose, the Iraqi revolution of 1958 was due to the performance of the monarchy as shown by the resistance of members of the royalty to social reform, the dissolution of political opposition, aligning Iraq with the West, exclusion of diplomatic and economic relations with the communist countries and their opposition to newer currents of Arab nationalism.[15] From this point subsequent governments tried to mix Arab nationalism with a commitment to socialism.

Geographically, Iraq too has very extensive desert areas. In the late 1960's only between 15 and 18 percent of the total area was agricultural land. The country can be divided into four main zones: the desert in the West and Southwest; the rolling upland, much of it very dry, between upper Tigris and Euphrates rivers; and the alluvial plain through which the lower Tigris and Euphrates flow. For the country as a whole except in the north and northeast highlands, mean annual rainfall ranges between 4 and 7 inches. In the mountains rainfall in some places reach 40 inches a year. Only one crop a year can be grown on non-irrigated land.[16]

In spite of the arid nature of the country, agriculture was the backbone of the economy before oil. Agricultural commodities included wheat, barley, dates, cotton and sorghum. The most important agricultural exports were dates and cotton. The foreign exchange earned from

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[15] Ibid., p. 199.

[16] For more details see Harvey H. Smith, et al., Area Handbook of Iraq. Washington, D.C., The American University, 1971, p. 15-17.

these agricultural exports provided the funds for capital imports for the development process of the country. But these funds were not significant. For example total government revenue rose moderately from an average of slightly over $12 million a year in the period 1931-35 to only $74 million a year in the period 1946 to 1950.[17]

Until the 1950's, state revenue was too small to finance integrated large scale development programs. For this reason, agricultural techniques remained poor leading to low output and productivity. Given such a condition there was virtually no industries of any significance and there was serious disguised unemployment in the rural areas. Most development efforts at this time concentrated on providing rudimentary infrastructure such as river control and water storage. Because of the central role of agriculture, all efforts of development were geared to increase its exports. Thus the land and water resources were the backbone of the economy before the coming of oil.[18]

A rigid landlord land tenure system developed in the agricultural sector. To improve the agricultural performance, a land reform was undertaken in Iraq in 1958 as part of the revolution with the aim of increasing agricultural productivity, raising the level of living of rural population and destroying the political and social power of the [illegible] land reform is considered to be more successful in Iraq than in Iran but its effect on productivity has not been

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[17] Edith and E. F. Penrose, Ibid., p. 150.

[18] Fahim I. Qubain, The Reconstruction of Iraq: 1950-57. New York, Praeger Publishers Inc., 1958, p. 17-36 and International Bank for Reconstruction and Development (IBRD); The Economic Development of Iraq. Baltimore, The Johns Hopkins Press, 1952, p. 1.

significant. A significant problem is the harassment of peasants by state agencies.[19]

Oil was discovered in Iraq in the 1920s. Thus at independence oil had already been discovered in the north but there was little exploration in other parts of the country. At the initial stages, Iraqi oil was developed mainly by British and French companies under the auspices of Turkish Petroleum Company (TPC). The ownership structure was as follows: Britain 70 percent, France 20 percent, and Iraqi government 10 percent. After independence the Iraqi Petroleum Company (IPC) a consortium of companies from Britain, France and the U.S. was formed. It became the principal company in the oil business of Iraq. Continuous conflict between the company and the government over lease holdings and royalty payments and the development of alternative sources of petroleum kept both production and government revenues from oil low.

Serious efforts at development of the economy were not undertaken until the late 1950's and early 1960's when oil began to contribute substantial amounts to public revenue. In addition to oil, the socialist trend that was unleashed in the economy beginning with the 1958 revolution affected the development process. According to the Iraqi Minister of Planning (1970) Rashid Al-Rifae, because of the urgent need to transform the economy, the economic backwardness of Iraq could not be overcome by traditional means of development.[20] Iraq therefore adopted scientific centralized planning method whereby better exploitation of economic resources may be ensured and the objectives of

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[19] See Economist Intelligence Unit. Annual Supplement, 1977.

[20] Republic of Iraq. Iraq: Nizarat-al-Talchtit. (Progress Under Planning in Iraq), Baghdad, Ministry of Planning, 1971.

sufficiency in production and justice in distribution can be attained. Since 1968, therefore, the economy has been organized through comprehensive planning in order to achieve socialism. This has involved organizing the economy according to principle of specific specialization whereby individuals are required to specialize in certain productions by the state.

Venezuela. Venezuela covers 912,000 square kilometers; about the size of Texas and Oklahoma combined. Politically, the Federal Republic of Venezuela is made up of 20 states, two federal territories and the federal district encompassing Caracas the capital. It began as a Spanish colony but became independent in 1821. Even then it was part of the Greater Colombian Federation until 1830 when it adopted its own constitution. For most of the nineteenth century, the country's history was characterized by recurrent periods of dictatorship, political instability and revolutionary violence. It was not until 1958 that a constitutionally democratic government was elected and Venezuela entered a period of political stability.[21]

The total area of Venezuela lies within the tropics. Nevertheless it has varying geographical contrasts. It has both torrid swamps in the Orinoco (the major river in the country) delta, and snow-capped peaks in the Andes. The country is generally divided into four distinct geographical regions, the Andes Highlands and adjacent coastal areas; the Maracaibo basis composed of hot, humid lowlands bordering lake Maracaibo; the Llanos - gently sloping plains, flatlands and valleys; and the Guyana

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[21] Franklin Ingwell, The Politics of Oil in Venezuela. Stanford, Stanford University Press, 1975, p. 7. Thomas E. Weil et al., Area Handbook of Venezuela. Washington, D.C., The American University, 1971, p. 32. IBRD, The Economic Development of Venezuela. Baltimore, The Johns Hopkins Press, 1961, p. 6.

maximize income while minimizing investments. Tenants were used to work the land. The tenancy contracts stipulated the type of crops to be raised and the method of cultivation. Introduction of new and modern technology was precluded which eliminated any incentive to invest in the land.

Venezuela too has undertaken a land reform. However in this case emphasis was placed on distributing government land and virgin land.[23] Its success rate has not been impressive. The Venezuelan case differs from the others because there is still government and virgin land to distribute. However, this strategy cannot continue for long as land becomes more scarce over the years. The government must have to undertake an equity based land reform in due course.

The Venezuelan petroleum era began in the 1920s immediately after World War I. The first major investments were made by British firms. Once begun, oil development proceeded rapidly. Petroleum appeared in Venezuelan export statistics for the first time in 1918, by 1927 it was the country's principal export and by 1929 Venezuela was the largest oil exporter in the world. The wealth made available by petroleum trade has changed the center of economic activities from agriculture to oil.[24] In the process a significant middle class has developed taking advantage of this trade to establish economic activities especially in the area of services, light manufacturing, and intermediate technological industries.

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[23] Ibid., p. 236-244 and Thomas E. Weil et al., Area Handbook of Venezuela. Washington, D.C., The American University, 1971, p. 315-33.

[24] Franklin Tugwell, The Politics of Oil in Venezuela. Stanford, Stanford University Press, 1975, p. 38.

Highlands, north and east of the Orinoco, a vast area of high plateaus and rolling plains. Venezuela also has a wide range of rainfall levels. Yearly rainfall averages range from less than 20 inches in some areas near the Caribbean Sea to over 80 inches in parts of the Orinoco delta.

Nearly one-third of the country's total area was agricultural land - used or unused by late 1960's. In 1970 land used for crop production constituted 6.4 percent of Venezuela's total agricultural land area; and a further 64 percent of the agricultural land area was used for pasture. Given the fairly abundant rainfall in the country, agriculture has been a prominent economic activity. For over four centuries, the people of Venezuela lived by raising cattle, by producing subsistence crops such as rice, root vegetables, and corn. Agricultural exports have traditionally been coffee and cocoa. Agriculture therefore was the central activity in the economic activities of the country and thus was the main source of raising the required public revenue.

Until 1922, 80 percent of the population lived in rural areas. But the returns from agricultural activities were meager as indicated by the national budget of $32 million in 1922. Given this situation the population suffered from extremely low purchasing power, a high percentage of infant mortality, a tragic incidence of malaria and other tropical diseases.[22]

In Venezuela a strong landlord land tenure system had developed characterized by the establishment of huge estates. As in the other cases, most of the large landowners being absentee landlords tried to

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[22] A. Curtis Wilgus (ed.), The Caribbean: Venezuelan Development. A Case History. Gainsville, University of Florida Press, 1963, p. 195-6.

For most of the 1950's Venezuela received substantial revenue from oil. But the effective use of oil revenue to enhance planned development began in the mid-1950's and early 1960's. These development plans have been used as ways of utilizing oil revenues to achieve specific objectives. In order to avoid inflationary phenomenon characteristic of Latin American countries, Venezuela has tried to control public expenditure through the use of a stabilization fund.

Conclusion

As we have seen, the countries under study all started their development efforts with funds derived from agricultural activities. Revenues derived from agriculture were however quite meager and thus for the period when agriculture was the main source of public revenue, the governments did not have the necessary funds to undertake effective development expenditures. As a result these economies could not purchase the needed inputs to improve their output capacity.

The availability of oil revenues changed this situation. Oil exploitation began after World War I in the case of Venezuela, Iran and Iraq. But only Venezuela enjoyed significant revenue from oil at that initial stage. In both Iran and Iraq substantial contribution of oil to total revenue began in late 1940's and early 1950's. Nigeria came to the oil scene in the mid-1960's. Thus major development efforts began only in the 1950's for the other countries and 1960's for Nigeria as revenues became available from oil. Since the oil revenues accrued to the public sector, the role of public expenditure in the development process increased substantially. The governments began to undertake direct activities to enhance development in many sectors of the economies.

In the case of Iraq, the government actually took over all activities with share capital of $8,400 and over. Only the construction sector was left predominantly in private hands. The availability of oil revenues has therefore raised the tempo of development activities.

The chapter that follows will show the annual amount of oil revenues accumulated by the countries. By so doing the magnitude of the revenues that accrued to these countries can be seen. This facilitates our later analysis of the use to which these funds have been put in order to enhance development in the countries.

CHAPTER IV

TRENDS IN OIL REVENUE LEVELS AND FUTURE PROSPECTS

Introduction

Oil revenues, present and future, have a significant role to play in welfare maximization by providing funds for simultaneous activities in consumption and investment. For all the countries there has been an upward trend in the contribution of the oil sector to total revenue. As oil revenues grew, these countries became more and more dependent on these revenues to finance their development efforts. This dependency underlines the urgent need to establish alternative sources of revenue to meet future development needs when oil runs out.

The prospects for future contribution of oil to total revenue depend on the reserve levels and the rate of exploitation of these reserves. The production profile of the oil sector provides a good picture of the likely future revenue prospects. By examining the production profile for each country, it can be ascertained, assuming no new discoveries, how long these countries can depend on the oil sector to provide the bulk of their revenue requirements.

This chapter therefore provides a historical trend of revenues from oil and a discussion of the future revenue prospects.

Trends in Oil Revenue Levels 1950-1977

Nigeria. Table 1 shows that over the years the contribution of oil to total revenue has increased dramatically. Percentage contribution rose from less than 1 percent in 1960 to over 61 percent in 1974,

Table 1

Revenue from Oil as Percent of Total Revenue 1950-1977
(in million U.S. dollars)

Year	Total Government Revenue'	Revenue from Oil	Percent of Total Revenue from Oil
1950	115.50+	*	*
1955	276.41	*	*
1960	390.00	1.95	0.5
1961	408.84	10.63	2.6
1962	421.80	12.27	3.0
1963	625.00	7.50	1.2
1964	683.33	18.45	2.7
1965	570.00	19.95	3.5
1966	550.00	28.05	5.1
1967	640.00	40.80	7.8
1968	483.67	28.70	5.8
1969	669.23	113.10	16.9
1970	1171.83	249.60	21.3
1971	2149.72	765.30	35.6
1972	2823.77	1146.45	40.6
1973	3394.21	1524.00	44.9
1974	9073.05	5589.00	61.6
1975	11131.24	6467.25	58.1
1976	13548.49	8047.80	59.4
1977	16086.24	9120.90	56.7

Note: + figures for 1951
* negligible figures

Sources: Federal Ministry of Mines and Power, Petroleum Division. Annual Report 1968-69, p. 18. Federal Ministry of Information, Department of Petroleum Resources. Annual Report 1970-71. Central Bank of Nigeria. Economic and Financial Review, Vol. 11, No. 2, December 1973 and Vol. 15, No. 1, June 1977. Annual Report and Statement of Accounts, December 1976.

and declined to 56.7 percent in 1977. Since 1973 the OPEC price increases have been the most important reasons for the sharp increase in oil revenue. However, increases in production have also contributed to this. Daily output rose from 1.08 million barrels per day in January 1970, the end of the civil war, to a maximum level of 2.7 million

barrels per day in 1979. According to West Africa magazine (March 1980 issue) oil contributes about 83 percent of total government revenue.

Iran. In Iran the contribution of oil to total government revenue has also increased sharply from 11.5 percent in 1950 to 93.6 percent in 1974 (Table 2). There was a significant increase between 1950 and 1960

Table 2

Revenue from Oil as Percent of Total Revenue 1950-1977
(in million U.S. dollars)

Year	Total Government Revenue	Revenue from Oil	Percent of Total Revenue from Oil
1950	237.39	27.30	11.50
1955	349.26	94.30	27.00
1960	639.18	279.96	43.80
1961	700.56	301.94	43.06
1962	701.14	319.72	45.60
1963	739.27	361.22	48.88
1964	889.84	392.42	44.10
1965	969.82	481.03	49.62
1966	1339.76	714.09	53.26
1967	1370.42	669.61	48.72
1968	1552.11	754.93	48.64
1969	1918.31	939.44	49.00
1970	2261.98	1122.54	50.00
1971	3877.47	2895.77	74.70
1972	4553.62	3411.27	74.90
1973	6318.31	5143.66	81.41
1974	20102.82	18821.13	93.62
1975	22912.68	17538.03	76.54
1976	25394.37	21676.06	85.36
1977	30838.03	22423.17	72.73

Sources: Statistical Center of Iran. Statistical Yearbook 1975, U.N. Statistical Yearbooks 1964, 1970. I.M.F. International Financial Statistics, Vol. XX, No. 12, December 1967 and Vol. XXXI, No. 9, September 1968, Central Bank of Iran. Annual Reports, 1970, 1972, 1974.

in spite of the conflicts between the government and the oil companies over nationalization compensation and profit sharing. The decade of the sixties did not show substantial change in the level of contribution mainly because price and production levels did not change much. The seventies, on the other hand, have shown significant changes in the level of contribution. The first reason was the result of the Tripoli and Tehran agreements of 1970 and 1971 which raised the level of profit sharing to 80/20 in the government's favor. Second, and most important, the price increases since 1973. In addition to these there was the Shah's decision to raise the level of output substantially in order to raise funds to implement his huge development programs. In 1976 for example, Iran was producing about 6.5 million barrels a day.

Iraq. In Iraq market forces and political changes have contributed to the fluctuation of revenue from oil (Table 3). For example, the downward trend in oil revenues from the early sixties to the beginning of the seventies was due to political instability coupled with changes in ownership of reserves in unexploited areas. The creeping nationalization that many oil companies envisaged also led to reduced output and thus lower revenue. A turnabout came in early seventies when France and the Soviet Union agreed to operate the Iraqi oil program. Since then the role of oil has continued to rise significantly.

Iraq has also benefitted from increased prices and profit sharing resulting from the Tripoli and Tehran agreements of 1970 and 1971. And the increases in prices since 1973 coupled with increased production have led to the increase in the level of oil revenues and its share rise in overall contribution to total revenue in the seventies.

Table 3

Revenue from Oil as Percent of Total Revenue 1950-1977
(in million U.S. dollars)

Year	Total Government Revenue	Revenue from Oil	Percent of Total Revenue from Oil
1950	227.38	139.61	61.40
1955	259.91	172.84	66.50
1960	449.96	293.05	65.13
1961	511.36	321.84	62.94
1962	635.03	421.82	66.43
1963	578.32	357.91	61.89
1964	633.18	387.01	61.12
1965	708.96	438.05	61.79
1966	754.28	457.79	60.69
1967	748.00	413.78	55.32
1968	967.93	512.64	53.00
1969	1032.39	590.55	57.20
1970	1139.64	571.25	50.12
1971	1334.66	715.61	53.62
1972	1762.13	1182.90	67.13
1973	2344.64	1783.80	76.08
1974	3440.67	2782.52	80.77
1975	4359.76	3469.37	79.58
1976	n.a.	n.a.	n.a.
1977	n.a.	n.a.	n.a.

Note: n.a. - the figures for these years are not available.

Sources: Central Statistical Organization. Annual Abstract of Statistics 1972 and 1973. I.M.F. International Financial Statistics 1960. U.N. Statistical Yearbook 1964 and 1970 and 1977.

Venezuela. In Venezuela, the change in the contribution of oil to total revenue has not been as significant as in the other countries. One reason for this is that Venezuela is one of the oldest members of the world oil business. As a result some structural changes have taken place in the economy since 1950. Moreover, Venezuela's oil is getting exhausted unless new fields are discovered. Its production peaked in 1970 at 3.7 million barrels a day. Recent government sponsored

explorations have not yielded much result. It is therefore quite conceivable that oil contribution to total revenue may begin to decline soon unless these explorations prove fruitful. The effects of the 1976 and 1977 changes of OPEC prices are very visible. Overall however, the role of oil in revenue contribution has not changed much since 1964.

Table 4

Revenue from Oil as Percent of Total Revenue 1950-1977
(in million U.S. dollars)

Year	Total Government Revenue	Revenue from Oil	Percent of Total Revenue from Oil
1950	632.18	200.40	31.70
1955	942.11	500.26	53.10
1960	1366.00	661.11	48.84
1961	1571.33	719.56	45.79
1962	1464.22	716.89	48.95
1963	1470.89	799.33	54.35
1964	1603.78	1059.11	66.03
1965	1637.11	1073.33	65.57
1966	1767.11	1091.56	61.77
1967	1928.67	1259.33	65.29
1968	2035.33	1287.11	63.24
1969	2150.44	1218.67	56.67
1970	2278.22	1277.78	56.09
1971	2694.00	1708.44	63.42
1972	2788.22	1762.22	63.20
1973	3079.50	1945.11	63.16
1974	9457.33	6224.89	65.82
1975	9088.44	5510.44	60.63
1976	8866.05	6450.93	72.76
1977	9017.67	6290.93	69.76

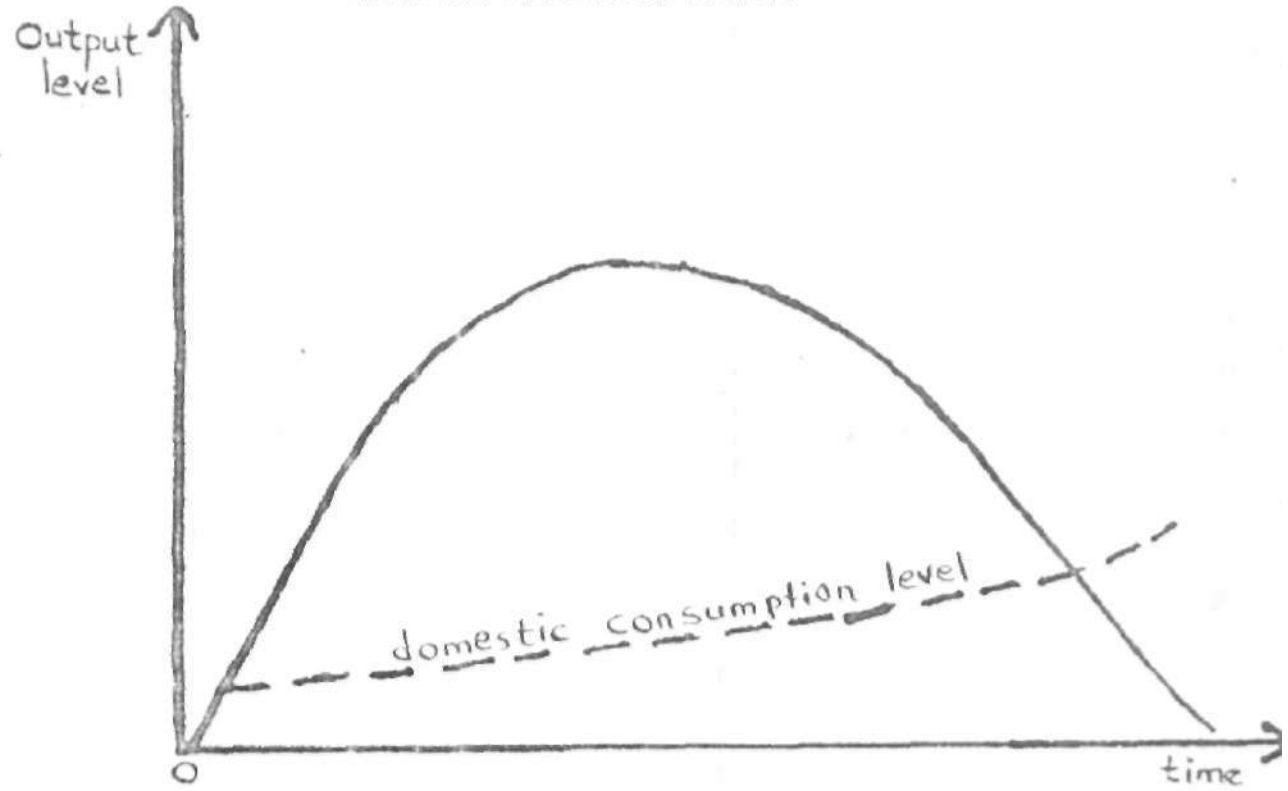
Sources: Central Bank of Venezuela. Economic Report 1973. Statistical Yearbook 1977. I.M.F. International Financial Statistics 1960.

Future Revenue Prospects

Future oil revenue prospects can best be shown by discussing the oil production profiles of each of these countries. Ideally the production profile of oil can be presented as shown in Fig. 1 below. Assuming no change in reserve level, this implies that over time as the rate of exploitation rises, output of oil will rise and this will continue until a peak level is reached. From then on output will begin to fall. How fast and how high the production level rises before reaching a peak depends on the amount of reserves and the rate of exploitation. The larger the reserve and the lower the exploitation rate the

Figure 1

Crude Oil Production Profile*



*Exports take place only after domestic consumption is met, and would stop when output falls below domestic consumption level.

the longer it will take before output peaks and vice-versa. The production trend in each of these countries can be expected to follow this profile.

The production profile cannot start somewhere on the Y-axis above zero and decline in a straight line to the right. This cannot be because it implies that oil can be produced without capital stock. Moreover, it implies instant decline in the level of output the moment production begins. These points are unrealistic. On the other hand, the profile cannot start somewhere on the Y-axis above zero and rise in a straight line to the right. This cannot be because it implies constant increases in output for an indefinite period. This too is not realistic. Therefore the production profile for each country must follow the profile shown in Fig. 1 above.

We would use the information in Table 5 below to discuss the production profiles of these countries. On the basis of daily production rate of 5.8 million barrels, Iran's production will peak by mid-1980's.[1] This however is no longer true since the Iranian revolution which caused drastic reduction in oil output. By reducing output the time for the peaking of Iran's production has been shifted forward. As a result the country can expect probably up to 35 more years of substantial revenue contribution from oil at current rate of production.

Venezuela passed her peak of production at 3.7 barrels in 1970. "Its conventional oil reserves are in absolute decline for want of new discoveries. Unlike most other OPEC members, its reserves are now

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[1] F. Vakil, "Iran's Basic Macroeconomic Problems: A 20-Year Horizon," in Iran: Past, Present and Future, edited by Jane W. Jacqz. New York, Aspen Institute for Humanistic Studies, 1978.

Table 5

Estimated Crude Oil Reserves
Proved and Probable 1978

Country	Reserve level in billion barrels	Production rate million barrels per day	Number of years to exhaustion
Nigeria	19	2.5	20.8
Iran	60	5.8	28.3
Iraq	36	2.5	39.4
Venezuela	14	2.4	16.0

Notes: Column 4 calculated on the basis of columns 2 and 3, thus:

$$\frac{R_L}{P_r} \Big/ Y$$

where R_L is the reserve level in billion barrels
P_r is the production rate in million barrels per day
Y is the number of days in a year.

Source: C.I.A. International Energy Statistical Review, October 1978.

projected to last only a little more than a decade at current rates of production."[2] Thus at the rate of production of 2.4 million barrels a day (1979), Venezuela's reserve is expected to last only up to around 1995. Unless Venezuela finds new deposits of crude oil, it cannot count on oil revenues as a major contributor. Even with oil price increases, the fact that output will continue to decline - in the absence of new reserves - implies that the oil sector contribution to revenue is likely to begin to show significant decline soon.

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[2]Frank Trager (ed.), Oil, Divestiture and National Security. New York, Crane, Rusak and Company, Inc., 1977, p. 80.

Iraq has the best prospect for continuous significant contribution of oil to total revenue among all the countries. Though surveys of oil potentials are reasonably complete, the potential for increasing output is quite great. In the past Iraq was not able to produce at a high level due to political instability and the accompanying economic uncertainties. For these reasons its reserve has not been depleted. Recently it has been able to raise its output level considerably. This indicates that Iraq is far from its peak. The implication of this is that Iraq can expect many more years of increased contribution of oil to total revenues of the government. At the current rate of production (2.5-3.0 million barrels a day), it is estimated that Iraq can expect about 39.4 more years of significant oil contribution to total revenue.

Nigeria's situation is slightly different. First, she is new in the oil business and second, there are still vast areas to be surveyed for oil potentials. Nonetheless, the characteristic nature of the subsoil in Nigeria with the resultant shallow oil deposits have made experts predict that even though Nigeria's production has not peaked as yet, the possibility of rapidly improving output in the eighties will depend on more discoveries. Therefore, "despite Nigeria's remarkable achievement in increasing its oil production a factor of more than four between 1969 and 1974, the country's long term prospects are not yet secure."[3] Moreover, oil production predicted to reach 3-4 million barrels a day by 1976 rose only to a maximum of 2.7 million barrels a day in early 1979.

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[3]"NIGERIA: A Slower Rate of Progress." Petroleum Economist, Vol. 43, January 1976, p. 12.

Thus, in spite of the lack of complete survey of oil potentials, Nigeria cannot probably expect more than 25 years of significant contribution of oil to total revenue at the current rate of production (2.3 million barrels a day) unless more surveys are undertaken to increase the reserve base.

Conclusion

The countries have received substantial revenue from oil in the past years and still have considerable prospects for more revenues in the future. The large amounts which have accrued to these governments provided them the opportunity to establish viable economic bases to ensure continuous growth of their economies. It is important to examine the effectiveness of government expenditures that resulted from these funds.

Assuming no new discoveries, future prospects range from about a decade and a half in Venezuela to about four decades in Iraq depending on rate of exploitation. This shows that more funds will still be available from oil to maximize future welfare through investment. The opportunity exists for putting in place more projects that can enhance the growth of the economy when oil runs out. However, the governments must expedite effective investments that would enhance the establishment of programs that ensure continuous growth in order to maximize welfare after oil runs out.

CHAPTER V

THE METHODOLOGY

Introduction

In recent years huge amounts of revenues have been accruing to oil producing countries. For the revenues to enhance development, effective investments must be undertaken which will lead to the establishment of viable economies by the time oil runs out. The use of the revenues in the process of establishing viable economic bases implies the necessity of making both inter and intra sectoral choices. In making these choices, time preference is brought to bear on the decisions made. A country that places emphasis on the future would have a different strategy from a country that emphasizes the present. The choice being used will determine the nature of public sector expenditure allocations that take place.

Expenditure allocations by nations normally encompass a variety of activities. This implies that governments do not usually undertake mutually exclusive choices. Instead, the choices that yield the desired objective as perceived by policy makers are closely interrelated. These countries must seek to increase output if the welfare of their citizens is to be maximized. Current oil revenues contribute to future output only insofar as they are invested productively. Hence, the types of choices made by the public sector with regard to investment activities have profound influence on the ability of the countries to maximize welfare longer than the life of oil. In view of the above, the first

step is for the countries to decide how much of current revenues should be invested rather than consumed. This decision implies a trade-off between present and future consumption. Besides determining the amount of investment, the countries must decide on the type of investment to undertake.

This chapter is structured as follows: First, a description of a standard, formal neoclassical model of welfare maximization for a growing country. The purpose of this is to show in an abstract way the kinds of choices involved in the investment - consumption choice. There is a close relationship between the outcome of this discussion and answers related to the issue of the type of investments the countries should undertake. The reason is that optimal investment decisions depend upon the rate of return on investments. While the abstract model provides a framework for the kind of investment - consumption choice that must be made, the assumptions underlying it are restrictive. This restrictiveness limits the practical application of the framework.

Second, an examination using a crude extrapolation of rates of growth of non-oil output in the countries under study in order to see the implication for per-capita consumption after oil is depleted. Very simple assumptions about the rate of oil depletion are used in this analysis. It is not an attempt to assess the ability of these countries to maintain past rates of growth, neither is it in any way a projection of the performance of these countries. Third, deals with the issue of the type of investments being undertaken. The last section of the chapter outlines a framework for analyzing government investments and outlines questions to be answered in subsequent chapters.

model. The first set of assumptions states: One, perfect competition. This implies no rigid prices. Prices will adjust to clear the market. Two, full employment of labor and capital. The economy will adjust to take care of any unemployed resources. Three, factors are paid their marginal products. Since prices will always adjust to clear the market, the rate of interest and the wage rate adjust to the marginal productivities of capital and labor instantaneously.

The second set of assumptions is as follows: One, the labor force N grows at an exogenously determined rate g_N. Two, output, Y_t, depends on capital, K, and labor, N. The production function can therefore be written thus:

$$Y_t = F(K_t, N_t) \; ; \; F_K > 0, \; F_{KK} < 0, \; F_N > 0, \; F_{NN} < 0 \, .$$

The production function is homogeneous of degree one, i.e., constant returns to scale. This means if we double the inputs (labor and capital) the output doubles also. We can deduce the following from the production function:

$$Y_t = \frac{Y_t}{N_t} = F(\frac{K_t}{N_t}, 1) = f(k_t) \; ; \; f' > 0 \, , \; f'' < 0$$

where y_t is the output per worker and k_t is the capital labor ratio. The production function rises at a diminishing rate. Three, investment, which is equal to savings is a given fraction, s, of total output. Saving also equals output that is not consumed. Thus

$$C = Y - S = (1 - S) Y$$

With depreciation defined as capital consumption, i.e. the wear and tear of equipment in the process of production, capital formation (net investment) can be written thus:

$$\dot{K} = \frac{dK}{d_t} = I_t - \delta K_t = S_t - \delta K_t = sY_t - \delta K_t$$

Thus for output to be increased savings must exceed the depreciation of capital stock leading to positive net investment. In per capita terms

$$\dot{k} = \frac{K}{N} - g_N k = sf(k) - \delta k = f(k_{(t)}) - \delta k_{(t)} - c_{(t)} - g_N k_{(t)}$$

Utility of society is described by general utility function:

$$U = U\{c_{(t)}\}, \quad U' > 0, \quad U'' < 0$$

Given the two sets of assumptions already stated, the neoclassical optimal growth theory's maximization of social welfare can be stated as the maximization of the discounted flow of utility over time subject to the constraint of net investment. Optimal growth requires that

$$\text{Max } W = \int_0^\infty U\{c_{(t)}\} e^{-rt} d_t$$

subject to:

$$\dot{k}_{(t)} = f\{k_{(t)}\} - \delta k_{(t)} - c_{(t)} - g_N k_{(t)}$$

where:

All numbers are in per capita terms.

Thus:

$\dot{k}_{(t)}$ = the level of net investment per worker. Output less consumption less depreciation.

$f\{k_{(t)}\}$ = output per worker

δ = constant coefficient of depreciation

$\delta k_{(t)}$ = depreciation

$c_{(t)}$ = consumption per worker

$g_N k_{(t)}$ = rate of growth of labor

W = welfare integral.

Thus under the neoclassical optimization theory, the ability to maximize utility over time is constrained by the level of net investment the economy is able to generate. The welfare function assumes utility to be a function of consumption. But consumption depends on income and income depends on capital stock which is increased through investment. Thus investment is the key policy variable. Without additional investment the ability to increase consumption and consequently utility will be nonexistent.

The solution of this model provides the optimal capital - labor ratio that the economy should move toward. This optimal ratio is such that

$$f'(k^*) = g_N + r + \delta$$

Since $f''(k) < 0$ (diminishing marginal productivity of capital), it follows that if the level of the discount rate rises, $f'(k)$ will be smaller because the rate of investment will decline. This is so because a higher discount rate implies preference for present than future goods. In such a circumstance investors will invest less since future benefits are valued less. So a higher discount rate means less investment.

If the rate of growth of labor increases the rate of investment must rise in order to maintain the same capital - labor ratio. In the end policy makers may be satisfied with a slightly lower capital - labor ratio. If the level of depreciation rises, the rate of investment must decline. This is so because increases in depreciation makes investors to consider investment not to be worthwhile. This leads to less investment.

In applying this model to oil countries we must take into account both oil revenue and non-oil output.

Assume

(1) that f(k) describes non-oil per-capita output.

(2) R indicates oil revenue in terms of the non-oil good. It is assumed to be constant until oil is depleted. It is also assumed that the relative prices between oil and non-oil good are constant. Given these assumptions

$$R = \bar{R} \quad \text{for} \quad t \leq k$$

$$R = 0 \quad \text{for} \quad t > k$$

(3) $r = \frac{\bar{R}}{N}$ which declines over time as labor grows.

We maximize the same integral, but the constraint is modified to allow for oil revenue. The constraint is written thus:

$$\dot{k}_{(t)} = f\{k_{(t)}\} + r_{(t)} - \delta k_{(t)} - c_{(t)} - g_N k_{(t)}$$

The mathematical solution becomes somewhat more complicated with oil revenues and is not undertaken here.

Our underlying principles remain the same. With oil revenues, the economy can undertake more investment and enjoy more current

consumption, but plans must be made over the long period of time, with appropriate discounting of the future, to achieve optimal levels of consumption after the oil revenues have run out. This requires the utilization of the oil revenues in investment in the non-oil sector of these economies such that by the time oil runs out, the savings from the non-oil output would be sufficient to generate the required level of investment that ensures welfare maximization. This implies undertaking investments that ensure a smooth shift from dependence on oil revenues to dependence on non-oil revenues.

There are a number of problems with the assumptions of the neoclassical model with regard to our analysis. First, the model does not disaggregate, i.e. it deals with total consumption and investment. But we are dealing only with the public sector in this analysis and this requires some disaggregation. Second, it does not take unemployment into consideration. However, in these countries unemployment cannot be assumed away. It is an issue of prime importance to policy makers in dealing with development issues because it is a prevalent phenomenon in these countries. Third, it assumes all people to be the same. This obviously is not the case. Oil revenues have created more problems of income distribution. So far the attempts to bring about effective distribution have not been successful. In all these countries a small segment of the population at the top has disproportionate wealth of the country in proportion to its size.

Finally, the model does not address the issue of absorptive capacity. Oil countries face the problem of absorption constraints. Huge amounts of revenue accrue to these countries giving rise to problems with absorptive capacity. Absorptive capacity is said to be

adequate if investments yield acceptable rates of return given the supply of co-operant factors. In these oil countries, the co-operant factors - skilled labor, efficient capital markets, efficient bureaucracy, other complementary resources, etc. are not readily available. Because of these absorption constraints, not all the accrued revenues can be effectively invested domestically. That is, if all the revenues are invested domestically, the rates of return may be so low as not to justify the investments. But investment possibilities are not limited to the domestic economy. Revenues can also be invested abroad if the rate of return is higher. Because of the size of the revenues these countries may choose to invest part of them abroad. Excess funds which are unlikely to yield acceptable rates of return in domestic investment should be used in foreign investment where the returns are higher. This option raises the overall rate of return from what it would be if investment were limited to the domestic economy and thus raises the optimal level of investment.

In spite of these institutional problems, neoclassical theory gives us an analytical framework for making investment-consumption choices. To this end it is very important for our analysis.

From what has been discussed above, it has been shown that the investment performance of these economies as oil reserves are depleted is very crucial for welfare maximization to be possible. The nature of the performance is revealed by the trend in the level of per capita consumption.

Trends in Per Capita Consumption

In the optimization model it was assumed that social welfare was positively related to per capita consumption. In the illustrations that follow, we examine the trend of non-oil output for its implication for per capita consumption after the oil runs out. What we want to see is what rate of per capita consumption would be possible immediately following the depletion of the country's oil reserves. The following assumptions are made:

(1) The past rate of growth of real non-oil output is maintained.

(2) The average rate of saving in the target year is the same as currently.

(3) Population grows at a constant rate.

(4) Oil is produced at a constant rate and runs out when current known reserves are depleted by this rate of production, thus defining the target year.

GNP_o = current GNP level

Y_o = current non-oil income

P_o = population

$c(\frac{GNP}{P})$ = present per capita consumption where c is the average propensity to consume.

It must be stressed that this illustration makes no attempt to describe or define the rate of investment that would be necessary to maintain the past rate of growth or to predict whether such a growth rate is likely. It is just a simple exercise to consider the implications of maintaining past rates of growth of non-oil output for consumption after oil revenue is no longer available.

Table 6

Trends in Per Capita Consumption up to Oil Depletion*

Nigeria 1975

Average real growth rate of non-oil GNP (1970-75) = 4 percent
Population growth rate = 2.5 percent
Oil runs out in 25 years

GNP_o = \$25,600 m	GNP_{25} = \$57,472 m	GNP_{26} = \$53,046 m
Y^o = \$19,133 m	Y_{25} = \$51,005 m	Y_{26} = \$53,046 m
R^o = \$ 6,467 m	R_{25} = \$ 6,467 m	R_{26} = 0
P^o_o = 75 m	P_{25} = 139 m	P_{26} = 142.5 m

$c(\frac{GNP}{P}) = .7\ (\frac{25600}{75})$ - $c(\frac{GNP}{P}) = .7\ (\frac{53046}{142.5})$

$= \$238.9$ $= \$260.6$

where c is the average propensity to consume.

Iran 1975

Average real growth rate of non-oil GNP (1970-75) = 10 percent**
Population growth rate = 2.8 percent
Oil runs out in 28 years

GNP_o = \$55,510 m	GNP_{28} = \$565,132 m	GNP_{29} = \$602,353 m
Y^o = \$37,972 m	Y_{28} = \$547,594 m	Y_{29} = \$602,353 m
R^o = \$17,538 m	R_{28} = \$17,538 m	R_{29} = 0
P^o_o = 33.4 m	P_{28} = 72.4 m	P_{29} = 74.4 m

$c(\frac{GNP}{P}) = .6\ (\frac{55510}{33.4})$ $c(\frac{GNP}{P}) = .6\ (\frac{602353}{74.4})$

$= \$997.2$ $= \$4857.7$

where c is the average propensity to consume.

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*All numbers are in 1975 prices.

**This high growth rate was due to the Shah's massive industrialization drive, especially from the 1960's onward, aimed at rapid transformation of the Iranian economy. The structural changes that developed as a result of this are mostly responsible for the current revolution in the country which has resulted in virtually zero growth rate for the economy. The chances of the Iranian economy every growing at such a high rate in the foreseeable future are very dim. Such growth rate therefore is useful only for illustrative purposes.

Table 6 (continued)

Iraq 1975

Average real growth rate of non-oil GNP (1970-75) = 8 percent*
Population growth rate = 3.3 percent
Oil runs out in 52 years

GNP_o = \$13,880 m
Y_o^o = \$10,411 m
R_o^o = \$ 3,469 m
P_o^o = 11.1 m

GNP_{52} = \$572,992 m
Y_{52}^{52} = \$569,523 m
R_{52}^{52} = \$ 3,469 m
P_{52}^{52} = 60 m

GNP_{53} = \$615,085 m
Y_{53}^{53} = \$615,085 m
R_{53}^{53} = 0
P_{53}^{53} = 62.03 m

$c(\frac{GNP}{P}) = .65\ (\frac{13880}{11.1})$

$= \$812.8$

$c(\frac{GNP}{P}) = .65\ (\frac{615085}{62.03})$

$= \$6445.4$

where c is the average propensity to consume.

Venezuela 1975

Average real growth rate of non-oil GNP (1970-75) = 6 percent
Population growth rate = 2.9 percent
Oil runs out in 16 years

GNP_o = \$28,079 m
Y_o^o = \$22,569 m
R_o^o = \$ 5,510 m
P_o^o = 12 m

GNP_{16} = \$62,844 m
Y_{16}^{16} = \$57,333 m
R_{16}^{16} = \$ 5,510 m
P_{16}^{16} = 19 m

GNP_{17} = \$60,773 m
Y_{17}^{17} = \$60,773 m
R_{17}^{17} = 0
P_{17}^{17} = 19.5 m

$c(\frac{GNP}{P}) = .65\ (\frac{28079}{12})$

$= \$1520.9$

$c(\frac{GNP}{P}) = .65\ (\frac{60773}{19.5})$

$= \$2025.8$

where c is the average propensity to consume.

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*Beginning with the 1968 Iraqi revolution, the socialist government that came to power began a massive industrial drive. This is responsible for this high growth rate. Extreme centralization and bureaucratic inefficiency are already causing a decline in this growth rate. This too is useful only for illustrative purposes.

From the illustration above, given the assumption we have made about these economies, these countries would be able to maintain a higher per capita consumption than current levels when oil runs out. But this result must be interpreted with caution. For some countries the growth rate was quite high. The case of Iran and Iraq in particular must be addressed in greater detail.

In Iran the revolution has changed attitudes, economic behavior and the level of capital stock resulting in considerable strain on the capacity of the economy to perform well. The revolution, which currently borders on anarchy, has brought the growth rate virtually to zero or a negative figure. With the revolution a long way from being over, it would take a long time before the economy begins to show appreciable growth rate even after political stability is restored. Because of the structural changes that came about as a result of the revolution for many years to come the execution of development plans would be poor. With that, the rate of growth of non-oil GNP would be very low. The Shah's attempted rapid transformation of Iran stampeded the society into development, enhancing social conflict in the process. The end result was only temporary high growth rates which will be difficult to be achieved in the future.

In Iraq the government continues to pursue increased centralization of economic activities using a relatively inefficient bureaucracy. This already has had adverse effect on the agricultural sector which is an important arm of the non-oil sector. Until recently military coups were prevalent in the country. Even now political stability is very precarious. Therefore a sudden decline is possible if the precarious political balance is upset or if the bureaucratic inefficiency

is not improved. Thus in both Iran and Iraq the growth rates are mainly useful for illustration purposes only.

Even if these growth rates could be maintained, there is no presumption that this would be the optimal growth pattern for these economies. Given that these countries want higher welfare levels, they are unlikely to be satisfied with these levels. All that the illustration shows is that per capita consumption of oil depletion will be higher than current levels if the growth rates of the non-oil sectors are maintained, if the population growth rate stays the same and the average propensity to consume were the same when oil runs out as now. Therefore the figures give only crude indicators of the trend in per capita consumption.

The result of the illustration follows from the assumptions we made earlier, some of which are quite sweeping. There are many factors that are likely to affect significantly the above outcome over the years. One, the average propensity to consume oil revenues is unlikely to remain constant for any of these countries. A change in this will affect the allocation between consumption and investment thus influencing how the non-oil sector grows over the years before depletion is reached. For example, if there is a move to consume less oil revenues, more revenues will be available for investment. This implies that future non-oil income will rise faster leading to higher levels of future per capita consumption. The reverse is also true. For Nigeria and Venezuela in particular, the likely development is a somewhat irregular upward trend in the rates of growth of the non-oil sector at least for some years to come.

Two, we are dealing with open economies. Because of this the economies are affected by changes in international markets. Their income levels will follow the trends in the demand for the goods they produce in the future. As these economies develop they will increasingly produce the products of declining industries in the West such as steel, textiles, synthetics and so on. Exports however would be difficult because of the high tariffs imposed by the developed countries. This will hurt the output capacity of these economies and consequently will affect the level of per capita consumption.

In addition, these countries rely considerably on imported inputs for some of their domestic production. Adverse changes on the international scene can cut the supply or sharply raise prices resulting in complete halt or reduction in domestic production for some time. This will affect the income generating capacity of the economies. The reverse could also happen. Moreover, the world inflationary situation may affect the foreign investments of these countries causing a reduction in the overall real rate of growth of the non-oil income of these economies. Since world developments cannot be determined with certainty the outcome of the level of per capita consumption is inconclusive.

Three, oil prices are likely to rise significantly in the years ahead as verified by the experiences of the last few years. The level of oil revenue is likely to fluctuate in an upward trend at least for some time to come. The desire to raise the level of per capita consumption in these countries may cause the governments to allocate more funds into investment in order to ensure rapid growth of the non-oil sector.

Four, the type of investment undertaken in a given economy also affects the ability to raise the level of per capita consumption. Unless investments with significant forward and backward linkages are undertaken, non-oil income will not grow significantly. Consequently the level of future per capita consumption may not rise much. The illustrations assume to some extent that this will happen. But there is no certainly that this would be the case. Unless the governments improve the absorptive capacity of the economies, investments in themselves may not generate the level of output that guarantees very high future per capita consumption.

Five, population growth rates are likely to decline as economic development takes place. There is enough evidence showing that family size and thus overall rate of growth of the population declines as per capita income levels improve. If the population growth rates decline, per capita consumption level will rise over the years.

Because of the possibility of the changes listed above, it is clear that the growth rates will change. If the growth rates rise, the per capita consumption level will rise and vice-versa. On the whole, the countries with the lower growth rates may increase their growth rates while those with high growth rates now will show a decline mainly because of the current political instability in the area. What the per capita consumption level will be at oil depletion cannot be known with certainty. The illustration only gave us a crude perspective of what the situation might be if the various growth rates are assumed to remain constant. Using the Nigerian example, it appears that the non-oil sector has to grow at less than 4 percent per annum before future per capita consumption can be less than the present.

Neoclassical model and simple extrapolation of growth rates have focused on the decision that governments must make concerning the amount of current income that should be withheld from consumption in order to generate savings needed for investment. As was shown, an important factor in determining the amount of investment is its productivity or rate of return. On the other hand, the determinant of the rate of return on investment is the choice of investment projects.

Government through its activities influences aggregate consumption and investment decisions in the economy. Moreover, through the budgetary allocations, the government makes its own consumption and investment decisions. In these oil countries, the governments are the recipients of much of the oil revenue. We must therefore examine how the public sectors in these countries have used their oil revenues in consumption and investment to ensure that a substantial growth rate of the non-oil sector is maintained. This implies examining the role of government expenditure in consumption and investment activities in order to enhance welfare. Thus, in looking at public expenditure, we want to examine how public expenditure influences one, aggregate consumption and investment, and two, government's own consumption and investment.

Functional Analysis of Public Expenditure

Public expenditure, especially on LDCs, implies undertaking consumption and investment activities. What we propose to do is to show that the functional distribution of public expenditure results in these activities. In establishing this functional budgetary structure, we would first examine the U.N. budgetary format. This is essential because it provides the basis for the establishment of our analytical

framework. The U.N. format divides expenditure along the following functions: general services; social and community services (consumption) and economic services (investment).* The general services category is made up of the following activities: general administration; justice and police; general research and scientific services; and defense. The social and community services comprises education; health; social security and special welfare; housing and other community services. The economic services comprises agricultural and nonmineral resources; fuel and power; other mineral resources; manufacturing and construction; transport, storage and communication; multipurpose project; and other economic services. And finally there is the category of unallocable expenditure items.

The U.N. format as shown above restricts investment to the conventional approach, i.e. structures, producer equipment and inventories. Thus all education expenditures are considered under consumption. Admittedly, the allocation of government expenditure among various functions has some arbitrary element to it. Agreement on what is consumption is not easy. And not all expenditure of an agency will fall clearly and unambiguously under one or another of the functions specified above. Nonetheless, we would modify the above presentation to fit our analysis and current thinking with regard to some areas of activities under study. Education expenditure will therefore be divided into two. Education I which comprises consumption education expenditures such as secondary grammar education, etc. and Education II which

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*United Nations, Department of Economic and Social Affairs, A Manual for Economic and Functional Classification of Government Transactions (Sales No. 58, XVI-2), New York, 1958.

comprises investment education expenditures such as primary education, secondary technical, etc. The social security and welfare payment item under the U.N. format is replaced by gratuities and pensions.

Research and scientific services expenditures would be placed under economic services. This is necessary because such allocations are usually incorporated with overall sectoral expenditure allocations. Moreover, these activities are what enhance output capacity of any investment.

In order to focus on the non-oil sector of these economies, expenditures on oil industry which the U.N. included under economic services will be separated out and placed under a separate category. This is preferable because at early stages of oil development more investment must be undertaken in this sector. But over time less funds will be put in this sector as alternative investment avenues are generated. Investment in this sector is also generally sporadic which presents problems of consistency. And because oil is depletable, expenditure in this sector has a time limit. These reasons necessitate placing these expenditures under a separate category. Thus what we have done is to replace some items or changed the category of some items of expenditure under the basic U.N. framework of expenditure categories of general services, social and community services (consumption) and economic services (investment). The format we have developed is presented below:

General Services

General administration
Justice and police
Defense

Social and Community Services

Education I
Health
Gratuities and pensions
Housing
Other community services

Economic Services

Education II
Agricultural and nonmineral resources
Fuel and power
Manufacturing and construction
Transport, storage and communication
Multipurpose project
Other economic services

Oil Services

Unallocable Expenditure Items.

Our interest is mainly with public expenditure in consumption and investment categories. However, we cannot examine all the sectors under either consumption or investment categories. The reasons are as follows. One, the data for all sectors are not available. Two, only in the most recent years have some of the governments begun to undertake some of the activities. Therefore not many years have elapsed for meaningful analysis to be made. An example is housing in Nigeria.

Our analysis is therefore restricted to the major sectors in these categories namely education (I & II), health, agriculture, industry and infrastructure (transport and communication). In this way our two categories of consumption and investment relate to the sectors we have chosen and also available data. Due to data constraints, we would not be able to associate specific figures with consumption and investment activities in each of the chosen sectors.

We begin this analysis with the agricultural sector. The agricultural sector in Iran and Iraq is semi-peasant, in Nigeria largely peasant

while in Venezuela it is mainly commercial. The effects of oil revenues on this sector are very crucial because this was the backbone of these economies before oil.

Except for minor exceptions among these countries, public agricultural expenditure programs cover the following activities. These activities can be divided into investment and consumption activities and each activity has its current and capital accounts. The investment activities include:

> irrigation and dam projects; agricultural mechanization scheme; livestock production; commercial crop production; land reform and other structural changes, e.g. marketing boards, etc.; pests control; loans and subsidies especially for fertilizer.

The consumption activities are basically educational and other forms of services in the agricultural sector. These include:

> extension services; training of peasants; encouragement of cooperative development; rural development (this covers education, water supply, roads, health, etc.).

In order to analyze the impact of agricultural expenditures on the growth of the sector, we are going to use a set of questions. Answers to these questions will be provided in the subsequent chapter. The questions are as follows:

- What is the impact of agricultural expenditures on agricultural output?
- How have agricultural expenditures influenced agricultural exports?
- What is the impact of agricultural expenditures on technological adaptation?

- How has land reform and related projects been affected by agricultural expenditures?
- In what ways have agricultural credits and subsidies influenced agricultural output?
- Is agricultural education getting to the peasants?
- What is the impact of agricultural expenditure on food imports?
- What are the problems of absorptive capacity in relation to agricultural expenditures?

Public industrial expenditures would be considered as wholly investment expenditures. First, this is generally accepted to be so. Two, even expenditures not in structures which look like consumption expenditures, e.g. industrial extension services for small scale industries; technical advice to the private sector, etc. are actually investment expenditures in that they generate increased output.

The expenditures cover the following activities: import - substituting industries; semi-processing activities for export and other mining activities; iron and steel; petrochemicals; paper and paper products; fertilizer plants; vehicle assembly plants; assembly plants for home appliances and other durable consumer goods; industrial credits and subsidies; industrial services for small scale industries; technical advice to the private sector; and the provision of general industrial information.

In this case also we examine the impact of public expenditure on the growth of the sector through the use of a set of questions. The questions are as follows:

- What is the impact of industrial expenditure on industrial output?
- How has industrial expenditure affected the output of import-substituting industries?
- What is the effectiveness of industrial expenditure in consumer durable industries on output?
- Are industrial loans and credits enhancing industrial output?
- How has the problem of absorptive capacity influenced industrial output?
- What is the impact of industrial expenditure on employment?

Infrastructural expenditures cover transport and communication activities. Expenditures in this sector are usually considered to be largely investment expenditures. In developed countries, expenditures on suburban roads, city streets, and commutation facilities are considered consumption expenditures. All other forms of transportation expenditures are considered investment. In the context of less developed countries, the equivalent of the above can be found. Communication expenditures are treated as investments. The published data in these countries lump all infrastructural expenditure under investment. Therefore it is almost impossible to separate consumption from investment expenditures. Nonetheless we can make the following distinction.

The investment expenditures include expenditures for:

roads/highways; railways; ports; river transport; airways; postal and telephone services.

Under the consumption expenditures, the following expenditure items can be stipulated:

township streets; and rural community roads.

The following questions will be used in analyzing the impact of public expenditure in the growth of this sector.

- What is the impact of public expenditure on the volume of these facilities?
- How has public expenditure influenced the quality of these facilities?
- Is public expenditure in this sector influencing output?
- What is the impact of public expenditure on the efficiency of these services?

With regard to education expenditures as we have already stated, in recent years it has been established that education expenditures also contribute to economic growth. Thus, attempts have been made to separate education expenditures into consumption and investment components. Budgetary attempts to separate consumption from investment expenditures have sometimes been presented in the form of current/capital expenditure structure. This mechanism has usually been applied to the education sector also. But it is not adequate for our analysis. Some of the current expenditures are investment in that they enhance output. A building which under the current/capital structure is considered investment need not necessarily be so because not all buildings contribute to development. For example, a palace or recreational facility may be built purely for consumption purposes.

Thus as we have already stipulated, education expenditure for imparting skills to increase output will be considered investment, while education expenditure purely to improve ones awareness of his environment will be considered consumption.

The investment expenditures cover the following activities:

primary education; secondary technical; technical institutes; technical part of university education.

The consumption expenditures cover the following activities: secondary - grammar education; adult education and non-technical university education.

The following questions will be used in analyzing the effectiveness of public expenditures in education:

- What is the nature of the growth of skills as a result of education expenditures?
- How has education expenditures influenced the trend in literacy rate?
- In what ways are education expenditures improving the absorptive capacity of these economies?

Health expenditures have much greater consensus as belonging to consumption expenditures than say education. But nearly all social expenditures are partly consumption and partly investment. This applies to health too. However, separating the two elements in this case is very difficult. Money spent in improving an individual's welfare by making him well, also helps him to perform effectively as a producer. What part of the expenditure made to cure his illness is consumption expenditure, and what part is an investment in a producer?

The current/capital expenditure structure has been one way by which the budget tries to separate the two elements. But this does not provide an adequate solution to the problem. Health facilities which the current/capital expenditure structure calls investment are built principally to enhance the consumption of health services. Thus such facilities too are part of consumption. In this case of the health sector, there is no adequate way of providing a rough separation. Therefore all health expenditures will be placed under consumption.

Health expenditures cover the following areas: the provision of basic health services; training and health education; sanitation and special programs such as malaria control.

The following questions will be used in analyzing the impact of public expenditures on health.

- How have infant mortality rates moved as a result of health expenditures?
- What is the effect of health expenditures on the incidence of basic diseases?

Foreign Investment and Throwaway Expenditure

Having already established that foreign investments are important in increasing non-oil income, and thus welfare, this section will examine the type of foreign investments these countries are undertaking to achieve this objective. Public foreign investments must be organized in a way that they form a pool of funds available to be used domestically in the future. This implies that such investments cannot be tied overseas for extremely long periods. Since some oil revenues also flow to the private sector, it is important we also analyze what is done with the funds in order to increase output.

The following questions must be addressed:

- What is the nature of public foreign investments?
- Is the private sector engaged in foreign investment?
- Is the private sector engaged in luxury consumption?
- Is the private sector engaged in reinvestment domestically?

The issue of throwaway expenditure must be analyzed in order to roughly determine the extent of waste of oil revenues. Excessive

military expenditure, corruption and luxury consumption are all ways by which oil revenues can be wasted. Moreover, revenues can be wasted through lack of thorough benefit-cost analysis of projects. The following questions will be used to analyze the issue:

- What is the trend in military expenditure over the years? Special circumstances like the civil war in Nigeria will be taken into consideration.
- What is the trend in luxury imports resulting from oil revenues?
- How prevalent is corruption in these countries?

The last two issues are controversial but can be assessed from available reports on these countries.

Conclusion

Effective use of oil revenues requires the development of alternative sources of revenue when oil runs out. A rough indicator of such a development is the trend in per capita consumption over time longer than the life of oil. A significant rising trend in per capita consumption is possible only as the non-oil sector maintains a substantial growth rate over time. The prospects of maintaining such a growth rate will depend on the type and amount of investments that take place in these economies prior to oil depletion. This implies that more oil revenues must be committed to investment if future per capita consumption level is to maintain an upward trend. Otherwise oil producing countries may find that they cannot maintain current levels of consumption when oil runs out.

We must therefore examine how the public sectors in these countries have used oil revenues in consumption and investment to enhance welfare. This is done by examining public expenditures in the sectors

we have chosen. Answers to the sets of questions we have raised for each sector provide a means for knowing how public expenditure attempts to meet the goal of increased output and thus increased welfare.

The analysis concludes by examining what Nigeria can learn from the experiences of the other countries. This will be done by evaluating the experiences of other countries in their investment programs. In doing this, it is important to examine which programs have been notably successful and the extent to which it has bearing for the Nigerian prospects. We must however take into account the special features of the given investment example or of that economy that may be different or similar to the Nigerian situation.

CHAPTER VI

OIL REVENUES AND PUBLIC EXPENDITURE FOR DEVELOPMENT

Introduction

In LDCs, the oil industry by itself has very small developmental effects. This is because it has weak linkages. It has no backward linkages because it employs very small labor force and its capital and technology come from abroad. Since most of its product is exported, it does not establish forward linkages except for the domestic energy it supplies thus saving foreign exchange. Hence the only substantial effect of oil is the income it provides the state. Its influence on development must be examined in the context of how the revenues have influenced public expenditure for the development of the non-oil sector.

The best indicator of development in the non-oil sector is the trend in output levels. Therefore, if public expenditures are to enhance development, they must generate increased output. For output to increase, the expenditure resulting from oil revenues must be pervasive enough. Not only must the expenditure give rise to growth in physical output, but effective expenditure must also be undertaken in the social sphere since this complements performance in the physical sphere.

The above calls for directing expenditure toward well established goals. This implies that budgetary allocations must be geared toward increasing output in a variety of activities in the non-oil sector.

But the process by which increased output is generated will differ among nations because of (a) the nature of the nation's factor endowments, (b) experience with oil production, (c) level of human capital,

(d) the amount of revenue accruing to the nation, (e) the goals set by the political system. Moreover, the pressure applied on policy makers by different interest groups in society will affect the way policy is formulated and executed. Nonetheless these economies must generate increased output in the non-oil sector if welfare is to be enhanced.

In this chapter we examine the role of government expenditure in agriculture, industry, infrastructure, education and health in order to enhance welfare. In the conclusion section we will explore briefly whether or not these countries can make it when oil runs out.

A Brief Survey of Macroeconomic Indicators

The economies of these countries have undergone major changes since the early 1960's as a result of oil revenues. All the conventional indices of growth demonstrate this. In terms of current prices GNP rose in 1960's by 5.4 percent per annum in Nigeria, 8 percent in Iran, 7.9 percent in Iraq and 6.8 percent in Venezuela. For the period 1970-78 it was 15.7 percent in Nigeria, 24.6 percent in Iran, 17.7 percent in Iraq and 13.7 percent in Venezuela.[1]

In absolute amount the level of GNP rose between 1960 and 1970 from $4.06 billion to $9.4 billion in Nigeria; $3.9 billion to $11.2 billion in Iran; $1.7 billion to $4.4 billion in Iraq; and $6.0 billion to $12.1 billion in Venezuela. More spectacular growth can be seen in the period 1971 to 1978. In Nigeria GNP rose from $11.8 billion to Iraq from $5.0 billion to $14.5 billion; and Venezuela from $13.3 billion to $32.5 billion.[2]

Both imports and exports have also shown phenomenal growth as a result of oil especially in the 1970s. In Nigeria in 1960 imports were $647.7 million but by 1970 they have increased to $1,104.6 million. For the same years in Iran imports rose from $203.4 million to $1,798.5 million. In Iraq imports rose from $458.4 million to $599.4 million and in Venezuela from $888.2 million to $1,845.5 million. But the 1970's saw steeper increases. In Nigeria by 1977 imports have risen to $11,045.2 million, in Iran $15,069.6 million, in Iraq $3,799.3 million and in Venezuela $9,661.0 million. The exports side was even more spectacular. In Nigeria in 1960 exports were $509.2 million but this rose to $1,312.0 million in 1970. For the same period in Iran exports rose from $881.9 million to $2,838.7 million. As with imports, exports in the 1970's also show very steep increases. In Nigeria, exports increased to $11,430.6 million in 1977; in Iran to $22,708.8 million, in Iraq to $8,526.5 million and in Venezuela to $10,246.5 million.[3]

Oil revenues have also given rise to phenomenal increases in development plan expenditures. In Nigeria these expenditures rose from

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[1] Nigeria: Federal Office of Statistics. Economic Indicators, various issues. Iran: Statistical Yearbooks of Iran 1972/73, 1973/74 and Central Bank Bulletins. Iraq and Venezuela: I.M.F. International Financial Statistics. U.N.: Yearbook of National Account Statistics, various issues. World Bank: Development Indicators 1979.

Table 8 (continued)

Sector	1960	1963	1965	1970	1972	1974	1976
Industry	62.0	75.0	-	34.0	188.0	579.0	418.0
Total Exp.	1550.0	1500.0	1896.0	2571.5	3100.0	9228.3	8386.2
Public Sec./ GDP (%)	25.8	20.0	21.5	21.3	21.1	31.3	27.1

Sources: Nigeria: Federal Office of Statistics, Lagos. Digest of Statistics, Vol. 18, No. 2, April 1969. Central Bank of Nigeria. Annual Report and Statement of Accounts, Dec. 1971 and 1978. U.N. Statistical Yearbooks 1969 and 1976. Iran: Statistical Office, Iran Statistical Yearbook 1972. Ministry of Information, Tehran, A Decade of Achievement. Illustrated Statistics of Iran. Central Bank, Annual Report and Balance Sheet 1974 and 1975. UNESCO Statistical Yearbook 1967. The Budget and Plan Organization, The Budget of Imperial Imperial Government of Iran 1976/77. Iraq: Central Statistical Office, Annual Abstract of Statistics 1973. Central Bank of Iraq, Quarterly Bulletins 1961 and 1976. The Economist Intelligence Unit, Quarterly Economic Review of Iraq, Annual Supplement 1979. U.N. Statistical Yearbooks 1964, 1970, 1977. Venezuela: Central Bank of Venezuela, Reports and Bulletins, various issues. The Economist Intelligence Unit, Quarterly Economic Review of Venezuela et al., 1977. U.N. Statistical Yearbooks 1964, 1970 and 1977.

Only Venezuela however has consistently spent substantial amount of money on education throughout the period 1960 - 1976. This indicates to some extent the difference in the level of development between Venezuela and the others. In LDCs, the first step in development has usually been the improvement of infrastructure. But Venezuela has had improved infrastructural facilities since late 1950's. This has made it possible for the country to put more funds into non-physical aspects of development. In addition up to the late 1950's the Venezuelan economy operated with greater private enterprise involvement. As a result, government expenditure was concentrated on non-physical aspects of development such as health and education.

Iraq is the only country that has consistently spent substantially more funds on industry than on agriculture. This was due to the drive to industrialize the country as fast as possible and the government takeover of businesses with share capital of $8,400.00 and over. Thus the table not only shows the magnitude of changes in expenditure distribution but also shows the pattern of priorities developing among these nations. In order to ascertain how effective these expenditures have been, we must analyze these economies on a sector by sector basis. We begin by examining agriculture.

Agriculture

Four issues determine the nature of public expenditure in this sector. One, policy makers stress that traditional forms of production must give way to modern forms if productivity per man per hectare is to increase and if substitution of capital for labor is to take place. Two, priority is being given to large farm units capable of using technically advanced capital-intensive processes. Third, government direct investment in agricultural production and the encouragement of the development of commercial agriculture. Four, the encouragement of subsistence farmers to join cooperatives in order to benefit from the economies of scale.

Before we proceed with this analysis we need to discuss the influence of oil financing on this sector. There are basically two major influences of oil revenues with regard to agricultural expenditures. One, the availability of oil revenues made it possible for more revenues in both absolute and relative amont to be committed to its development. Two, governments have been able to widen their strategies for enhancement of agricultural output. Thus many more activities are

main objectives of agricultural expenditures is the inducement of technological adaptation so that farmers can increase output for sale.

Chart I

Outline and Order of Agricultural Expenditure Analysis

1. Farm Mechanization

   Ways of encouraging mechanization
   Expenditure on farm machines especially tractor

2. Commercial Crop Production

   Use of inputs such as fertilizers, pesticides, etc.
   Subsidies
   Marketing boards and price guarantees

3. Land Reform and Co-operatives

   Oil revenues and land reform implementation
   Co-operative membership and land allocation

4. Rural Development

   Water supply, extension services and rural roads

5. Credit Institutions

   Methods and levels of public credit

6. Encouragement of Private Sector Investment
   Conditions provided to induce such investments

   Tax reform and investment credits

7. Livestock Development

   Animal production

This necessitated land reform to provide the needed land. However, co-operatives are necessary since the peasants are not able to individually purchase some of the farm implements. Moreover, rural development is essential if output is to rise. But funds for investment by farmers

have always been in short supply. It has therefore become necessary to establish credit institutions. Private investment offers the benefits of increased output as well as inducing technological adaptation through demonstration effect. And finally livestock production is encouraged to meet improved food needs.

To enhance agricultural mechanization these governments resorted to importation of farm machinery especially tractors. Iran, Iraq and Venezuela have also established tractor, combine harvesters and other sophisticated farm equipment assembly plants to supplement imports. To enhance access to these machines, the prices are subsidized through tariff exemptions on imports and components. Credit is also provided for the purchase of machinery. For small farmers who are unable to purchase machinery, the governments have set up rental stations and storage depots for farm machinery. In Nigeria for the period 1970-73 the government spent 2.5 percent of $530.4 million expended on agriculture in providing tractor hiring units. In Iraq between 1970-75 the government spent 14.7 percent of $917 million expended on agriculture for this purpose. In Iran in 1974 the government spent 28.6 percent of $884.3 million on this activity. But this included provision of credit for machinery purchase and the training of tractor technicians and operators.

Commercial crop production is a traditional sphere of government expenditure. Instruments used to enhance this activity include encouraging farmers to use inputs such as fertilizers; improved seeds and seedlings; pesticides; and the use of government purchases through marketing boards. The governments enhance the use of inputs by subsidizing prices of these inputs.

The level of subsidies for fertilizers and pesticides in these countries range from 20-50 percent. For example in Nigeria it is 50 percent while in Iran it is 20 percent. In the period 1975-79 input subsidies cost 11.7 percent of $2468.3 million allocated to agriculture in Nigeria. In Venezuela in 1974 about 43.8 percent of $1075.3 million spent on agriculture was for input subsidies. In both Iran and Iraq expenditures on subsidies have been rising.

Government price guarantee scheme is an important price incentive utilized to increase output. The marketing boards are the mechanism used in administering these prices. In Nigeria the boards purchase export crops at guaranteed minimum prices thus cushioning the farmers from fluctuations in the world prices of agricultural commodities. The program therefore protects the producers' incomes from yearly fluctuations and encourages consolidation.

While the objectives of the programs with regard to farmers' income are the same in all the countries, price guarantee programs in Iran, Iraq and Venezuela are broader than in Nigeria. They cover both export and domestically used crops including food crops. Moreover in these countries the goal of minimum farm price policy is balanced with the goal of containing food prices for the urban consumer. This has necessitated considerable food subsidy. For example in Venezuela in 1974 food subsidies were $193.5 million but by 1977 they exceeded $467 million.

Land reform has also been another means by which the governments have tried to improve agricultural output. In Nigeria where the land tenure system is based on communal ownership, this took the form of land use decree in order to release idle land for big agricultural projects.

In Iran, Iraq and Venezuela, land reforms were considered necessary in order to provide land for landless rural labor. The premise of the reform being that such a step would lead to peasant investment in the land thus increasing agricultural output. In these countries, land reform would have taken place whether there is oil or not in order to stave-off peasant revolt. But the availability of oil revenues has helped in the administration of the reform programs. Oil revenues provided the means for compensating former land owners and the ability to subsidize agricultural inputs. For example in the period 1962-68 the Iranian government allocated over $81 million (12.7 percent of agricultural expenditure) to implement land reform. In Venezuela between 1960-1974 expenditure on land reform was $604.9 million (14.4 percent of agricultural expenditure).

Co-operatives are also being encouraged especially as a complement to land reform. They are used as a means of pooling peasants together into larger production units so as to enhance the use of improved technology (machines) in production. In Nigeria, co-operatives are voluntary and very much fewer in number in comparison to the other countries. For the period 1962-68 expenditure on cooperatives was $10.7 million (7 percent) of expenditure. By 1975-79 expenditure allocation increased in absolute amount to $145 million. This was however a decline in relative amount to 6 percent. In Iran, Iraq and Venezuela membership in a cooperative is essential for getting land and access to other public agricultural services. In Iran by mid-1977 there were 2800 cooperatives; in Iraq there were 1940 but in Nigeria there were only 180 by 1975.

Rural development is another means by which attempts are made to enhance agricultural output. The most important activities include

water supply, extension services and rural roads. In Nigeria over the period 1962-68 only $27.5 million was spent on these activities. But for the period 1975-79 expenditure allocation increased to over $145.0 million. In Iran between 1969 and 1973 expenditure increased from $19.5 million to $40.2 million. In Venezuela between 1966 and 1974 expenditure rose from $15.4 million to $17.7 million. In all the countries the level of expenditure has continued to increase with extension services continuing to receive considerable attention with the aim of reducing the ratio of farmers per extension worker.

One of the most important developments in this sector in these countries has been the establishment of various credit institutions such as the Agricultural Development Banks, etc. These credit institutions administer loans at very low interest rates. For Nigeria agricultural credit is a relatively new phenomenon. For the period 1970-74 public agricultural credit was $16.9 million or 3.2 percent of expenditure. This rose to $225.0 million or 9 percent of agricultural expenditure in the period 1975-79. In Iran in 1970 public credit was $29.3 million or 21.7 percent of expenditure. By 1976 this had risen to $612.6 million or 30 percent of agricultural expenditure. In Venezuela in 1973 public credits were $55.9 million or 14.4 percent of expenditure but by 1976 this had risen to $284.3 million or 27 percent of expenditure. Although in Iraq public credit also increased in the 1970's this was only in absolute amount. In relative amount credits declined. In 1970 public credits were $6.4 million or 9.7 percent of expenditure and by 1973 they rose to $12.8 million or 6.8 percent of expenditure.

The drive to increase output has led the governments of Iran, Venezuela and Nigeria to encourage both domestic and foreign private

sector investment in agriculture through the use of very generous investment incentives. The strategy is a combination of tax reform and investment credits in order to improve profitability of agricultural investments. The Nigerian measures will be used as an example. One, an investment allowance of 10 percent. Two, agricultural companies could carry forward indefinitely any losses they suffer and write them off against future profits.

Three, tax exemption on interest earned on agricultural loans depending on the repayment period. Loans payable in more than seven years, 100 percent exemption; payable in 5-7 years, 70 percent; payable in 2-4 years, 49 percent but those payable in less than two years were not exempted. Four capital allowance was introduced for equipment leasing in agriculture. Moreover the government undertook to absorb private risks in agricultural investments through the introduction of Agricultural Credit Guarantee Scheme.[5] In Iraq the government instead has used foreign private firms and government agencies to establish agricultural turn key projects on its behalf.

Finally, livestock production is receiving increasing attention especially in recent years. In Nigeria between 1970-73 the government spent $2.67 million on this program but expenditure rose rapidly between 1975-79 when over $185.8 million was allocated to this activity. This expenditure has gone into improving grazing facilities, the expansion of the activities of the Nigerian Livestock Authority and the settlement of migrant herdsmen. In Iran the government uses the State Meat

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[5]For more details see Central Bank of Nigeria, Lagos, Developments in the Nigerian Economy During the First Half of 1978.

Organization to enhance livestock production. Funds are spent mainly on grazing facilities and subsidies.

In Venezuela livestock production is encouraged principally through the government credit provision under the directions of the Livestock Development Bank. Credits for livestock development rose from $25 million in 1966 to $150.5 million in 1974. Moreover, a $465 million Agriculture - Cattle Credit Fund was created in 1974 to channel oil revenues into livestock production. As in Iran, government subsidizes livestock production. In Iraq livestock development has been incorporated in the turn key projects built for the government.

Certain basic differences and similarities in expenditure structure have emerged from this discussion. The differences are, one, Iran, Iraq and Venezuela have placed considerable emphasis on cooperative development in comparison to Nigeria. Two, Iran and Venezuela have made more use of agricultural credit than Nigeria or Iraq. Three, price incentive has been applied on a wider basis in Iran, Iraq and Venezuela than in Nigeria. Four, only in Nigeria, Iran and Venezuela is commercial agriculture encouraged. Five, only in Nigeria, Iran and Iraq are the governments directly involved in agricultural production.

Similarities are as follows: One, all the countries emphasize agricultural mechanization as a means of improving agricultural production. Two, large scale production is clearly favored in all the countries. Three, input subsidies are used extensively. Four, the countries lack effective extension services.

Given the various expenditures undertaken, it is important we evaluate the effectiveness of these expenditures. This requires answering the set of questions stipulated in the previous chapter.

Although vast resources have been allocated to this sector; in Nigeria an annual average of 16.3 percent of total investment for the period 1962-1979; in Iran 21.2 percent for the period 1950-1979; in Iraq 17.7 percent for the period 1956-1979; and in Venezuela 12.7 percent for the period 1960-1979;[6] the growth in output has not been very encouraging. In Nigeria the average annual growth of agricultural sector GNP at current factor cost for the period 1963-1974 was 3.5 percent. In Iran at current prices for the same period was 6.6 percent. In Iraq at current factor cost for the period 1960-1971 was 5.2 percent. And in Venezuela at constant 1968 prices for the period 1970-75 was 3.7 percent.[7]

As Table 9 shows between the period 1961-65 and 1976 agricultural output increased on compounded average at the rate of 1.3 percent per annum in Nigeria, 2 percent in Iraq, 3.5 percent in Iran and 4.5 percent in Venezuela. Performance on a per capita basis was even worse than this. In Nigeria compared to the production levels of 1961-65 productivity in the 1970's was in some cases up to 15 percent lower. Iraq also showed a similar trend as in Nigeria with productivity fluctuating in a declining way. By 1976 for example, Iraqi productivity had declined 11 percent from its level in 1961-65. Only in Iran and Venezuela were there modest annual increases in productivity of about 1.5 percent and 2.2 percent respectively. Therefore, in spite of the

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[6] See Footnote number 4 for sources.

[7] Nigeria. Federal Office of Statistics. Economic Indicators, various issues. Iran: Statistical Yearbook of Iran 1972, 1973 and Central Bank of Iran, Bulletins. Iraq: Annual Abstract of Statistics 1970, 1973. Venezuela: U.N. Yearbook of National Accounts Statistics, various issues.

various expenditure measures undertaken, agricultural output has been poor thus casting some doubt on the effectiveness of these measures.

Table 9

Index Numbers of Total and Per Capita Agricultural Production
1961-65 = 100

Country	1961-65	1966	1968	1970	1972	1974	1976
Nigeria	100	101	105	116	111	112	120
Iran	100	116	128	140	144	155	171
Iraq	100	109	131	126	164	125	136
Venezuela	100	119	129	148	151	168	178
				Per Capita Output			
Nigeria	100	94	93	98	89	85	86
Iran	100	107	111	115	112	113	118
Iraq	100	99	112	101	123	88	89
Venezuela	100	108	110	120	115	121	121

Source: U.N. (F.A.O.) Production Yearbooks, Vol. 27, 1973 and Vol. 36, 1976.

Exports have been affected by this poor performance. The effect however has varied among the countries between 1960 and 1977. In Nigeria the growth of agricultural export was sluggish. Three major agricultural exports grew at only about 3.3 percent annually. In the case of two commodities - palm oil and cotton - whose exports were substantial in 1960's, exports virtually disappeared by 1974. In Iraq total agricultural exports declined between 1968 and 1975. Exports of raw cotton have virtually stopped while the exports of grains have been erratic.

In Venezuela agricultural exports showed a somewhat upward trend between 1965 and 1974. This was most noticeable in the case of three

crops: coffee, cocoa and sugar. The average growth rate for these crops was 8 percent annually. Export of rice which grew in the 1960's actually declined in the 1970's. Other commodities especially livestock products declined in the 1970's also. In Iran three agricultural exports, cotton, fresh and dried fruits and skin and leather grew at an annual rate of 8 percent in the 1970's. In general exports of agricultural commodities in the period 1964-1975 grew at an annual rate of 5.7 percent.

Export volumes have not been impressive for two reasons. One, the general poor performance of the agricultural sector in these countries. Second, rapid increases in recent years in domestic demand for most of the traditional export crops. For example, in Nigeria and Iraq the establishment of textile firms have eventually wiped out the export of cotton.

Two activities will be used as examples to assess the degree of technological adaptation in these countries. These activities are the use of machines like tractor, etc. and the use of fertilizers. The number of tractors in use grew 11 times from 660 to 7,300 between 1965 and 1974 in Nigeria. In the same period in Iran the number more than doubled from 11,300 to 25,000. In Iraq the number about doubled from 4,600 to 9,100 while in Venezuela the number grew from 13,086 to 23,460. While there has been increased number of tractors in use, most are used on government farms except in Venezuela. Therefore, with regard to mechanization it must be concluded that there has been little technological adaptation except in Venezuela.

For the peasant farmer, the most accessible technology is probably fertilizer because the price is substantially subsidized and it can be

bought in small quantities. The use of fertilizer has been rising substantially. In the period 1961-65 the average amount of fertilizer used in Nigeria was 0.3 kilogram per hectare. By 1975 this had risen to 2.9 kilogram per hectare. For the same period in Iran fertilizer usage rose from 4.7 kilograms per hectare to 49.7 kilograms per hectare. In Iraq the increase was from 1.1 kilograms per hectare to 17.0 kilograms per hectare, while in Venezuela the increase was from 21.4 kilograms per hectare to 76.5 kilograms per hectare.

From the analysis above, all the countries have shown substantial improvement in the application of fertilizer. The rapid rise in the volume used indicates that the peasants are adopting this form of technology. However, the levels of use are still below the recommended levels. In Nigeria for example, the level of use in 1975 was well below the recommended level of 18 kilograms per hectare.

Even though it appears there is a gradual progress in technological adaptation, except in Venezuela, the process has not yet taken sufficient roots to significantly influence output. It may be many more years before real positive changes in output can be noticed.

With regard to consolidating the benefits of land reform, agricultural expenditures have not helped much. A considerable proportion of beneficiaries of the reforms abandoned their lands because of lack of sufficient inputs especially credits and fertilizers, lack of effective extension service and lack of infrastructure (roads, irrigation facilities, etc.). In Venezuela by 1971 over one-third of beneficiaries abandoned their land. The rate was high in Iran and Iraq where soil salinity also contributed to land abandonment. Because of the high abandonment rate, land reform measures have not substantially contributed

real income which has led to changes in consumers taste in favor of protein rich foods such as meats and dairy products which are in short supply in these countries. Only in the last few years have these governments began to seriously deal with this problem by directing more public expenditure to those areas of high demand. It would take some more years before such expenditures can begin to effectively slow down food imports.

In addition to all the issues already discussed, the main issue regarding the poor performance of this sector is absorptive capacity. The capacity to spend the available funds to increase output is still low in these countries. In Nigeria during the 1970-74 plan only 44.4 percent of the plan projects in this sector were undertaken. Performance in the first year of the plan period just ended indicates about the same performance as in the 1970-74 plan period. For the other countries we can only give aggregate plan performance. In Iraq plan implementation rate was only 31 percent in the early 1960's. By 1970's this has improved to only about 55 percent. Only about 40 percent of the 1973-78 plan projects were undertaken in Iran. Undoubtedly, such low implementation rates of development plans contribute significantly to the poor performance of the sector.

As a summary, in spite of the governments huge expenditure in agriculture over the years, output has not grown rapidly. This is largely because the majority of the producers - the small farmers - have been neglected in favor of big farmers and sophisticated means of production which are considered more productive by policy makers. But these approaches have not been that productive as the output levels have shown. If agricultural output is to rise substantially public

become an important source of private industrial finance through the use of industrial credit institutions.

Another important influence of oil revenues has to do with the changes they induced in government policies. As examples, in Nigeria, oil revenues led to the establishment of the indigenization scheme. Under this scheme, Nigerians must own at least 40 percent of any industrial activity. Where the indigenous private sector was unable to execute this program the government stepped in and bought whatever was outstanding. In Venezuela in 1974 oil revenues made it possible for the government to take over the iron and steel industry.

Chart II below gives the order and outline of expenditure analysis in this sector. These activities are related in that they all play important roles in enhancing industrial output. Import-substituting industries have generally been the beginning of industrial activities in LDCs in order to save foreign exchange. But if industry is to contribute fully to an economy it must be able to produce intermediate and capital goods because these are the basis of all production. Industrial credits facilitate the role of the private sector in the establishment and development of the above activities. Finally, non-structural industrial expenditures provide the needed information to enhance output especially with regard to small scale industrial activities which are complementary to the big industries in enhancing overall output.

We begin our analysis with the import-substituting industries. During the period 1962-68 public sector industrial expenditures on import-substituting industries were as follows: In Nigeria, 70 percent of $137 million was spent on cement, food, beverages and textiles. In Iran, 63 percent of $1107 million was spent on fertilizer, sugar,

Public industrial credit in Iraq has not been significant. Available credit in 1967 was 1 percent of $141.3 million expended by the government on industries. By 1974 relative amount of credit rose only modestly to 1.4 percent of $462.5 million of public sector industrial expenditure. The increase therefore is mainly in absolute amount. Venezuelan use of industrial credit rose in absolute amount but declined in relative amount between 1965 and 1974. While between 1965-69 public credits to industry were 14.1 percent of $265.4 million, between 1970-74 they were 5 percent of $998.4 million. But in 1974 the government began a major drive to increase both in absolute and relative size the amount of industrial credit in the economy. Thus it created the Industrial Credit Fund with a capital of $500 million to be paid from the budget over five years.

Progress has been slow with regard to non-structural investment expenditures. In Nigeria only during the 1975-80 plan period did the government plan some reasonable expenditure on industrial extension services and general industrial information. About 0.55 percent of the $8502.4 million planned industrial expenditure during this period was allocated to these activities. In the other countries there are no available data to specify the expenditures undertaken, but given the degree of commitment to industrialization it can be deduced that expenditures are rising.

In sum, the following pattern of expenditure has emerged from this analysis. There is a strong similarity in the type of industries that have been established. This covers both import-substituting and intermediate and capital goods industries. A major difference is weight of expenditure between import substitution, and intermediate and capital

goods industries over the years. Except Venezuela, all the other countries show greater proportional public sector expenditure on import-substitution industries in the 1960's. But beginning with the 1970s the other countries followed Venezuela's pattern of increased concentration on intermediate and capital goods industries.

• Absolute levels of industrial credits have risen over the years. But in Iran in particular there was also a significant relative increase. In both Nigeria and Venezuela there was a relative decline between 1970-74. In all the countries non-structural industrial expenditures were neglected up to 1974. However, increased oil revenues since 1974 have led to increased attention being paid to these activities.

From the analysis above, substantial industrial expenditures have been undertaken. As an example, in Venezuela between 1968 and 1976 public industrial expenditure rose from 13.0 percent of gross capital formation to 22.4 percent. These expenditures have generated substantial growth in output in this sector. The average annual growth rates of industrial sector GNP at current factor cost were as follows. In Nigeria 18.6 percent for 1960-1978 period; in Iran 21.0 percent for 1962-76 period; in Iraq 12.6 percent for 1960-1976 period; and in Venezuela 11.6 percent for 1968-1976 period.[9]

The growth in industrial output followed a similar pattern as above. The annual average growth rates of industrial output for the decade 1962-1972 were: in Nigeria 12 percent; in Iran 14 percent; in Iraq 9.1 percent and in Venezuela 6 percent. For the period 1970-76 industrial output grew at even higher levels. The annual average growth

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[9]U.N. Yearbook of National Accounts Statistics, Vol. I, various issues.

rate was 14.0 percent in Nigeria; 17.6 percent in Iran; 12.0 percent in Iraq and about 7.4 percent in Venezuela.[10] The high growth rates especially in the 1970's indicate that industry had benefitted substantially from government investment induced by oil revenues.

The growth of output of import-substitution industries was also quite impressive especially in the 1970's. Output increased at an annual rate of 18 percent in Nigeria between 1970-78; in Iran 14.3 percent between 1969-75; in Iraq 16.0 percent between 1968-72 and in Venezuela 7.0 percent between 1968-75. In all these countries however increased output was most significant in non-durable consumer goods.

Output of intermediate and capital goods also grew substantially. For the period 1967-75 the annual growth rates for these products averaged about 10 percent in Venezuela; 29 percent in Iran; 18 percent in Nigeria; and 15 percent in Iraq. The growth rates in Iran, Nigeria and Iraq were very high partly because these countries are coming from relatively lower bases in comparison to Venezuela.

With regard to industrial credits their contribution to output appears to be most obvious in Iran, Venezuela and Nigeria. The average loan in Nigeria between 1962-68 was about $28,000. This was within the scope of medium sized industries. In Venezuela currently the loans range from less than $1.0 million to over $12.5 million depending on the type of project. In Venezuela for example, the availability of government long term finance has become the determining factor in investment decisions of the private sector. In Iraq, public industrial credits were small. In 1967 the average loan was $7,210.0 but modestly

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[10] U.N. Yearbook of Industrial Statistics, various issues.

rose to $10,420 by 1973. Such loans appear too small to bring about effective industrial development especially in the areas of intermediate and capital goods development which require substantial investment.

The drive to industrialize has been hampered by absorptive constraints. During the 1960's and early 1970's Nigeria's plan implementation ratio was around 33.3 percent of planned industrial projects. The implementation ratio of the 1975-80 plan is unlikely to be more than 50 percent. In Iraq even though implementation rate was as high as 82 percent for the 1970-75 plan, given the high expenditure of the 1976-80 plan it is unlikely that a high ratio would be achieved. The performance of Iran indicate this could happen. In Iran in 1962-68 the implementation ratio was 88.9 percent, but as a result of huge expenditure level during the 1973-77 plan period, the implementation ratio dropped to 33.8 percent. The current Iranian revolution is likely to even lower this rate. Venezuela too shows evidence of absorptive constraints though not as acute as in Nigeria. This is evidenced by the consistent failure of the development plans to achieve the targets set. It can be deduced therefore that absorptive constraints have considerably reduced output prospects of this sector.

Industrial development is expected to provide employment. In these countries unemployment has declined over the years. In Nigeria unemployment rate declined from 7.8 percent in 1970 to 4.5 percent in 1974. In Iraq the rate declined from 9 percent in the 1960's to 6 percent by 1972, in Iran it declined from 10 percent in 1971 to 8 percent in 1974 and in Venezuela from 14.2 percent in 1962 to 6.3 percent in 1974. It can be deduced that industrial expenditures have helped to reduce unemployment although we cannot tell exactly by how much.

However, the fact that unemployment rates remain high in Iran, Iraq and Venezuela indicates that industrial employment creation capacity has not been large enough to meet the supply of available labor. This is partly because of the high capital intensity of many of the industries that are being established for example petrochemicals, etc. Moreover, oil has induced accelerated rural-urban migration at a rate that far surpasses industrial employment creation. Therefore, in spite of the huge industrial expenditures, unemployment is still a problem in these countries.

In sum, unlike agriculture industrial expenditures have led to significant growth in industrial output in all the countries. This is particularly so in the 1970's corresponding with increased oil revenues. But these high growth rates in Nigeria, Iran and Iraq are largely due to the fact that the industrial bases are small vi-sa-vi Venezuela. Moreover, high unemployment rates persist in these countries. This situation suggests the need to give more attention to critical assessment of the type of technology being used in industrial projects. Where possible, industrial ventures should use the technology that enhances employment prospects. We now turn to infrastructure.

Infrastructure

A sound infrastructural base is essential if output is to be enhanced. To achieve this, substantial funds have been committed over the years by these countries in this sector with the aim of removing all potential bottlenecks to increased output.

The availability of oil financing has influenced expenditure in this sector in the following ways. One, there have been massive efforts to increase the volume of infrastructural facilities. Two, the

governments have also become increasingly concerned about the quality of infrastructural facilities. Three, the countries have diversified their shipping activities to include oil tanker fleets in order to participate in downstream oil trade.

In this sector our discussion will cover transportation facilities (roads, railways, airways and civil aviation, ports and shipping lines) and communication facilities (telephone and postal systems).

Of the $4401.3 million spent by the public sector in Nigeria between 1962-68 about 8 percent of it ($376.6 million) was spent on infrastructure. The breakdown for specific programs was 46.3 percent of $376.6 million for roads; 16.0 percent for railways; 26.8 percent for ports and shipping; 10 percent for communication; and about 3.0 percent for airways and aviation. The road program involved the construction of bituminous and asphalt surface roads, construction of new feeder roads and bridges to connect rural areas with the main towns. The railway expenditure went into the completion of an extension to the system as well as for the purchase of new locomotives and rolling stock. Port investment concentrated on improving berthing facilities of six ports. Additional aircrafts were purchased with airways funds while communication funds were used to improve the telephone and postal systems.

In Iran during this period, 7.4 percent of $5777.2 million ($778.7 million) spent by the public sector went into this sector. The order of the funds breakdown with regard to transportation was as follows: road development, railways, ports and civil aviation. Substantial funds were committed to communication. However, specific percentage figures for these activities are not available.

The pattern of expenditure in Iraq was similar to that in Nigeria and Iran. In the period 1951-69 about 12.8 percent of $9376.4 million spent by the public sector went into this sector. Here also percentage breakdown of expenditure is not available, and thus we would make qualitative statements. The order of expenditure with regard to transportation was as in Iran and Nigeria. Road expenditure concentrated on expansion of hard surfaced and feeder roads to connect the main transport centers. Railway funds were directed at standardizing gauges of rail lines, the modernizing and increasing the volume of the rolling stock. Berthing facilities were improved at the country's then only port and civil aviation funds were used to improve airport facilities. The communication activity did not receive significant expenditure.

In Venezuela throughout the 1950's the government committed over 30 percent of annual public expenditure in infrastructural investments. Public expenditure in this sector therefore rose from $161.7 million in 1951 to $412.5 million in 1959. In the 1960's both the relative and absolute amounts of public expenditure in this sector declined. For example infrastructural expenditure declined to an average of 15 percent of annual public expenditure and an annual average of $249 million in absolute terms. Expenditure preference was similar to the situation in the other countries with roads coming on top followed by ports, railways and civil aviation. Unlike Iraq however, the communication activities received considerable attention.

The 1970's show much higher public expenditure, diversification into oil tanker fleets and more attention to quality in this sector. In Nigeria infrastructural expenditure between 1970-73 was $584.4 million. Of this amount 73.4 percent went for roads and bridges; 8.1

percent for railways; 3.3 percent on airways and civil aviation; 2.3 percent on ports and waterways and 11.8 percent on communication. Expenditure levels continued to increase in subsequent years. In 1975 expenditure was $1205.8 billion. Again road program had the largest allocation of 71.7 percent of this expenditure. Airways and civil aviation received 7.7 percent of this amount while all the other activities including the establishment of oil tanker fleet received 7.5 percent. By this time more attention was being given to communication activities. Expenditure on them in this year was 13.1 percent of $1205.8 million. In all the activities emphasis continued to be on increased volume and quality. For example more rolling stock and locomotives were purchased for the railways and six additional berths were added to the ports.

In Iran expenditure rose in absolute amount from $189 million in 1970 to over $1.3 billion in 1976. While roads continued to be emphasized, in 1976 port development received 19 percent of $1.3 billion spent in that year while railways received 16.6 percent. As in Nigeria during this period, emphasis was placed on increased volume and quality of infrastructural establishments. But the quality of improvement went much further than in Nigeria. By 1976 the government started to double track and electrify parts of the rail system. Estimated cost of completion was $1.9 billion. Six new ports were built by 1976. Two shipping lines were established, one for merchant marine activities and the other for transporting oil. The communication system was modernized with the establishment of automatic exchanges in all major towns and satellite communication with many parts of the world.

In Iraq expenditure rose in absolute amount from $138.0 million in 1970 to $800.3 million in 1976. This represented a decline in relative amount from 13 percent of 1970 public expenditure level to 9.6 percent of 1976 public expenditure level. Here too emphasis was on improved volume and quality of facilities. With regard to road quality, improvement emphasized resurfacing with asphalt and concrete. Quality emphasis for the railways necessitated the purchase of more locomotives and rail cars. A new port was also built and 27 small vessels were purchased which served as nucleus of Iraq Maritime Transport Company. With regard to communication systems, quality improvement involved the establishment of 12 automatic telephone exchanges, radio and wire communications network and a microwave project.

In Venezuela there was a slight new development in the 1970's. Infrastructural expenditures rose in absolute amount from $217 million in 1970 to $534 million in 1976 but remained a relative decline from 8.4 percent to 6.4 percent for the two years respectively. The emphasis in the 1970's was on the development of feeder roads and regional highways. This is because Venezuela since early 1960's has had quite a highly developed network of major roads leading it to pay more attention in the 1970's to feeder roads. Moreover in the 1970's extension to the rail system was begun. When completed, total cost of the project was estimated to be $2.3 billion. As in Iran and Nigeria an oil tanker fleet has also been established. Communication expenditures were for quality improvement resulting in the installation of automatic facilities.

In sum, in all the countries expenditure in this sector shows similar patterns. Road development has received considerable attention. In Nigeria in particular it has remained the dominant expenditure activity.

Except in Nigeria, considerable attention was given to port development over the years. The neglect of this activity in Nigeria created in the mid-1970's very serious port congestion resulting in substantial loss of revenue through demurrage payments. All the countries have made efforts to improve communication facilities through equipment modernization especially in Iraq and Iran in recent years.

Given the public investment described above, we proceed to analyze the impact of this expenditure on the growth of facilities in this sector. As examples we would use roads in analyzing transportation facilities while for communication facilities we would use telephones. Table 10 indicates considerable increase in the volume and quality of roads between 1968-1973 in these countries. The two highest increases in volume being in Iran and Venezuela respectively. Quality improvement were highest in Nigeria, Iran and Iraq. The relatively lower performance in Venezuela was because by that time period, Venezuela already had a developed road system which did not require substantial quality improvement. In particular, Nigeria and Iraq have shown significant trade-off between quality and quantity in favor of quality. Overall however there has been growth both in quantity and quality over the years.

Undoubtedly infrastructural expenditure contribute to output. This is achieved through the capacity of infrastructural development to enhance transactions which in turn generate increased output. For example, in agriculture feeder roads (which in this case imply earth/gravel roads) play a very significant role in increasing output. Thus, it is important to note that in the countries under study, the order of the growth in feeder roads closely corresponds with the order of the

Table 10

Expansion of Roads Selected Years (in kilometers)

Country	Year	Paved	Earth/Gravel	Total
Nigeria	1968	15200	73280	88480
	1969	15758	75200	90958
	1971	16122	75088	91210
	1973	20109	80364	100473
Percent change 1968-73		33.3	9.5	13.6
Iran	1968	8500	27500	36000
	1970	11000	28000	39000
	1972	12000	31000	43000
	1973	14000	33000	47000
Percent change 1963-73		64.7	20	31
Iraq	1968	4183	5116	9299
	1970	4792	4568	9329
	1972	5380	5228	10608
	1973	5824	5000	10824
Percent change 1968-73		39	-3	16
Venezuela	1968	17478	21522	39000
	1970	18401	23404	41805
	1971	18600	24600	43000
	1974	19599	27677	47296
Percent Change 1968-74		12.1	28.7	21.3

Sources: Nigeria: Ministry of Economic Development. Third National Development Plan 1975-80, Table 14.2. Iran: Plan and Budget Organization Statistical Center. Statistical Yearbook of Iran 1973. Iraq: Central Statistical Organization. Annual Abstract of Statistics 1973. Venezuela: Ministry of Public Works. Report 1976.

growth of agricultural output. Venezuela and Iran which have the highest growth rates in agricultural output in that order have also the highest growth rates in feeder roads respectively.

With regard to the impact of public expenditure on communication facilities, between 1967 and 1976 the availability of the service almost trippled in Iran from 0.8 to 2.3 telephones per 100 inhabitants. It more than trippled in Iraq from 0.9 to 2.8 telephones per 100 inhabitants. It almost doubled in Venezuela as the availability of the service rose from 3.4 to 6.4 telephones per 100 inhabitants. Only in Nigeria did the availability of the service virtually remain static at 0.2 telephones per 100 inhabitants.[12] The quality of the service has improved as a result of the installations of automatic exchanges and satellite communication systems in these countries.

As a summary, even though there have been significant growth rates in the volume of these facilities over the years, what is available is well below what is required to effectively enhance output. For example in Iran by 1973 the government was providing only about one in three feeder road mileage needed in the economy. Even Venezuela which has the most developed road system in these countries is short of feeder roads. All the countries especially Nigeria and Iraq need increased road volume especially feeder roads if infrastructural expenditures are to contribute fully to increased output. Considerably more attention also needs to be given to the provision of communication facilities. This is most urgently needed in Nigeria where the volume is abysmally low. We now turn to education.

Education

One of the persistent constraints to increased output in these countries is the lack of capacity to execute plans. A principal factor

[12] U.N. Statistical Yearbooks 1972, 1973, 1977.

in this lack of executive capacity is inadequate levels of skilled labor. In addition to providing the needed skilled labor, education makes people more receptive to new ideas which can enhance output. Thus these countries see education as the instrument 'par excellence' for effecting national development.

Oil financing has influenced expenditure in this sector as well. One, it has made it possible for these countries to rapidly expand educational services at all levels. In particular Universal Primary Education has been achieved in Venezuela and is the goal in the other countries. Two, in Nigeria and Venezuela the governments have embarked on crash programs for the training of intermediate manpower at home and abroad. Three, increased emphasis on technical education throughout the educational system now that the funds are available to meet the high cost of such education. Four, enhancement of adult education particularly in Iran, Iraq and Venezuela.

Our order of discussion in this sector is primary education, technical education (both secondary and university levels); non-technical education (both secondary and university levels); and adult education.

Traditionally, public sector expenditure on education has been substantive. In Nigeria between 1962 and 1970 education expenditure increased from 12.9 percent of $555.2 million spent by the government in 1962 to 13.1 percent of $1669.0 million spent in 1970. The growth therefore was mainly in absolute amount. The average distribution of education expenditure in the various activities in this sector during this period was 44.1 percent for primary education; 16.4 percent for technical education; 29.1 percent for non-technical education; and 1.3

percent for adult education. At all levels of education the emphasis was on increased enrollment. This necessitated the expansion and construction of new educational facilities. But as the distribution shows, non-technical education received almost twice the budgetary allocation of technical education. This partly explains the subsequent manpower problems the country faces.

In Iran between 1961 and 1970, public education expenditure increased from $122.0 million to $332.6 million. This however was a relative decline in budgetary allocation from 15.6 percent of $782.3 million in 1961 to 9.7 percent of $3412.8 million in 1970. The average distribution of expenditure in educational activities was primary education 40.3 percent; technical education 18.0 percent; and non-technical education 31.8 percent. In this case adult education expenditure was incorporated in the primary education expenditure. As in Nigeria, the government concentrated on increasing enrollment at all levels. Thus expenditure went into increasing the volume of facilities at all levels. Moreover the government established the education corp as a way of rapidly inducing literacy among adults in rural areas. In contrast to Nigeria during this period more funds in both relative and absolute amounts were expended on technical education.

In Iraq public education expenditure rose from $97.3 million in 1960 to $204.8 million in 1970. As in Iran this also represents an overall relative decline from 23.2 percent of the budget in 1960 to 19.3 percent of the budget in 1970. The average distribution of these expenditures among educational activities during the period was 56 percent primary education; 15.6 percent technical education; and 30.5 percent non-technical education. An important contrast with the other

countries is the overwhelming concentration on primary education. Even though this figure includes adult education, it does indicate much greater attention on primary education. As with the other countries during this period, emphasis was on increased enrollment especially at primary school level. But considerable attention was also given to provision of facilities especially in technical education.

In Venezuela for most of the 1960's average annual education expenditure was 17.4 percent of the yearly budget. Thus public expenditure rose from $219.8 million in 1960 to $588.8 million in 1970. Within this period, the average percentage distribution of expenditure among the various activities in the sector was 49.1 percent for primary education; 20.25 percent for technical education; and 26.50 percent for non-technical education. In contrast to the other countries, Venezuela has contributed proportionately more to technical education. But as in the other countries, the government continued to emphasize increased enrollment and improvement in literacy rate.

In the period 1971-76 however, education expenditure levels rose much more rapidly especially in absolute amounts. In all the countries, the programs of the 1960's were pushed more vigorously and increased attention was also given to the development of intermediate manpower categories. This has resulted in changes in percentage allocation of funds among the various educational activities. The number of schools built grew rapidly especially at the secondary and university levels. Moreover, additional schemes were undertaken especially at primary school level.

In Nigeria in 1974 educational expenditure was 15 percent of $6901.6 million spent by the public sector in that year. In absolute amount

this was $1035 million. The distribution was 15 percent primary education; 26.84 percent technical and 45.4 percent non-technical. This indicates considerable shift into technical education in comparison to the past. By 1976 expenditure was $1702.0 million. Two issues brought about this rise in expenditure. One, the government embarkation on a crash intermediate manpower program. Under this program about 1000 students beginning in 1976 are being sent out yearly to various countries for training. Two, Universal Primary Education was also launched in September 1976. In addition to these greater attention began to be given to adult education.

In Iraq expenditure rose to $1298.5 million in 1974. That was 7.2 percent of total public expenditure in that year. In terms of percentage distribution of the funds 23.7 percent went for primary education; 28.8 percent for technical education; 44 percent to non-technical education; and 1.5 percent for adult education. Here also there was a shift into technical education. In Iraq the situation was similar to the other countries. Expenditure increased to $929.4 million in absolute amount in 1976. The government emphasized technical education but pursued its educational objectives from the grass roots. Thus the distribution of educational expenditure remained predominantly in primary education.

Finally, in Venezuela expenditure rose to $1556.3 million in 1975. As in the 1960's distribution of expenditure continued to move increasingly into technical education. Moreover in 1974 Venezuela established the Gran Mariscal de Ayacucho Scholarships Program for study in Venezuela and abroad. The program is especially designed to transfer skills to the non-metropolitan, less educated classes. About 10,000 people are to be trained on this program.

Overall the educational objectives and strategies of these countries have been quite similar over the years. Educational expenditures have increasingly been directed into the provision of skilled manpower, as well as the improvement of literacy. To achieve these objectives considerable expenditure went into the provision of educational facilities at all levels of education. In Iran and Venezuela in recent years increases in these facilities have occurred mostly at secondary and university levels. But in Nigeria and Iraq, primary education is given considerable emphasis. The Universal Primary Education scheme in Nigeria substantiates this.

We now proceed to analyze the effectiveness of public expenditures in education. For output to be enhanced, there must be substantial growth in the level of skills in these countries. Between 1965 and 1973 technical manpower from university and technical institutes rose from 1,121 to 3,343 in Nigeria; from 3,484 to 21,125 in Iran; from 1,280 to 6,010 in Iraq and from 2,558 to 6,985 in Venezuela. This implies about three fold increases in Nigeria and Venezuela; seven fold in Iran and five fold in Iraq. Because of the lack of data on graduates of secondary technical and vocational schools we will use enrollment levels to show the changes that have taken place. Between the period 1965 to 1974 enrollment rose from 51,855 to 68,013 in Nigeria; in Venezuela from 105,951 to 148,047; in Iran from 19,898 to 171,244 and Iraq from 13,386 to 26,950.[13] Using this as an estimate of intermediate manpower potential, the increases were Venezuela 39.7 percent; Nigeria 31 percent; Iran over seven fold (760 percent) and Iraq 100 percent.

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[13] UNESCO. Statistical Yearbook, various issues.

With regard to literacy rate there has been some improvement although this has not been spectacular in Nigeria and Iraq. Nigerian literacy rate rose from 15 percent in 1960 to about 25 percent in 1975. For Iran within this period, it rose from 16 percent to 50 percent. In Iraq it rose from 18 percent to about 38 percent while in Venezuela it rose from 63 percent to 83 percent.[14] The Nigerian average annual growth rate was the lowest at less than 1 percent while Iran had the highest annual growth rate of over 2 percent. The creation of the Education Corp in Iran was partly responsible for this higher growth rate.

On the whole except in Venezuela the literacy rate remains quite low. Moreover the growth rate has not been significant especially in Nigeria. It appears the coming years will continue to see increased educational expenditure especially in absolute amount as these countries try to improve the literacy rate and manpower levels. This is essential if the potentials of these economies are to be fully harnessed to enhance output levels.

Even though the volume of skilled labor has grown substantially over the years, these countries are coming from low bases. Therefore the available skilled manpower has not brought about much improvement in the absorptive capacity of the economies. Lack of executive capacity still hampers economic performance in these countries. There have developed inverse relationships between development plans implementation ratios and the size of plans. None of the countries has been able to effectively execute up to 75 percent of all its plan projects in the

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[14]World Bank. World Bank Development Indicators, June 1979.

last few years. Nigeria for example has consistently failed to execute even half of the plans. Given this situation, it must be concluded that education expenditures as of now have not rapidly increased absorptive capacity.

In sum, in all the countries, considerable amount of funds have gone into education. And in recent years funds are increasingly directed into dealings with the problems of manpower needs. As a result all the countries are increasingly paying attention to the development of facilities for technical education. In the process however, the issue of enhancing literacy rate is also being addressed. But with the exception of Venezuela, these countries need to give even more attention to adult education. This is particularly essential in Nigeria if the overall literacy rate is to improve substantially. With regard to absorptive capacity because of the long gestation period of education expenditure, it will take some more years before the recent increases in education expenditures can improve it. We now turn to the last sector under discussion, health.

Health

Traditionally public expenditure on health has not been given as much prominence as in education in these countries. Nonetheless health expenditures have always been considered important in enhancing welfare. The importance of health services in the social and economic progress of a people is increasingly being appreciated. A healthy population is an economic asset since the assured supply of a strong and healthy labor force is an essential factor in development.

In this sector also oil financing has influenced public expenditure. One, there have been rapid increases in the volume of health

services and amenities. Two, more attention is being given to improving quality of the facilities and consequently services. This is being achieved through improvement in personnel and equipment. Three, significant emphasis is currently being placed on preventive medicine through improved sanitation and dieting. In addition governments are undertaking variety of campaigns to eradicate diseases such as malaria, yellow fever, etc.

The order of our discussion in this sector is: the provision of basic health services through hospitals, clinics and dispensaries; training and health education; sanitation and special programs.

In Nigeria health expenditures remained about constant in relative amount at 3 percent of annual expenditure between 1960 and 1968. In absolute amount this implies an expenditure increase from $26 million to $54.4 million in those years. The funds were largely spent on the provision of basic medical services, training and health education. Not much expenditure was committed to sanitation and funds were not available to undertake any major medical campaign. But in the 1970's public health expenditures grew substantially in absolute amount. For the period 1970-74 about $610 million was allocated. The expenditure pattern was as follows: 63.6 percent on basic health services; 4.7 percent on training and health education. This time considerable amount was spent on sanitation. About 12.8 percent of $610 million was spent on it. Moreover the government began a series of campaigns against malaria, yellow fever, etc.

In Iran for the period 1962-68 the government spent $180.0 million on health programs. This was 2 percent of total expenditure during this period. About 53.3 percent of $180.0 million was spent on basic health

services, and 3.2 percent of $180.0 million was spent on training and health education. However in contrast to Nigeria the government at this time began to make substantial expenditure in sanitation and undertook campaigns to eradicate diseases such as malaria, tuberculosis, etc. During this period 37.4 percent of $180.0 million was allocated for these activities. Between 1970-76 about $1375.5 million was spent on this sector. Emphasis during this time was on increasing the size of activities mentioned above. Particular emphasis was directed to the rural areas through the activities of the Health Corp.. Malaria eradication campaign was actively undertaken.

With regard to Iraq expenditure rose from about $20 million in 1954 to $55.8 million in 1969. In relative amounts this was a decline from 9.9 percent of $200.6 million spent in 1954 to 5.5 percent of $1101 million spent by the government in 1969. As with the other countries most of the expenditure went for basic health services. Expenditure on sanitation was also undertaken mainly to improve water supply and sewerage facilities especially in rural areas. For the 1970's expenditures rose sharply from $56.5 million in 1970 to over $132.0 million in 1976. Again considerable attention continued to be given to basic health services and training and health education. But the government increased expenditure on sanitation as well, and eradication of malaria and small pox were vigorously pursued incurring considerable expenditure.

The situation in Venezuela presents a somewhat different situation. On the whole Venezuela has had a relatively more developed health program than any of the other countries. In 1960 health expenditures were 6 percent of $1550 million spent by the government in that year. By 1969 they have risen to about 14 percent of $2425 million. During the 1960

decade, a total of $1521 million was spent on this sector. Like the other countries however for the 1960's an average of 70 percent of annual expenditure was in basic health services and training and health education. The remaining 30 percent was spent on sanitation and medical campaigns. During this period Venezuela succeeded in eradicating malaria. The 1970's however have seen considerable emphasis on sanitation and other preventive aspects of medicine. Most of the $3524 million spent between 1970 and 1976 on the health sector went into such activities. For example in 1975, 33.8 percent of $741.0 million spent on health was spent on sanitation.

The expenditures undertaken by these countries in this sector presents the following contrasts. With the exception of Venezuela all the other countries concentrated on the provision of basic health facilities, training and health education. But Nigeria showed even greater emphasis on these because of her relative poor health base at the beginning of the period under study. Over the years increased emphasis is moving into preventive medicine as more funds are committed into such activities as sanitation, etc. This is most true in Venezuela.

Given the expenditures already undertaken, it is essential we examine their effectiveness on the health of the populations of these countries. The first issue we will examine is the movement in infant mortality rates. As Table 11 indicates, there have been significant drops in infant mortality rates especially in Nigeria and Iran. While this cannot be all attributed to health expenditures, these expenditures have undoubtedly contributed much in the drops. The decline in the rates is significant in Nigeria and Iran because these countries are coming from a background of very high rates. In spite of the substantial drop

the current rates are still very high indeed. This indicates that many rural areas still have no access to health facilities. This casts doubt as to the real effectiveness of the medical corp in Iran which the Shah launched with great fanfare. For Iran to still have such a high rate, waste and corruption cannot be completely ruled out with regard to the use of funds.

Table 11

Infant Mortality Rate Per 1000 Live Births

Country	1965-70	1970-75
Nigeria	182.0	163.0
Iran	140.0	120.0
Iraq	28.5	27.5
Venezuela	53.7	46.0

Sources: The World Bank, World Development Indicators, June 1979. U.N. Demographic Yearbooks 1962, 1976. The World Bank, Atlas of the Child 1979.

It is clear that the solution to better health lies in a dual approach with emphasis reasonably divided between curative and preventive measures. The case of Venezuela and Iraq where this dual approach has brought infant mortality rate substantially down shows this strategy to be effective. Nigeria in particular must give much more attention to preventive medicine if the high infant mortality rate is to be reduced sharply in the near future. Coupled with this must also be a more vigorous effort than currently exists to spread clinics and health centers in rural areas within the reach of the population.

With regard to incidence of diseases, health expenditures have brought about some improvement. In Nigeria, using the Lagos area statistics, malarial incidence dropped from 50,000 in 1962 to 39,000 in 1964 and this trend has been the case in other parts of the country although no specific statistics are available. In Venezuela malaria has been wiped out since the 1960's. And in 1964 there were 91,000 cases of dysentry which dropped to 13,000 by 1970. In Iran the number of cases dropped from 461,000 in 1964 to 104,000 by 1974. In Iraq the figures for dysentry incidence declined from 6000 in 1964 to 2000 in 1970. Small pox has been eliminated in all these countries and the occurrences of childhood diseases such as measles have been declining. All these indicate that health expenditures have contributed to the decline in the incidence of certain basic diseases.

As a summary, even though these governments have incurred substantial expenditures especially in the 1970's, on this sector, the effectiveness of these expenditures have not been very high. For example, infant mortality rates still remain very high. The level and structure of public expenditure on health need to be changed. This is most obvious in Nigeria and Iran where preventive medicine is still weak and rural areas are still badly neglected. This calls for even higher - both in absolute and relative amount - health expenditures. In Venezuela recent failure of health expenditures to match population increases began to cause the country to lose some of the gains made earlier on. For example life expectancy declined from 66.4 years in 1961 to 66.1 years in 1973. If the other countries are to avoid such a trend, expenditure must rise substantially.

Conclusion

Oil revenues have undoubtedly influenced public expenditure in these countries. Not only did the levels of expenditure rise phenomenally especially in the 1970's but the governments were also able to diversify their activities in the various sectors. But as we have seen growth in agriculture was not impressive largely because the small farmers have been neglected. In industry however there has been substantial growth in output. But in this case most of the growth was in consumer goods both durable and non-durable. Until recently there had not been significant investments in intermediate and capital goods industries. Despite recent moves in these areas most of the establishments are assembly plants depending on imported components. In such situations very little domestic value added is generated. Thus even industry is a very shaky alternative to oil in its present state.

With regard to infrastructure we have shown how overall rural areas are badly neglected thus reducing output capacity especially in agriculture. In education skilled manpower levels are still low making these countries persistently unable to execute significant portions of their development plans. With regard to health there has been some improvement but a lot more needs to be done especially in the area of preventive medicine.

Given these performances in these countries we must address the issue of whether or not these countries can enhance welfare in the absence of oil. The apparent inability to successfully develop agriculture especially in Nigeria is the principal problem still facing these economies. Without improved agricultural output the gains say in industry will be swallowed up by the losses in agriculture. For unless

agriculture develops any foreign exchange saved through domestic industrial activities would have to be used to import food. Currently oil revenues are used to import food to meet the short fall in domestic supply. But this can only be a short term measure. In the long run agricultural output must rise substantially otherwise welfare cannot be enhanced when oil runs out.

Industry too must move rapidly beyond the stage of assembly plants into actual production from raw materials to finished products in these countries. This is the only way value added can be maximized and industry can fully contribute to increased output and consequently enhance welfare level. This will require the domestic production of producer goods. Unless this happens, as in agriculture, it must be concluded that welfare cannot be enhanced in the absence of oil.

CHAPTER VII

FOREIGN INVESTMENT AND THROWAWAY EXPENDITURE

Introduction

The sudden influx of funds into these countries especially after 1974 made it possible for them to undertake foreign investment. Foreign investment offered an opportunity of utilizing surplus funds, i.e. funds that the domestic economy could not absorb. In addition to a good expected rate of return, foreign investments were undertaken for the following motives. One, investments in activities that ensure easy repatriation of funds when needed domestically. Two, investment in activities that directly help the domestic economy of the country concerned. For example, Iran's investment in Krupp Steel Complex in West Germany so that she might use the expertise of the company to improve her domestic steel production. Funds meant to be repatriated were invested in international agencies such as the I.M.F. and regional banking agencies and to a large extent in commercial banks particularly in the Eurodollar market.

However, besides foreign investments, these countries also engaged in throwaway expenditures, i.e. expenditures that merely wasted the available funds. Among the expenditures we will analyze are luxury consumption and military expenditures. Oil revenues have also aggravated corruption especially in the use of state power to land a contract, start a business, etc. in order to ensure personal enrichment. We will examine these issues in the subsequent sections beginning with foreign investment.

Foreign Investment

We start our discussion of this issue by examining first the public sector and later the private sector activities in this area. Table 12 presents the balance of payments accounts of these countries as of 1977. Except in Iran all the other countries showed deficits in their balance of payments measured as a change in reserves in 1977. In relative terms the deficits as percent of GNP were not significant. Their level as percent of oil revenues can be said to be quite reasonable. Since 1977 Iran too has had balance of payments deficits. The two most important items are merchandise imports as percent of GNP and oil exports as percent of GNP. As the figures show, merchandise imports were quite high in all the countries especially, Nigeria, Iraq and Venezuela. The increase in oil revenues are mostly responsible for this. Oil exports as percent of GNP shows how dependent these countries are on oil revenues. From the figures Iraq and Iran are most dependent on these revenues.

In addition to this we must examine the change in reserves compared to the current account balance. Given the figures in Table 12, Iran and Iraq are net foreign investors while Nigeria and Venezuela are net recipients of foreign investment. The change in reserves compared to current account balance was 91.0 percent in Nigeria; 57.0 percent in Iran; 18.4 percent in Iraq; and 9.5 percent in Venezuela. A country is said to be a net foreign investor if the country is in current account surplus after adjusting for valuation changes and allocation of SDRs. Applying this principle to these countries we find that since Nigeria and Venezuela had deficit current account figures after the adjustments, this confirms that these countries were net recipients of foreign investments.

Table 12

Balance of Payments 1977 (in million dollars)

		Nigeria	Iran*	Iraq**	Venezuela
A.	Goods, Services and Unrequited Transfers	- 897	10,575	2,601	-2,052
	Merchandise: exports f.o.b.	12,004	24,083	7,982	9,669
	Oil sector	10,984	23,358	7,843	9,224
	Non-oil sectors	1,020	725	139	445
	Merchandise: imports f.o.b.	- 9,381	- 6,827	-4,002	-9,209
	Oil sector	- 75	- 190	356	- 157
	Non-oil sectors	- 9,306	- 6,637	3,646	9,051
	Trade balance	2,623	17,255	3,980	460
	Services: credit	899	1,255	522	1,383
	Oil sector	36	9	16	-
	Non-oil sectors	863	1,246	505	-
	Services: debit	-4,266	7,912	1,646	-3,595
	Oil sector	-1,096	- 5,190	- 642	- 434
	Non-oil sectors	-3,170	- 2,722	-1,004	-3,160
	Total goods & services	- 744	10,598	2,856	-1,751
	Private Unrequited transfers	- 167	- 4	1	- 251
	Total (excluding government unrequited transfers)	- 911	10,595	2,857	-2,002
	Government unrequited transfers	14	- 20	- 255	- 50
B.	Long-Term Capital	235	4,348	- 419	965
	Direct investment in the country	245	-2,092	10	382
	Oil sector	145	-2,143	10	-
	Non-oil sectors	100	51	-	382
	Direct investment abroad	-	-	-	- 112
	Other private liabilities (net)	22	117	- 110	50
	General Government liabilities	- 32	2,372	- 319	645
	Total, A plus B	- 661	6,227	2,182	-1,087
C.	Short-Term Capital	- 151	202	-2,661	893
	Deposit money banks	- 50	- 5	- 5	2
	Other private liabilities	- 58	-	-1,932	- 804
	General government assets	-	1	-	5
	Central Monetary Institutions	-	60	- 26	28
	Net errors and omissions	- 43	- 257	- 698	1,662
	Total, A through C	- 813	6,025	- 479	- 194
D.	Exceptional Financing: Payment Arrears	-	-	-	-
	Total, A through D	- 813	6,025	- 479	- 194

Balance of Payments 1977 (Continued)

	Nigeria	Iran*	Iraq**	Venezuela
E. Counterpart Items	-	-	-	-
Monetization/demonetization of gold	-	-	-	-
Allocations of SDRs	-	-	-	-
Total, A through E	- 813	6,025	- 479	- 194
F. Reserves and Related Items	813	-6,025	479	194
Use of IMF credit	-	-	-	-
Other liabilities	-	-	- 205	-
Monetary gold	-	-	-	- 3
SDRs	- 5	- 9	-	- 12
Reserve position in IMF	- 7	- 437	-	109
Foreign exchange and other claims	825	5,579	684	100
Balance of Payments	- 813	6,025	- 479	- 194
Balance of payments as % of GNP	2.0	13.5	3.8	0.5
Balance of payments as % of oil revenue	7.4	25.8	6.1	2.1
Merchandise imports as % of GNP	32.0	15.3	29.0	24.1
Oil exports as % of GNP	37.9	52.4	57.7	24.1
Non-oil exports as % of GNP	3.5	2.0	1.0	1.2

Notes: * The Iranian figures are for 1974
**The Iraqi figures are for 1975

Sources: IMF. Balance of Payments Yearbook. Vol. 27, October 1976 and Vol. 29, June 1978.

Foreign investment is generally categorized as follows: direct investment; long term portfolio; short-term portfolio; reserves and errors and omissions. Table 13 shows the foreign investment flows 1973-1977. The first thing to notice in this table is the change in reserves. All the countries except Iraq tried to build up reserves in the period 1973-74. In the case of Nigeria reserves were depleted in the period 1975-1977. The level of depletion progressively increased. In Venezuela reserve depletion began in 1977. In Nigeria and Iran for

Table 13

Foreign Investment Flows 1973-77 (in million dollars)*

Country	Year	Net Total $ million	Direct Investment	Long-term Portfolio	Short-term Portfolio	Change in Results	Net error and Omission
Nigeria	1973	- 78	373	- 67	-130	- 206	-48
	1974	-4833	257	- 88	- 23	-5050	71
	1975	161	418	-209	- 22	16	-42
	1976	383	339	-367	- 39	405	45
	1977	1136	441	- 18	-184	948	-51
Iran	1973	- 258	561	514	- 730	- 66	- 547
	1974	-12767	324	-2262	-3127	-7026	- 176
	1975	- 6314	141	-3010	-1079	- 110	-2256
	1976	- 4214	744	-2579	-3238	61	798
	1977	- 5098	802	- 441	-2961	-3424	926
Iraq	1973	- 891	297	-199	18	-253	- 754
	1974	-2424	-214	-317	- 587	411	-1717
	1975	-2666	11	-447	-2041	-726	537
Venezuela	1973	- 849	- 85	39	260	- 608	- 455
	1974	-5697	-343	- 209	197	-4469	- 873
	1975	-2040	418	46	- 259	-2670	425
	1976	-1165	-889	1581	-3789	- 71	2003
	1977	3081	- 4	2175	-1814	113	2611

Notes: * minus sign indicates debit.

Source: IMF International Financial Statistics, July 1980.

the period 1973-77 there was continuous short-term portfolio investment. In Venezuela short-term portfolio investment began in 1975. The Iraq situation differs from the other countries. Iraq in general does not undertake portfolio investment as a matter of policy. The figures shown for Iraq under short-term portfolio are actually trade credits resulting from exports of oil. These exports were paid for in 1976.

In Iran and Venezuela the short-term portfolio investments were substantial. The relatively small investment levels in Nigeria were used to purchase foreign governments securities such as treasury bills etc. In Iran these short-term assets were made up of U.S. Treasury bills as well as deposits held abroad by the National Iranian Oil Corporation.

The Venezuelan figures indicate considerable investment resulting from the creation of the Venezuelan Investment Fund in 1974. The bulk of the funds resources were placed in liquid securities and short-term bank deposits. Thus $500 million were lent to the World Bank and a Trust Fund; $500 million to the Inter-American Development Bank; $280 million to Latin American Central Banks. It is also within this category that the IMF oil facility loans were made.

In dealing with oil facility the change in reserves in the balance of payments account deals with only increases or decreases in this amount. Stock values are not listed. However the following can be deduced with regard to this item. Oil facility as an investment activity began in 1974 in Iran and Venezuela and in 1975 in Nigeria. Iraq does not participate in this. In Iran there was a substantial change in the level between 1974 and 1975 when the figure more than doubled from $458 million to $1,066 million. The peak was reached in 1977 at

$1116 million. From then on the level has been declining. Similar trends were registered in Venezuela. The amount more than doubled between 1974 and 1975 from $308 million to $704 million. It reached its peak in 1976 at $709 million and has since been declining. The Nigerian figures showed only moderate increases. The peak was reached in 1977 at $360 million. Between 1976-77 the increase in the figures for Nigeria was only $11 million. The figures have been declining since 1978.* In all the countries increases in the level of oil facility were significant only in the first two years of operation, and have been declining between 1976-79. Oil facility therefore has not played a significant role in the short-term asset position of these countries.

With regard to long-term portfolio investment, in Nigeria they reached their peak in 1976 but declined substantially in 1977. By 1978 the country became a net recipient of foreign investment in this category as a result of syndicated loans she raised to execute iron and steel and petrochemical projects. Iran began its long-term portfolio investment in 1974, reached its peak in 1975 and declined since then. It was through these investments that Iran was able to undertake those investments deemed to directly help domestic output. In 1974 she bought 25.04 percent of interest in Krupp Steel Works in West Germany for $100 million. In April 1975 she bought 25.02 percent shares in Deutsche Babcock and Wilcox AG at a cost of $75 million. And in October 1976 she bought 25 percent of the shares in overall Krupp Holding Company which had 125 subsidiaries and affiliated companies in 25 countries. Other investments undertaken include the purchase of 24.5 percent of

* See IMF International Financial Statistics, July 1980.

Madras fertilizer plant in India; some interest in North Sea Oil production; the ownership of 50 percent of Ashland Oil Company here in the U.S. and some refining and marketing facilities in Greece.

In Iraq the long-term portfolio figures indicate payments made to owners of investments taken over by the government.

With regard to direct investment, only Venezuela has shown this trend. The other countries particularly Nigeria and Iran have been net recipients of direct investment. The Venezuelan direct investment also results from the use of the Investment Fund created in 1974. However, no specific account of the types of investments undertaken are available.

Dealing specifically with private sector activities, while some of the oil revenues in these countries have accrued to this sector the figures available do not break down into specific private capital flows to facilitate our analysis. In addition there are no private capital outflows from Nigeria and Iraq because of restrictive foreign exchange policies. We can therefore only make qualitative statements with regard to Iran and Venezuela where some private capital flows did take place. In Iran all the funds were invested in short-term assets such as claims on U.S. banks, etc. In Venezuela most of the funds were invested in short-term assets such as claims on U.S. banks; U.S. security brokers and other non-banking concerns. Some of the private capital were also invested in long-term U.S. securities.

There is also no available information with regard to the reinvestment structure of private foreign investment income. Some qualitative statements can however be made. The private sector in these countries seems to have considerable short time horizon. Most investments are in activities that ensure quick return such as urban real

estate and light industry. Therefore even if these incomes are reinvested domestically, they are most likely to be invested in such activities where returns are very high. In Venezuela in 1978 the return from light industry (cosmetics for example) was as high as 55 percent. Very little long term investment was undertaken. For example, in Iran when the government compensated landowners with shares in long-term projects, most sold their shares and invested the revenue in real estate or light industry.

In summary therefore, investment concentrated in increasing reserve levels, the purchase of short-term portfolio and to some extent long-term portfolio except in Venezuela. Only Venezuela seems to have undertaken direct foreign investment. The other countries were largely recipients of direct investment. The private sector in Iran invested completely in short term assets while in Venezuela even though investment in short-term assets were dominant, some long-term investments were also undertaken.

The issue of absorptive capacity has also been a problem in these countries. However, no account of this is available except in Venezuela because the governments have not confronted this issue. In Venezuela the creation of the Venezuelan Investment Fund was initiated as a means of ensuring that funds are used only when the domestic economy has developed the capacity to absorb them. There is no evidence of similar funds in the other countries. Even the oil facility which can be drawn upon was created only out of desire to help non-oil LDCs to meet their oil import bills. Thus only Venezuela has confronted the issue of absorptive capacity.

Throwaway Expenditures

The first issue is the role of military expenditure. As Table 14 shows except in Venezuela military expenditures increased substantially in the 1960's and have remained quite high for most of the 1970's especially in Iran. The Nigerian situation is undoubtedly due to the civil war the country fought from mid-1960's to early 1970. As a result, the military expenditure rose steeply as the army expanded from 10,000 men to over 250,000 men. After the war, demobilization was not rapidly accomplished and coupled with the desire to improve the quality of equipment, military expenditure remained quite high in absolute amount although it has declined in relative amount.

The Iranian situation shows an upward trend without any substantial decline especially beginning with 1970. Between 1970 and 1976 military expenditure grew ten times. This coincides with the beginning of Iran's attempts to exert its influence in the Persian Gulf. The Shah therefore engaged in massive drive to purchase modern sophisticated military hardware resulting in very steep increases in military expenditure. As can be seen in the table, from 1972 onward close to 30 percent of the budget was spent on defense. The absolute level of military expenditure has continued to escalate. Iraq due to persistent domestic instability and squabbles with her neighbor has traditionally spent substantial amount of her revenue on defense. The decade 1954-74 indicate an annual average of 31.6 percent of the budget went to this sector. While the relative expenditure has declined in the mid-1970's to about 19.1 percent of the budget, the absolute expenditure has continued to rise.

Table 14

Trends in Military Expenditure (million U.S. dollars)

Country		1960	1964	1966	1970	1972	1974	1976
Nigeria	Total Expenditure	373.5	483.4	618.0	1153.1	1872.4	6390.4	14552.3
	Defense Expenditure	34.0	55.9	75.5	494.1	519.5	863.3	1173.0
	Defense as % of total expenditure	9.1	11.6	12.2	42.9	27.7	13.5	13.0
	Defense as % of GNP	0.4	1.4	1.2	6.3	5.2	3.6	4.2
Iran	Total Expenditure	566.6	1067.5	1554.3	3412.3	5527.1	17858.6	23605.7
	Defense Expenditure	119.7	245.5	348.6	834.5	1441.4	5322.9	8097.1
	Defense as % of total expenditure	21.1	23.0	22.4	24.4	26.0	29.8	28.3
	Defense as % of GNP	3.1	5.0	5.9	7.5	8.7	12.3	13.7
Iraq	Total Expenditure	494.7	668.6	816.3	1311.4	1634.1	2306.4	4607.2
	Defense Expenditure	123.0	202.3	280.2	417.0	505.5	708.6	878.2
	Defense as % of total expenditure	24.9	30.2	34.3	31.8	30.9	30.7	19.1
	Defense as % of GNP	7.2	9.6	11.2	9.5	9.2	6.5	6.3
Venezuela	Total Expenditure	1538.6	1611.0	1914.0	2447.5	3107.8	9874.3	8973.3
	Defense Expenditure	146.3	162.5	199.0	225.3	322.5	492.3	448.0
	Defense as % of total expenditure	9.5	10.0	10.4	9.2	10.4	5.0	5.0
	Defense as % of GNP	2.4	1.9	2.2	1.8	2.2	1.7	1.5

Sources: Nigeria: Central Bank of Nigeria. Economic and Financial Review. Federal Office of Statistics. Economic Indicators. Iran: Central Statistical Office. Iran Statistical Yearbooks. Iraq: Central Statistical Organization. Annual Abstract of Statistics. U.N. Statistical Yearbooks, various issues.

Venezuela's situation contrasts sharply with that of the other countries. For the 1960 decade, military expenditure increased only by 35.0 percent in absolute amount. This gives a compounded annual average increase of about 3.8 percent. In relative amount military expenditure was about constant between 1960-1972 but declined almost by half to 5 percent of total expenditure between 1974-76. Therefore except for Iran, all the other three countries have shown substantial relative decline in military expenditure. This is however due to rapid increases in oil revenues because in absolute amount, expenditure continued to increase.

It appears therefore that throwaway expenditure in terms of military expenditures can be associated mainly with Iran and to some extent Iraq given the relatively high proportion of Iraqi GNP committed to defense expenditure. The greatest level of waste however was the situation in Iran under the Shah. The Shah in deciding to 'police' the Persian Gulf committed substantial Iranian revenue into unnecessary military expenditure thus depriving the country of the funds that could have been used to enhance output. Table 15 shows that only in Iran did defense expenditure multiply many more times than total expenditure in the period 1970-76. This implies that defense expenditures have been undertaken at the expense of expenditures that could have enhanced output.

Are military expenditures of this magnitude helpful to the development process? I think not. It is obvious that some trade-off must have taken place in the economy for such a high military expenditure to be maintained.

Table 15

Number of Times Expenditures Multiplied 1970-76

Country	Defense Expenditure	Total Expenditure
Nigeria	4	13
Iran	10	8
Iraq	2	4
Venezuela	2	4

Source: Table 14

As to whether or no. luxury imports have been taking place in these countries we must examine the import trends in these countries for verification. Table 16 provides such a data for the most important import categories. For the examination of luxury imports the three important categories are food and beverages; transport; and consumer goods. For the period given for each country, food and beverages imports have risen substantially in all the countries except Iran. Processed food in particular has shown the largest increase. It is in this sub-category that luxury food items are found, e.g. special cuts of meats, distilled alcoholic beverages (champagne, caviar, etc.). Under transport, it is within the sub-category of passenger cars that luxury cars like Mercedes-Benz are found. Here, significant increases in imports occurred only in Iran and Venezuela. There was actually a decline in Nigeria. Imports of consumer goods generally declined except in Iran. But the sub-category of durable consumer goods increased in Nigeria and Iran.

A closer examination of the increase in expenditure in the various sectors indicates the following. In absolute amount expenditure on

Table 16

Percentage Trends in Imports

	Nigeria		Iran		Iraq		Venezuela	
	1972	1977	1972	1976	1972	1974	1972	1975
Food and Beverages	9.9	12.7	9.6	9.9	18.7	27.9	8.8	11.4
Primary	2.8	2.4	4.5	4.7	8.3	11.2	5.0	6.3
Processed	7.1	10.3	4.0	5.2	10.4	16.7	3.8	5.2
Industrial Supplies	36.2	28.4	40.6	36.6	40.8	41.6	29.8	21.4
Primary	1.9	1.1	2.4	1.8	2.1	1.4	1.8	1.4
Processed	34.3	27.3	38.2	34.8	38.7	40.2	28.0	20.0
Machinery	21.7	24.7	31.3	31.0	21.3	13.4	34.2	31.8
Capital equipment	18.2	22.3	26.5	27.0	19.8	12.0	31.1	28.7
Parts	3.5	2.4	4.8	3.9	1.5	1.4	3.1	3.1
Transport	19.1	22.2	12.5	14.4	12.0	11.4	14.5	16.8
Passenger cars	6.1	4.2	0.3	1.7	1.5	1.8	5.1	6.5
Others	6.0	10.9	1.4	4.6	3.7	5.0	5.6	7.4
Consumer goods	12.1	10.8	5.7	7.9	6.7	5.6	10.3	7.7
Durable	2.0	3.1	1.6	3.0	2.7	2.7	3.6	3.3
Semi-durable	5.4	4.3	1.4	2.1	1.4	1.2	4.2	3.0
Non-durable	4.6	3.5	2.6	2.8	2.6	1.7	2.5	1.4
Imports ($ million)	1633.6	12039.7	2607.1	12931.4	774.4	2310.3	2367.8	5704.3

Source: U.N. Yearbook of International Trade Statistics, 1978.

food and beverages rose from $161.7 million to $1,529.0 million in Nigeria between 1972 and 1977. In Iran between 1972 and 1976 expenditure rose from $250.3 million to $1,280.2 million. In Iraq between 1972 and 1974 expenditure rose from $144.7 million to $644.6 million. And in Venezuela between 1972 and 1975 expenditure rose from $218.4 million to $650.3 million. As can be seen the Nigerian increase in expenditure has been the greatest. This growth in expenditure is

mostly accounted for by the increase in expenditure on the processed items of this category. In Nigeria between 1972 and 1977 expenditure rose from $116 million to $1,240.1 million. In Iran between 1972 and 1976 from $104.3 million to $672.4 million. In Iraq between 1972 and 1974 expenditure rose from $80.5 million to $385.8 million. And in Venezuela between 1972 and 1975 expenditure rose from $90.0 million to $297.0 million. Since luxury food items are subsumed under this sub-category of processed food items, such substantial increase in expenditure especially in Nigeria indicates substantial consumption of luxury food and beverages.

Imports of industrial supplies have generally declined in all the countries except Iraq where between 1972 and 1974 expenditure rose from $315.9 million to $961.0 million. But while primary industrial supplies declined as in the other countries, it was the component of processed industrial supplies that increased.

The imports of machinery decreased in all the countries except in Nigeria. Expenditure between 1972 and 1977 in Nigeria rose from $354.5 million to $2974.0 million. Capital equipment registered the increase. There was a slight increase in this item in Iran between 1972 and 1976.

Given the above analysis with regard to food these countries are relying more on external agriculture to meet their food needs. The decline in importation of industrial supplies indicate some improvement in industry and the decline in imports of machinery in Iran, Iraq and Venezuela indicates that these countries are diversifying more in terms of industrialization. Nigeria seems to concentrate most in industrial supplies. The overall impact of this trend on their development suggests concentration on industries at the expense of agriculture. But this is

unlikely to effect long term development if the agricultural sector continues to be neglected. Any benefits from industrialization will be swallowed up in food imports.

The trend in imports indicate the need to place even more emphasis on improving agriculture especially in food processing. In industry there is a need to improve the domestic provision of industrial supplies.

Overall food imports showed the steepest increases. As was shown in Chapter VI per capita food imports rose sharply in the 1970's. In Nigeria between 1971 and 1976 per capita food imports rose from $2.09 to $9.06; in Iran from $6.70 to $56.41; in Iraq from $8.90 to $42.41 and Venezuela from $9.58 to $55.75. Such rapid increases indicate importation of luxury food items. In Nigeria there was substantial growth in the imports of caviar, and champagne that the government in 1977 had to ban these commodities. Until the ban, Nigeria was the world's biggest importer of French champagne. Even though importation of passenger cars declined between 1972-77 as the table shows, importation of luxury cars like Mercedes-Benz grew rapidly during this period that the government had to raise the duties to over 200 percent in order to curb imports. But reports indicate that even this measure has not worked well.

In the other countries, private sector luxury consumption is similar as in Nigeria. For example in Venezuela luxury food items such as special cuts of meats (tender loin or porter steak) constitute significant proportion of food imports. Imported distilled alcoholic beverages are also consumed by the rich in increasing quantities. The capitals of these countries show evidence of the oil wealth in terms of luxury high rise apartment buildings and imported $40,000 Mercedes-Benz cars.*

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*See Howard Handelman. "Venezuela: Scarcity Amid Plenty" in Common Ground, Vol. IV, No. 2, Spring, 1978, p. 49-64.

Finally, the issue of corruption in these countries. This is a controversial issue and there is no data especially for Iraq, Iran and Venezuela to substantiate cases. But there is no doubt that oil revenues have increased the level of corruption in these countries. From available reports, it appears there is a very significant relationship between the level of corruption and accrued oil revenues.

In Nigeria the first major corruption following the rise in oil revenues was in the award of contracts for cement imports. In 1974 using corrupt means orders were placed for 20 million tons of cement although the annual cement unloading capacity of Nigerian ports was less than 2 million tons. This led to extreme port congestion and costly demurrage payments. In 1977 the country lost about $1.5 billion in foreign exchange through currency scum. There have also been problems with the accounts of the Nigerian National Oil Company. Currently the company is under investigation for omitting $4.2 billion from its books. Corruption is also prevalent in contract awards and contracts are always highly inflated. In commercial transactions importation boom led to over invoicing of many transactions thus permitting companies to ship out money beyond what is legally allowed. Many top civil servants associated with oil transactions have had to be dismissed because of corrupt accumulation of wealth.

Corruption in government is a serious problem in Iran too. Businessmen struggle to have access to government spurces of information in order to speculate on financial transactions. For example in urban areas, access to government sources determining which property will be favored with new construction ensuring high rentals is vital if fortunes are to be made. Moreover, civil servants corruptly use state power to award

all types of contracts or enhance certain businesses. The luxurious palaces of the Shah and other members of the royal family indicate how oil revenues have been corruptly used. It was also customary to overcharge government for services rendered or overvalue a property used as collateral to borrow money from a public banking facility. Bribery, kickbacks and so forth become standard ways of conducting business as was revealed by the Lockheed Aircraft case.

In Iraq corruption emanates from large contractors who are close to the high officials in government and in the ministries where they act as intermediaries for firms seeking or executing government contracts. This corruption is quite serious and has led the government to issue Draconian decrees in an attempt to deal with it. Penalties include death and life imprisonment.

In Venezuela also corruption has been so prevalent in the country's political history that such practices have been popularly accorded an amused toleration. Corruption is prevalent in contract award, in having access to credit, and other forms of state assistance. Corruption has also been an important element in thwarting all attempts to significantly implement land reform. Here also it is customary to take public credit and use it for something else, e.g. real estate investment in Caracas or elsewhere.

In summary therefore, the pattern of throwaway expenditure has been similar for all the countries. All have engaged in luxury imports prompting the governments to impose import ban or import licenses for certain commodities. Corruption has also increased especially in contract award, access to and use of public credit, etc. The only area of significant difference is excessive military expenditure. It appears

only Iran and Iraq could be siad to have been involved in this form of throwaway expenditure.

Conclusion

The countries tried to build up the level of their reserves as a result of the influx of funds especially within the period 1973-74. In the case of Venezuela and Iran this continued up to 1976 and 1977 respectively. While Nigeria, Iran and Venezuela undertook short-term portfolio investments, it was only in Iran and Venezuela that such investments were significant. Iran also undertook long-term portfolio investments. Venezuela concentrated in short term investments to ensure that the resources were repatriable to be used domestically when needed.

Throwaway expenditures have been undertaken by these countries. In the field of military expenditure, it has been shown that Iran engaged most in this followed by Iraq. The high military expenditures deprived these economies of funds that could have been used to enhance output of their economies.

Luxury imports have also risen especially in the area of luxury food and beverages. With regard to corruption we have seen how this is prevalent in all the countries especially with the increases in oil revenues. The availability of oil revenues has induced acquisitive frenzy in these countries thus enhancing corrupt practices. Therefore for these countries, the levels of foreign investment and throwaway expenditures will decline only with rapid development.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

Summary

In this study, an attempt was made to compare the impact of petroleum revenues on public expenditure in Nigeria, Iran, Iraq and Venezuela in order to see what Nigeria could learn from the other countries since these countries have had longer experience with oil. The study sought to develop a descriptive analysis of public expenditure in these countries, in order to enhance welfare longer than the life of oil. The premise of the analysis being that since oil is an exhaustible resource, the revenues from it must be spent in creating structures that enhance the output capacity of the economy. This necessitated examining public expenditure in five sectors of these economies namely: agriculture, industry, infrastructure (transport and communication), education and health.

The review of the literature on public expenditure and welfare maximization in LDCs indicates that expenditure must be directed to effect maximum long run increases in output. Investment therefore becomes an important function of the public sector. The three prominent investment criteria models were discussed. One, the Chenery model which advocates investing in projects on the basis of their social marginal productivity. Two, the Galenson and Leibenstein model which advocates the criterion of 'marginal per capita reinvestment quotient' i.e. an investment should be selected on the basis of the amount of

reinvestment it can generate. Three, the Otto Eckstein model which advocates investment on the basis of the 'marginal growth contribution' of a project. The main drawbacks of these models is that they address only individual projects with no attempt to look at development from a comprehensive perspective.

Moreover, the issues of balanced and unbalanced development strategies were examined. Balanced development strategy ensures that no sector is left out, and development is not contingent on the performance of any one sector of the economy alone. Unbalanced growth however stresses the selection of a particular sector and concentrating on it. Through the development of that sector it is hoped the rest of the economy will eventually develop. Our thrust was not an attempt to choose between the two, but an attempt to examine how welfare can be enhanced in these economies. To do this, the most critical thing is to generate overall increased output.

In order to establish the position we were coming from with regard to each country, some background information about each country was provided. This required a brief discussion of some of the factors that have helped shape these nations. By so doing we brought into focus the structure of current public expenditures and their influence on welfare maximization. Political, social and geographical issues were discussed. Political economic approaches varied from the socialist style of development in Iraq to capital concentrated right wing regime of pre-revolutionary Iran.

Since the capacity to undertake investment depends on available revenues it was necessary to examine the trend in oil revenues for each country. The essence of this exercise was to show the length of time

each country could conceivably continue to expect substantial revenues from oil. This is important because it reveals the urgency to diversify the given economy if per capita consumption level is not to fall after oil depletion. From an historical perspective, the trend reveals the amount of revenues that have accrued to each country and thus shows the potentials each country has had over time to generate increased output. A country with a much larger amount of revenue, assuming minimal waste, ought to have been able to generate more output than one with less revenue.

The methodology provided the framework for analysis of public expenditures in these countries, the main thrust being that public expenditures can generate increased output and consequently increased per capita consumption. Since oil revenues are exhaustible, this requires the utilization of the oil revenues in investments in the non-oil sector of these economies such that by the time oil runs out, the savings from the non-oil output would be sufficient to generate the required level of investment that ensures the enhancement of per capita consumption. The investments undertaken must therefore provide alternative revenue sources to oil. This is the only strategy by which these economies can ensure a smooth shift from dependence on oil revenues to dependence on non-oil revenues.

A crude per capita consumption trend was developed in order to see if these economies can sustain the current level of per capita consumption when oil runs out. Some of the problems associated with the model include: One, the average propensity to consume oil revenues is unlikely to remain constant. Two, these economies are open economies and thus are subject to international developments. Three, oil prices are

likely to rise. Four, the type of investment undertaken in a given economy also affects the ability to raise the level of per capita consumption. Five, population growth rates may decline as the economy develops.

Since most of the oil revenues accrue to the governments in these countries, the governments have very important roles to play in generating increased output. They do this by allocating their revenues in various sectors of their economies. But in order for us to see how this expenditure allocation is achieving the objective of increased output we examined various key sectors of these economies using a series of questions.

Agriculture was found not to have done well especially in Nigeria. On the whole industry did quite well. Infrastructural facilities were found to have improved especially in quality. There was substantial improvement in literacy rates except in Nigeria. And health improved, although the infant mortality rates remained very high especially in Nigeria and Iran.

Because of the sudden influx of funds into these countries, the countries have had the potential to use their revenues for public and private foreign investments. Moreover there was the potential to waste the funds. Iran and Venezuela undertook substantial foreign investments. With regard to waste of funds there were indications that all of them engaged in this. In Iran and Iraq military expenditure, luxury consumption and corruption were the ways by which funds were wasted. In Nigeria and Venezuela corruption and luxury consumption were the principal factors in enhancing wasteful expenditures.

Conclusions

At this juncture we must address the issue regarding whether these countries are reinvesting enough of the oil revenues and diversifying enough to sustain the current level of per capita consumption when oil runs out.

Between 1960 and 1977 the gross domestic investment rose from 13 percent to 31 percent in Nigeria; from 21 percent to 32 percent in Venezuela and from 17 percent to 30 percent in Iran. No figures are available for Iraq. The gross domestic investment as a percentage of gross domestic production compares favorably in these countries. But the output performance has not compared favorably.

In Chapter VI we have seen that the compounded annual growth rate in the agricultural sector was about 1.3 percent for Nigeria between 1961-65 and 1976. For the other countries at this time the growth rates were 3.5 percent for Iran, 2.0 percent for Iraq and 4.5 percent for Venezuela. Industry did quite well in all the countries. For example, in Nigeria the real average annual growth rate was 10.1 percent between 1960-1977. In Iran for this period it was 12.3 percent, Iraq 9.5 percent and Venezuela 6.1 percent. Services did well in Iran, Iraq and Venezuela for the period 1960-1977. The respective real annual growth rates were 11.3 percent; 9.0 percent and 7.1 percent.* Only in Nigeria was performance relatively poor at 4.0 percent during this period.

For the period 1960-1975** the real annual average growth rate of non-oil GNP in these countries were 3.8 percent in Nigeria; 9 percent

*All figures derived from The World Bank, World Development Indicators, June 1979.

**Calculated by author.

in Iran; 7.5 percent in Iraq and 6.1 percent in Venezuela. Using the very simple extrapolation techniques of Chapter V it was found that only Nigeria could not sustain the current consumption levels in the absence of oil. The limitations of this modelling already mentioned should however be kept in mind in interpreting this result. Many factors subject to change have been frozen, once they change different results might be obtained.

However the main problem areas for Nigeria are agriculture and services. The combined effect of their poor performance has contributed significantly to low growth rates of the non-oil GNP in the country over the years. This indicates that if the available oil revenues are to enhance per capita consumption, investments in agriculture and services must be enhanced in Nigeria. The investment in services should take care of the manpower problems that the country has continuously faced. By so doing output capacity of the country can be enhanced.

We have seen that Iran has increased per capita consumption, did well in industry, and agriculture was not bad. But given the revolution that is still taking place in the country, the people did not see their welfare as being enhanced. Why has this major social upheaval occurred even though we have seen Iran is projected to be able to sustain per capita consumption? Two suggestions can be made One the model used has limitations. The main ones being, the average propensity to consume is unlikely to be constant for a long period; oil prices are likely to rise; over time the various investments undertaken will influence output levels, etc. Two, the nature of this modelling itself. People judge total welfare by more than per capita consumption. In Iran factors which have led to the revolution include the following: skewed income

distribution in favor of people at the top; high infant mortality; political oppression; the country was playing a role not approved of by the majority of the people. Therefore we need to use our conclusion carefully. Enhancing welfare is much more than just increases in the level of per capita consumption.

Personal Policy Conclusions

Agriculture seems neglected in all the economies making it to lag substantially behind the other sectors. Given that Nigeria is a country of small farmers and for distribution reasons it would seem sensible to develop these farmers. Without this agriculture would continue to lag badly with the result that overall performance of the economy would remain at a poor level. Consequently welfare enhancement would be impossible in the absence of oil.

The experience of the other countries indicate to Nigeria the importance of producing capital goods. Assembling imported components does not generate substantial value-added to enhance per capita consumption when oil runs out. For without the revenue to import the components, the assembly plants will gradually grind to a halt. Domestic production of capital goods is therefore very important.

With regard to infrastructure, Nigeria should give priority to increasing volume. Roads to rural areas in particular must be given priority as in the case of Venezuela. This can have a direct impact on improving agricultural output as well as enhance the provision of social amenities in rural areas. Communication facilities also need to be increased in volume as well as quality.

In education in order to rapidly improve the literacy rate the establishment of an education corp like in Iran is worthwhile. The

education corp by concentrating on adult education would provide a means of comprehending information concerning modern methods of farming, improved sanitation and improved dieting thus helping overall to improve welfare of the citizens.

In the area of health as in Iraq and Venezuela, Nigeria should place significant emphasis on preventive medicine. To this end water and sanitation projects should be given much more attention.

Given the expenditure frenzy in the economy it is worthwhile for the government to establish an investment fund like in Venezuela. This [illegible] released into the economy for projects whose benefits have been reasonably well assessed. This will reduce the temptation on the part of civil servants to undertake grandiose projects just to spend the available funds. Moreover an investment fund can help reduce the current 'acquisitive frenzy' in the country thus providing funds for effective investments.

It is believed that if these steps are undertaken in the overall development efforts of the country, output capacity would be enhanced and the country stands a chance of enhancing welfare when oil runs out.

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