

MONETARY ASPECTS OF EXCHANGE RATE DETERMINATION,
MACROECONOMIC ISSUES OF A RESOURCE PRICE INCREASE IN LDCs:
A CASE STUDY.

A Thesis submitted in fulfillment
of the requirements for the degree of
Doctor of Philosophy

by

Fakunle Taiwo ODIFA

Public Sector Economics
Research Centre;
Leicester University
February 1988.

(ii)

To the memory of a loved one, whom, I hardly knew.

Acknowledgement

Quite a large number of people have helped, directly and otherwise, in order for this research to come to a conclusion. It is therefore, a task of some significance, to list each individual contributor by name. However, I would like to show my appreciation for the assistance rendered by everyone in the duration of this work, and assure everyone that, their help is gratefully acknowledged.

I would also like to extend my thanks to the Public Sector Economics Research Centre, and the Economics Department's staff and colleagues, who contributed by offering their time. The help of some library and Computer Centre staff is also hereby acknowledged. In particular, I would like to thank Mr John Becket, Miss Pam Gibson, Dr. Richard Mobbs and Mr A. R. Siddiqui. All of whom were always prepared to render time to persistent enquiries.

The commitments of two particular friends, who read, typed, and gave unlimited encouragement throughout the entire research period, is beyond expression; I thank you both dearly.

It is sad, that events with the inevitable passage of time, overtook the witness of this finished research by two special people. Notwithstanding, their support and encouragement at an early stage of the work is acknowledged as an important factor in overcoming part of the unfavourable times encountered.

It will be improper to close this section without the mention of a sincere friend, who gave unqualified help. Your encouragement and unselfish outlook to life made major aspects of the research work possible, and living in the United Kingdom that more accommodating.

The greatest appreciation is reserved for the effective help and guidance provided by Professor Peter M. Jackson in his supervisory capacity of the thesis. His help and encouragement extends beyond the limited aspects supervision, and this, had been quite an important contribution towards my stay in Leicester.

The financial help, advice, guidance and patience of my entire family is naturally, beyond words.

Fakunle Taiwo ODIFA

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ABSTRACT

The impact of the world oil price increases of the early 1970s and those that occurred in the 1980s, and the corresponding growth in revenue for the Nigerian economy had two major effects. First, it affected the official exchange rates and its determination, hence fiscal developments for the country. At the same time, the windfall also led to an unbalanced sectoral change within the economy.

Both the internal and external economic situation since the oil shock had shown persistent imbalances requiring adjustments. In analysing the oil shock effect, a comprehensive assessment of the influences of exchange rates and structural adjustment problems employs the valuable strengths of the monetary approach aspects of exchange rates determination; particularly on the question of external payments adjustment and of inflation of domestic price levels.

The function of exchange rate as an instrument of stabilization policy in an economy such as Nigeria is imperative. A relatively stable exchange rate standard in a world of significant variability is important in evaluating the impact of exchange rate changes on the economy; precisely because the financial infrastructures are at the developing state.

When tight controls on the foreign trade sector also lead to the establishment of an unofficial market in foreign exchange, the question of stability would depend on which of the two markets adjust quicker. The market with the more rapid rate of adjustment can therefore provide a guide to exchange rate policy performance.

In analysing the structural adjustments impact of the oil revenues, features of both national and global economic environment that are significant for macroeconomic performance, which are also proximately related to exchange rates determination are considered by using the dutch-disease framework.

By laying emphasis on the function of exchange rates mechanism and the impact of the oil revenue increases at macroeconomic level, the large and persistent misalignment of real exchange rates and the general economic policies of the oil boom era are thus analysed in-depth.

Contents

	Page
Acknowledgement	(iii)
Abstract	(v)
 <u>Chapter 1</u>	
An Introductory Overview	1
 <u>Chapter 2</u>	
The Nigerian economy and oil; an overview	
2.1 Introduction	10
2.2 Chronology on Nigeria (1900 – 1985)	12
2.3 Chronology of Exchange Rates and Exchange Arrangements	16
2.4 Exchange Rates, Control, and the financial institutions	18
2.5 Oil and Agriculture	22
2.6 Oil, Growth, and Development	30
2.7 The Authorities and Oil	36
2.8 Oil, Foreign Trade, and Related Problems	43
2.9 Concluding Remarks	55
2.10 Selected Chapter Reference	280

Chapter 3

A monetary approach to Nigeria's Exchange Rate

3.1	Introduction/Review	58
3.2	Exchange Rates; Fixed, Flexible, and alternatives: A developing economy perspective	62
3.3	The Efficacy of Monetary Policy in Developing Countries	70
3.4	The Monetary Approach and developing Economy	85
3.5	A monetary approach model to Nigeria's Exchange Rate; Plus Empirical Results	90
3.6	Concluding Remarks	103
3.7	Selected Chapter References	284

Chapter 4

The Purchasing Power Parity Theory of Exchange Rates Determination: Its Relevance to Developing Economies, and Its Applicability to the Particular case of Nigeria

4.1	Introduction/Review	107
4.2	Exchange Rates and Purchasing Power Parity Doctrine	113
4.3	Purchasing Power Parity Theory and the Developing Countries	123
4.4	Tested Model and Results: Purchasing Power Parity Theory: A simple Test for evidence in the Nigerian Economy	133
4.5	Concluding Remarks	147
4.6	Selected Chapter References	292

Chapter 5

The Illegal Market for Foreign Exchange in Nigeria

5.1	Introduction/Review	151
5.2	The Determination of the Illegal Market Exchange Rates in a controlled Foreign Exchange Market	155
5.3	A partial equilibrium analysis with demand and Supply Schedules in the determination of illegal market; in Relation to the Overall equilibrium in the Foreign Exchange Market	164
5.4	Tested Model: A Monetary Approach to the Unofficial (illegal) exchange rate determination in Nigeria	173
5.5	Correcting illegal Transactions in the Nigerian Foreign Exchange: Plus an analysis of the first six months of the Two-tier foreign exchange operations	185
5.6	The Efficiency of the Illegal Markets in Foreign Exchange	197
5.7	Concluding Remarks	203
5.8	Selected Chapter References	295

Chapter 6

The Macroeconomic Implications of Oil Revenue Increases in the Nigerian Economy

6.1	Introduction/Review	206
6.2	Oil Revenue Increase and the Dutch-Disease effect: a theoretical explanation, and its relevance in a developing country	211
6.3	Macroeconomic and Structural Adjustments of the Dutch-Disease phenomenon in a developing economy	218
6.4	Oil Export Boom, Relative Prices and Sectoral Competitiveness: A Geometric analysis	228

Chapter 5

The Illegal Market for Foreign Exchange in Nigeria

5.1	Introduction/Review	151
5.2	The Determination of the Illegal Market Exchange Rates in a controlled Foreign Exchange Market	155
5.3	A partial equilibrium analysis with demand and Supply Schedules in the determination of illegal market; in Relation to the Overall equilibrium in the Foreign Exchange Market	164
5.4	Tested Model: A Monetary Approach to the Unofficial (illegal) exchange rate determination in Nigeria	173
5.5	Correcting illegal Transactions in the Nigerian Foreign Exchange: Plus an analysis of the first six months of the Two-tier foreign exchange operations	185
5.6	The Efficiency of the Illegal Markets in Foreign Exchange	197
5.7	Concluding Remarks	203
5.8	Selected Chapter References	295

Chapter 6

The Macroeconomic Implications of Oil Revenue Increases in the Nigerian Economy

6.1	Introduction/Review	206
6.2	Oil Revenue Increase and the Dutch-Disease effect: a theoretical explanation, and its relevance in a developing country	211
6.3	Macroeconomic and Structural Adjustments of the Dutch-Disease phenomenon in a developing economy	218
6.4	Oil Export Boom, Relative Prices and Sectoral Competitiveness: A Geometric analysis	228

6.5	The Tested Model:	238
	(i) Oil Export Revenue and the Monetary aspects of Inflation in Nigeria	
	(ii) The Macroeconomic Response to a Monetary Shock in the Nigerian Economy	
6.6	The Oil Shock: Prospects and Policies; Some Implications of the oil sector on the economy	263
6.7	Concluding Remarks	270
6.8	Selected Chapter References	297

Chapter 7

	Conclusion – An Overview	273
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The Reference Chapter

2.10	Selected References to Chapter 2	280
3.6	Selected References to Chapter 3	284
4.6	Selected References to Chapter 4	292
5.8	Selected References to Chapter 5	295
6.9	Selected References to Chapter 6	297

Chapter 1

An Introductory Overview

The thesis provides the first substantial study of its kind on the Monetary approach to balance of payments and the question of exchange rates, oil revenue increases and the dutch disease phenomenon for the Nigerian economy.

The importance of exchange rates in a developing economy such as Nigeria lies primarily in the fact that, such economies have sought continuously to find an exchange rate standard that is relatively stable. The argument for so doing is reflected in the asset market (market for different monies) where exchange rates are determined. In such markets, prices tend to fluctuate, and a well-developed financial market is needed to cope with the fluctuations and trade hedging that result.¹ The nature of developing countries is such that limited market exist for their currency, and without a stable standard of exchange rates which allow reserves to be built up in the system, changes in exchange rates will tend to be more volatile. Therefore, in a world of significant exchange rate variability, the problem of evaluating the impact of exchange rate changes on developing countries trade balance, and in turn, their political running, carries immediate operational relevance; most especially, when the outcome is likely to be a disruptive economic path and political change.

¹Dornbusch (1976) and Schadler (1977) provide other reasons why exchange rate prices fluctuate.

The essence is therefore to look at the oil revenue and its overall macroeconomic effect, and in specific terms, to integrate studies on monetary policy and exchange rate policies for the particular case of Nigeria. In so doing, one would be able to introduce policy measures and structural changes that can be designed to restore to any exchange rate mechanism, a greater degree of effectiveness in bringing about real adjustments whenever the economy indicates this is necessary.

By adopting the monetary approach, one is overtly acknowledging its effectiveness on focusing and explaining the behaviour of the balance of payments. Further, the attention of policy makers on the need to co-ordinate monetary and exchange rate policies can also be centralised, thereby establishing the overall function of exchange rate as an instrument of stabilization policy. Importantly, testing the theoretical choices responsiveness to available data, and thus establishing some empirical alignment and consequent policy prescription is of overall significance.

Although the monetary approach has extremely strong policy implications, the challenge is that the study throws open the whole question of the efficacy of existing interpretations, on its aspects of exchange rates and the economy, particularly with regards to the less developed countries. Therefore, any monetary policy assertions can only be advocated if supported by empirical proof of the underlying theory, and this becomes more important when it is recognised, that these countries may function differently to what operates in the more advanced economies where these theories are usually developed.

The work is structured such that each chapter has a section on Introductory/Review, and a conclusion. The aim here is two fold. First, to make the main review and chapter identification burden easier, and secondly, to introduce clarity of each chapter's main contention and contribution within the context of the overall thesis. Chapters one and seven provides the main general guide on the intention and the results obtained in the thesis respectively. Whereby a comprehensive summary in relation to each chapter can be found subsequently after each chapter, chapter seven also provides a summary overview of tested models on available theoretical framework, and in addition, advances both policy implications and caution on limitations of their applicability in an economy with structures similar to that of Nigeria.

To gain a thorough understanding of the kind of economic environment in which the study is being undertaken, and to which results are applied, chapter two is intended to acquaint the reader in a wide and extensive form, to the nature and complexities of the Nigerian economy. A summary of important developments and historical events in the economy is also addressed through chronological perspectives since 1900 to date. In discussing the oil industry and the consequent revenues associated with it on a broader scale here, one also raises the point that future policy could be able to distinguish, conceptually at least, between the different uses to which the government can use its oil tax revenues effectively. The chapter therefore considers the generated surplus of the oil boom era, and discusses how it had been used so far. The overriding theme is to look into

how import savings from oil are realised and spent, and this is done by analysing the deterioration of the non-oil balance, and the unprecedented current account deficit of recent periods, which has been reported to be of enormous economic and social consequence.

In chapter three, the aim is to first consider in a rigorous analytical way, the types of existing exchange rate regimes and their applicability to developing economies in general, and the Nigerian case in particular. After which, the exchange rate of the Nigerian economy is analysed within a monetary approach framework. In this context, the efficacy of monetary policy in developing economies is discussed and its weaknesses within such country's structural framework highlighted. The chapter then proceeds to establish a model for the economy by reaccessing, modifying, and improving upon available models on monetary approach to balance of payments, and establishing the determinants of exchange rates in the traditional monetary approach models for the particular case of the Nigeria economy. The final reduced form equations of the adopted model is then tested to produce a case study of the economy, and the implications of the result obtained in providing empirical evidence in support of the maintained hypothesis on exchange rate determination is then discussed.

A critical ingredient of the monetary approach view of the determinants of exchange rates, which link monetary and real variables as jointly influencing the equilibrium level of the exchange rate is Purchasing Power Parity. The primary aim of chapter four therefore concerns looking at the relevance of Purchasing Power Parity doctrine and its influence as an exchange rate determinant. The relevance of

the doctrine in a developing economy is analysed, particularly the central issue of goods arbitrage for internationally traded ones; regarding where the home and foreign price levels can be related to the prices of traded goods. Further, the relevance of Purchasing Power Parity doctrine as a fairly general and eclectic concept within the monetary approach framework on exchange rates is questioned by providing an independent test of the doctrine for the Nigerian case. By looking at Purchasing Power Parity theory in isolation, two important implications would be revealed. First, the relevance of this concept to a developing economy's exchange rate mechanism would be established. Secondly, its importance as a building block in the monetary approach framework can be further explored from a developing economy's perspective. The model considered in chapter four tests for evidence of Purchasing Power Parity doctrine in the Nigerian economy, and the result obtained in this simple model is then discussed in the general context of the monetary approach to balance of payments.

The section covered under chapter five concerns illegal market for foreign exchange in Nigeria. It therefore begins by tracing the backgrounds and reasons why such markets establish themselves in an economy such as Nigeria. In this process, the role of tight controls on the economy's foreign and exchange rate sectors, and how this might create incentives for the establishment of a curb market would be looked at in depth. Within the market economy framework, the phenomena of exchange control, liberalization and the operations of an illegal market in a developing economy has important implications. Particularly, where there is a

strong presence of parallel markets in the foreign trade sectors, it would be difficult to derive a satisfactory measure of policy performance for exchange rates.

The role of the official exchange rate in the economic functions of developing countries is examined by paying particular attention to real trade flows, and their interdependence regarding domestic relative prices. It is of interest to policy makers within Nigeria and in the circles of international economics to obtain a clear analytical result whether illegal markets in foreign currencies process available information more effectively than the official channel. The relevant empirical question is therefore whether the exchange rates in such markets adjust quicker than that in the official markets. Two channels would be looked at in order to resolve this problem. First, the two-tier foreign exchange operations introduced by the government in 1986, presents a means by which its analysis and the consequent effort at resolving the gap between the official and the illegal rates can be considered. The second channel develops a monetary approach model to unofficial exchange rate determination and consequently, analysed; furthermore, it provides supporting evidence of market efficiency on the illegal markets for foreign exchange. On this question of the efficacy of the illegal markets for foreign exchange, if available information is revealed as being processed more efficiently, the implication is therefore that illegal market would anticipate changes in the official rates. This being the case, movements in the illegal market exchange rate could then be used to forecast those in the official ones.

Chapter six critically examines the implicit analysis now established in the literatures leading to the diagnosis of the dutch - disease phenomenon, whereby a booming resource sector is presumed to lead to a contraction of the manufacturing sector, via the loss of competitiveness, due to the appreciation of the domestic currency. The dutch disease phenomenon would be approached in the light of oil export boom and the consequential effects on other tradeable sectors, particularly in agriculture. On the one hand, the massive petroleum boom represents, opportunities for accelerated development of the domestic economy, and on the other hand, serious problems of adjustment.

In recent years, it has become clear in Nigeria that absorption of the revenues from booms of the sort created by oil price increases create problems than opportunities. Central along these lines is thus the extension of the concept of the dutch disease phenomenon to a developing economy in a rigorous manner. Particularly, on those part of the domestic economy outside the petroleum sector that engage in the production of commodities which enter international trade, and therefore has consequential implications on policy instruments.

The chapter also considers two adopted models for the particular case study of the Nigerian economy. The first will look at a framework that consider oil export revenue and the monetary aspect of inflation, and the second is in a general framework of the macroeconomic response to a monetary shock in the economy. However, this model also seek to highlight the incomes and wealth effects of such macroeconomic responses. Both of these models further seek

to advance the development of existing analytical framework for understanding the dutch disease phenomenon in a less developed country's context. Thereby, helping to formulate relevant policies on exchange rates and resource discoveries.

Literatures cited and a comprehensive list of selected bibliography are presented under a separate section referred to as the reference chapter.

CHAPTER 2

THE NIGERIAN ECONOMY AND OIL; AN OVERVIEW

2.1 Introduction

2.2 Chronology on Nigeria (1900 - 1986)

2.3 Chronology of Exchange Rates and Exchange Arrangements

2.4 Exchange Rates, Control, and the financial institutions

2.5 Oil and Agriculture

2.6 Oil, Growth, and Development

2.7 The Authorities and Oil

2.8 Oil, Foreign Trade, and Related Problems

2.9 Concluding Remarks

2.10 Selected Chapter Reference (See Reference Chapter.)

2.1

Introduction

The Nigerian economy has a financial structure that is now recognised as a common feature among the developing nations. Mainly, a financial market in its infancy, plus the added problem of an unofficial market that is well established. Due to controls of the official market in scarce foreign exchange, the activities of these unofficial markets usually provide an alternative to the official banking systems. Added to these problems, the oil which Nigeria exports, and which provides around ninety - percent of exchange earnings appeared on the surface, to be a blessing during the 1970s price increase; however, apart from it being a way of easing some of the pressures faced by the country, it seems now to contribute to it.

For nearly a decade, the oil flowed out of Nigerian wells and the money flowed into the country. With the (Organisation of Petroleum Exporting Countries) OPEC price increases, the nation was offered a considerable windfall as a result of Nigeria's exportable status. At the peak around 1979, the pumps were operating at an average of 24 million barrels a day and selling it at around \$40 a barrel. On paper, the oil boom should have created a once-for-all transfer of resources, large enough to lay the basis of an economic reform unprecedented in the history of any developing economy. However, a critical analysis of the economy suggests that the oil sector, and the resulting revenues have caused more damage than anticipated or appreciated. Overall, the economy has lost nearly all other

sectors as a foreign exchange earner, and depended entirely on the oil sector.

Particularly, the agricultural sector has been severely hit. With Nigeria earning a little over \$100 billion from oil between 1973, when the scale of the "oil syndrome" became apparent, and 1981 when the slump sets in, export trade in agricultural tradeables were ruined. Rich national accounts prompted by the oil money brought in floods of cheap food imports that spoiled domestic markets, and most of all, influenced a migration trend to urban areas; thereby, further reducing the productive capability of the rural agricultural sector. With the 1980s and the associated slump in oil prices, Nigeria has suffered badly, and at times, abandoned development programmes entirely. All indications are that the harsh realities of pinning development hopes strongly on the oil sector is not, however, over.

2.2

Chronology of Nigeria (1900 - 1986)

1906		Lagos and Southern Nigeria became a protectorate of Southern Nigeria. Initially, three territories exist: Lagos and Colony, The Northern and Southern protectorates.
1914		North and South amalgamated and administered as one country.
1916		The Nigerian Council, consisting of members from all parts of Nigeria was established.
1917/8		The National Congress of British West Africa was established with its headquarters in Ghana (Gold Coast).
1922		The first Constitution was introduced in Nigeria. The Clifford's Constitution. It introduced the elective principles for the first time in tropical Africa.
		The first Political Party was formed; Nigeria National Democratic Party.
1926		The Daily Times of Nigeria was established.
1946		A new Constitution was introduced - the Richards - named after the (1945) newly appointed governor.
1947		Introduction of regional assemblies.
1960	Oct 1.	Independence Day.
1962.	April 1.	First National Development Plan inaugurated.
1963.	Oct 1.	Republic of Nigeria proclaimed.
1964.	Dec.	General Election Crisis.
1966.	Jan 15.	Coup D'etat, end of the First Republic; Ironsi regime.
	May 24.	Unitary state to replace the Federal System.
	July 29.	Coup d'etat; Gowon Regime.

1967.	May 27.	Twelve states introduced, to replace the four regions of:- East, North, Mid-west, and West.
	May 30.	Secession of the Old Eastern region and the proclamation of the State of 'Biafra'.
	July 6.	Civil war starts.
1968/9		Western State bloody riots: the Agbekoya uprising.
1970	Jan 12.	Civil war ends; Cost and war damages estimated at over U.S.\$800m.
	April 1.	Second National Development Plan inaugurated.
1971	May.	Establishment of Nigerian National Oil Corporation.
	July	Nigeria became the eleventh member of the OPEC.
	August 6.	Wages and Salaries Review Commissions report (Adebo).
1972	Feb 23.	First indigenization decree. "Nigerian Enterprises Promotion Decree" - Some business categories are to have limited foreign participation - Also commercial ventures which could be owned only by Nigerians after March 1974, announced.
1973.	Jan 1.	The Nigerian Naira replaced the Nigerian Pound.
	Feb.	Marketing Boards Reform announced.
	Oct.	Opec price increase - prices increased fourfold.
1974.	Sept 25.	(Udoji) Commission report on Public Service Review.
1975.	April 1.	Third National Development Plan inaugurated.
	July 29.	Coup d'etat; Murtala Mohammed regime.
	Oct 18.	Constitution Drafting Committee meeting.
1976.	Feb 13.	Murtala Mohammed assassinated; Obasanjo regime.

	April.	Nineteen states to replace the twelve.
	Sept.	Universal Primary Education programme announced.
	Sept 24.	Constitution Drafting Committee Reports.
	Oct 1.	Federal Electoral Commission Appointed.
1977.	Jan.	Second indigenization decree.
	April 1.	Marketing Boards reconstituted as National Boards.
	Aug 1.	Constituent Assembly elections.
	Oct 6.	Constituent Assembly begins sitting.
1978	Sept 21.	Ban on Political Parties lifted.
1979	Jan.	Opec - oil price increase.
	Feb 15.	Plan for a new Federal Capital (Abuja) presented.
	July 7.	Senate Elections held.
	July 14.	House of Representatives Elections held.
	July 21.	House of Assembly Elections held.
	July 23.	State Governors' Elections held.
	Aug 11.	Presidential Elections.
	Oct 1.	Start of the Second Republic; Shehu Shagari as President.
1980		"Green Revolution" Initiated.
	Dec.	Religious violence in Kano.
1981	Jan 1.	Fourth National Development Plan inaugurated.
	Aug.	Oil Price cuts (Nigeria).
1983	Feb.	The Opec London Agreement on prices and quotas.
	Aug.	National Elections.

	Dec 31.	Military coup ousted second term of office for Shagari as President; Buhari regime.
1984	May.	Decrees No 24 and 25 - Fundamental Changes in the Customs and Excise Tariff Structure.
1985	August.	Coup d'etat; Babangida regime.
1985		IMF negotiations over proposed \$2.4 bn fund deadlocked.
1985		Amendments to Section 2 of Allocation of Revenue (Federation Account) Act of 1982.

Chronology adapted from "Oil Revenues and Policy Choice in Nigeria" Henry Bienen World Bank Staff Working Paper No 592.

2.3

Chronology of Exchange Rates and Exchange Arrangement

1914		After amalgamation, ¹ Nigeria came under Overseas Sterling area.
1947		Nigeria ceased to be a scheduled Territory in terms of United Kingdom Exchange Control Act of 1947. However, still a Sterling area.
1961	Mar 30.	Nigeria Joined the International Monetary Fund (IMF); It also became a member of the International Finance Corporation.
1963	April 17.	Par value of 2.488828 grams of fine gold per Nigerian pound established. £N1 = \$2.80 established with IMF.
1966	April 19.	Exports of certain foodstuffs prohibited.
1971	Aug. 23.	Two-tier exchange market established following the defacto devaluation of the U.S. dollar of August 15th, 1971. Official rate of U.S. \$2.80 applied to government and foreign transactions, while a floating rate is applicable to other transactions.
	Nov 1.	Nigerian pound unpegged from sterling. Two-tier abolished.
1972	June 23.	Ceased to be a scheduled Territory of the Sterling Area.
	June 26.	Daily Sterling quotations suspended by Central Bank.
	June 29.	Central Bank Resumed quotations.
	July 31.	Revised edition of Exchange Control instruction manual issued.
	Aug.	Two - tier exchange rate system abolished.
1973	Jan 1.	The Naira was introduced at (N2 = 1£N), to replace the Nigerian Pound.
	Feb 14.	Central Rate of 1.11973 grams of fine gold per naira established.

¹See the year 1914 under Chronology of Nigeria since 1900.

		Sterling exchange rate given at N1 = £0.63.
1974	April 1.	Nigeria ceased to maintain any specified margins in exchange transactions.
	Dec 31.	IMF Quota given as SDR (Special Drawing Rights) 135 million.
1974		Basic exchange allowance for tourist travel doubled; N400 per person and N200 for within Africa. Pilgrimage allowance set at N500 per person a year.
1975	April.	Basic Travel allowance raised from N400 to N1000 per person a year.
1977	Oct 1.	Travel Allowance reduced from N1000 to N500.
1978		Import - weighted basket of Exchange Rates calculation introduced.
1979	Jan.	Pre-shipment inspection on imports exceeding (USA) \$25,000 effective. Basic Travel Allowance raised to N1000.
1981		Basic Travel Allowance reduced to N800 per person a year. Children (under 16 years) allowance abolished.
1982	Aug.	N1.18 = £1.
1984		Travel Allowance of N100 introduced.
	Aug.	Counter trade conceived.
1985	Aug.	Comprehensive Review of counter trade strategy.
1986		In the Budget, a new form of exchange rates determination was announced; The Two-tier.

Source:

Chronology compiled using information from various CBN
(Central Bank of Nigeria) publications.

2.4

Exchange Rates, Control, and the financial Institutions

The currency of Nigeria is the Naira, and the position as on December of 1984, according to the IMF is that, Nigeria does not maintain margins in respect of Exchange transactions (Abolished April 1 1974) and pursues an independent and flexible exchange Rate Policy. However, the Federal Ministry of Finance in Nigeria is responsible for basic exchange control policy. The value of the Naira is set by the Central Bank, and maintained by Exchange controls. Though the Central Bank remains the principal administrator of exchange control, most commercial and merchant banks have been designated authorized dealers by the Ministry of Finance and can deal in foreign currencies and also approve applications in accordance with instructions issued by the Central Bank. The Central Bank supplies the authorized banks with foreign exchange for approved payments.

Exchange control is applied on imports by import regulations to stem the outflow of foreign exchange, with controls being tightened or relaxed, in response to the level of international reserves. Since 1981, import policy has become increasingly restrictive. The form 'M' system of exchange control has now become an established guideline of the Central Bank on import matters. Before importers can open letters of credit or make any other arrangement for payment in foreign currency, a Form 'M' has to be submitted to one of the commercial banks who are responsible for allocating foreign exchange up to pre-determined ceilings under Central Bank guidelines. A Strict exchange control

system operates in Nigeria, and the government in conjunction with the Central Bank sets the exchange rate, without necessarily allowing individuals to carry out desired transactions.² Foreign exchange is only thereby sold under certain guidelines set by the authorities.

There have been three approaches on exchange rate determination in Nigeria up to date.³

(i) Pegged

The collapse of the "gold standard" in 1973 resulted in the Nigerian currency being pegged to the US dollar. However, conditions in the USA, affecting movements in the dollar market were deemed different from those in Nigeria.

(ii) Managed Float

During April of 1974, a managed float was introduced. A policy of gradual appreciation of the naira was also adopted.⁴ The managed float was abandoned because it was felt not to be guided by developments in international market.⁵

(iii) Basket (Import weighted)

In 1978, a new approach was adopted using seven currencies of trade partners (import weighted) to determine the Naira's exchange rate. The Central Banks' stand is

²The implication of such restrictive actions on foreign exchange have been analysed in a recent paper by May (1985) for the World Bank.

³The October, 1986, introduced Structural Adjustment Program (SAP)-cum the Two-tier exchange rate system are discussed in chapter 5.

⁴For further analysis, see Central Bank of Nigeria's Economic and Financial Review, March 1985.

⁵Ibid.

that, this approach, apart from reflecting developments in the economies of major trading partners, also reflects developments in the international market.

Financial Institutions

The establishment of the Central Bank in 1958, and later in 1960, of the Lagos (Now Nigerian) Stock Exchange, led to the following money market instruments: The Treasury Bills (1960); Commercial Bills (1961); Call Money Fund (1962); Bankers Unit Fund (1975); and Stabilization Securities (1976). Various financial intermediaries were also established. Amongst them were: Nigerian Industrial Development Bank (1964); Nigerian Bank for Commerce and Industry (1973), and the Agricultural Credit Guarantee Scheme (1977). Credit formation and availability had not been affected by the relatively low interest rates policy adopted. Although, low rates were deemed beneficial to development and to sustain growth of the industry especially, the agricultural sector.⁶

Since interest rates are managed by the monetary authorities, it became possible to set and vary deposit and lending rates of financial intermediaries.⁷ The Rediscount rate forms the basis on which the first treasury bills were issued in 1960 and 1961. However, the Commercial Banks' short term investments from abroad were not attracted.

⁶Interest rates are lower still for the agricultural industry; see, The Agricultural Credit Guarantee Scheme of 1977.

⁷In chapter 3, the question of institutional rates in developing countries is further discussed in the context of a monetary policy framework.

Hence, it was revised ten times, and the treasury bills thirteen times during the period. During 1965, the Rediscount rate was increased from 4 to 5 percent, and the interest rates revised upwards by 1 percent. Since then however, changes in both rediscount and interest rate structure has been made in 1968, 1975, 1977, 1978, 1980, 1982, 1984 and 1985.

2.5

Oil and Agriculture

At the time of independence in 1960, the agricultural sector was the dominant sector; accounting for about sixty - five percent of the Gross Domestic Product. However, agriculture and related output continued to fall at a sharp rate in relative terms, as revenue reliance centred strongly on petroleum production.

Table 2.10.1

GDP and its percentage Distribution among some selected Sectors at 1974/75 Factor Cost (For 1974/75- 1979/80) (Million Naira)

<u>Year</u>	<u>Gdp</u>	<u>Agric</u>	<u>Mfn.& Crafts</u>	<u>Mining& Quarry</u>	<u>(% Contr. to GDP)</u>		
					<u>Agric</u>	<u>Mfn.</u>	<u>Mining</u>
1974/75	14410.7	3372.7	683.9	6552.3	23.4	4.7	45.5
1975/76	15447.8	3490.7	755.0	6886.5	22.6	4.9	44.6
1976/77	16755.7	3665.2	875.0	7244.6	21.9	5.2	43.2
1977/78	18392.9	3866.8	1038.6	7635.8	21.0	5.7	41.5
1978/79	20347.3	4079.5	1258.8	8655.8	20.1	6.2	39.6
1979/80	22692.4	4303.9	1558.4	8506.9	19.0	6.9	37.5

Note: Mining and quarrying sector of the economy is dominated by up to 95 percent of oil exploration.

Source: Federal Ministry of Economic Development, Lagos. (1985).

Table 2.10.2

Share of Major Revenue Component in Total Government Revenue 1971-1981 and Ratio of non oil Tax Revenue to non-oil tax GDP (1971-1979).

<u>Year</u>	<u>Oil Revenue</u>	<u>Non-oil Tax Revenue</u>	<u>Non oil tax Revenue to non oil Tax GDP</u>
1971-73	54.8*	4.0*	8.1*
1974	79.5	17.3	7.0
1975-78	75.4*	20.0	7.9*
1979	80.1	16.7	5.8
1980	84.6	12.7	-
1981	81.1	15.8	-

* average

Sources: IMF, April 1983,CBN, FOS, Lagos

Nigeria's vast agricultural sector produced an export which earned three times as much in foreign exchange as oil production during the civil war.⁸ Indeed, the nation had depended almost entirely on agricultural exports for foreign exchange earnings as the war seriously curtailed oil production. The years after the war however saw a resumption of petroleum production on a large scale, thereby signalling an end to a sustained high agricultural output. The decline in staple and livestock contributed largely to the fall in agricultural output. Further examination of the sectorial performance of agriculture in the economy continue to give cause for concern, particularly within food production. Food imports have been at an increase, and an even greater drain of foreign exchange resources that has been originally boosted by increased oil production. The petroleum price increase that occurred in the early 1970s created an

⁸ During the Civil War, Oil production was seriously curtailed due to the 'partial' involvement of the production areas of the South-East and Mid-West in the war.

explosion in earnings from this source, and the agricultural sector became less an 'important' foreign exchange earner, and consequently neglected. The result is that, Capital shifted from agriculture into the production of oil. In terms of overall welfare, this shift has been recognised to be a disaster on the economy.⁹

Largely, there are two factors responsible; First, the capital shift resulted in expenditure increases in other sectors, and mainly away from agriculture. As these sectors tend to be mainly capital intensive and urban oriented, labour resources are attracted to them, particularly from the rural agricultural sectors. In terms of employment, it has to be recognised that capital intensive sectors cannot however absorb all the displaced resources, and hence, the resultant increase in unemployment. Secondly, as agricultural output falls in relation to these resource shifts, imports have to be increased to sustain previous level of demand. When this is the case, the situation is such that a foreign exchange shortfall is created.

Another factor which curtailed agricultural activities was the fact that, the increased revenue from oil was not invested in this particular sector in any significant way; as indicated in table 2.10.3 below. Instead, a shift towards the Public Sector of the economy were undertaken.¹⁰

⁹On this view, see particularly The Nigerian Economic Society (1972).

¹⁰From the first development plan to the time when the third was inaugurated in 1975, emphasis have been shifting away from commital funding of the agricultural sector to others; mainly those established in the urban sector.

Table 2.10.3

Structure of Government Capital Expenditure, 1971-1981 (in %)

Sector	1970/71- 1973/74	1975/76- 1978/79	1980-81*
Agriculture	7.0	3.5	4.0
Industry	8.5	18.7	28.7
Infrastructure including transport & Communication	31.0	27.6	24.8
Social Services	8.9	17.5	14.1
Education	4.6	11.0	7.4
Health	3.3	1.0	1.6
Housing	1.0	5.5	5.1
Others - including Defence and other Social & Economic Expenditure	40.00	32.7	28.4

* Estimates

Sources: IMF, International Financial Statistics, FOS,
Lagos.

This in effect, resulted in an expansion of the labour - intensive public sector services and in most cases, this means a withdrawal of labour from the rural and agricultural sector as earlier discussed. This intersectoral labour mobility is a case of resource shift, and without at least an equivalent investment in say, technology, to nullify its effect, a real decline in output is the result. Though the substantial increase in government revenue which is usually associated with the first oil price increase, permitted a rapid growth of government expenditure.¹¹ However, the structure of these expenditures from Table 2.10.3 shows an urban - bias. Less than 4 percent of total Capital

¹¹ Approved Budget plans for the periods concerned by the Ministry of Finance further illustrates this point. Expenditure increases were matched by increases in revenues. Though these expenditures were inappropriately channelled into the problem areas of the sectors concerned.

expenditure in 1975 through 1979 went into agriculture, further reducing its share of contribution into the economy as a whole.

Table 2.10.4

Structure of GDP 1973-1980 (in %)

	<u>1973</u>	<u>1980</u>
Oil Sector	26	23*
Agriculture	36*	20
Manufacturing	5*	6
Other Industry	7	13
Services	26	38

* 1970

Source: World Development Report, 1982

From Table 2.10.4, the effect has been a further decline of the agricultural sector's contribution to the overall structure of the Gross Domestic Product.¹²

In a country where increases in incomes, including wages and producer prices for export crops are largely determined by the authorities, and where it has been shown that the urban wages are substantially higher;¹³ the rural population, and hence, the agricultural work force will continue to be attracted to higher wage levels that are operative in the urban areas. In all, the rural - urban income disparity will deteriorate further with the decline of

¹²In the 1985 Approved Budget: Recurrent Expenditure lies 15th in the Preference table of Ministry/Department; and 6th on Capital Expenditure Estimates.

¹³For developing economies, analysis on wage disparities can be seen for example, in the work of Thirwall (1983). For the case of Nigeria, Yusuf (1962) implicitly recognised the problem in the years before the first oil shocks.

agriculture output and therefore the corresponding loss of incomes in the sector. Indeed, this has been claimed to be a dominant factor in reducing output from 1970/71 through 1974/5.¹⁴

The need to absorb the oil revenue surplus, led to a public - sector wage and salary increases during the 1970s, without fully taking into account consequential effects on other sectors, in particular, agriculture.¹⁵ These increases raised the public sector annual wage, which is predominantly an urban sector affair, particularly over one year period; in the 1974 fiscal year, by between 50 and 60 percent. Thus, further widening the rural-urban wage gap, and fuelling the cause of a reduced output, as the increase also resulted in raising the price of hired labour.

There can be no doubt that the basic support which the agricultural sector lends the economy in a way of food provision and thereby reduced imports and exportable commodities; itself a foreign exchange resource, has become gradually eroded. The failure of agricultural production to keep pace with population growth has not only reduced the volume of crops available for export, but increasingly, has made it necessary to import large quantities of foodstuffs. In part, this was to ease the domestic shortages, but increasingly it was required to serve another important purpose; because the domestic market's respond to these

¹⁴ In depth analysis of this issue was covered in the Nigerian Economic Society (1972) Annual Conference Proceedings.

¹⁵ For example, see the Udoji Public Service Review Commission of 1974; and the Adebo Wages and Salaries Review Commission (1971), referred to under section 2.2.

domestic shortages is a tendency for high agricultural prices, cheaper imports can therefore be used to repress increased prices that would normally follow shortages. Nigeria got to this position because it had singularly concentrated in obtaining resources in foreign exchange from mineral wealth; particularly, petroleum production. In the decade following 1967, while the Agricultural sector increased at an annual average of 5 percent, the mining sector increased at an average of 90 percent, and the manufacturing sector at a rate of around 60 percent.

Although, it can be argued that in a sector like agriculture, overall output, rather than growth is what mattered. And with a sound domestic policy and investment in techniques that will increase output, there is no reason for believing that agricultural output and production would fall when resources that are mainly in human capital, shifts away from the sector to manufacturing or services. This is of course, assuming that oil production does not compete for resources (Capital and Human) with the non - oil sector. Though this might be an accurate reflection with regards to labour, particularly with the unemployment problem now facing the country.¹⁶ However, a lack of Capital investment combined with the sectorial shift in labour away from agriculture suggest that, not only a resource shift is taking place, but a domestic policy neglect of the agricultural sector has occurred. This being the case, investment requirements and

¹⁶In 1975, 4.5 percent of the labour force were estimated unemployed. Further, the January 1983 pursuit of 'aliens' from Nigerian soil was mainly seen as a bad example of trying to resolve the increasingly chronic unemployment problem.

indeed, the future output and the economic contribution of the sector cannot be adequately predicted.

2.6

Oil, Growth, and Development

Oil, first discovered for commercial exploration at Oloibiri in 1956, ushered Nigeria onto the international Oil Stage. Thereafter, the economy has undergone profound changes from the early 1960s. The great surge in oil revenue even before the 1970s price rise, created high hopes of entering an era of rapid and unprecedented economic development. After independence, stated economic orientation and the actual approach adopted by economic planners began to widen. Although before the Civil War, economic planners gave commendatory appraisals of the economy.¹⁷ There has been a considerable growth in the economy in the post Civil war period. For 1970 - 71, the first post war year, real Gross Domestic Product was 30.5 percent above the average for 1964 through 1967, the final three years before the outbreak of civil war. For the same period, real national income more than tripled while the population increased to a somewhat disputed estimate of 85 million.¹⁸

Despite notable deficiencies, the economic security provided by the "oil boom" led to three ambitious national development plans to be undertaken: 1962 - 1968; 1969 - 1975; and the third to cover for the period 1975 - 1980. The new found wealth in oil gave rise to the now familiar ambitious and exuberant form of development orientation. The theme of development plans of reducing income and wealth disparities

¹⁷See Review of the period, in the Second National Development Plan. Particularly pages 44 - 45.

¹⁸The 1984 figures was given as 85 million in the I.M.F. Country Report of same year.

overnight by planned extension of education, rural electrification, and water supply programmes and health facilities are all too common. Undoubtedly, the significant role played by the oil sector in revenue component, relates directly to the annual rate of growth of output. From Table 2.10.5, the average real rate of growth of the non - oil Gross Domestic Product reached 12 percent during 1974 to 1976; the "oil boom" peak period.

Table 2.10.5

Annual Rate of Growth of Output, 1971-1980 (In percentages)

<u>Year</u>	<u>Real GDP</u>	<u>Non-oil Sector</u>
1971-73	6.7	2.7
1974-76	5.5	12.1
1977-79	6.1	6.8
1980	3.8	8.0

Sources: IMF, Int. Financial Statistics: FOS, Lagos.

This then tailed off considerably, corresponding to a reduced revenue in the oil sector.¹⁹ In all, the production of petroleum increased more than fourfold between 1962/3 and 1966/7. Thereby, making oil production as a percentage of Gross Domestic Product increase from 2 percent to 5.1 percent in the four year period. The profound effect on the economy of the oil industry since early 1970s and the associated price increases is further explored in tables 2.10.6a and 2.10.6b; which shows that oil extraction industry constituted less than 4 percent of Gross Domestic Product in 1956 through

¹⁹For current effects of further reduction in oil prices, see The Observer, Sunday 9th February (1986).

1966. Table 2.10.6b in particular, which showed that Gross Domestic Product without the oil producing sector, gives an annual growth rate increase that diminishes with percentage growth increase of oil extraction.

Table 2.10.6a

GDP 1958-59 to 1965-66 at 1962/3 factor cost

<u>Year</u>	<u>£N million</u>	<u>Annual % growth</u>
1958-59	924.3	-
1959-60	982.2	6.3
1960-61	1122.3	14.3
1961-62	1186.7	5.7
1962-63	1315.4	10.8
1963-64	1403.2	6.7
1964-65	1457.0	3.8
1965-66	1540.3	5.7

£N - Nigerian pound.

Source: Central Bank of Nigeria, Lagos.

Table 2.10.6b

GDP excluding Production of oil at 1962/3 factor cost

<u>Year</u>	<u>£N million</u>	<u>Annual % Growth</u>	<u>% Growth of Oil Extraction</u>
1958-59	923.7	-	0.6
1959-60	981.3	6.2	0.9
1960-61	1118.8	14.0	3.5
1961-62	1176.1	5.1	10.6
1962-63	1299.6	10.5	15.8
1963-64	1386.7	6.7	16.5
1964-65	1429.4	3.1	27.6
1965-66	1480.8	3.6	59.5

Sources: Schatz: Nigerian Capitalism pp 10 and 13.

By 1977/8, according to the Federal Office of Statistics, Gross Domestic Product at constant 1977/8 prices rose to nearly 31 billion Naira. Once again, the biggest contribution being attributed to the mining and quarrying sector, which alone contributed over 15 billion to Gross

Domestic Product despite the depressed world demand for crude oil, and the corresponding decline in domestic output since 1974. A somewhat complete reliance on oil has caused drawbacks in growth, due to the changing world oil market conditions and the corresponding wide fluctuations in the level of export earnings and thereby in government revenue; making any realistic forward planning impossible. Bearing in mind that industrial production had declined along with oil production - production in 1983 was 27 percent below its 1977/8 levels, and some 30 percent off its 1980 peak - and that the agricultural sector has been a non determinant in foreign exchange earnings; without access to capital inflows, it is going to take a very long and painful period to recapture the anticipated living standards of the middle 1970s; brought about by the surge in oil revenue receipts of the period.

If this is the case, it is thereby baffling to grasp where the economic growth expressed in the Fourth National Development Plan will arise.²⁰ It seems that government investment performances and planned economic developments, subject to official figures, are based almost entirely on projected revenue from oil production at one level of oil price. In economic welfare terms, increase in government revenue should therefore lead to the almost predictable growth of the economy. However, growth aside, the confidence generated as a result of petroleum price increase underlined

²⁰The fourth National Development Plan (1981) and the approved budgets of 1981 through 1985 showed no significant decrease in anticipated growth, even with the apparent slump in oil production and the corresponding reduced revenues.

a series of other problems. Most notably, linking development plans to a continued world demand for oil and therefore, a stable and high price for the commodity.

Table 2.10.7

Oil Sectors projected Contribution to the Development plan (1974-1979)

<u>Year</u>	<u>Projected</u>	<u>% Actual Contribution</u>
1974	87.9	95.1
1975	88.0	95.2
1976	82.2	95.8
1977	84.2	95.0
1978	84.1	92.9
1979	84.4	95.6

Source: CBN, Economic and Financial Review, No.1 vol.20.

If the need to utilize finite petroleum export revenues to effect changes, both in sustaining growth and creating an acceptable income distribution are the main objectives of the development plans, then they have failed, despite an impressive better contribution than expected quote in the above table. Largely because the nature of short to medium-run difficulties of economic management, occasioned by the "oil boom syndrome" has resulted in an attitude of a surplus to be quickly disposed of. Thereby, growth plans have been less objective and even more, unrealistic.

Choices of development strategy facing Nigeria as a developing but an oil - exporting nation therefore revolve around the prospects for, and the limitations of its underlying economic structure as a major oil exporter. However, one feels that this has not been adequately projected in formulating development plans. Factors such as insufficient infrastructure facilities, the lack of a

commensurately developed bureaucracy, and a vital absence of capital-based indigenous technology creates a profound problem of transforming oil revenues into realisable growth pattern in all sectors of the economy.

To be heavily dependent upon petroleum as the major source of government revenue and provision of foreign exchange, in effect, means vulnerability to fluctuations in the global demand for oil and therefore its effect on price. More importantly however, the question of an urgent need to diversify the economy away from a mono-revenue resource becomes more apparent, because of the lack within the oil sector to generate a direct production and consumption linkage with the other sectors of the economy; and thus, to create real employment opportunities. In order to attain a reasonable amount of diversification therefore, it has to be recognised that the oil sector, and oil production in particular, involves technology which is highly capital intensive, and also, some input requirements that are vastly different from domestic factor supplies. This being the case, the diversification problem should be addressing risks of a future decline in oil revenues, which will in turn, affect the choice of projects involving investment in human capital, and in particular, reallocation of revenue towards the development of the hitherto non - traded goods sector, and the basic social and welfare programs.

2.7

The Authorities And Oil

Since commercial production of petroleum started, decisions regarding the level of production, exports, OPEC membership, the allocation of oil receipts to domestic real capital formation, has had to be made by the government.²¹ From 1971, the revenue from oil had steadily shown an increase.²²

Table 2.10.8

Annual Rate of Growth of Government Revenue, 1971-81 (%), and Ratio of Total Government Revenue to GDP

<u>Year</u>	<u>Total Govt. Revenue</u>	<u>Oil Revenue</u>	<u>Ratio of Total Govt. Revenue to GDP</u>
1971-73*	30.1	55.8	13.0
1974	124.7	172.8	28.7
1975-78*	22.0	12.4	30.2
1979	47.2	72.1	29.1
1980	36.5	45.0	30.9
1981	-1.0	-5.8	-

* average

Sources: IMF, Int. Financial Statistics.

²¹ A rise in oil revenues coincided with a period of reconstruction after two military coup and a civil war. The military and civilian leaders of this period, have at their disposal, financial resources to undertake new plans.

²² See tables 2.10.8 and 2.10.9.

Table 2.10.9

Nigerian Government Net Oil Revenues (Monthly) 1973/4 (\$100 mill)

<u>Year</u>	<u>Revenue</u>	<u>Year</u>	<u>Revenue</u>
1973 Sept.	1.6	1974 Jan.	5.7
Oct.	2.2	May.	7.7 (peak)
Nov.	3.2	1975 May	4.0
Dec.	3.3		

Source: Petroleum Intelligence N.Y.

Coinciding with the increase in revenue is the creation of more states in the country, and these worked to further the centralization of decision making. Economic optimism was announced through the "oil boom syndrome", and the government was placed under great pressures to deliver services to large numbers of people. An expansion in the size and role of the public sector was undertaken; however, the resulting expansion of the government sector was service based though an increase in human capital was attempted through education.²³ As revenue accrued at the centre through oil sales, taxes and rents on oil companies, the central government and Public Sector's revenues increased dramatically relative to GDP. At the same time, as did the dependence of the state governments on petroleum revenue handouts from the central government, creating a public sector debt crisis for the economy. The percentage rate of growth of government revenue, and oil revenue to GDP, and particularly revenue accruing in 1973 are shown in tables 2.10.8 and 2.10.9.

²³The option of a service based expansion for disposition of oil rents has been linked with the politics of the country. See for example, Balassa (1981) and Bienen (1983).

Table 2.10.10

The Public Debt (£Naira million)

Year	30.6.69	30.6.70	30.3.71
External	84.9	88.27	88.10
Internal	<u>324.07</u>	<u>469.04</u>	<u>599.08</u>
	408.98	557.61	687.18

Source: Federal Office of Statistics, Lagos.

Successive governments were eager to spend oil revenues rapidly, public sector wage increases were permitted, with large investments in education; transportation and road construction undertaken without any real evidence of a careful analysis of the impact of this sort of rapid spending on inflation, or indeed of the public sector's capacity of implementing set targets. From table 2.10.3, a major relative increase in capital outlay by the authorities was in economic service, especially in manufacturing. However, reflecting upon the priority assigned to development of local industries in various annual budgets, social services challenge has now become a mere budget inclusion, and represents a large share of total expenditure; with a slight decrease during the years of reduced revenue without effecting any real change.

The consequences of real appreciation for public sector budgets has been a corresponding increase in import content of government purchases. With an increase in imports of development expenditure on goods and services, real appreciation for the public sector would also mean the reduction of the purchasing power of public revenues. Given the associated political difficulties of adjusting the real

volume of public spending downward, this effect may partly explain the overshooting pattern encountered in domestic adjustment after the first oil shock. An eagerness by the authorities to meet, partly at least, the tide of popular expectations that followed the well publicised "oil boom" era - rapidly rising urban wages and fringe benefits, maintaining a low food and fuel prices and so forth - created a domestic inflation which, coupled with increased fiscal deficits and a less than effective exchange rate policy, further depressed the non oil exports.

As petroleum production became an increasing dominant part of all government resources, its effect on government holdings and domestic money supply could no longer be discounted.

Table 2.10.11

Money Supply 1966-1970 (£N million)

<u>Year</u>	<u>Currency with non Bank Public</u>	<u>Demand Deposit*</u>	<u>Savings & Time Deposit</u>	<u>Total Money Supply</u>
1966	108.6	63.9	81.3	172.5
1967	103.7	53.0	65.6	156.7
1968	91.5	72.5	91.8	164.0
1969	126.3	86.6	107.7	212.9
1970	185.2	144.5	168.4	329.7
1971	177.3	137.2	185.9	314.5

* Includes domestic deposits at CBN, but excludes official deposits at Commercial Banks.

All figures are for December of the indicated years.

Sources: CBN, Standard Bank Review: various issues.

According to table 2.10.11, the supply of money rose by almost 30 percent during 1969, and by over 55 percent by December of 1970. A major point to notice here is that, the addition in currency held is much greater than the increase

in demand deposit. The trend continued to be on the increase, and by 1974, the Central Bank reported total money supply as at the end of July 1973, at N753.3 million; representing an increase of N29.7 million or some 4 percent increase over the June figure, and N127.9 million (20.3 percent) over the July 1972 figure. The swell in money supply caused internal inflationary demand to soar. The main component of inflation being food price rises.

Table 2.10.12

Consumer Price Index, 1971-81 (%) Average Annual Rate

<u>Year</u>	<u>%</u>
1971-73	8.1
1974-77	22.4
1978-79	17.8
1980	14.0
1981	-

Source: IMF Int. Financial Statistics

Food supplies were less elastic than recognised or anticipated by the government, and in table 2.10.12., inflation as measured by the consumer price index averaged 22.0 percent during 1974 - 1977, from a position of 8 percent in 1971 - 1973.²⁴ In an effort to combat inflation on domestic price, especially foodstuffs, the government imposed direct price control and also attempted a tightened demand management policies during 1976 - 1978.²⁵ Inflation fell as a result during 1978/79, and continued to fall during 1980.

²⁴In the 1985 Approved Budget Speech, a target of 30 percent in inflation rate was to be attained.

²⁵Although this period corresponds to the Murtala/Obasanjo Regime, a military one; but at the same time, a frustrated one in an effort to effect any real economic changes.

However, the advent of a Civilian government in 1980, saw a resumption of rapid expansion on expenditure amid a rather weak set of monetary policies. As a result, food and other imports rose, and the dwindling public sector surpluses speedily changed into deficits. These were then financed by domestic money creation and foreign borrowing. Public debt figures continued to increase because, the inflationary demand caused by the swell in money supply spilled over into further need for imports. Despite increased oil exports and an improved Federal Capital budgets, the country faced a continued deteriorating foreign exchange situation and an unfavourable Balance of Payments account position.

Also because it is possible to import inflation from abroad; with the weak adjustment guidelines and an insufficiently developed financial market that exists in the country, economic planning will fluctuate with the price of oil. Moreover, since the price of oil is denominated in dollars, any fluctuation in the market for dollars will affect the purchasing power of its associated oil revenues. Thereby, making the slowdown in the growth of oil revenue after 1975, coupled with a weak dollar and other distributional and financial inadequacies of the economy, lead to an accelerated inflation.

So why has a booming resource sector led to a contraction of all other aspects of the economy under successive governments? A possible explanation could be the loss of "competetiveness" as the foreign exchange earner by other sectors, other than oil.²⁶ This position is made

²⁶As a possible case of the Dutch Disease syndrome, this pont
(Footnote continued)

increasingly difficult, due to a considerable appreciation that has occurred in the naira over the years. The naira is overvalued, and in order to keep international obligations within limits imposed by foreign exchange availability, the government has adopted a variety of measures to restrict imports and capital outflow.²⁷ However, major emphasis have been placed on import restrictions rather than export promotions, and as a result, a decline in the country's demand for agriculture and manufacturing exports passed virtually unnoticed.

²⁶(continued)
is further exposed in chapter 6.

²⁷Some of the restrictions on transfer of foreign exchange were pointed out in section 2.4. On the debate over devaluation, see Rimmer (1985).

2.8

Oil, Foreign Trade, and related Problems

The oil price increase which, on standard microeconomic grounds should have resulted in a boom for the whole economy, has presented considerable problems to the country. The extent to which the oil industry and world oil prices influence domestic policies has already been explored under the last sub-chapter.²⁸ Accompanying these domestic policies are associated problems, caused primarily by failing to make correct assessments of the oil price shocks on other sectors of the economy. From careful analysis, a whole generation of economic policy seem to have been based on what can be described as an oil - based optimism, upon which development plans are made; to the extent that, whenever there is a drop in oil prices, it is generally viewed as a temporary occurrence and no corresponding adjustment is made to development strategies. The slump in production of crude petroleum during the 1980s is as a result of both a hasty and unplanned production pattern at home, and the position of the world oil supply. This reached an all time low in August 1982, when a scramble for corrective domestic policies were made for past optimism.

There can be little doubt, that the country's balance of payments improved during the early parts of 1970s as a result of increased oil production which followed the price increases. However, this gave a false sense of security, and

²⁸ Further, macroeconomic effects of the increases in oil prices is looked at in some detail in chapter 6, where it is interpreted in the context of the dutch disease phenomenon for the Nigerian case.

economic growth figures that were given, were both confusing and exaggerated; by masking the impact of price increases especially, during 1974 - 1975.

This in turn, created an undertaking of ambitious development plans which depended mainly on expected revenues from oil.²⁹ Nigeria's foreign trade, (see table 2.10.13) is a reflection of the rapid economic growth which has largely been buoyed by the surge in oil revenues as its export market shares were lost in the traditional - mainly agriculture - foreign exchange earner. Increased appreciation of the naira and a strong pro-urban development plans in the wake of the quadrupling petroleum prices during the early 1970s, adversely affected agricultural production and hence, export contribution.

The need for food imports, the import requirements of increased investment, and the problem of overvaluation of the naira on the foreign exchange, led to a rapid increase in imports. In particular, the ratio of the non oil content of imports increased in the 1970s, as table 2.10.13 indicates. In 1978, non - fuel imports were more than double the import's estimate on the assumption of unchanged income elasticities of import demand. With the adverse balance - of - payments effects of the policies applied to meet the increased imports, additional net external financing turned positive at the end of 1978, as did the actual resource gap. Correspondingly, the nation has to draw on reserves it had

²⁹To date, the four National Development Plans are 'dream - plans' rather than a coordinated development undertaking; their aim were nonetheless well intended be it somewhat unrealistic, given the structural and absorptive capacity of existing institutions within the economy.

earlier accumulated, and in 1978 it borrowed substantial amounts from abroad, seriously affecting the state the country's current account balances; this is shown in table 2.10.14. Furthermore, the overvalued currency encouraged borrowing from abroad, as cost of servicing external debt became relatively cheaper. This type of policy is however, fundamentally flawed in that, the value of exports would become lower with an overvalued naira, if export proceeds are converted back into naira.

Although petroleum exports increased during 1973, the problem of evaluating the naira, introduced in the same year plus a general decline in the revenue of other sectors of the economy signalled the first crisis. The continued upsurge in oil revenue, paid for in dollars clearly pose an exchange rate problem to the new currency, but the trade surplus created made this and the serious problem of a continuous fall in the non - oil receipts to be pushed to the background.

Table 2.10.13

Foreign Trade (N million) 1971-1973

<u>Year</u>	<u>Imports</u>	<u>Exports</u>	<u>Re-exports</u>	<u>Visible Trade Surplus</u>
1971	1079.0	1280.8	12.6	214.4
1972	990.6	1402.0	12.6	424.0
1973	1079.0	2059.0	12.6	992.6

Source: IMF; International Financial Statistics

Table 2.10.13b

Foreign Trade Classified as oil and non-oil (N million)
1975-77.

	<u>1975</u>	<u>1976</u>	<u>1977</u>
Total Imports	3721.5	5148.5	7296.8
Oil	118.5	95.0	65.7
Non-oil	3603.5	5053.5	7231.1
Total Exports; (Including Re-exports)	4935.5	6751.1	8673.5
Oil	4563.1	6321.6	7969.2
Non-oil	362.1	429.5	704.3
Trade Balance	1204.0	1602.6	1376.7

Table 2.10.14

Current Account Balances 1973-80 (U.S. \$ millions)

<u>Year</u>	1973	1974	1975	1976	1977	1978	1979	1980
<u>Balance</u>	-10	4904	62	-409	-1888	-3770	2904	4871

Table 2.10.15

Ratio of Oil in Current Account Balances, 1973-81
(US \$ millions)

<u>Year</u>	<u>Oil Exports</u>	<u>Imports (cif)</u>
1973	3054	-1862
1974	9006	-2776
1978	-	-12844
1980	9423	-16374
1981	25614	-18564
1982	18328	-

Source: IMF; International Financial Statistics

The visible trade surplus in 1973, as shown in Table 2.10.13 increased to nearly fourfolds of its 1971 level. At over N4 billion, it was the highest in the history of the country's merchandise trade, and by value, oil alone accounted for 92 percent of total exports, which, inclusive of re - exports, rose by 153 percent.

Current account balances and the flow of foreign exchange created a severe dilemma for the authorities. During 1977, a deficit was recorded, while the trade surplus stood at N1.38 billion (see tables 2.10.13 and 2.10.14) a decline of 14 percent from the previous year. Needless to add, that imports continue to rise despite shortfalls in the overall revenue of the economy. In 1977, it rose by some 28 percent to N8.6 billion, while the total value of Nigeria's external trade declined to N14.28 billion in 1978. The visible trade balance at the same time according to the Central Bank, moved from a surplus of N537 million in 1977, to a deficit of N2.15 billion in real terms by 1978. During the end of 1970s and early 1980s, the total value of exports fluctuated from N10.7 billion in 1979 to N14.7 billion in 1980, and back to a lower value of N11.9 billion in 1981. Petroleum exports still accounting for a substantial part of the exports despite declining world demand. It accounted for 93.6; 95.3 and 94.3 percent during 1979, 1980 and 1981 respectively. The decline which continued into 1982 was a result of global glut in the oil market. And since there are no indications as to the end of this glut, it is highly likely the 1980s will see further downturn in revenue. In 1980, international reserves stood at N5.6 billion, enough to finance only seven months imports. By the end of 1981, it was further reduced to N2.5 billion and fell to N841.5 million at the end of June 1982. There is nothing however, to suggest that the worst periods are over.

Trade and balance-of-payments became issues in macro economic policy after 1976, and policies were aimed at managing the external trade sector by depleting reserves in

periods of deficits and accumulating reserves in periods of surplus. (Obadan & Ihmodu (1985)). This perhaps explains the growth option of the authorities despite severe trade deficits of 1978, 1982 and 1983. Trying to generate growth, while at the same time maintaining strict exchange control measures led to the establishment of the now entrenched illegal market for foreign exchange.³⁰ In order to further check the declining trade surplus, import restriction policies were formulated with the objective of promoting industrialization, diversification of the economy, and supportive measures for the balance of payments account.³¹ Imports were classified into three major categories:

- (a) Prohibited imports;
- (b) Imports subject to licencing requirements;
- (c) The imports under open general licencing (OGL).

Such was the feeling of uncertainty as to the effects of such hurriedly applied policies that by February 9th 1984, the issuance of OGL was discontinued and all imports placed under specific import licence. On the balance of payments front, since imports depend directly on income from oil revenues, and it has been shown that over time, Nigeria's spending has risen to more than match its incomes, an effective import restriction policy should show an improvement in the balance

³⁰An expansive discussion on the subject is undertaken in chapter 5.

³¹The 1983 Import Policies was one in a list of import restrictions. But, like its predecessors, a half - heartedly enforced legislation.

-of- payments account. Thus, the balance of payment's effect of higher oil prices depend, to a diminishing extent, on the country's asset preferences and increasingly on its preferences for goods. That is, in the long run, only a comparison of import and export shares matter.

Table 2.10.16

Balance of Payments, (Figures in US \$bm)

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Exports	19.9	12.1	10.5	12.0	12.6	6.8
Imports	20.7	14.7	11.4	9.0	8.3	5.4
Net-						
Invisibles	-6.0	-4.4	-3.2	-2.6	-3.3	-2.8
Current-						
Balance	-6.8	-7.1	-4.2	-0.4	1.0	-1.4
Net Capital						
Accounts	1.3	5.1	4.0	0.1	-0.7	-3.3
Overall-						
Balance	-5.5	-2.0	-0.2	0.5	0.3	-4.7

Source: IMF; International Financial Statistics, various years.

Where diversification is to help reduce excessive dependence on oil exports, concern with the structure of exports, especially increasing its share and maintaining the competitiveness within the non - oil export sector makes the exchange rate policy, and in particular, the foreign exchange earning contribution of this sector crucial to development prospects. All indication suggest that the exchange rate equilibrium was not reviewed to take account of specified diversification programmes. Thereby, export competitiveness of all other sectors other than that of oil were grounded; even with the expected intention of boosting the non - oil exports and consequently the 1983 import restrictions. It is

therefore not only important, but essential, that the right equilibrium exchange rate policy is adopted as one of the necessary conditions for a successful export diversification programme. Most especially, when a sizable part of the diversification prospects involve agricultural products which has to be traded in a world market. Therefore, the setting of nominal exchange rate is only a partial step towards any diversification objective, as the real rather than nominal exchange rate changes is what matters for a successful trade flow campaign. Further, at home, steps will need to be taken to ensure that accompanying policies - fiscal, monetary and purely political - and their effects on diversification are thoroughly analysed.

Particularly, since with the increase in oil revenues, any slightly sustained surplus in the balance - of - payments have a tendency of pushing the exchange rate upwards and thereby affecting the balance of flow in foreign exchanges.

Table 2.10.17

Flow of Foreign Exchange (N million) 1981

<u>Year 1981</u>	<u>Inflow</u>	<u>Outflow</u>	<u>Netflow</u>
June	890.9	1582.0	-691.1
July	946.8	1448.2	-501.4
August	940.2	1161.9	-221.4

Sources: IMF, International financial Statistic, CBN, FOS, Lagos.

Here, the important factor determining the course of exchange rate policies, including the choice of exchange agreement, is the domestic policy setting. Domestic considerations often weigh heavily in decisions to allow the domestic currency to

appreciate or depreciate. In the case of Nigeria, it has become clear that the main consideration influencing exchange rate movement has been the effect of oil prices and the consequent optimism that follows in economic policy.

Characteristically, trade regime based on exchange control and some degree of import rationing are Nigeria's answer whenever there are downturns in oil revenues. It emerges however that, these erratically applied policies are ineffective in combating the growing gap between export and imports, nor indeed, in adjusting the balance of payments accounts. In most cases, the exchange rate and exchange control actions of the authorities are applied without appropriate shift towards a more supportive interest rates policy, which would, on all accounts have a major impact on both the resource allocation and the demand management pursued.

Also, and more important, the movement in real effective exchange rate of the naira will depend on whether its nominal value is adjusted in line with differences between domestic and foreign rates of inflation. And if past periods were anything to go by, exchange rate adjustments have been limited, and these rarely reflect inflation home or abroad. (Hanson & Neal (1985)). Although interest rates in Nigeria have been raised on several occasions between 1974 and 1984, the nominal interest rates are held by administrative means at a level below that which would equate the underlying supply and demand for funds, and are frequently held well below the current rates of inflation. Balassa (1981); Hanson & Neal (1985). It is clear that the importance of an interest rates policy will depend upon the financial market

development that exists within the country. Nonetheless, if interest rates are not competitive with international rates or with returns on alternative domestic assets, this would contribute to a lower rate of investment, thereby, also in growth. This is primarily because, domestic financial savings will be discouraged in favour of the stocks of goods or, a leaning towards foreign financial assets is generated.

From the basis of the type of policies followed, it appeared that Nigeria did not have any real choice. With petroleum accounting for over 90 percent of exports and over 65 percent of government revenues, the decline in price and production led to a slowdown in economic activity. Foreign exchange earnings were halved between 1980 and 1982, and by 1983, a cumulative three year deficit of \$16 billion had appeared on the current account. This is reflected in a 4.4 percent decline in real Gross Domestic Product during 1983, following the 3.4 percent fall recorded in 1982. Debt service payments loom as a serious complicating factor over the three year period 1980 - 1983. According to the International Monetary Fund, debt servicing cost nearly \$2,000 million in 1983 and was estimated to reach \$3,270 million in 1984.³²

All these factors combined, have led to the call for the naira to be devalued.³³ Needless to say that the authorities are clearly reluctant in the use of devaluation as a policy tool for correcting unstable external deficit, and adjusting

³²Enumerated in the Africa Economic Digest (AED) Special Report, 1984.

³³The IMF; in particular, during negotiation of debt rescheduling and servicing makes this a key point.

for the exchange rate. In part, because of concern with its short - term costs and also, and more importantly, because of uncertainties as to its outcome. In Nigeria, the cost of such a policy are seen in terms of political and social repercussions - income distribution, consumer price impact and, the political vulnerability (or stability) of the authorities introducing the policy.

Further, using exchange rate depreciation in order to improve the competitive position of the non - oil sector can only have a successful impact on the economy if backed by a restrictive economic management policy. As a result, this will serve to maintain a significant share of the original relative price advantage caused by depreciation. Even where exchange rate devaluation succeeds in correcting price imbalances in the traded goods sector, it would almost certainly leave the non competitive side of export unaffected. In reality, the sluggishness of exportable goods other than oil is not the result of price disadvantages, but in most cases, of poor quality and an absence of a committed export sector.

The problem facing Nigeria as an oil exporting, but developing nation is how best to transform valuable but rapidly dwindling oil reserves into a permanent flow of present and future income, needed to improve substantially, the standard of living of its "oil - boom - accustomed" citizens. The chance, one feels, was lost from the outset, when the nation failed to make a distinction between price and quantity shocks. That is, between the impact of an exogenous increase in the world price of oil on the economy, and that of overall domestic reserves. The tide of the

unexpected jump in revenue swept through government and policy adviser's departments, and revenue estimates were linked with reserves. This was then projected as future incomes; based on the high prices upon which economic development plans were then subjected.

2.9

Concluding Remarks

It is clear from the beginning of the 1980s, and the associated onset of the oil glut, that if the oil market does not improve, large injections of external funds will be required by Nigeria. The shape of the economy since the onset of the world oil glut in 1982 has been a difficult one, with falling outputs and employment. Why have the 1980s become suddenly crucial; or has the writing been on the wall for quite some time?.

Frankly, Nigeria has received a lot of bad advice, or, has failed to implement the good advice over the years. She has spent the oil wealth like a surplus to be disposed, mainly on unsound projects. And she has also failed to invest with any substantial commitment in agriculture, a major productive and largely exportable sector before the oil period. Choosing instead, an unhealthy economic path that is dependent upon its oil industry. Progressively, as this dependence deepens, relying on it for 97 percent of exports and more than 80 percent of Federal Government revenues. Largely, the result of any sustained expansion thereby being subject always on the crucial provisos of successful policy implementation and relative oil market stability.

The economy, when seriously and carefully appraised, performs inadequately in showing the apparent benefits of oil discoveries, and the unprecedented price increases of the 1970s. In fact, for Nigeria, the oil boom period flattered only to deceive, and the 1970s and early 1980s were a decade of squandered opportunities. Economic policy patterns have tended to reflect the oil industry's fortunes. After

increasing nearly 30 percent in 1974-1978 period, Gross Domestic Product fell 20 percent by 1986.³⁴ Linkages in intersectoral activities are difficult to establish and adequately evaluate. However, looking at government revenues and the corresponding expenditure pattern over the period covered, there is ample evidence of waste and inadequate planning in the economy, culminating in heavy overseas borrowing to sustain an "oil syndromed" economy.

This has resulted in the authority's continual wrestle with the economy to avoid fundamental balance of payments adjustments. However, with the only workable option of a return to strong oil market failing to materialise, and the continued fall in oil prices, strong structural adjustment programmes seem inevitable.³⁵

³⁴At which time it was only 5 percent higher than 1974; See Financial Times (London, 2nd March 1987) Estimates. At peak production in 1980 the oil sector accounted for more than a quarter of GDP, but by 1983 its share was below 14 percent.

³⁵Overseas debt as at May 1986 (See the Economist May 3rd 1986) was somewhere between \$15 billion and \$22 billion, and medium to long term public debt amounts to just under \$11 billion; which is about \$95 per Nigerian.

Chapter 3

A monetary approach to Nigeria's Exchange Rate

3.1 Introduction/Review

3.2 Exchange Rates; Fixed, Flexible, and alternatives: A developing economy perspective

3.3 The Efficacy of Monetary Policy in Developing Countries

3.4 The Monetary Approach and developing Economy

3.5 A monetary approach model to Nigeria's Exchange Rate; Plus Empirical Results

3.6 Concluding Remarks

3.7 Selected Chapter References.(See The Reference Chapter.)

3.1

Introduction/Review

Issues in new theorizing of exchange rate system and research by economists was prompted by the switch from fixed to floating exchange rates in the early 1970s. Since then the debate has widened in economic circles beyond merits of fixed or flexible exchange rates discussions, to aligning with the general principles of the monetary approach to exchange rate determination and the approach to balance-of-payments theory.¹ The monetary (or asset) view of exchange rate determinants and the approach to balance-of-payments theory argues contrary to Keynesian theory, by emphasizing the role of money and other assets in determining the balance-of-payments when the exchange rate is pegged, and in determining the exchange rate when it is flexible. The departure from Keynesian theory is that the balance-of-payments is a monetary phenomenon and not a real one. Therefore, in analysing issues on the balance-of-payments, familiar tools of monetary theory are employed. Leading from this, the argument is that any disequilibrium in the balance-of-payments is a reflection of disequilibrium in the money markets.

A more appealing front of the monetary approach is what Whitman (1975) has called Global monetarism. This approach

¹Some of the doctrinal perspective of the evolution of Monetary Approach to Balance of Payments under fixed exchange rates, and approaches to exchange rate determination can be seen traced in Myhrman (1976) and Frenkel and Johnson (1976). Importantly, the work of Johnson (1972) is the main reference point on the evolution trail.

is inherently simple, and further, it gives unambiguous analytical results which makes policy inference easier. Again, the monetarist element of the approach places emphasises on the supply and demand for money as the relevant tools for balance-of-payments disequilibrium analysis. Whereas the global element of the approach concentrates on assumptions pertaining to the integration of the world economy.²

This presents a simple analysis but strong policy inference view of the monetary approach to balance-of-payments and has been challenged on many fronts. If one agrees that balance-of-payments disequilibrium are reflections of monetary disequilibrium, and such payments imbalances are transitory and will automatically be corrected, (Hallwood and MacDonald (1986)) why is there any need for a government balance-of-payments policy? Since if a country is faced with a balance-of-payments deficit (surplus) it may be able to sustain this deficit (surplus) by sterilizing the effect of the deficit (surplus) on the domestic money supply. In the case of a deficit, the domestic component of the money supply can be raised as the foreign backed components fall. This will however cease when the reserve's finite constraints can no longer be forced. Similarly, in the surplus case, the long term view is that the stock of domestic credit assets will eventually be exhausted.

²An essential element of this assumption is that goods originating from different countries are perfect substitutes, and that the law of one price holds. On the law of one price, see Chapter 4 on Purchasing Power Parity .

The two most crucial policy implications of the monetary approach: the conclusion that under a system of pegged exchange rates a country's monetary policy cannot be an independent one, and the view that inflation is an international monetary phenomenon under fixed rates were assessed under available evidence by Hallwood and MacDonald (1986). It was accepted that inflation is a world monetary phenomenon and cannot be regulated by a national monetary policy, therefore with pegged exchange rates, monetary policy would appear to have a limited role. However, Dornbusch (1973) demonstrated that by relaxing the assumption of global monetarism - allowing real variables to be affected in the short run by monetary variables; imperfect substitutability of goods and assets in different countries - the domestic component of money supply has real effects in the short run, even under fixed exchange rates. Kaldor (1970) among others, questioned the monetary component of the global monetary approach to balance-of-payments, and further attacked its long run ineffectiveness.

The chapter further explores theoretical issues of the fixed and flexible exchange regime, and discuss alternatives. Further, it seeks to clarify Nigeria's exchange rate category, thereafter, using a monetary model, analyses the monetary approach to the exchange rate of the economy. The role of capital mobility, expectations, and scope for international transmission of disturbances are discussed in general terms. The issues covered have been raised to a large extent in the literature: particularly by Mundell (1964, 1968) and Fleming (1962). However, it is hoped that in its extension to allow these issues to cover for the

particular case of Nigeria, it serves a policy purpose for a developing country, along the monetary approach path.

3.2

Exchange Rates; Fixed, Flexible and alternatives: A Developing Economy Perspective

The emergence of a new approach to the question of exchange rates and the ensuing debate enumerated by the advocates of fixed or flexible exchange regimes, can be traced to the collapse of the fixed exchange rates as an international regime during the 1930s. To a large extent, the applicability of the merits of fixed or flexible rates excludes developing nations.³ Generally, the discussion has been approached with the view of monetary arrangements to facilitate international flows in transaction, and this has the tendency of casting no roles for the less developed countries. This is not surprising, since such economies are not actively influential (lack of a strong financial market) in such transactions. An extension of this path is such that, literature focusing on determination of the exchange rates in developing countries are, as a result very few.

In the much discussed fixed and flexible exchange rate debate, the most common argument put forward by the proponents of a flexible system is the insulation property of the regime. Flexible regime it was argued, would insulate a country from monetary developments taking place in the rest of the world. This indicates a possible avoidance to speculative crisis with the introduction of flexible exchange

³The case for one type of exchange rates versus another system has usually been made abstracting from countries development levels. However, economic characteristics and institutional realities of countries have important bearing on the argument.

rates, and also suggest that it is inherently linked to the fixed regime. This insulation property of flexible exchange rates calls into question the wisdom of global monetarism.⁴ Before commenting on other issues from the debate which is of prime concern to developing nations, the insulation argument is further explored. The question to ask is, to what extent does a flexible exchange rate insulate the domestic economy from exogenous disturbances, and how much of an independence does domestic monetary policy have under flexible rates? The argument that flexible exchange rates insulate an economy from exogenous disturbances is usually presented in a model in which national outputs are distinct, and capital is immobile. In such a situation, Johnson (1970), Mundell (1960, 1963), the only link between the domestic economy and the rest of the world will be through the relative price of domestic and foreign goods.

When flexible exchange rate is in operation, the exchange rate therefore adjusts this relative price so as to keep foreign demand of domestic goods constant, hence insulating the domestic economy. Leading from this, two points need to be made. First, consider an advanced economy which the model can easily be applied. If accepted that national outputs are distinct, is capital also immobile? Secondly, for a developing economy, even if capital is relatively immobile, is domestic output distinct? In the real world, the two benchmarks on which the insulation point are modelled hardly occur together, especially regarding a developing economy.

⁴Global monetarism was commented upon in the previous section. For further work, the reader is referred to Whitman (1975), Dornbusch (1973) and Kaldor (1970).

Therefore, the relevance and applicability of the insulation claim to such economies is questionable.

Krueger (1983) has shown that the differences in the functioning of an economy, apart from depending on which exchange regime is adopted, also hinges crucially on the nature of assumptions made about the degree of capital mobility. It is from this point that one can further challenge the insulation merit of flexible exchange rate system. It has to be agreed that national outputs for many developing countries are not distinguishable, (especially since many are primary producers of agricultural products) and worse, competes inadequately in the world market; one is thereby left with the assumptions made on the strength of capital mobility to carry the fort for the insulation merit of flexible exchange rates. If one assumes that capital is immobile, at least, in the unorganised financial framework in developing countries, another difficulty arises; the critical ingredient now is goods arbitrage for internationally traded ones. However, with primary good's producing countries, goods arbitrage would result in a one - way link between the domestic economy and the rest of the world through the domestic imports of foreign goods. As a result, arbitrage through relative prices becomes unimportant in the argument, because even when domestic goods are distinguishable and of international competitive trading standard, they are often of different inputs. The question raised here is that of different analytical level in comparisons. For developing countries, assumptions about the nature of the domestic economy departs from the accepted framework within which most monetary analysis start off. To

make meaningful analysis regarding such countries, one has to examine the functions of fixed or flexible exchange rate regimes under assumed market imperfections which characterises these countries.

Leaving the enormous problems normally associated with the less developed countries aside, the insulation properties of flexible rates applicability to the advanced nations has been questioned on another front. Mundell (1960) and Fleming (1962) carried further their challenge within the assignment models. Where it was shown that a foreign monetary disturbance could be fed directly into the domestic level of economic activity under flexible rates. This happens because a change in the foreign interest rate would normally induce capital flows, which in turn would induce a change in the exchange rate in order to induce the current account to move in the opposite direction to that of capital account movement.⁵

In Nigeria, policy instruments under flexible exchange rates and the question of domestic disturbances is of particular interest. First, without adequate participation in the international asset and other financial transactions, external equilibrium is difficult to maintain. This raises the problem of accepting, and importing inflation via the more advanced of trading partners (Corden 1977). The implicit assumption here is that financial markets are operating efficiently in international transactions. Otherwise, the argument in favour of exchange rate

⁵It is important to note that insulation can only occur when it is assumed that flexible exchange rates maintains constancy of the current account balance.

flexibility on the basis of a theory of exchange rate determination; which perceived the exchange rate as being determined by the interaction of demand for and supply of currencies, which arise from the demands for imports and exports would be difficult to sustain. If efficient market is lacking within one of the trading partner's economy, in particular, where trade flow is uneven, currency trade will not reflect demands for imports and exports. With a reasonable view of the domestic component of the money supply, but a limited one of its foreign components, imported inflationary pressure would be difficult to contain. Controls such as restriction in exchange market operations further illustrates the divergence between the domestic and external price of the currency.

Johnson (1972) argued the desirability of relatively small and highly specialised countries to peg their currency against that of a major country. The belief here is that, flexible exchange rates would permit countries to maintain their preferred combinations of inflation and unemployment without the need to resort to trade barriers and exchange controls. The problem that arises however is that, monetary autonomy for the pegged country is curtailed. Without an adequately developed financial market, and faced with a domestic good's output which is not highly specialised to be distinct in the world market, exchange rates plus other controls and trade barriers are then used to preserve some limited monetary autonomy. Also, Lanyi (1969) expressed doubts as to the legitimacy of the assumption that trade barriers were maintained solely because of balance of payments considerations, as was implied by advocates of

flexible exchange rates. The hopes by advocates of exchange rate flexibility in stimulating trade by removing the pressures to maintain or erect new barriers has not materialised. Since 1973, protectionist tendencies, even in the most advanced countries have become evident.

It is therefore not too surprising that countries with one primary export often find it necessary to erect barriers; in an attempt to protect what may, in many cases be products of less efficient local industries, and their main source of foreign resources. Where barriers are not fully effective and foreign price disturbances occur, Van Duyne (1980) has pointed out that insulation can be incomplete, and under flexible exchange rates, this happens whenever a wealth effect or less-than-perfect foresight is present. For most developing economies, unpredictable economic and political stability in the economy makes speculation in the exchange and other financial markets an uninviting task. The monetary authorities are thereby left as the main speculators, on the basis of their own understanding of current and projected economic developments and government policy. When this the case, it becomes much more difficult to extend the insulation merits of the flexible exchange rates to cover developing economies. This has a curious consequence on the natural implication of the asset approach, and the special role played by expectations in the determination of exchange rates. Since the demand for both the domestic and foreign currency, like that of any other asset depends on the expected rates of return; what is expected therefore is that current values of exchange rates have an inbuilt mechanism of reflecting expectations of market participants regarding

future events.⁶ Even in the advanced countries, the differences revolved much around empirical issues that all theorising so far has failed to settle conclusively.

Hitherto, discussions on fixed and flexible exchange rates implicitly assumed a clear-cut policy choice. That is, either choosing between a purely fixed or purely flexible rates. Aligning with this principle therefore makes the analysis a rigid one in investigating the type of regime likely to minimise disturbances for various kinds of shocks. In contemporary discussions therefore, one find arguments relating to world inflation, and which of the two systems would allow countries to apply a more restrictive monetary and fiscal policies; with a result of lower world rate of inflation and less variation in inflation rates among countries. The fact that comparison of fixed and flexible exchange rates assumed rigid alignment, and further, that the debate does not really address the issue of the degree of discipline enforced on governments under alternative regimes make its application suspect in relation to the developing countries. Further, one would assume that welfare comparisons of the two regimes would be of more interest to developing nations. If the overall welfare of these countries were better served by some active intervention of either of the two exchange regimes so far discussed, then this will be a better option, and would also help in the

⁶Accounts of the specific role played by expectation in the determination of exchange rates in Nigeria can best be resolved empirically, after a somewhat stable period of the newly introduced (October 1986) "two-tier" exchange mechanism; the belief that supply and demand forces within the market are now without the authority's regulations is implicit here.

light of problems associated with both regimes concerning these economies. Optimal intervention by the government would be on the presumption that policy makers have information superior to that available from the private sector. The lack of a co-ordinated private sector and of a well organised financial markets makes this 'managed' regime of exchange rates attractive.⁷

Boyer (1978) discussed how optimal intervention strategy could be attained. Where earlier discussions tended to identify optimal intervention strategies with geographic source of disturbance, (domestic or foreign) Boyers' conclusions focused on the relative importance of shocks in the intervention market in relation to other markets. The degree of correlation between disturbances thereby playing a part in influencing optimal intervention choice; therefore, the first best policy will be an intervention in the market closest to the distortion. For a developing nation, this alternative to the fixed versus flexible debate appear to pose fewer problems.

⁷Frankel (1980) has raised the question where intervention might not be optimal, in what he described as perverse intervention.

3.3

The Efficacy of Monetary Policy in Developing Countries

The post-war period witnessed a focus of attention on the importance of money and monetary policy in relation to economic development.⁸ However, the role of money and credit as a "phenomenon of development", Schumpeter (1911) retained a low-keyed interest in developing countries; largely because of the preoccupation of economists and policy makers with the techniques of monetary management as applicable in developed countries, which shows emphasis on cyclical rather than long-run objectives. But in the context of developing countries with constraints on institutional features such as well knit money and capital markets, banking habits and a diversified financial institutions, there will be the deficiencies of accustomed monetary policy techniques.

While accepting that economic characteristics and the institutional constraint realities of the developing countries have important bearing on the adoption of monetary theory to monetary management in such economies; nonetheless, does monetary actions provide a powerful enough tool in influencing economic activities regarding developing countries? The advent of independent central banking in policy making for many developing nations coincided with the period when Keynesian economics was accepted as the main framework for analysing the role of money and monetary policy. Since there are underdeveloped resources and

⁸At various times, the pace of economic development have been related to monetary conditions for the less developed economies. For example, see, Shaw (1960,1967), Patrick (1966) and Park (1973).

unemployment, the main policy aim was then for money supply expansion and low interest rates. In general, this had not been accompanied by improved price stability or more rapid growth in development. Instead, inflationary pressures that followed such policies resulted in growth stagnation, and the need for a more appropriate policy framework became once again necessary.

By and large, the precipitating foreign exchange crisis, devaluations, trade and exchange controls and inflation indicate that the issue involves applying the same concept of monetary theory in a refined way, taking into account the slight functional roles in developing countries. Moreover, the need for this view of money and monetary policy for the developing economies is made more compelling by other factors; such as the political involvement in the issue of money, difficulty of collecting and interpreting economic data promptly, and the defects in the accurate forecast of changes in the demand for money in order to improve performance of desired growth rate.

The importance of Central Banks to economic development of developing nations is not straightforward. Mainly because, there is no consensus as to their roles or operating procedures in fostering economic stability development. Where recognised that economic development and stability are interrelated, then the Central Banks becomes important as a medium for the adoption of monetary management, for the ultimate objectives of monetary policy. The adoption of monetary theory to monetary management and any resulting analytical techniques would therefore provide further insights of their financial intermediation and the operation

of the financial systems. Through monetary policy therefore, the Central Bank can affect the behaviours of any desired objectives - the price level, output stability or employment.

The major instruments of monetary policy are now considered with their consequences on both the quantity of money and credit and on price and the allocation of credit in relation to a developing economy framework. These include interest rate and selective credit controls, credit ceilings, reserve requirements, refinancing facilities, exchange rate policies and in some instances, open market operations. To begin, monetary policy of any kind requires a relatively stable demand for money. The importance of a stable demand becomes stronger, where the ultimate objectives of monetary policy in a developing economy are the stabilization of the domestic price level and output, plus a balance of payments equilibrium.

From the Central Banks' perspective, money for policy purposes, and the relationship between its nominal stock and prices, output and balance of payments is determined by the public's demand. Therefore, it follows that for a successful exploitation and any consequent attainment of price objectives, the bank has to establish changes in spending adjustments to determine desired quantity. Their ability to anticipate public demand for money to any accurate extent using the functional framework of opportunity cost of holding money has some limitations in developing countries. For the more advanced economies with a well-developed money and capital markets, the nominal yields that exist on liquid assets that are available as alternatives to money in wealth portfolios provide a measure of the opportunity cost of

holding money.

In the developing economy, capital markets are thin or non existent, and therefore cannot be assumed to be efficient. Also because of government regulation and suppression of interest rates and their failure to reflect actual alternative yields available, it can be assumed that no market exist that embodies any accurate measure of inflationary expectations. Common modifications in such economies therefore is the use of actual or expected rate of inflation as a measure of opportunity cost of holding money. Since expectations are not directly observable, the choice of the inflation measure with which to measure the opportunity cost of holding money raises unresolved issues. In essence, this involves both the appropriate measure of estimation for expected inflation, and the choice of a price index whose rate of change embodies the inflation rate most relevant to money demand.⁹

Another problem which is raised in a developing economy framework, arises from the unresolved controversy over whether money demand is more stably related to wealth or transactions. The empirical significance of an appropriate choice is somewhat small, since income remains the only realistic proxy for either. However, a further problem is precipitated through the choice of an income measure, as a combined result of changing degrees of monetization and

⁹In developing economies, durable goods inventories and consumption are important alternatives to holding money, thus their rate of return is often the most relevant as a proxy for inflation rate. The implicit assumption here is that, the relevant rate of inflation for the demand for money in such economies is that which the public thinks is currently prevailing.

financial depth on the measured demand for money.¹⁰ In the case of Nigeria, for example, the periods of increased income resulting from oil export will pose a problem. Here, the dilemma is whether a more stable relationship is to be associated with current measured income, or whether with the permanent (expected) income.

Most Central Banks in developing economies have an inoperative role in being able to manipulate interest rates as an instrument of policy. Concern for monetary policy objectives to cater for financial assets other than money adds a new dimension to monetary policies by encouraging new financial institutions in these economies.¹¹ For a less developed economy, the attractiveness of interest rates as a possible policy instruments arises primarily because of their effect on aggregate demand, and therefore, on output. Further, Central Banks policy with regards to interest rate structure becomes a significant contributing factor in development if it either brings about a more rational allocation of resources, or if it induces savers to switch investments to other financial assets and bank deposits; and away from physical assets (the purchase of durable goods).

¹⁰The term monetization is a reference to transactions (Chandavarkar(1977)). With both monetization and financial deepening increasing the demand for money, the degree of monetization refers to the fraction of total output exchanged for money and financial depth, to the extent that the monetized sector utilizes the money and services of financial intermediaries.

¹¹Where there exist limited financial institutions, expansions of their markets can be further encouraged by policy instruments, through an appropriate interest rate policy, which makes real returns on financial assets more attractive. See for example, McKinnon (1973) and Shaw (1973).

The problem that will face a developing economy with the use of interest rates as a monetary policy tool is that, equilibrium rates are endogenous to the economic system. Therefore, any attempt to stabilize nominal rates by manipulating or stabilizing interest rates would prove more successful in economies with developed money and capital markets, and in which interest rates are allowed to reflect market conditions. In economies with rudimentary financial markets and an absence of secondary markets in financial assets, interest rates cannot reflect market conditions. Ultimately without appropriate market conditions, the control of interest rates and the consequent imposition of nominal quantity of money lies with the monetary authorities. Under such conditions, it is possible to set interest rates too low;¹² thereby allowing the money supply to grow too fast, accompanied by price increases and inflation. This problem is compounded by the attempt of any limited market that might exist, to raise interest rates even higher in order to adjust for the ensuing inflation.

With the continuous attempt by many developing countries to establish a credible financial markets, interest rate policy as a monetary management instrument remains widely attractive in the context of less developed economies. This is mainly because, it both involves a strong interventionist

¹² Sometimes interest rates are set below the clearing levels as a policy instrument, in the hope of stimulating investment and growth. Unfortunately, this line of argument in development debate often has the opposite effect by diverting foreign capital away from the country. Thereby further reducing the mobilization of savings into economically productive areas, hence eroding the efficiency in allocation of such savings.

approach to credit markets which are imperfect and fragmented, and also because it is deemed to affect, importantly but differently, critical variables such as savings and investments, which are recognised to be vital to economic growth, and to aid development process. Therefore, in a climate of reasonable price stability and with comparable yields on financial assets available, it is possible to raise the rate of financial savings and thus bring about greater integration of money and capital markets.

Before considering further policy instruments of monetary management, the money supply side within the framework has to be integrated as part of the instruments of control of the factors determining overall money's behaviour. For a successful monetary policy objective, the nature of the money supply process is such that, the monetary authorities need to understand how its behaviour is determined, in order to control it in a way consistent with price and other policy objectives. There is a web of complex interrelationships regarding the stock of money as the outgrowth of the behaviour of the public, the banks and other financial sectors, the ministry of finance, actions of the Central Bank, and the attitudes of the rest of the world economy. To facilitate in identifying those forces that alter money supply and the Central Bank's role in its control, the frequently accepted money multiplier concept is adopted.

As a building block, the multiplier framework starts with the monetary base, and goes on to build upon an identity which views the money (M) stock as some multiple(m) of base money (B);¹³ giving; $M = mB$,

It follows from the above identity therefore, that any Central Bank's control of the money supply requires accurate prediction of the multiplier (this calls on the Central Bank's ability in estimating the behaviour of its currency, required reserve, and excess reserve components) and control of the base. For a developing economy, this requires not only a predictable multiplier, but also the ability of such economies to dominate those base components that it does not control with those that it does. Where the base is in turn invariably dominated by balance of payments and/or the government's deficit, the behaviour of the overall money supply might reflect a complex interaction, only partially influenced by the authorities.

Nonetheless, it is possible to use other instruments of control of the factors determining money's behaviour available to the Central Bank, that will help it to manipulate those factors in the base or multiplier to obtain desired results of policy objectives in the light of any expected effect on money stock. This is particularly important in aiding development process, when money as an

¹³It is important to point out here that the framework follows Coats (1979), and does not depict the supply (or stock) of money in the traditional sense of supply functions, but rather attempt to explain the money stock's behaviour as an outrun of the process of equating the supply and demand for base money. At equilibrium therefore, the source (supply) of the base must then equal its uses (demand). Certainly, the multiplier also depends on how one chooses to define money.

asset is desired for channelling saving, and the monetary authorities in meeting its demand, need to create accurate additional money stock. Otherwise, if money demand of the asset holding units is not accurately guided and it fluctuates, this causes disturbance to the investment process, which the initial money creation is designed to sustain. To contain fluctuation, the Central Bank can directly regulate the availability of credit and money within an instrument of policy control framework.

Regulation of credit by the Central Bank can be effectively attained by introducing bank rate, coupled with powers to vary reserve ratios and net liquidity ratios. For a developing economy, the use of reserve requirement acquired some importance, because it characteristically, is a direct functional form to regulate credit.¹⁴ Reserve requirement can help in the control and management of the money supply, by limiting the expansion of money and credit, since when imposed (except when used as a credit allocation device) it gives the officially regulated fraction of deposit or deposit - like liabilities which must be held as vault cash and/or deposits with the Central Bank. Consequently, it has a profound effect on the size of the multiplier and hence the quantity of money resulting from a given base or change in the base. If the behaviour of excess reserves are assumed stable, then for a given base, changes in the ratio can cause

¹⁴The use of reserve requirements will depend in part, upon the alternative monetary instruments available. Their use is accepted as important in the early stages of development, however, as financial markets becomes more developed and widespread, their use relative to those of open market operations and Central Bank discounts and advances for example, must be judged.

a dramatic change in the multiplier, and hence in the money supply.

The mechanism is such that a high level of required reserves allows for a smaller expansion of deposits and money than a lower level, and therefore, a smaller money supply effect for a given change in excess reserves. While on the other hand, a lower reserve requirement and hence a larger money supply multiplier would give the Central Bank and the monetary authorities considerable leverage, with the consequential effect that small changes in the reserve base give rise to large changes in the money supply.¹⁵ Effectively, this makes reserve requirements potentially an important instrument of monetary control in the less developed countries. However, its effective use require that choice of specific bank liabilities for the purpose of money supply control should be taken into account in calculating required reserves; since this will affect the ease with which the monetary authorities can control the money supply. Attempt to control a monetary aggregate with the most stable demand relative to economic activity also indicates that the use of reserve requirements introduces some degree of flexibility in monetary policy operations.

To supplement any quantitative control measures introduced by the monetary authorities, monetary policy instruments such as selective credit control are often used. Since its effectiveness generally depends on the degree of

¹⁵For relatively open economies within the developing countries framework, reserve bases might be sensitive to foreign reserve flows. The result is that bank reserves becomes difficult to control with any great precision; thereby making the leverage of a low ratio destabilizing.

substitutability between financial market instruments by borrowers and lenders, its impact at a later stage of development would be more precise. Where credit ceilings is used as a form of credit control, care must be exercised to induce warranted results. For example, if ceilings were limited to domestic bank credit, further deposit inflows would tend to be lent abroad as the ceiling limit is approached. If this is the case, then a domestic bank credit ceiling would not necessarily constrain domestic money growth.

Other possible instrument of policy in a developing country include refinancing facilities; where central bank credit can be manipulated through loan schemes, discounts, and advances. The use of exchange rates and as a policy instrument on the other hand can be linked with the choice of exchange rate regime in operation. In order to minimise the cost of adjustments in the domestic price level, either a floating or fixed rates when chosen, have to favour economic activities and policy objectives. The crucial element of a successful exchange rate, as a policy instrument therefore involves the choice of exchange rate policies. Three major categories of policy reactions are: (a) pegging to a single currency; (b) pegging to an import-weighted basket (or to SDR basket); and (c) independent floating.¹⁶ With the characteristics of each particular country having an ultimate bearing upon any appropriate policy choice mix.

¹⁶Detailed discussion on the consideration to be taken into account by developing countries in determining policy response to the type of available exchange rate regime can be found in Crockett and Nsouli (1977).

The direction and shape of monetary policy that may be designed to aid economic stability, and speed up the development process require some scope of open market operations. Whereby, the desired changes in central bank credit are made by the purchase or sale of securities in the secondary markets rather than directly with banks or eligible borrowers. The traditional open market operations would be circumscribed in the early stages of development when security markets are narrow. In such situation, the central bank's sale of some small volume of government securities may lead to disorderly conditions in the market. However, mere justification of narrow security markets should not exclude operations in government securities considerations as a policy tool. Particularly, if narrowness is the result of government policy rather than arising due to underdevelopment.

In Nigeria, the coercive force of the authorities on the security market -for example, low security yields- makes the spectrum of owners of marketable government securities consist almost entirely of banks. Once restrictive practices are removed, the market becomes broader, and financial assets can be further generated, and therefore find a fuller scope to operate. At this stage, traditional open market operations, if conducted cautiously, becomes quite feasible. However, at an initial stage prior to an established market conditions, central bank intervention may be needed to initiate a more variant form of open market operations, and prevent overly wide fluctuations in interest rates. Within a less developed economy, the central bank can therefore carry out open market operations with emphasis on the price rather

than on the quantity of government securities. By influencing the price, it can encourage purchases or sale by the public, and hence manipulate the structure of yields on monetary assets, and in turn affect reserves.

The lack of integration of money and capital markets is likely to limit central bank's function. However, the rapid growth rate of real national income that followed the oil price increases helped in expanding the demand for financial services, with functional extension of the banking system. Central bank's effectiveness in regulating credit will depend both upon the geographical and functional scope of the banking system, and their extent of dependency on the control bank for assistance. The monetization and commercialization of the traditional primary producing sectors is therefore an essential part of a well integrated financial system, if full resource mobilization and efficient allocation for development strategy is to be attained.¹⁷ Rapid widespread and the sophistication of the banking and functional systems means the central bank has to maintain a crucial balance of functional controls in the banking systems of the urban and largely, non-monetized rural one. Too tight control on the banks for example, may mean starving the modern sector which rely heavily on banking their required credit, while the lack of an appropriate control would mean supplying resources to

¹⁷Improvements in the financial intermediation process, brought about by economy's degree of monetization had been related with economic development; Gurley and Shaw (1955,1960), Porter (1965), Goldsmith (1966,1969). For example, higher (equilibrium) real interest rates would shift resources from the traditional low-yielding investments to investments in the modern sector, thereby improving the overall rate of economic growth.

the unorganized market, over which the central bank has no control. Thus, further limiting the scope of application of any monetary policy.

The ideal situation with balanced budgets and a stable exchange rates does not prevail in developing economies for an effective monetary policy. Domestic objectives of price stability, improved employment and the availability of credit is not however limited by such absence, especially when monetary implications of any fiscal policy is recognised. The central bank is therefore no longer central in the domestic sphere, with its flexibility restricted by government fiscal policy; thus, making monetary policy an aspect of the overall economic policy; a particular form of the authorities intervention in the economic process. In the international sphere, monetary policy cannot avoid real shock consequences such as the oil boom, and the agricultural price collapses that result in significant changes in terms of trade and international credit system, and how they affect developing economies.

Ultimately therefore, for unsophisticated economies, stabilization aspects of monetary policy will help curb monetary mismanagement, with the resulting possibility of a more accurate diagnoses of the economy. Such economies would be less concerned with international balance of payments and interest rates, since it has to accept world rates. The domestic monetary policy can therefore be more independent of international consideration, with emphasis upon its impact upon national income the major concern. Further, policy efforts are likely to be more concerned with short-run effects of any decision on output than with the long-run

policy response. However, future monetary policy will be determined by long-run effects, since the nonpolicy economic disturbances to which monetary policy must respond invariably originate on the supply side. Making meaningful monetary policy closely related to the pace and nature of economic development.

3.4

The Monetary Approach and Developing Economy

There has been a shift in emphasis, away from the flow demand/supply analysis to the asset approach to the exchange rate determination.¹⁸ This switch in emphasis parallels the move from the elasticities and absorption approaches to the monetary approach to balance-of-payments.¹⁹ This section accepts the view put forward by Mundell (1971), Guitian (1973), Mussa (1974) and Johnson (1972) that the balance-of-payments is essentially a monetary phenomenon, and the direct consequence therefore, of analysing the balance-of-payments as a monetary phenomenon. However, it questions the crucial assumptions made under the approach, and therefore the implications of using a monetary framework to analyse the exchange rates of developing economies. Under the standard model, the monetary approach assumes that monetary inflows or outflows associated with surpluses or deficits in the balance-of-payments account are not sterilized, but instead, influence the domestic money supply.

Fundamentally, this position is in alignment with most developing economies, especially where no significant international trade exists; apart from that in primary crops. For international adjustment therefore, monetary rather than relative price aspects will be of importance. It is important to recognise that if the supply of money is

¹⁸Mussa (1979) and others have argued that the exchange rate should be viewed as an asset price since by its definition, it is the price of one national money in terms of another. That is, a relative asset price.

¹⁹See for example, Hallwood and MacDonald (1986), particularly Chapter 5.

sluggish in adjusting to demand, (residents find it difficult to acquire or rid of money instantaneously) international adjustment process will not be automatic. Even when accepted that monetary rather than relative aspects are of relevance under the adjustment mechanism for developing nations, this should be qualified by their access to the international market for commodities and securities. Through goods arbitrage for internationally traded ones, the monetary approach invariably assumes that a country's price level is pegged to the world price level and must move rigidly in line with it. There are two ways of looking at this assumption. First, there is a class of nations where industrial technology and product competition is so pervasive; that elasticities of substitution among their products approximate infinity.

There is a second group; where lack of adequate information and knowhow in industrial technology prevents any competition in the traded goods sector. International adjustment becomes a bigger policy problem for governments if they are 'excluded' from the process of technology and information techniques in the world capital and other markets. Without any serious basis for assuming instantaneous adjustment of money supply to demand for a developing economy, (either through the international market for commodities or through the international securities market) which adjustment mechanism prevails will determine the way in which monetary policy affects the composition of the balance-of-payments. If limited international involvement is assumed, the consequence is that domestic monetary policy to a large extent determine the money supply

and the public demands with international reserves playing a minimum role. Within a developing economy framework therefore, monetary policy controls both the volume of domestic credit and the money supply. Since control over domestic credit act as a control of the balance-of-payments and thus the behaviour of the country's international reserves, unhealthy reserves are therefore an indication of a lack of control over domestic credit. It is the emphasis placed on the effects of changes in the money supply on economic activities which is of prime concern in the monetary approach, and thereby a major building block in the assumption of instantaneous adjustment process; which has been reflected to fail to provide adequate cover for developing nations.

The question of the effect of perfect capital mobility assumption was discussed in section 3.2. This assumption indicates that at a given level of world interest rates and prices, a country can import or export goods and financial assets without affecting their prices. It was also pointed out under section 3.2, that in reality, interest rates and prices of an economy such as Nigeria generally has little reflection on given world rates. Further, the assumption of full employment can be defended on the grounds that monetary approach models are primarily concerned with the long-run, and therefore for this perspective, the assumption of full employment is more appropriate than the assumption of general mass unemployment. Where departures from the long-run equilibrium occur, this can only be properly assessed after the outline establishments of determinants of exchange rates. Therefore, monetary and the real variables that influence the

equilibrium level of the exchange rates has to be recognised. However, the process of transmission of real disturbances must operate through monetary channels in order to affect the exchange rate or the official settlements balance. Ultimately, the type and origins of monetary disturbances and the question of economic stability and political continuity are linked. For example, the rapid expansion of the money stock in Nigeria between 1973 and 1979, has to be seen beyond monetization of the increased oil revenue of the period, and aligned in part to political pressure for stabilization after the civil war.

Another implication of using a monetary framework to analyse the exchange rate is that, to regard the exchange rate as an asset price is also to recognise that such prices are usually determined in efficient markets. Two things need to happen in such a market. First, it requires sufficient number of active participants to make it work, and secondly, such a market is one in which participants exploit all profitable trading opportunities and force the prevailing price to reflect all available information; Fama (1970). The effects of expectations about future course of exchange rate as an asset price will be important for the current determination of exchange rate. Expectations will affect current rate if agents behave rationally. Otherwise, there would be a (possibly) large unexploited expected return available in the foreign exchange market. The importance of expectations in the market should result in a close correspondence between actual exchange rates and the markets' expected future rates.

Where the asset market is not fully efficient, or

available information are inappropriately assessed, it is possible for exchange rates to exhibit a great deal of variability relative to the current determinants of exchange rate. Further, in the case of Nigeria, where the bulk of foreign capital flows are public and thereby asset trading are limited, and also where the government act as the main speculator in the asset market, the role of expectation in exchange rate determination must be recognised as limiting.

3.5

The Tested Model:

A Monetary approach model to Nigeria's Exchange Rate; Plus Empirical Results

This section of the chapter analyses the determinants of the Exchange Rate through an application of the monetary approach to balance-of-payments theory for the Nigerian economy between 1960 and 1984. The history of Nigeria's exchange rate system(s) during the period covered, continuously changed from being described as fixed; flexible and managed float.²⁰ Since the monetary approach to balance-of-payments theory can, in econometric analysis, be applied to countries operating under fixed and flexible exchange regimes, an extension of the theory to cover for the "managed float" case of the Nigerian economy provides an unusual application of the monetary approach. Besides, empirical analysis of the monetary approach to the balance of payments and exchange rate has been shown to provide possible explanation of the behaviour of some LDCs balance of payments activities with results yielding interesting policy implications. (Aghevli and Khan (1977))

Though one can group together economies with similar characteristics, the principal advantage in analysing particular cases is that, for the less developed economies,

²⁰The Chronology of Exchange Rates and Exchange Arrangements in Chapter 2 provides some historical background. Also, see IMF Country Exchange Rate System for some more detail. The year 1986 also saw an introduction of a two-tier exchange operations in Nigeria. This version of managed float operates by the CBN accepting bids on exchange rate from bank dealers in Foreign exchange for the value of the Naira against major currencies.

there exist an inherent and unique economic and political management, not easy to group together. Further, and almost invariably, types of analytical work required in countries that might have similar characteristics are almost, always different. More importantly, with the established economic and political institutions, and the degree in dearth of economic statistics within the less developed economies, obtaining an indepth analysis of one, in no way signifies an attainment of significant knowledge for all.

The model chosen followed an approach similar to Fry (1976), which in turn established its first building benchmark using a demand-for-money function. However, Fry's expected inflation, taken to be the opportunity cost of holding money suggest an error of a double count.²¹ This flaw is because Fry indirectly incorporated current and past values of the exchange rate into the explanatory variables through his representation of the opportunity cost of holding money.

The analysis here therefore departs from Fry by using an adaptive expectation, or error-learning mechanism as an argument for expected rate of inflation.²²

The monetary approach to the determination of Nigeria's exchange rate starts by considering the long run demand for

²¹See Bulford H. Putman and John J. Van Belle (1978). The authors reestimated Fry (1976) by purging his estimated equation of variables calculated with purchasing power parity index. However one feels this reduces the predictive capability of Fry's original model. Therefore, an augmented form of the model is adopted here for consistency.

²²This assumption follows from available works involving developing economies with cases similar to that of Nigeria. For example, see Adekunle (1968); Auernheimer (1979); Musa (1975) and Shahi and Sheik (1979).

real money balances as a function of real income and expected rate of inflation. Thus:

$$(M^*/P)^d = \alpha (Y/P)^\beta e^{\chi\pi^*} \text{-----}(1)$$

where:

$(M^*/P)^d$ is the long run demand for real money balances

(Y/P) is real income, and

(π^*) is the expected rate of inflation.

Taking natural logarithms, equation (1) becomes:

$$\ln (M^*/P)^d = \ln (\alpha) + \beta \ln(Y/P) + \chi\pi^* \text{-----}(2)$$

From the standard adjustment process, the actual or short-run demand for money can be expressed as:

$$\ln (M/P)^d = \eta \ln (M^*/P)^d + (1-\eta) \ln (m)_{-1} \text{-----}(3)$$

where $(m)_{-1}$ represents real money balances in the previous time period.

Equation (2) can now be substituted into (3) to obtain:

$$\ln (M/P)^d = \eta[\ln(\alpha) + \beta\ln(Y/P) + \chi\pi^*] + (1-\eta) \ln(m)_{-1} \text{---}(4)$$

The essential structure of what may be termed the standard

model of the monetary approach to balance of payments theory, almost invariably assumes the influence of relative prices of trade flows. Thereby, making the determination of exchange rates that is not fixed, a monetary phenomenon. For this to be so, there must be an implicit assumption that elasticities of substitution are so great that purchasing power parity theory will hold.²³ The next natural step of the theory of exchange rate determination is therefore the purchasing power parity, which links the domestic price level with the foreign price through the purchasing power parity condition; The theory states that:

$$P = r.w \quad \text{-----}(5)$$

where:

P is the domestic price level

r the exchange rate, and

w is the world price level.

Here, w is the price index in the country whose currency is used as a proxy for world prices. Under a complete floating regime, w would be the price index in the country whose currency is used for the exchange rate.

If Purchasing Power parity condition holds,²⁴ equation (4)

²³That is, a country's price level is pegged to the world price level and must move rigidly in line with it. In the past, one justification for this assumption is that, for the developed countries at least, industrial competition is highly widespread that elasticities of substitution are so great to approach infinity. When this is the case, purchasing power parity theory must hold. Harry G. Johnson (1972) provided another justification for the price pegging, and this is derivable from the general framework of the monetarist approach.

can be decomposed to give:

$$\ln (M)^d - \ln(r) - \ln(w) = \eta[\ln(\alpha) + \beta \ln(Y) - \beta \ln(r) - \beta \ln(w) + \chi \pi^*] + (1-\eta) \ln(m)_{-1} \text{ -----(6)}$$

Market equilibrium and exogeneity of the money supply suggests that, if the actual money stock is greater than desired level, cash holders will get rid of excess balances by spending on goods and services. Given output that is exogenously determined, price level will move up to adjust. Therefore, real value of money stock will fall to the price level the public wishes to hold.

Similar arguments can be put forward for when money stock falls short of desired holdings. The equilibrium is therefore an instantaneous process, so that continuous money market equilibrium is maintained. If this is the case, it is possible to express equilibrium and exogeneity condition in the form:

$$M^d = M^s \text{ -----(7)}$$

$$M^s = M \text{ -----(8)}$$

Equations (7) and (8) can now be substituted into equation (6). When the terms are rearranged and the coefficients simplified, equation (6) can be expressed as:

²⁴An independent test of purchasing power parity is the subject concern of Chapter 4. There, it has been shown to hold for the Nigerian case .

$$\ln(r) = a_0 + a_1 \ln(M) + a_2 \ln(w) + a_3 \ln(Y) + a_4 \pi^* + a_5 \ln(m)_{-1} \quad \text{-----}(9)$$

with the following partial derivatives:²⁵

$$\begin{array}{cccc} \frac{\partial \ln(r)}{\partial \ln(M)} & \frac{\partial \ln(r)}{\partial \ln(w)} & \frac{\partial \ln(r)}{\partial \ln(Y)} & \frac{\partial \ln(r)}{\partial \pi^*} \\ \text{-----} > 0; & \text{-----} < 0; & \text{-----} < 0; & \text{-----} > 0; \\ \frac{\partial \ln(r)}{\partial \ln(m)_{-1}} & & & \end{array}$$

Before the model can be empirically tested, inflationary expectations have to be expressed as an observable variable. There is currently no universally accepted theory about expectation; of which the three main areas of theoretical work are: Adaptive expectations, Rational expectations and Behavioural expectations.

Adaptive expectation or error-learning mechanism is adopted here;²⁶ which form can be expressed:

²⁵It should be mentioned that the implication that $\frac{\partial \ln(r)}{\partial \pi^*} > 0$ conflicts with some of the theories of exchange rate determination. It should therefore be possible to discriminate among alternative theories by examining the empirical relationship between expected rate of inflation and exchange rate. For further analysis, see for example. Jacob A. Frenkel (1978).

²⁶This assumption is made, in order to be consistent with available works from developing countries analysis. See for example, Adekunle (1978); Wong (1977) and Musa (1975). See also, the case of Auto regressive expectations as in Modigliani and Schiller (1973), which maintain that forecasts are based solely on the past history of inflation.

$$\Delta \pi_t = \beta [\Delta \log P_t - \pi_{t-1}] \quad \text{-----}(10)$$

$$1 > \beta > 0$$

where β is the coefficient of expectations and $\Delta \log P_t$ denotes the current rate of inflation. Where economic agents assume that previous inflation will persist in the current period, then it is possible to set $\beta=1$; and thereby formulate the expected rate of inflation on the basis of the growth rate of past values of inflation.²⁷ When this is done, it is possible to express the expected rate as thus:

$$\begin{aligned} P &= ae^{\chi t} = \text{growth rate in prices.} \\ \pi &= P = ae^{\chi t} \quad \text{-----}(11) \end{aligned}$$

That is, the growth rate of prices is taken to be the expected rate of inflation.

Expressed in natural log form, (11) becomes:

$$\log P = \log a + \chi t$$

π can now be set to equal inflation growth.

²⁷Where direct measurement of expectational phenomena is related to the growth rate of inflation, this implicitly means dealing with expectations empirically, based on a structure of observed events about past price behaviour. The strength of this hypothesis can be seen in what amounts to a weakness in its alternative; where expectations are based purely on past events without considering the growth rate of inflation.

That is,

$$\pi_t = \log P = \log a + \chi t$$

therefore,

$$\pi_t = \log a + \chi t \quad \text{-----}(12)^{28}$$

where χ is the rate of growth.

Formation of equations (10) through (12) has now enabled equation (9) to be expressed in terms of observable variables. Thus, (9) can now be written in a form which allows for a monetary approach model test on factors determining Nigeria's exchange rates. That is:

$$\ln(r) = a_0 + a_1 \ln(M) + a_2 \ln(w) + a_3 \ln(Y) + a_4 \pi_t + a_5 \ln(m)_{-1} \quad \text{-----}(13)$$

A few comments are in order before interpreting the estimations obtained for the final equation. First, in estimating expected rates of inflation, the adoptive expectation approach was adopted. For the particular case of Nigeria, rational expectations is less useful. It is more effective on the economy when the actions of the monetary authorities are correctly anticipated by the public. Further, since the formation of expectations and the action or response of the economic agents will almost usually occur simultaneously. The only way one can effectively gauge how

²⁸From preliminary result for the case of Nigeria between 1960-1984, inflation was estimated to be growing at a constant amount of 2.3502 at 0.1047 rate. As an equation $p = 2.3502 + .1047t$.

efficiently expectations about, say the rates of interests are being formed, is to monitor how it affects final estimations. Indeed, the concept of rational expectations seem to allude to a set of expectations which are somehow in equilibrium; even as in many cases when developing economies are concerned, the equilibrium may not exist in the economy as a whole and, maybe both unachievable and undesirable.²⁹

The role of expectation cannot be overstated; since money is an asset. Its demand will depend on expected rates. In essence, the monetary approach implies a special role for expectations in determining the exchange rate. It follows therefore that for a less than efficient market, considerations should be given to the possible indicators which could form the basis for formations about expectations other than accepting conventional hypothesis.³⁰

²⁹Precisely because, the nature of rational expectations expects full information; both in availability and its use. Fundamentally, therefore, for the less developed countries, it is more important to choose a relevantly defined steady state path in terms of real variables which are of importance to the economy.

³⁰For example, deriving market measure of inflationary expectations by relying on the interest parity theory; which maintains that in equilibrium, the premium (or discount) on forward contract for foreign exchange for a given maturity is (approximately) related to the interest rate differential. Fundamentally, however, this measure of inflationary expectations inherently assumes an efficient market hypothesis. In addition, with foreign and domestic assets being perfect substitute.

Empirical Result of tested model

Table R3(i)

A Monetary approach to Nigeria's Exchange Rate

Estimated equation:

$$\ln(r) = a_0 + a_1 \ln(M) + a_2 \ln(w) + a_3 \ln(Y) + a_4 \pi_t + a_5 \ln(m)_{-1}$$

Explanatory
Variables

	Constant	lnM	ln(w)	ln(Y)	π_t	$\ln(m)_{-1}$	R^2	DW	SER
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Dependent
Variable

r1	-0.717 (-0.946)	.032 (.220)	.401 (1.857)	-.079 (-.514)	.081 (.877)	-.153 (-1.622)	.477	.930	.060
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r2	-6.87 (-1.911)	.095 (.135)	1.845 (1.800)	.526 (.783)	.062 (.141)	-.847 (-1.890)	.560	.857	.283
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Notes:

The result of ordinary least squares estimation of equation (9) is presented in table R3(i); where r_1 and r_2 are the logs of the official and illegal exchange rates respectively (end of period averages). That is, Naira/U.S dollar. w , therefore, is the U.S consumer price index.³¹ The money supply (stock) series are averages of beginning and end of year periods as given in the International Financial Statistics. Lagged variables used data from the same sources, and where possible, verification of data with that supplied by the Federal Statistics Office (Nigeria) were

³¹ Preliminary analysis showed a close result for wholesale and consumer price index. Therefore, the slightly better result of U.S consumer prices are used in the analysis.

made. The calculation involved in obtaining (π_t) are presented in the main text of the chapter. Initial experimentation using government expenditure as a proxy for nominal national income produced a poorer result than when gross national income is used. The goodness of fit for estimated parameters is the adjusted R^2 , and the reported Durbin-Watson statistics are the customary ones; t-statistics are in parentheses below each coefficients. Tests for possible autocorrelation in the tested model produced no improvement in goodness of fit. Thereby, indicating that the error term are serially uncorrelated.

Empirical Result

Table R3(i) presents a summary of estimates for the maintained hypothesis of equation (9), based on an annual time series data over the period 1960-1984. In this application, the explanatory power of the monetary approach to exchange rate determination for Nigeria is fairly satisfactory, as measured by reported R^2 ; both for the official and unofficial rates. The regression line is a better fit to the observed data for the illegal exchange rates, as it explains approximately 56 percent of total variation of dependent variable values around their mean, whilst the the official exchange rate can only explain approximately 50 percent.

However, from the signs of the coefficients, not all the estimated coefficients have the anticipated signs on purely theoretical a priori criteria. In the context of the presented model, the coefficients money supply (M), nominal income (Y), expected rate of inflation (π_t) and the lagged

money supply $((m)_{-1})$ maintained expected signs, with money supply and nominal income not meeting the significance criteria at better than 0.05 level, when the official exchange rate is considered. The result faired no significantly better when the unofficial exchange rate is considered. Here, money supply remained insignificant at the conventional level, while the nominal income showed the wrong sign.

It is of interest to note that lagged money supply is however, significant for both types of exchange rates at better than the 0.05 level. Also, the coefficient of the world price index (w), showed the wrong signs but appeared to be statistically significant at better than the 95 percent confidence interval. For both exchange rates, the expected rates of inflation maintained the expected signs, but appeared statistically insignificant at the conventional level.

The result explain some proportion of the movements in exchange rates. Overall, the result presented provide an interesting test of the monetary approach to balance of payments theory. In its explanation of the movements in the Nigerian Naira/dollar rate of exchange, it provides that world prices and past money supply are the principal determinants for both the official and the illegal exchange rates in Nigeria, with the expected rates of inflation asserting a limited influence in the process.

Although the result provide only a limited support for the contention of the monetary approach, however, given the paucity of the flow of information on monetary and other financial markets in the economy, the result seem to suggest

that economic agents rely substantially on past (known) available information. On such basis, the result provides an acceptable explanation for the contention of the monetary approach as applicable in economies of weak financial market structures. For the purpose of future predictability of the model, one would tend to leave out variables that appear to account for very little of the regression analysis. However, an independent test of step-stage method for the model reveal that all variables included account for some proportion of the regression.

An account of the workings of exchange rate system is of considerable value for several types of analysis for an economy like Nigeria. In particular, regarding policy instruments support provision. However, the result obtained cannot claim that exchange rate is an exclusive monetary phenomenon.³² Indeed, exchange rate like any other price is determined as part of the general, real and monetary equilibrium of the system.

³²Dornbusch, in Frankel and Johnson (1978) suggested that it is possible for the equilibrium exchange rate to change without accompanying change in the monetary supply, or the real money demand.

3.6

Conclusions, Limitations and Extensions

The way in which the international monetary system has operated during the last decade, and the emphasis placed on monetary operations in solving economic problems, pay little attention to the economic climate of the developing countries. It is easy to point to the continual rise in unemployment, the acceleration in inflation rates, the decline in growth rates, and the fall in international trade growth of primary products and the ensuing debt crises. The decade since 1973 saw the introduction of flexible exchange rates, and these economies became caught in an international monetary management that is not convinced of an exchange rate system which best serve its international dealings. Abstracting from detailed arguments for favouring one particular exchange regime or another, the analysis of the determinants of exchange rates in Nigeria through an application of the monetary approach theory, provides a reference point within macroeconomic policy options for economies with similar characteristics.

In aligning with the general principles of the monetary approach, exchange rates are thought of as the relative prices of different national monies, rather than as relative prices of different national outputs. This makes the analysis more meaningful, especially when the concept of national output is of reference to primary products, and consistency in output and price uncertain. When the market price of traded outputs for an economy is exogeneously determined, (as the case for Nigeria's oil) it is the addition to income which will be of interest. This

additional income would be reflected in the national demand for money, and hence, the price of money. It is also recognised that exchange rate determination cannot be considered solely as the relative price of two national monies; hence, demand and supplies of these monies. Expectations, incomes, rates of return, and other portfolio choice will also affect the determination of exchange rate; however limiting one accepts their existence within the economy. Although the expected rates of return will affect demand for domestic and foreign monies, proper and accurate evaluation can only be made in an asset market which is efficient. Like all prices determined in the asset market, exchange rates are strongly influenced by asset holder's expectations of the future behaviour of prices. Within the analysis, it is assumed that the government holds an asset market monopoly. The implicit assumption here is that, it is the monetary authorities who are the decision makers and not the public. Therefore, what is important is the perception within the authorities, of the behaviour of the price of oil; which forms the core of national incomes, and expectation. Further, government policy on oil output, and the corresponding revenue that will accrue, act as real factors which must operate through monetary channels, in order to affect the exchange rates.

Where it is recognised that portfolio choices are a limiting factor on demand and supplies of money within an economy, an analysis of exchange rates should be integrated in the macroeconomic framework of the economy, in order to capture portfolio effects. Through the analysis, the assumption that real factors (operating through monetary

channels) more than monetary factors are of significance in determining exchange rate behaviour in such economy as Nigeria is made. Further, changes in the exchange rates usually have real effects which are of legitimate concern to government policy choice. It is also recognised that, concentrating on the 'boom' period does not provide any insight into the exchange rate effect of long term structural changes that will occur in the economy after the 'boom' effect has passed. More importantly, the rapid developments during this period further prevents detailed analysis of the channels of transmission of disturbances among the various sectors in the economy.

Chapter 4

The Purchasing Power Parity Theory of Exchange Rates Determination: Its Relevance to Developing Economies, and Its Applicability to the Particular case of Nigeria.

4.1 Introduction/Review

4.2 Exchange Rates and Purchasing Power Parity Doctrine

4.3 Purchasing Power Parity Theory and the Developing Countries

4.4 Tested Model and Results:

Purchasing Power Parity Theory: A simple Test for evidence in the Nigerian Economy

4.5 Concluding Remarks

4.6 Selected Chapter References (See Reference Chapter.)

4.1

Introduction/Review

Widespread consideration of the Purchasing Power Parity doctrine as a guide to exchange rate determination and management is now an acceptable part in economic writings.¹ In theory, Purchasing Power Parity essentially asserts that prices in one country must equal those in another, when these prices are expressed in common currency. Basically, there are two versions of the theory, and this with their associated problems are discussed in some detail later in the chapter. In one version, it is absolute prices that are equalised, whereas in the other, it is only proportionate rates of price level change that are reflected in proportionate movements in exchange rates. Among the attractions of Purchasing Power Parity doctrine is the fact that, its relationships present a relevant concept under both fixed and flexible exchange rates regime. In a freely floating exchange regime, Purchasing Power Parity is sometimes used as an explanation of international transmission of inflation and of movements in exchange rates. The theory, under the monetary approach to payments balance, shows its adaptability to both types of exchange rate regime. For a small country, a fixed exchange rate determines the domestic price level; whereas, under a flexible rate, the domestic price level - determined by the money supply - determines the exchange rate.

¹There are, of course, fundamental differences on the question of empirical findings and applicability among economists. For a review of articles on the subject, see Officer (1976).

Though there exist important differences in the Purchasing Power Parity relationship under the two types of exchange rate regimes, these are sometimes analysed by looking at time profiles of short-run deviations from the parity path.² As an extended theory of the law of one price, Purchasing Power Parity doctrine have important implications on the analysis of exchange rate determination in developing economies. Precisely because, if all countries produce exactly the same goods which are tradeables, with no impediment to free trade, then the Parity method would be a strict application of the law of one price. This being the case, the Purchasing Power Parity value of a particular currency could easily be measured, and any exchange rate deviations from the measured value would reveal a slow working of the arbitrage process in the traded goods market sector. However, the arbitrage hypothesis require conditions which are simply quite difficult for some particular groups of economies to meet. First, the condition that the price of homogeneous commodity must be the same in all countries, assumes an international integration of wide proportions; both in the conditions for information availability and of sharing that information, and in transaction costs. Secondly, even if the threat of arbitrage keeps prices uniform in the industrialised economies, it does not assume that this position will hold when trade take place between economies of different development.

²The issue is however less straightforward with the inclusion of developing economies in the analysis. Time profiles of short-run deviations from Purchasing Power Parity path can only provide limited information about the reasons for these differences. Genberg (1978) discussed the issue at length.

Further, a distinction still has to be made between goods which are traded and goods which are not;³ this point is later looked at at some length in the chapter under section 4.3.

The concept and various subsequent empirical verification of the Purchasing Power Parity theory as it stands, answered little direct questions regarding the developing economies.⁴ In general, analyses have been carried out for the more advanced countries, with differing views as to how supportive empirical results have been to Purchasing Power Parity hypothesis in any of its form. Notable works include Dornbusch (1980a), Isard (1977) and Frenkel (1980a) to name a few. In Dornbusch (1980a), tables were provided setting divergences in rates of price increases and exchange rate movements during the 1970s; he concluded that Purchasing Power Parity did not work well either in the short or long-run. On the other hand, Frenkel (1980a) who also applied a regression analysis to monthly data from the floating periods of the 1920s and 1970s was able to demonstrate that Purchasing Power Parity performed better in the 1920s. In part, his reasons were the wider divergences between wholesale and consumer price indices within countries in the 1970s.

A careful consideration of the role of Purchasing Power Parity in a model of exchange rate however reveals that it is not a single theory, but rather consists of many alternative

³This point was forcefully made by Balassa (1964).

⁴Exceptions include specific analysis carried out for such economies. For example, DeVries (1968) and Johnson (1970).

theories.⁵ The proposition that the short-run equilibrium is a function of the long-run equilibrium, and that the Purchasing Power Parity is either the long-run equilibrium exchange rate or its principal determinant can therefore be interpreted in support of the particular type of measurement procedure followed. This is more profound if result merely specify causal relationships, and thereby expresses channels of transmission rather than equilibrium relationships between prices and exchange rates. Such possibilities are not inconsistent with the view that, since price levels are never directly comparable across countries, what is then usually observed are price indices. In this form, it makes significant difference therefore whether cost-of-living price index, a wholesale price index, an index of home goods prices or some other measure of the price level is used. It is sufficient to mention therefore that, in any analysis which seriously discusses developing economies, and if a distinction is made between home goods; which are generally non tradeables and those which are, an index that gives heavy weight to the traded goods sector may not provide an adequate test of the absolute version of Purchasing Power Parity doctrine.

Although some advocates of the doctrine have asserted that through international linkage of traded goods, prices would be much the same across countries; Balassa (1964) showed that home goods tend to be labour intensive, and as such, cheaper in countries with lower real wage. Furthermore, Isard (1977) and Kravis and Lipsey (1978) have

⁵See Officer (1976), on the question of Parity theory and the variety of measurements that may be applied in analysis.

challenged the view that prices of traded goods are internationally equalized, pointing out the systematic tendency for real exchange rate to appreciate with rising per capita incomes; thus acknowledging wage differential between countries. On the other hand, Yeager (1958) was one of the early writings to reject Purchasing Power Parity as non operational in its absolute interpretation, pointing out that this approach require any two countries for which exchange rate is to be calculated to have identical consumption or production pattern. Since his challenge, Officer (1974) has rejected this claim, and argued that each country's own pattern of production represents the ideal source of weights in which to construct its price measure for parity computation, insofar as price parity is founded on factor cost parity. Issues on real variables that enter the analysis of exchange rate determination were discussed in Stockman (1980). This issue was later emphasised by Helpman and Razin (1981), who modeled the real exchange rate behaviour over time as a function of differences among countries on rates of time preference. Further pursuit of real variables and indeed, other theories to exchange rates determination does not contribute in any significant way to the analytical intention of the chapter and therefore not considered.

In general, there are sound analytical reasons for skepticism about the proposition that Purchasing Power Parity must hold, in either its absolute or relative form without qualification. ⁶ Providing suitable qualifications and

⁶In section 4.2, bias encountered when the official exchange
(Footnote continued)

extending the realm of assumptions when appropriate, in order to extend applicability of the doctrine to economies of developing countries, and also to carry out an empirical investigation of Purchasing Power Parity doctrine on the particular case of Nigeria with further extension on the theory of money demand, is now set out the chapter.

⁶(continued)

rate is used as a proxy for Purchasing Power Parity were highlighted with analytical support in the literature discussed. Section 4.3 discussed in some detail, important qualifications necessary when the theory is to be extended to include the less advanced economies for analytical purposes.

4.2

Exchange Rates and the Purchasing Power Parity doctrine.

Questions surrounding Purchasing Power Parity theorem are of central issue to the theory of exchange rate determination, and there are two versions of the doctrine- "absolute" and "relative"- which interpretation and measurement constitute to effective building blocks upon which debate and the theory's long-run or short-run acceptability are centred. According to the absolute version, emphasis is placed on the role of commodity arbitrage. Here, Purchasing Power Parity is calculated as a ratio of consumer goods prices for any pair of countries; and will tend to approximate the equilibrium rates of exchange. On the other hand, the relative interpretation of Purchasing Power Parity asserts that, as compared to a period when equilibrium rates exist, changes in relative prices will indicate any necessary adjustments in exchange rates.⁷

In a simplified attempt at interpretation, "absolute" parity can be taken to mean that price levels are equated between countries. This situation is now examined in some detail. Here, there is an implicit assumption that the internal price ratios between countries are at an equilibrium. Immediately, one can question if price levels are directly comparable across countries, particularly between countries which are of different development stages. Beckerman (1966) and Balassa (1964, 1974a) raised this point

⁷Cassel's name (1916) has been associated with both interpretation; see Balassa (1964). Pigou (1922) also made the distinction between absolute and comparative parity theory.

and argued further to show how surplus labour in a country might affect the internal price ratio. This particular issue has wider implication when probed further, as it extends itself to the general question of prices between traded and non traded goods within the economy.

A serious defect in the absolute version of price parity therefore occur, if the decomposition of the general price level of countries into the ratio of the price level of traded and non traded commodities are not the same for each country.⁸ Where there are substantial differences in the range of goods available between countries, a further problem can immediately be recognised. For a full representation of the true parity of commodities in the economy, actual price calculations has to include all commodities and not merely some samples. In this case, a close proxy has to be accepted, but the parity will therefore depend on the weighting pattern of the price measures. Further, for two different countries, this is asking for prices of a range of assortments of goods and services in these two countries, first to be done in local currencies, in order to reflect predominant economic life; and second, to be the same for these two different countries.

This dual requirement will therefore, also require two countries of identical consumption and production patterns. Moreover, if the proposition that internal price ratio is an

⁸ Officer (1974) considers price parity founded on factor-cost basis, thereby making each country's production pattern as an ideal source of weights to construct price measure for parity computation. But this does not answer the question of a limited, heavily subsidised, or non existent traded sector encountered in developing economies.

increasing function of per capita income holds,⁹ it will also be true that a high-income country, which is endowed with more advanced technology, will also have an efficiency advantage in the traded goods sector. Indeed, if the non traded sector includes consumer services (public sector also included), it is then questionable whether an efficiency advantage is not also established in this sector.¹⁰ In any case, a high-income country which is more technologically productive, will have an advantage over a low-income income country on traded goods, especially manufacturing and agricultural products. Other things being equal, this tends to be accompanied by a high wage rate, and if wages are domestically equalised across all industries, the internal price ratio will be higher in high-income countries.

As it stands therefore, the absolute version of Purchasing Power Parity theory and its application between a developing economy and a 'standard' one, hinges crucially on the question of efficiency advantage between such countries. This is primarily because, a price parity calculated from general price levels which is assumed dominated by prices of the traded goods sector, will yield an exchange value of the high-income country's currency that is lower than its true long-run equilibrium value. If this is not to occur, observed price differences over consumer services has to be offset by quality difference between the countries. However, any

⁹See for example, Hagen (1957,1960) and Balassa (1961,1964) who further clarify why internal price ratio increases with per capita incomes.

¹⁰The analysis of productivity difference or superior efficiency in this case will translate into quality differences in consumer services. See Officer (1974) on the relevance of productivity difference.

contemplation of this happening is difficult to envisage, unless home goods and tradeables can be identified as sufficiently close substitutes in production; or alternatively, if trade can assure factor price equalisation, in which case the technologies for producing home goods in the assumed different economies were identical.

For developing economies, to view the exchange rate as the determined variable and the price levels as causal variables, restricts the view also that, there might be chains of causation running from the exchange rates to prices. Indeed, the exchange rate is only approximately equal to the ratio of the price levels of traded goods for two reasons. First, trade restrictions, tariffs and transport costs, and foreign exchange quotas in many developing economies prevent an exact equalisation of prices of traded goods.¹¹ Secondly, weighting pattern regarding the traded good's price level, as mentioned earlier, may differ between any two countries. If analysis of the absolute version of Purchasing Power Parity was extended to cover for other markets, then the assumption of integrated trade for example, in a capital market context would imply two things. Firstly, that there exist a frictionless international capital market; and secondly, that the same return on security or commodities are applicable for residents of all countries, regardless of the different levels of risks or inflation in different countries.¹² It is of course, highly questionable if this is

¹¹ An extreme case where controls are extended to the domestic sector in the form of price controls, wage control, rationing of consumer goods, and allocation of raw materials might render Purchasing Power Parity inapplicable.

immediately achievable, even among the advanced countries where extensive economic integration assures reasonable degree of price and other level of economic unification.

The relative interpretation of purchasing power parity asserts that, in a comparison of a period when equilibrium exchange rates prevailed, any change in relative prices would give an indication of necessary adjustments in exchange rates. This interpretation therefore suggest that, comparisons be made with some previous period taken as the reference point. Hence, for this reason, relative parity has a particular problem which is not associated with the absolute parity interpretation. Precisely, a base period is required for calculating relative parity.

Due to this fact, two things need to occur simultaneously to guarantee that, even in the short-run, an equilibrium is attained. First, the exchange rate has to float freely, and secondly, the base period exchange rate itself has to be in long-run equilibrium. Choosing a base period and any consequent associated problems can be further explored by the fact that, the choice for the base period requires a period during which the actual exchange rate equals the equilibrium rate. By definition, this choice assumes that one already knows or at least can recognise, whether an actual rate diverges from the equilibrium rate. If this is the case, one can recognisably choose a period where divergence is minimal, and there would be no need for

¹²Dornbusch (1975a), Frenkel and Rodriguez (1975) emphasised the fact that exchange rates are determined in the asset markets. See also Fama and Farber (1979), where exchange rate analysis was extended to cover capital markets.

computing parity rates.¹³ Further, any change in economic conditions of some significant magnitude since the last base period was chosen, will affect relative parity. In other words, the "relative" version of Purchasing Power Parity may be applied when it is no longer required. In subsequent test validity therefore, one is left to ponder what consequence will result, should the divergence between the actual and equilibrium exchange rate exceed that between the parity and equilibrium rate.

Purchasing Power Parity theory makes reference to the general price level regarding all goods and services. This being the case, an important situation then emerges concerning developing economies. For the long-run equilibrium exchange rate to have any significant meaning in reflecting accurately such economies; that is, the expected Purchasing Power Parity between a particular currency and those of the rest of the world, a set of price data is required. Available price data has to be used in calculating a ratio of the domestic price level to the average price level of its trading partners, which can be considered a reasonable estimate of the average Purchasing Power Parity value of its currency in terms of foreign currency. The use of price index however, entails numerous problems particularly in an economy such as Nigeria. To begin, one has to choose an index which gives the correct balance with respect to traded and non-traded goods. This is not an easy task as prices of

¹³Kindleberger (1973), and McKinnon (1979) proved that under conditions of trade interruptions and different rates of inflation, the relative form of Purchasing Power Parity holds.

tradable goods may be set in the short term to maintain competitiveness in the world markets. Further, price subsidies at home mainly on political grounds is a common phenomenon in developing countries. This will therefore suggest a reduction in accuracy with which the short run equilibrium exchange rate approaches Purchasing Power Parity when there are recognised imperfections. Yeager (1958) for example, argued that any imperfections will merely reduce accuracy of the theory, while Scammell (1961) seems to suggest that the existence of imperfections renders a breakdown in theory. Where imperfections occur, it seems reasonable to concentrate on the degree of such imperfections and how it may affect applicability of theory to particular economies, rather than their mere existence.

The question of appropriate price index should also be viewed in a much wider context of differential price movements between countries. It is of course, doubtful whether prices can ever be synchronised simultaneously between countries of varied development stages, and therefore, is the transition period sufficiently short to provide what can be accepted as similar speed of adjustment of prices? This is because, if protracted deviation were to take place, international comparability and the measurement of Purchasing Power Parity in terms of effective exchange and inflation rates is considerably weakened. It was earlier recognised, that the relative version of Purchasing Power Parity emphasizes the importance of monetary factors, with the line of causation running from the money supply to prices and unto exchange rates. Particularly, the line of causation is relevant when an international comparison of changes in

wholesale prices is made, to be used in establishing a base period. By their very nature, wholesale price indices are often heavily weighted with traded goods, with prices therefore reflecting changes in the world market rather than domestic inflationary pressures. While this may not present difficulties if inflation differentials in the exchange rates of home and world currencies can be reflected. However, the problem becomes more difficult when wholesale price indices are used to express the national inflation rate, and Purchasing Power Parity is then measured in terms of effective exchange and inflation rates. Furthermore, it is unlikely, with the acute problem of data availability, if this can be achieved, or particularly, obtained when required. If it is to the price level in general (home and foreign) that exchange rate must adjust, and if the price level reflects what exists in the world market, then prices can be regarded as exogeneous; what effect would this have on exchange rates? But this is not the end of the story, and when the behaviour of the monetary authorities can also affect exchange rates, then neither prices nor exchange rates can properly be regarded as completely exogeneous. The question that needs answering is therefore, if Purchasing Power Parity is the sole determinant of exchange rates.

Whitman (1975) suggested that the world prices and the exchange rate determines domestic prices. This he did by assuming a complete integration of the world economy including capital flows, thus ensuring that changes in the exchange rate will merely affect domestic price levels. Darby (1980) reinforces this view by suggesting that a monetary disturbance will affect the price level and/or exchange rate,

and this will lead to the restoration of the previously established Purchasing Power Parity relationship. For this to happen, the rate of inflation between countries has to be kept in check by the same rate of change in the exchange rate, equating inflation rate divergence between countries. This dual purpose factor concedes that variables other than equality Purchasing Power Parity may influence the equilibrium exchange rate.

Purchasing Power Parity emphasizes the role of prices in exchange rate determination, but how relevant is the role of income? Earlier discussion suggested that a freely floating exchange rate may bear no relationship to the Purchasing power Parity if restrictive measures in the form of wages or price controls is applied by the authorities. With such conditions, the Purchasing Power of domestic currency under market conditions will be affected. Income is thereby recognised to influence exchange rates. However, in order for incomes to affect exchange rate, and cause it to deviate from its Purchasing Power Parity path, the forces in incomes will have to constitute a structural change. Thus, incomes forces induced by shifts in the business cycles as suggested by Yeager (1958) may not involve a differential shift in internal price ratio between countries. And since Purchasing Power Parity represents a long run equilibrium exchange rate, mere cyclical variation in incomes will not affect equilibrium. However, if incomes has an effect on capital markets, then both the short-run and the long-run capital movements will affect equilibrium exchange rates. Here, the magnitude and persistence of flow is important. Further, an interesting aspect of wage adjustment is that they are hardly

identical between countries, and this being the case, parallel changes in the general price level may not follow; and this will affect the applicability of Purchasing Power Parity doctrine. Finally, if true that changes in the general price level are determined mainly in the process of technological improvements and wage adjustments, neither of which can be assumed to follow the same pattern in every country, then Purchasing Power Parity can only provide guidance as a doctrine of exchange rates.

4.3

Purchasing Power Parity Theory and the Developing Countries.

International theoretical literature on Purchasing Power Parity and its relevance to exchange rate determination discusses fully, by implication or otherwise, some link in Purchasing Power Parity as a measure of the equilibrium exchange rate.¹⁴ However, with such a wide and varied treatment of the doctrine, few of the analytical treatment on the subject comes to grips with an empirical evaluation which exclusively relate to the less developed economies. An important exception which incorporates a less developed economy 'element' in an analysis of the doctrine is found in the work of Clague and Tanzi (1972). Restatement of some of the theoretical aspects of the doctrine which places restraint on applicability with regards to developing countries, is therefore an important part in the understanding of why such economies are accorded limited roles in empirical evaluations. A crucial variable that comes under scrutiny, and upon which many of the theoretical building blocks can be affected is the law of one price.

In Purchasing Power Parity doctrine, it is almost assumed that whatever may hold true about the price of home goods, prices of internationally traded commodities must be identical in different markets.¹⁵ This, in itself, is based

¹⁴The literature range is a substantial one. Works include a review of articles by Officer (1976), Frenkel (1980a), Dornbusch (1980a), Kravis and Lipsey (1978) and Isard (1977).

¹⁵In some cases where difference in prices are accepted as possible, it is also generally asserted that these
(Footnote continued)

upon other assumptions which possesses limited realism in relation to most developing economies. While the price levels of different countries are understandably linked together, the links are far looser than normally accepted when treating the parity approach to exchange rates, even among the industrialised countries.¹⁶ It is generally accepted that prices of traded goods, particularly among the more industrialised countries are of a uniform level, because their products are highly substitutable. While on the other hand, the prices of non traded goods are kept uniform across frontiers, again by a substantial element of substitutability that exists between traded and non traded goods in consumption, and among the inputs of production of such goods in these countries. In reality, prices may differ substantially for competitive products exported by different countries; and according to the type markets, different prices may be charged for a given product to different destinations.

A further point is raised by the fact that, a comprehensive trade link and free movement of merchandise between any two countries may be unattainable. Precisely because, no two country's trade will follow the same specified pattern in commodity trading. Even where some high level agreement in trade is possible, a further problem

¹⁵(continued)

differences are transitory and will disappear through arbitrage or the threat of arbitrage. See for example, p.28 of The Monetary Approach to Balance of Payments; University of Toronto Press, Frenkel & Johnson (eds).

¹⁶For some support on this view, see for example, International Financial Statistics (1976) June; Kravis and Lipsey (1971, 1977a) and Israd (1977).

arises when more than two countries are considered; neither trade movement of commodities nor trading partners can be assumed to follow the same course in every country. In its extreme (naive) form, the Purchasing Power Parity doctrine denies that relative price level change; consequently, any differential movement in the price levels of a pair of countries merely corresponds to an adjustment tendency of the exchange rates so as to maintain the parity relationship. Where there are differences in prices, especially in the case of economies of different structural formation, it is important to note what happens to these price differences through time.¹⁷

It is also proper to ask where, when prices alter with time, if these are caused by changes in the long-run structural factors, such as relative GDP/Capita, or long-run and short-run balance of payment factors; such as trade flows and capital movements. When dealing with developing economies, payment mechanism is important for two reasons. First, not all goods can be traded, and further, not all domestically produced goods are perfect substitutes for foreign goods. Secondly, such economies usually have restrictions on various ways in which their national currencies are permitted for use in international transactions.

There is another aspect on the question of equilibrium

¹⁷ In situations when price difference between any two pair of countries remain constant or where its direction and magnitude is theoretically predictable, then no weakness of doctrine can be inferred. Here, prices do not have to be equal to begin with. However, the differential ratio is either constant or predictable.

exchange rates under the Purchasing Power Parity doctrine which is of concern here. Since equilibrium is reached when at the market exchange rate, the demand for, and the supply of foreign exchange is equal, therefore a variable which might affect the demand side of the equation has to be considered relevant in the argument. Simply, demand and supply will not only depend on relative prices, but also crucially on incomes. The emphasis here is that, though exchange rate changes can alter the prices of a country's goods relative to those of others, and that these price changes constitute an important factor in inducing quantity changes regarding export and import values and hence the balance of payments; it is equally important to assert that prices may be equal at a particular rate of exchange, and yet the balance of payments may not be in equilibrium. It follows therefore that equality is only part of a package of requirements needed for the equilibrium condition on the exchange market, and for a fuller picture, changes in incomes is also relevant.

Consider a situation where there is a change in income levels, say because of revenue increases in oil exports. This will not only lead to domestic price changes, but also affect demand.¹⁸ The implication therefore, is that the equilibrium of the exchange market requires not only that prices be equal between say Nigeria and a chosen standard country at the exchange rate, but also that reciprocal international

¹⁸Reference as to the effect of increased incomes on prices need not always follow this path. While an increase in monetary incomes in one country relative to the other will deteriorate its exchange rates through increased imports, price levels may actually remain constant.

demands are equal. This in turn implies that relative real and money incomes levels in the two countries bear a definite relationship to each other.

Thus far, the discussions suggests a strong monetary influence on exchange rates determination, plus a high role cast for price exogeneity. Due to this aspect, the dominant nature of balance of payments equilibrium in the argument of often ignores conflict which might arise between balance of payments equilibrium and other objectives. At times, objectives other than that of balance of payments equilibrium is of crucial importance to the developing countries, especially when there may be nothing particularly virtuous or conducive to welfare in balance of payments equilibrium. Therefore, abstracting from the possibility of exchange rate changes and the adoption of policies designed to improve the capital account of the balance of payments, equilibrium of the account is not desired for its own sake.

Unless of course, balance of payments is looked at as a whole, along with others, towards a final objective to the society to maximize welfare, a conflict between say, balance of payments equilibrium and both full employment and faster growth might occur. However, while strictly adhering to the confines of exchange rates and balance of payments, there would appear to be negligible conflict between balance of payments equilibrium and stable prices. It follows therefore that since the exchange rate is determined as part of the general, real and monetary equilibrium set of the economic system, there is no relevant sense in asserting that it is an exclusively monetary phenomenon. Indeed, the case where changes occur in the composition of production between home

and traded commodities, exchange rates equilibrium may change without any accompanying change in the monetary sector.¹⁹

Stronger reasons for doubting the practicality of Purchasing Power Parity doctrine, and its applicability to its developing countries relate to the very nature of these economies. Later, discussion will touch on the problem of uncertainty, but first, consider the task of choosing a standard country on which to determine world price upon which parity estimate (calculation) are based. The U.S. dollar is a traditional currency, but other advanced nations have a currency which could be chosen for the role. While in practice the position of the dollar as the dominant form of international money,²⁰ and the point that there is no serious loss in restricting discussion to the case of the dollar or the American consumer/wholesale prices, because the principles involved would essentially remain unchanged does not help matter conclusively. Nonetheless, it has not been established that with another currency, the adjustment costs and process of the exchange rate structure takes longer. In a way therefore, the point at issue extends beyond currency choice. If assumed, for the sake of argument, that the

¹⁹Paul Krugman (1978) demonstrated the failures of Purchasing Power Parity in the short run represent the interreaction of real shocks within an endogenous monetary policy. However, the question of whether there is more exchange rates than Purchasing Power Parity is not resolved; as Haberler (1936) PP 37-8 and Samuelson (1948;1949) PP 397 stipulates that parity doctrine possesses some truth when applied to monetary disturbances. Particularly Samuelson's (1964) observation that one should expect Purchasing Power Parity to hold when disturbances are purely monetary in character.

²⁰It is also the value currency in which Nigeria sell its oil, and this initial advantage might make the selection of other currencies seem unattractive.

U.S.A. constitutes Nigeria's biggest trading partner, and therefore its currency and price indices are used as the standard. What meaningful inference can one obtain by any comparison of exchange rates and Purchasing Power Parity between these two "unequal" trading partners?

If trade takes place where the standard country has an advantage in the production of all commodities traded and non traded, it follows that, whether or not one uses the standard or the second country's consumption pattern as weights, the Purchasing Power Parity between the currencies, defined as the ratio of the price level of the second country to that of the standard country, will be less than the equilibrium rate of exchange, expressed in terms of the currency of the standard country. In order to limit defects in parity expressed equilibrium, individual country analysis would suggest that the optimal standard country be that with which the home country's trade and payments link are strongest. Thereby, suggesting that some concept of effective exchange rates be applied to Purchasing Power Parity equilibrium determination, so that the standard currency is now replaced by some approximately weighted average of the currencies of the home country's principal trading partners.²¹ On other relevant issues, one cannot abstract from trade restrictions, differences in the characteristics of inputs to the finished goods between countries, and time lags in the market reactions between countries. Where international productivity differences are greater in the production of traded goods, the currency of the standard country (presumably with the

²¹See IMF Annual Report, 1975, pp 31-33.

higher productivity levels) will appear to be over-valued in terms of Purchasing Power Parity.²²

Another problem associated with productivity differentials was in Balassa's (1964) exposition. In it, the greater the productivity differentials in the production of traded goods between two countries, the larger the difference in wages and prices of services, and the corresponding gap between Purchasing Power Parity and the equilibrium exchange rate. More precisely, since the question of the service sector is entertained in parity calculation but not directly affecting exchange rates, the Purchasing Power Parity between the currencies of any two countries, expressed in terms of the standard country, will be lower than the equilibrium rate of exchange.²³

The problem here is two-fold. First, there may be non-negligible differences in the relative price of non tradeables across countries, given a manageable distortion in tradeable prices. Therefore, with significant wage differentials both in the tradeable and non tradeable sectors within an inter-country analysis, the high-productivity country will tend to have a higher relative price for non tradeables. A second and more important issue is that, due to differentially efficient rates of the financial sectors between countries, time lags expectation and uncertainty will differ.

²²Whereas the strict application of the Purchasing Power Parity doctrine would indicate an incorrect answer for determining equilibrium exchange rates, any observed relationship between Purchasing Power Parity and exchange rates may provide some clue as to the over-valuation of currency.

²³On this view, see Gilbert and Kravis (1954) PP 113-20.

Dornbusch (1975) with Frenkel and Rodrioguez (1975) stressed that exchange rates are primarily determined in the asset market. This being the case, the role of speculative behaviour and uncertainty in such markets will also affect exchange rates determination. Therefore, theories of expectation and uncertainty which may have assumptions that are inconsistent with the workings of developing economies, and the consequent effects on exchange rates determination in the asset markets should not be overlooked. With most expectation models, risk premia are assumed constant; thereby some learning parameters can be introduced to impose rational expectation hypothesis condition on information used in financial markets. However, this can only take place under the existence of effectivelly organised financial markets, which can be seriously lacking in some economy. If accepted that exchange rate is the price of one currency in terms of another currency, then the asset market approach to exchange rate determination needs to take into account that, not all currencies will have a well organised financial market. Consequent interpretation of the equilibrium rate based on international comparison should thereby reflect this fact. Also depending on the efficacy of different financial markets, time variation in risk based activities cannot be assumed to follow the same path in every country. All this suggest that the developing countries in particular, need to ascertain, if exchange rate is akin to their stock market prices, with all the association problems of such markets in their economy, or more in alignment with the aggregate commodity prices. The effect of risk aversion and uncertainty on international trade has been documented by

Roll and Solink (1977). In the context of a developing economy such as Nigeria, the question of risk is hardly manifested in changes in asset due to changes in the value of foreign money in terms of goods, but risk due to political intervention such as exchange control.²⁴ In essence, the risk and uncertainty aspect of the asset market approach to exchange rate determination can be revised to avoid inadequacy of some behavioural assumptions under uncertainty in relation to developing economies.

A yet unresolved aspect of the theory of Purchasing Power Parity which is of importance to an economy such as Nigeria, is the choice of index in determining Parity. This controversy is not helped by the fact that, even when international price arbitrage is accepted, indices in different countries may not move together, unless of course, they are weighted alike. One can immediately go one step further and relate any imperfections of the markets to be reflected in the index of a country. Thereby, it is possible that prices at the exchange rate between the home country and the chosen standard are the same, but indices and particularly, their direction are not. This point is of importance in empirical analysis and interpretation of results. The next section addresses the question of how empirically agreeable the Purchasing Power Parity doctrine is, to the economy of Nigeria.

²⁴See Aliber (1975) and (1975a) on the question of exchange and Political Risk.

4.4

Tested Model with Result obtained:

Purchasing Power Parity Theory; A simple test for evidence in the Nigerian Economy.

This section presents a simple model for an independent verification of the Purchasing Power Parity doctrine.²⁵ The proposition that exchange rates does not affect relative goods prices - or equivalently, that changes in exchange rates will be in proportion to relative information- is generally referred to as Purchasing Power Parity doctrine.²⁶

In itself, purchasing power parity is not a complete theory of exchange rates. However, it forms the critical ingredient in the general view of exchange rate determinants. One of its important features is that, it provides a primary building block for models that attempt to explain the economics of exchange rates.

In the narrow sense of goods arbitrage for international traded goods; where the law of one price is accepted as a complete theory of world inflation,²⁷ the behavioural model

²⁵ Many empirical models, particularly on monetary approach to exchange rate dynamics implicitly assume that purchasing power parity condition holds in one form or another. On this premise therefore, limited steps for an independent test of the theory takes place. For example, see Fry (1976); Frenkel (1976), in Frenkel and Johnson (1978), and Dornbusch (1978) *ibid*. The tests carried out here further strengthen the empirical analysis of the proposition concerning the relationship of purchasing power parity and exchange rates, within the monetary approach framework considered in chapter three.

²⁶ Officer (1976) provides a comprehensive survey of work on Purchasing Power Parity.

²⁷ Here, one of course, abstracts from tariffs and transport costs, which, if assumed to occur would introduce obvious modifications to the law of one price.

of purchasing power parity provides an anchor in the link about long-run exchange rates. Explained under the commonly adopted assumptions of time invariant expectations about the long-term real exchange rate and risk premium, purchasing power parity would have important implications for the analysis of exchange rates if it holds; so that exchange rate equates the prices of traded goods in alternative currencies.

The purchasing power parity doctrine when applied between two countries is defined as either the ratio of the two countries' price levels (absolute PPP) or the product of the exchange rate in a base period and the ratio of the countries' price indices (relative PPP). In essence, absolute parity guarantees that changes in the goods price ratio will equal changes in the exchange rate (relative PPP).

In Nigeria, the conventional wisdom is that the exchange rates (at least those in operation prior to the introduction of a two-tier bidding regime of determination (1986)), are of little economic significance and indeed irrational, and mainly artificially determined.²⁸ This therefore provides a strong case for the modelling of real exchange rates on some notion of goods market or balance of payments equilibrium; if only to provide empirical proof in justifying or refuting such wisdom. More importantly, the major shifts in the relative price of oil during the 1970s further strengthen the case for arguing that revisions in expectations about the long-run purchasing power parity level may have been an

²⁸See for example, the lengthy discussion on the subject in Rimmer (1985); further evidence of an overvalued currency is provided by the clamour from the IMF, through negotiation for loans (1983-1985/6), for a devalued Naira.

empirically important neglect in changes in the exchange rates over the past decade.²⁹ Notwithstanding, well documented cases of the apparent use of purchasing power parity by national governments in connection with the setting of a new exchange rate cannot be ignored.³⁰ For the United Kingdom and Czechoslovakia, purchasing power parity was used to calculate the amount of overvaluation of the currency that would remain at a predecided new exchange rate of national currencies. In essence, this would enable measurement of the amount of price-level adjustment at home and abroad that would be required to maintain the chosen new exchange rate. While on the other hand, in the Belgium case, parity application was used to actually compute the new exchange rate.

²⁹ It is acknowledged that on an international scale, some difficulties will arise in trying to identify such changes in exchange rates, with revisions in expectations about the long-run parity level. Precisely because, economic stabilization policies undertaken by different countries have the tendency of responding differently to oil price shocks. Especially, when these countries are non producers of oil.

³⁰ The United Kingdom, Czechoslovakia and Belgium provide for specific cases, all occurring in the periods between the two world wars. Krugman (1978) also presented another look at evidence concerning purchasing power parity and episodes from the 1920s and 1970s.

Tested Model

The model adopted starts by restating the Purchasing Power Parity Theory as:

$$P = r P_w \text{-----}(1)$$

where;

P = domestic price level in domestic currency
(in indices, it is the domestic price index),

r = exchange rate; domestic currency for foreign.
(Naira/dollar)

P_w = foreign price level, in foreign currency; (often expressed as the price index in the country whose currency is used for the exchange rate. In this case, P_w is the world price index; in which the U.S. price indices are used as proxies.³¹

The idea is that the purchasing power of the Naira in relation to that abroad, represents fundamental factors that a rational exchange rate policy would need to consider. In particular, where skepticism about the Naira's exchange rate is widespread, then one should find support in the view of taking purchasing power parity as the norm, and comparing the actual exchange rate with it.

³¹World consumer price indices and wholesale were computed on the basis of the strength of trade, and preliminary results of Nigeria's major trading partners show that the U.K consumer prices has a stronger link with that of Nigeria. On this account, it therefore obtains a higher rank.

If equation (1) is restated in terms of r , then it is possible to write:

$$r = \alpha P/P_w \text{ -----(2)}$$

where r , P , P_w have definitions given above and α is an arbitrary constant term.

It is often much more convenient to state purchasing power parity as a proposition about the logarithms of variables. When this is applied, the parity implies:

$$\ln r = \ln \alpha + \ln P - \ln P_w \text{ -----(3)}$$

A natural test of Purchasing power parity employed by Krugman (1978), regressed the spot exchange rate on relative prices;³²

Thus, estimating the equation:

$$\ln r = \log \alpha + \beta (\ln P - \ln P_w) + \lambda \text{ -----(4)}$$

One can therefore test Purchasing power parity by testing the hypothesis $\beta = 1$. The expectation is that the constant term does not differ significantly from zero, and the slope coefficient (β) does not differ significantly from unity; with the error term serially uncorrelated.

³²This trend of analysis can also be found in Frenkel (1978) and in Amacher and Hodgson (1974).

Table R4(i)

PPP Theory: A simple test for evidence in the Nigerian economy

Estimated equation: $\ln r = \log \alpha + \beta(\ln p - \ln pw) + \lambda$

Explanatory variables	α	β_1	R^2	DW	SER
Dependant Variable					
r_1	.409 (20.281)	.061 (1.392)	.0374	.433	.077
r_2	.1452 (2.3696)	1.0048 (7.4103)	.070096	.09374	.2366
	α	β_2	R^2	DW	SER
r_1	.385 (24.177)	.0694 (1.551)	.055	.438	.077
r_2	-0.2417 (-4.5803)	1.0261 (6.9609)	.6735	.9275	.2473

Table R4(ii)

Explanatory Variables	α	β_{11}	R^2	DW	SER
Dependant Variable					
r_1	.4183 (15.730)	.0651 (1.191)	.0179	.4183	.0794
r_1	.3037 (3.3863)	1.1366 (6.1637)	.6166	1.004	.2679
	α	β_{12}	R^2	DW	SER
r_1	.3934 (24.516)	.0785 (1.3869)	.0360	.4229	.0786
r_2	-.1314 (-2.2936)	1.1560 (5.7142)	.5792	.9700	.2807

Table R4(iii)

Part 2; Correcting for Autocorrelation

Explanatory Variables	α	β_1	R^2	DW	SER	FVR
Dependant Variable						
r_2	.2300 (2.144)	1.1850 (5.6243)	.5732	1.533	.2077	.5689
	α	β_2	R^2	DW	SER	FVR
	-.2246 (-2.2115)	1.2063 (5.2124)	.5345	1.5224	.2174	.5654

Explanatory Variables	α	β_{11}	R^2	DW	SER	FVR
Dependant Variable						
r_2	.3650 (2.6900)	1.2132 (4.3275)	.4625	1.2461	.2454	.4762
	α	β_{12}	R^2	DW	SER	FVR
	-.0952 (-0.9560)	1.2300 (4.0471)	.4040	1.2153	.2555	.4967

Table R4(iv)

Explanatory Variables	α	β_1	R^2	DW	SER
Dependant Variable					
r_2	.1454 (2.3761)	.9729 (7.4082)	.6918	.9073	.2363
	α	β_2	R^2	DW	SER
	.1603 (2.5250)	1.2686 (7.2674)	.6834	1.004	.2395
	α	β_{1_1}	R^2	DW	SER
r_2	.3037 (3.3863)	1.1366 (6.1637)	.6166	1.0014	.2679
	α	β_{1_2}	R^2	DW	SER
r_2	.3606 (3.3261)	1.4837 (5.4408)	.5543	1.0362	.2889

Table R4(v)

Part 2; Correcting for Autocorrelation

Explanatory Variables	α	β_1	R^2	DW	SER	FVR
Dependant Variable						
r_2	.2300 (2.144)	1.1850 (5.6243)	.5732	1.533	.2077	.5689
	α	β_2	R^2	DW	SER	FVR
	-.2108 (-2.1590)	1.4169 (5.5826)	.5698	1.5458	.2205	.4681

Explanatory Variables	α	β_{11}	R^2	DW	SER	FVR
Dependant Variable						
r_2	.3650 (2.6900)	1.2132 (4.5343)	.4625	1.2461	.2454	.4761
	α	β_{12}	R^2	DW	SER	FVR
	.3872 (2.4589)	1.4719 (3.8374)	.3771	1.2245	.2678	.4511

Notes:

These regressions are ordinary least squares of the equation $\ln r = \log \alpha + \beta (\ln P - \ln P_w) + \lambda$. Where r_1 and r_2 are the logs of the official and illegal exchange rates respectively (end of period average). The slope term (β) associated with the estimation of $(\ln P - \ln P_w)$, has β_1 , for when USA wholesale/consumer price index are used as a proxy for P_w (see model formulation); for β_2 , P_w is computed by a ranking order on the strength of both preliminary results and available trade patterns figures on Nigeria's major trading partners.³³ β_{11} and β_{12} indicated lagged forms of β_1 and β_2 . In the result, the multiple coefficient of determination used to ascertain the goodness of the parameter estimates is symbolized by R^2 ; the adjusted R^2 . The Durbin-Watson

³³The procedure involves a preliminary test of PPP hypothesis for Nigeria's major trading partners; USA, UK, West Germany Japan and Canada. The result was that none of the trading partner's wholesale or consumer prices gave a conclusive indication that it alone can be used as a proxy for the foreign (world) price level. However, the results obtained from this exercise, in conjunction with reported trade flows (see Lloyds Bank Country report 1984/5) allows for an accurate weighting system in formulating a better proxy for the world wholesale/consumer prices.

statistics refers to the customary Durbin-Watson statistics and, the t-statistics are in parentheses below each coefficient. SER represents the standard error of regression. Maximum likelihood iteration technique is employed to adjust for first order serial correlation in residuals, and the column labelled FVR (final value of RHO) gives the estimates of the coefficient of serial correlation when adjustments for possible autocorrelations has been made. All data are from International Financial Statistics and Nigeria Statistical Office.

Empirical Results

Table R(4) (i) through R4(v) reports a summary of estimates for the maintained hypothesis of equation (4), based on annual time series data over the period 1960-1984.

From table R4(i), a formal test of the hypothesis $\beta = 1$ leads one to accept that PPP theory holds for Nigeria's exchange rates given at official level (r_1) and those derived using illegal exchange rate. The test is of doubtful value, however, for the official exchange rates, since if accepting 5 percent level as the significance criterion, one can conclude that the low R^2 indicate no correlation. However, the fit is of satisfactory nature as measured by both the R^2 and Durbin-Watson statistics at 1 percent level as the significance criterion when the illegal exchange rate (r_2) is used to estimate β . Of the utmost importance is the sign of the coefficients, and illegal exchange rate (r_2) consistently yield better result for the maintained hypothesis.

Tabulated result conclusively shows that using (β_1) USA wholesale/consumer price indices and a computer version (β_2)

based on pattern of trade of major trading partners with Nigeria, does not greatly improve estimated results. The estimates in table R4(i) for both the official and illegal exchange rates can be improved upon when the lagged values of these exchange rates are substituted in the explanatory variables. Again, the correlation relation is well marked for the illegal exchange rates.

With tables R4(i) and R4(ii) providing support that the regression line is a good fit to the observed data for illegal exchange rates at better than 95 percent confidence level, table R4(iii) aim to improve on the small slight of some degree of the autocorrelation of the errors, as indicated by the Durbin-Watson statistics. The result presented in table R4(iii) shows an improvement, and clearly give much comfort to the support that PPP theory holds for the illegal rather than the official exchange rates in Nigeria.

The exercise for estimates presented in table R4(iv) and R4(v) regards an adjustment in calculating β_2 (computed world wholesale/consumer price indices) by only including useful countries in the weighting priorities attached to trading partners, thus eliminating superfluous countries of Japan and Canada.³⁴ The presented estimates shows that world wholesale/consumer price index useful for determining PPP in Nigeria can be that of USA, or principle trading partners

³⁴Useful countries (here USA, UK, France and West Germany) is recognised by preliminary tests which improves R^2 without rendering the individual countries coefficients unacceptable on a priori considerations. Whereas superfluous countries are those that, while not affecting other countries coefficients to any considerable extent, non the less does not improve on obtained R^2 .

that include UK, USA, France and the West Germany. However, with the exception of USA, these countries wholesale/consumer prices in isolation, cannot be used as world prices proxy.

These simple tests, then confirm the maintained hypothesis, for the purchasing power parity theory. It shows first, that if the theory is to be accepted for Nigeria, the often expressed impression that the official rates hardly reflects world and domestic price changes is now substantiated. More importantly, these empirical results confirm the casual impression that exchange rate movements in the long run are related to price changes; when a realistic exchange rate system is in operation.

The explanatory power of the final equation presented in (4), is somewhat restrictive, because the exchange rate issue concerns the legitimacy of approximation in the ratio of the price levels of traded goods. This can be hampered for two reasons. First, trade restrictions and transport costs prevent an exact equalization of prices of traded goods. Secondly, the weighting pattern within the traded goods price level may differ significantly in the two countries, particularly where there are gaps in development level.

Officer (1976) has also shown that a deviation between a country's actual exchange rate and purchasing power parity involves: one, a divergence between the country's internal price ratio and that of the standard country and/or second, a divergence between the relative weights of traded and non-traded commodities in the two countries' price levels.

Balassa (1964) provided some comforting thoughts however, by demonstrating that purchasing power relationship does not also imply that the cost of living will be the same in Nigeria and the United States. If for example, there exist a wide disparity in levels of productivity between the two countries, the result is of a much lower price in non-traded goods and services being observed in Nigeria. Thus, it is not obvious that a systematic price difference in internal price ratios is a case against the validity of Purchasing power parity theory. The suggestion is however that, in some sufficiently long-run, the parity condition holds strong conviction. At least in its relative version, as long as rates of change in labour productivity in Nigeria and the United States have not differed significantly, and the proportion of traded to non-traded goods in both countries has remained unchanged over the period under analysis.

An important point that affects analytical result is that, if Purchasing power parity determines the exchange rate, there is no necessity for the relationship to be simultaneous.³⁵ Therefore, an allowance for a lagged influence is not inconsistent with the theory. Where the lag is distributed through time, it may improve the explanatory power of the model.³⁶ Finally, Purchasing power parity have important ramifications for developing economies in terms of trade balance and in the field of exchange rate forecasts.

³⁵ Adjustment lags are possible; this is more so when price indices from developing country is involved in computation.

³⁶ See results regarding the effects of lagging, by examining columns headed β_{11} and β_{12} .

In that, while the current parity determines the trade balance, if expected or future parity is used, it is possible to determine speculative capital flows, and hence provide an optimal method of forecasting for the future exchange rates.³⁷

³⁷An example of this approach can be found in Thomas (1973).

4.5

Concluding Remarks

The analysis of exchange rate determination covers an established perennial debate in international economics, generally referred to as the Purchasing Power Parity doctrine. However, the identification of the exchange rates with the relative price of national outputs in the parity analysis is an implicit assumption in the assertion that Purchasing power parity approach to exchange rate determination is applicable to all economies. On this issue, the chapter traced the relevance of the doctrine in developing economies to conceptual issues of the theory of exchange rates, mainly concentrating on functional assumptions that forms the building blocks of the theory before providing empirical reports for the particular case study of the Nigerian economy. In particular, the assumption that commodity trade occur. Since theory does not seek to match the pattern of commodity production and consumption in each country; thereby overlooking differences in analytical levels between countries of varied proportions in development.

A rereading of the now fully established writings on Purchasing power parity doctrine shows a limited involvement of the developing countries, in the analytical aspects of the theory. Accordingly, once accepted that useful result from analytical work can encompass developing economies, the need for supplementing the general conception with a detailed analysis of specific countries has to be established. The chapter's main attempt was to identify this for Nigeria. It also emphasised on the basic components of the approach, the

parity virtue, which is of value in exchange rate determination, and of relevance to the characteristics of developing economies.

A standard complication in assessing Purchasing Power Parity doctrine for the particular case of Nigeria, and many other developing economies, is that, under certain available financial market conditions in these economies, results can bias national income and other calculations. However, Purchasing Power Parity possesses some truth when applied in a fashion compatible with the economic and other relevant backgrounds of developing countries. In particular, it provides a reference guide for the exchange rates where this may be difficult to obtain. Thereby, forming a crucial link in policy measures and structural changes which can be designed to reflect the reference exchange rates calculated using Purchasing Power Parity. Thus, enabling the exchange rate mechanism a greater degree of effectiveness in bringing about real adjustments whenever the economy indicates this as necessary.

In assessing Purchasing Power Parity theory results for the case of Nigeria, this is recognised to hold in an approximate fashion. However, the importance goes further by suggesting that with the problem of data availability, the results can act as an indication of the equilibrium exchange rate, using available information. Further, apart from the mainly accepted traditional use of the doctrine, which is that of a theory of exchange rate, it is recognised that for certain purposes of data conversion, it is preferable to use Purchasing Power Parity rather than exchange rates. Purchasing Power Parity can also be used as a conversion

factor in transferring data from denomination in one national currency to another, and this is particularly helpful where no organised and effective currency market exist.

Chapter 5

The Illegal Market for Foreign Exchange in Nigeria

- 5.1 Introduction/Review
- 5.2 The Determination of the Illegal Market Exchange Rates in a controlled Foreign Exchange Market
- 5.3 A partial equilibrium analysis with demand and Supply Schedules in the determination of illegal market; in Relation to the Overall equilibrium in the Foreign Exchange Market
- 5.4 Tested Model:
A Monetary Approach to the Unofficial (illegal) exchange rate determination in Nigeria
- 5.5 Correcting illegal Transactions in the Nigerian Foreign Exchange: Plus an analysis of the first six months of the Two-tier foreign exchange operations
- 5. The Efficiency of the Illegal Markets in Foreign Exchange
- 5.7 Concluding Remarks
- 5.8 Selected Chapter References. (See Reference Chapter)

5.1

Introduction/Review

The economic literature is poor in empirical studies that explain illegal activities in the Foreign Exchange Market.¹ Whereas illegal activities such as the unapproved Market trading in foreign currency are usually considered as less important, and a sideshow, with no effect on interest rates or the course of the official exchange rate in the more advanced economy, the illegal market account is a dominant factor in the economy of developing countries; providing a substantial trading sector with respect to financial markets. An understanding of such markets in the foreign exchange sector will therefore be of interest to policy makers, if it is to be curtailed, and its damaging influence on official rates eradicated. In this process, the chapter seek to extend theoretical analysis of exchange rate determination using a model of Purchasing Power Parity for the illegal Market exchange rates, to access within the empirical analyses the role of such markets and how it affects the foreign currency market.²

This is therefore generally accepting that unorganized money markets exist in developing economies such as Nigeria and that their role is important within the context of accurate studies of the foreign exchange market. In

¹An effort is made to review some of the contributors in the study of illegal Market Exchange Rates later in the Chapter.

²The model follows the same line as Culbertson (1975). However, the foregoing model uses results obtained from Chapter Four of the thesis to form the analytical core of Parity calculated rates used in the model.

recognising this, the importance of the illegal Market in such economies, and their contribution to the Foreign Exchange Market as a whole can be ascertained.

The existence of any set of controls such as on prices, imports or exports, that leaves a large scale of demand unsatisfied, usually results in a widespread circumvention of such controls, and with it, an establishment of an illegal market.³ Under exchange control, the authorities are assumed to outlaw all capital outflows from the country and distribute whatever the official foreign exchange supply is 'available' to those who demand foreign exchange for 'approved' transactions at the officially pegged rate. The long experience of Nigeria with foreign exchange restrictions has lead to a well established illegal market for foreign exchange. In the presence of an illegal market for foreign exchange, there are two exchange rates. One is the Officially pegged rate, and the other is the illegal market rate. Where the normally assumed free market activities are curtailed by the introduction of exchange controls, how important is the activity of the illegal market in reflecting a rate without control?. Primarily, the chapter provides support for the view that transactions in the illegal market are of some quantitative significance to justify the acceptance of the exchange rate in the market as an indicator of the equilibrium rate.

While Michaely (1968) argues that there are strong

³How import and export restrictions can lead to other illegal transactions such as smuggling, has for example been discussed in some literature extensively; see Bhagwati (1973) for further analysis.

practical problems in measuring the equilibrium rate, the chapter uses results obtained from the preceding chapter in its evaluation of the illegal market, and thereby overcome some of these problems. Support for the illegal market exchange rate as an indicator of the equilibrium rate can also be found in the work of Fishelson (1976), with similar attempts in Culbertson (1975). However, it is to Boulding (1947) that one has to turn for reportedly, the first attempt on diagrammatic representation of price determination in the illegal market. It is now also widely accepted that the works of Bronfenbrenner (1947) and Michaely (1954) comprised the first traces of research into the theoretical analysis of the existence of the illegal market for a single commodity. These early expositions, substantially based price formation in the illegal market on the standard analysis of price formation under discriminating monopoly. However, Gonensay (1966) pointed out that some of these earlier analysis are based on assumptions which might be flawed. For example, in that illegal market price is a function of both the quantity supplied in that market and the official market; therefore, not independent of the quantity supplied in the official market.⁴

The more recent analysis of the illegal market in foreign exchange seem to be concerned with the effect of such markets on the official rate, thereby also acting in aiding

⁴Supply and Demand determinants of the illegal markets are covered under section 5.2 and 5.3. While section 5.2 emphasizes theoretical aspects, section 5.3 provides a geometrical support, revealing expected results of different shifts in demand and supply schedules. Plumptre (1947) on Boulding (1937) first pointed out that demand in the illegal market was likely to be higher than suggested.

policy determination. From the standard textbook case application of the foreign sector restrictions,⁵ analytical work now uses supportive theoretical framework to determine results of various trade restrictions on the economy. Where the form of trade restrictions is the imposition of exchange controls; Sheikh (1976) showed that the illegal market exchange rate can become a guide for a decision on devaluation, while Fishelson (1978) showed that illegal market exchange rates are determined in a process similar to the legal flexible rate and despite illegality the market is an efficient one. Where equilibrium in the illegal market can be shown to be stable, and when important monetary factors in determining the equilibrium have been considered, changes in the illegal market rate as a function of world inflation and domestic disequilibria can thus be determined.⁶

The importance of the foreign trade sector in any economy cannot be overemphasized, and where domestic inflation and exchange rates equilibrium can be aligned, further determinants of the illegal market exchange rates in reflecting world and domestic price changes can be ascertained. In an economy with an extended illegal market operations, the results on the foreign trade sector policy would reflect upon any realistic exchange rates, which would in the long run benefit the economy as a whole.

⁵See for example, Chapter 15 of Grubel (1977); and also Little et al. (1970).

⁶See for example, the works of Culbertson (1975), Fishelson (1978) and Blejer (1978).

5.2

The Determination of Illegal Market Exchange Rates in a controlled Foreign Exchange Market

This section now extends the analysis of where exchange restrictions lead to the development of an illegal market for foreign currency, by considering theoretical analysis of the illegal market exchange rate determination. The system of tight control on the foreign trade sector in the form of commodity trade restrictions such as tariffs and quota systems, effective capital flow restrictions; and hence restrictions on the foreign exchange market is common among the developing nations. In Nigeria, at various stages since commercial oil exploration began on a large scale in 1956, economic and security uncertainties of the continuing depleted foreign reserves, even with increased revenues from oil, coupled with panic economic measures, supplied a rationale for controlling the foreign exchange.

Due to the control in foreign exchange by the authorities, some potential buyers (or sellers) of foreign exchange are turned away by the Central Bank. Those whose application does not comply with stipulated regulations, or those whose full demand are not satisfied (or rejected) therefore seek an alternative market in which to buy (or sell) foreign currency. The existence of a fringe of unsatisfied demand in foreign currency at the regulated price because of the overall control of the foreign trade sector, therefore creates an incentive for an illegal market in foreign exchange. Evidence of effective price ceiling resulting in an illegal market is not limited to the less developed nations. During the world wars, when various

governments due to shortages fixed prices of many food items below what will prevail in the free market, it resulted in shortages in quantity supplies to the market which can be taken to signal price dissatisfaction amongst producers; and alternative market with higher prices sought. In the case of price regulation in the foreign trade sector, particularly, capital flow restrictions and control of the foreign exchange market, illegal capital flows lead to the establishment of a parallel market in foreign exchange.

In Nigeria, all exporters and importers have to comply with the various (and continually changing) foreign exchange regulations. Since not all application are granted approval by the Central Bank, the illegal market can be said to be a direct outcome of the control and allocation policies. Further, because of tariffs and quotas on imported goods, any illegal imports and exports of goods and assets has to be financed; and with restrictions on foreign exchanges, the illegal market usually provides the alternative source for purchase of foreign exchange to finance such activities.⁷ The effect is that, illegal market for foreign exchange arises when due to exchange controls, the official rates differ from what would prevail in the absence of any control. Therefore, its rate depends on the extent to which the official rate overvalues or undervalues the currency. Also, crucial to any meaningful analysis of the determinants of the

⁷The case for the Nigerian experience is such that, this is not to suggest that parallel market is solely used to finance illegal activities. Increasingly, it is also used as a way of avoiding the extensive bureaucratic controls associated with the purchase of foreign exchange through the official channels on approved transactions. It is not uncommon to have delays of up to one year.

illegal market is the penalty structure. That is, the extent to which participants can continue trading without the fear of being apprehended and prosecuted for what is an unofficial transaction. Here, the assumed penalty structure have dealers in the parallel market behaving as if they face declining revenue and increased risk of capture, depending on the attitudes of the policing authority.

The demand for foreign exchange in an unofficial market, in the presence of penalties if apprehended, is then determined by the foreign exchange available in the official market. Shortages in foreign exchange from the official market necessarily involves a diversion of demand to the parallel market. A controlled exchange market also implies: either an excess demand or excess supply of foreign exchange. This disequilibrium is then reflected in the foreign reserves, assumed transmitted through endogenous economic variables to other sectors including the foreign exchange. The implication therefore, is that, if there are no controls on dealings in foreign currencies, the free market for foreign exchange will absorb all demands and supplies of foreign exchanges. However, the imposition of exchange controls also implied that the government is assumed to ban all capital outflows and distribute whatever foreign exchange supplies it has available to those who demand foreign exchange for what the authority classified as 'acceptable' transactions at the official rate.

Since the official exchange rate is administratively determined through the various restrictions placed on it by the government, those whose full demand for capital outflows are unmet or unaccepted by the authorities, and therefore

seek alternative source of supply in an unofficial market will constitute part of the demand for such markets. This includes those not eligible to buy foreign exchange from the official Bank source; those who would normally transfer large capital abroad and not allowed to purchase their stated requirements; plus business and other travellers, who on average have their 'necessary' requirement for foreign currencies over and above the legitimate officially allowed quantity. These factors are usually compounded by the fact that the domestic 'needs' of luxury overseas-based goods are larger than the substitute home market can provide. Where foreign goods are limited because of restrictions on imports of many consumer goods, this usually results in the domestic price of luxury (mainly imported goods) based goods to be higher than the world price. In turn, this has created the demand for such goods to be partly satisfied by travelling outside of the country and hence, a corresponding demand for foreign exchange for this purpose falls on the illegal market.

When this is the case, Official Exchange Rate becomes virtually irrelevant to the size and composition of real trade flows which are initiated by the market mechanism. The indications are that, at the non - commercial official exchange rate, there are excess demand by consumers for foreign exchange, and therefore exchange control is imposed in order to ration foreign exchange among those who demand it as well as to allocate it among various government appointed enterprises. In reality, if because of the risk involved (stipulated penalties) not all unsatisfied demand turns up in the parallel market, those who do not, will also include

those who cannot afford the usually higher rate of the illegal market. Strictly speaking however, this will depend upon who is turned away from the official market due to the limited supplies and the long and often tedious bureaucratic procedures; and upon how punishment on illegal activities are administered.

Here, the question of the supply of foreign exchange in the parallel market is considered as an integral part of the price mechanism of such markets. With the total supply of foreign exchange in the absence of any exchange control, the illegal market presence leads to the establishment of two exchange rates. One is the officially pegged rate, and the other, the illegal market rate; which is usually higher than the official rate. Since with the exchange control a new supply emerges, total supply now includes official as well as the illegal market.⁸ That is, the illegal market supply is therefore a function of the higher parallel market price. Because it pays those who participate in the illegal market to buy at the official foreign exchange price and sell at the assumed higher unofficial market price, the supply of foreign exchange to the official market is also a function of the illegal market rate. Precisely because, whenever the unofficial market rate rises, given the official rate, exporters and other foreign exchange suppliers will be tempted to divert more of their foreign exchange earnings from the official to the illegal market.⁹

⁸ It is conceivable that the existence of an exchange control may decrease overall supplies of foreign exchange, due to a decrease in capital flow.

⁹ Other source of supply of foreign exchange into the illegal market may arise from domestic resident's over-invoicing of
(Footnote continued)

The total allocations of available quantity is assumed to be between the official market and the illegal market. However, this does not take into account any additional swelling by illegal entries from abroad. This is true of those sending capital; given an official rate which is lower than the illegal market rate, residents living abroad can channel remittances through the illegal market. In return, a higher receipt in terms of home currency will be guaranteed. When the logic of this particular activity is extended to cover larger effects, the Central Bank is thus denied useful foreign exchanges which is vital for a healthy reserve and the backing of the official rate. That is, with higher premium on foreign currencies, diversions to the illegal market away from the official market increases. Since an increase in transaction rates in the unofficial market undoubtedly increases its exchange rate, which in turn influences the level of foreign exchange reserves; therefore, the illegal market becomes an important variable in the economy and its overall development plans.

Resale of officially allocated foreign exchange has already been identified as one of the sources of supply to the illegal market. In addition, it was assumed that some sort of penalties exist when one trades in an illegal market. Theoretically, this should effect the continuous sustaining of the illegal market given the difficulties of obtaining foreign exchange at the official rate where documented

⁹(continued)

imports. Again, one can assume that the proportion of the total overall supply contributed this way, rises as the unofficial market rate rises relative to the official rate.

records exist, and reselling in the unofficial market without attracting the attention of the authorities. However, this is not so because, foreign exchange control is thought to be permanent by the participants in the market and applies to both spot and future market prices; the illegal market is thus assumed to be in a long - run state with the official foreign exchange rate fixed below the equilibrium rate and the amount supplied at the official price lower than quantity demanded.¹⁰ The effect is that, at any illegal market price, the combined amount supplied by the official and the unofficial markets is still smaller than the amount that would be supplied in a free market at the same price. Therefore, resale of foreign exchange among participants at prices above the official exchange rate involves large profiteering, negligible penalties and transactions costs, and above all, participants have no inhibitions concerning such activity, hence, the illegal markets can be sustained.

Price of foreign exchange under the foregoing discussions has to be extended to capture the effects on how the economy operates with restrictions on foreign currency. In other words, foreign exchange prices must reflect the development of an illegal market economy for foreign exchange. Because money is a relative price of two assets, the exchange rate equilibrium should coincide with the point when existing stocks of any two monies are willingly held. Due to exchange controls of foreign currencies however, this equilibrium may not be attainable. The illegal market

¹⁰Permanent price control makes adjustments for intertemporal substitution which would occur if price control were temporary.

therefore, plays an important role in making the equilibrium level achievable, by absorbing the excess quantity demanded over quantity supplied in the official market. In theory therefore, the determination of the relative price of two monies should focus on the demand and supply of these monies both in the unofficial and official markets of the economy.

If for example, the Central Bank sets the exchange rate of the Nigerian Naira too high, that is, foreign currency exchange rate to the Nigerian Naira was below its competitive price against other currencies, the supply of these foreign currencies in the Naira foreign exchange market will be seriously reduced.¹¹ This will mean demand for foreign exchange higher than what the Central Bank have in reserves or can supply. Coupled with the added restrictions of various varieties on the foreign exchange sector already discussed, the illegal market will operate to satisfy excess existing demand at the regulated price. Scarcity is thereby induced artificially by a high foreign exchange rate of the Naira. The excess demand for foreign exchange will ensure that the illegal market customers pay a price normally above the regulated price, with a maximum base as the quantity equal to the fringe of unsatisfied demand diverted to the illegal market. In all, a lower unofficial market price will reduce sales in the illegal market but increase sales in the legal market, therefore, leaving total requirements for foreign currency unchanged. Similarly, lighter penalties (or

¹¹ Overvaluation of currency is not a necessary condition for the emergence of the unofficial market. Even when the currency is not overvalued, illegal market could exist if the authorities restrict capital outflow on export receipt in order to create an increase in official reserves.

one seen as ineffective) when customers have no repugnance against illegal market will increase its sales and again reduces legal market sales.

Therefore, one can say that since there are restrictions on capital mobility by the authorities, it would be reflected in the foreign exchanges. Thereby, ordinary market forces cannot be the overwhelming determinants of the official exchange rates. It is important to note however that, other than the entry into the illegal market which are assumed restricted by legal and moral obstacles, the illegal market exchange rate is 'freely' determined by market forces and responds to disequilibria in the home money market. This then raises the question of how effective the illegal market exchange rate is, as an equilibrium rate for the Naira in the foreign exchange market, which is the subject concern of section 5.6.

5.3

A Partial Equilibrium Analysis with Demand and Supply Schedules in the Determination of The Illegal Market Exchange Rate: In Relation to the overall equilibrium in the Foreign Exchange Market

From the outset, some preliminary assumptions upon which the following analysis are made need to be stated. First, the small country assumption is made in which world prices are accepted to be a dominant factor on traded goods. Thus, there are limited existence of home produced goods to substitute for imports; That is, those whose price response at least in the short run, to any domestic monetary disequilibria. In addition, monetary disequilibrium when this occurs, does not affect the rate of growth in real incomes.¹² Secondly, there are some penalties imposed by the authorities on illegal trade activities. However, a more severe penalty structure in relation to smuggling exists, and there is a higher risk of being caught than in the transactions process undertaken in the an illegal market. Because of this, smuggling is assumed limited and consequently any foreign exchange that is demanded in the illegal market is on a purely disequilibria of the supply and demand function. Further, the official price pegging of foreign exchange is assumed to have no psychological or speculative effects on the supply of, and demand for foreign exchange. If there are no speculative and arbitrage between the local and foreign exchange markets, then originally drawn

¹²This implicitly assumed that the illegal market is in a long run state, thereby income effects on foreign exchange demand shifts are negligible. Consequently, market demand curve will not shift as a result of the distributional effects of foreign exchange control.

supply and demand schedules of foreign exchange are not affected. That is, the supply and demand schedules are not changed by the mere knowledge that foreign exchange is excessively demanded.

Geometrical analysis of the illegal market for foreign exchange therefore translates the standard textbook case of markets for goods into foreign exchange markets with the normal illegal market analysis.¹³ Some existing analysis however, fail to consider some aspects of the illegal market which are important and peculiar to a developing economy. To begin, consider Boulding's (1937) presentation which assumes that the demand for the official market would only consist those who would in an unrestricted market, bid the highest prices. Because of the nature of how controls are usually applied, when exchange controls are announced, those entitled to purchase foreign exchanges are also normally categorized. Therefore, unlike the unofficial market with steeper prices, the official price should in theory include those who would not be able to participate in an unrestricted market with higher prices. On the question of supply, his presentation of the supply of the illegal market does not attend the question of shifting quantities which may occur between the official and unofficial markets, induced by changes in the illegal market price.¹⁴

¹³This can be seen in some of the earlier works in this field. For example, Boulding (1937), Bronfenbrenner (1947) and Michaly (1954).

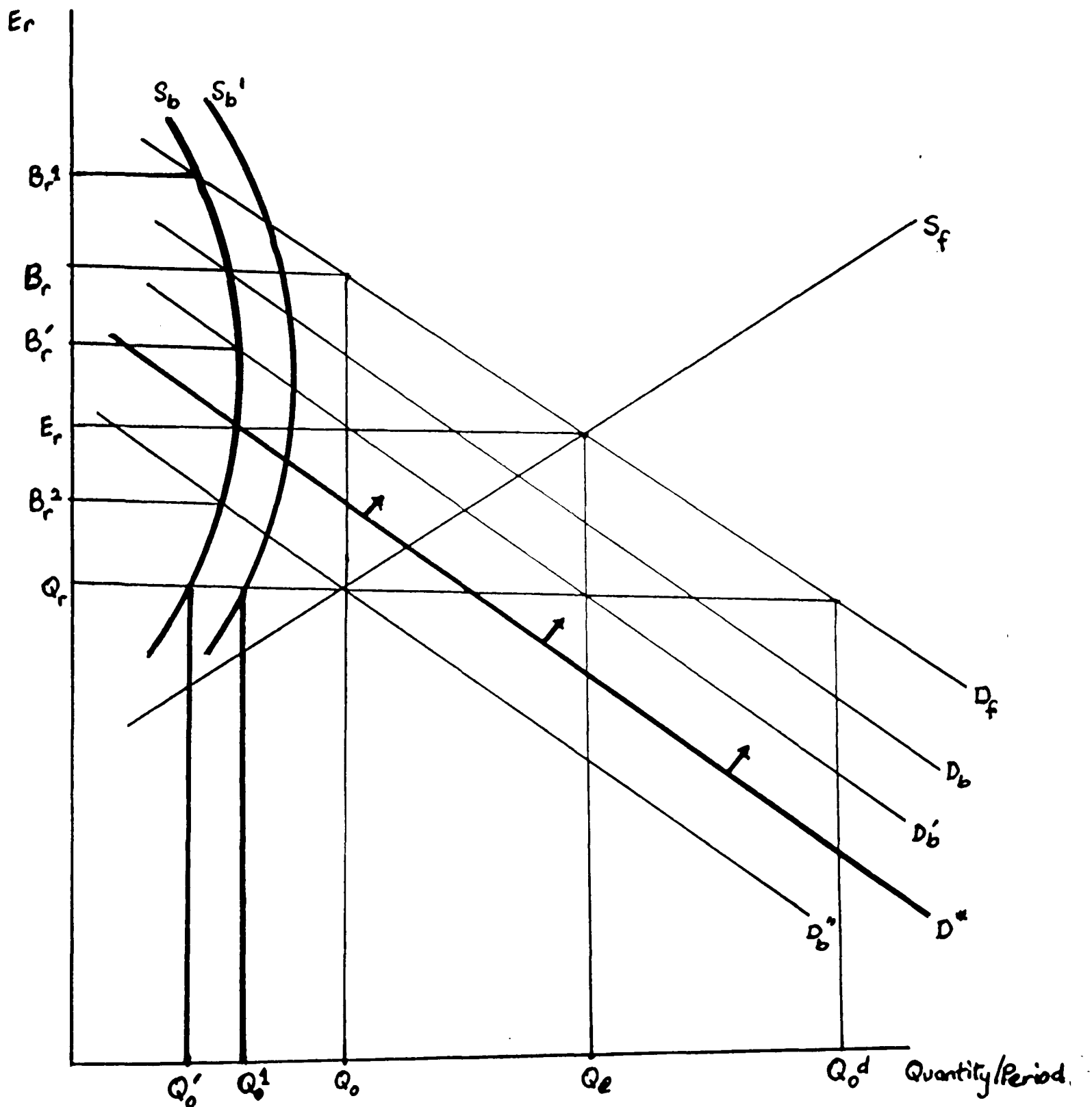
¹⁴Here, the quantity legally supplied will decrease when illegal market price increases as a result of exports. For example, exporters will only declare part of their overseas receipts to the Central Bank and divert the rest to the unofficial market when this is the case. Further, undeclared remittances from abroad may also have this effect.

Bronfenbrenner (1947) on the illegal market issue on the other hand suggested that the total quantity supplied would be the same with or without the illegal market and only distribution of this supply changes as a result of an unofficial market. Thus, no account of an induced supply by the existence of an illegal market is looked at, while at the same time the illegal market demand curve implied an unchanged excess demand at the official price. With the possibility of resale of the foreign exchange acquired from the official source, excess demand at the official price may change. This demand will be affected by those who are entitled to foreign exchanges but only demand foreign exchange when there are large profits to be made as a result of an increase in the unofficial market price relative to the official one.

In addition to the assumptions made at the beginning of the section, the analysis of illegal market behaviour presented below assumes that though resale takes place, not all officially purchased foreign exchange are however resold. Further, though participants of the illegal market have no inhibitions concerning these activities, there are some penalties imposed when apprehended.

A Partial Equilibrium Analysis with Demand and Supply schedules in the determination of the Illegal Market Exchange Rates in the Foreign Exchange Market.

Figure 5.1



The amount of foreign exchange demand and supply per period are represented along the horizontal axis, while the

number of units of domestic currency per unit of foreign exchange is along the vertical axis. In the absence of exchange controls S_f and D_f represents the free market supply and demand respectively, with a corresponding equilibrium of exchange rates at E_r . When exchange controls are introduced, and the official rate pegged below the equilibrium (E_r) at Q_r , official quantity supplied now stands at Q_o , while quantity demanded is $Q_o d$ at the pegged rate. This then creates an incentive for an illegal market in foreign exchange to equilibrate the market; which has been offset from equilibrium by exchange controls, with an illegal market rate at point B_r emerging.

In the presence of exchange controls and an established illegal market, supply and demand schedules are now represented by S_b and D_b respectively. On the supply side, the official and the illegal market rate acts as a function of S_b , and since control will discourage foreign currency and capital inflow in the form of investments, S_b will lie to the left of S_f . The demand will depend upon who is turned away from the official market due to limited supply and the extremely long bureaucratic delays involved in this section of the foreign exchange market.¹⁵ Resale possibilities of officially acquired foreign exchange and associated penalty structures will also affect demand.

¹⁵ Since not all officially acquired exchange are resold in the unofficial market due to some fear of prosecution and of course, the genuine need of purchase, S_b lies to the left of S_f . The vertical distance between S_f and S_b indicating the market price of risk attached to penalty structures. For example, during the Buhari regime and the subsequent introduction of long prison sentences and possible death penalty, one would expect the distance between S_f and S_b to be quite large.

The shape of S_b is steeper than S_f because an increase in the illegal market rate leads to reduced contribution in total supply by resale of officially allocated foreign exchange. The reason for this is twofold: First, since S_b will consist of resale and 'diverted' direct supply, (when some export receipts are unreturned to the Central Bank) officially sold foreign exchange is of more value due to further reduction in its supply. Secondly, it reflects that as the illegal market price increases, its value also increases as this usually indicates fear of prosecution or a combination of both. S_b and S_{b1} indicates reduced quantity supplied through the official channels from Q_{o1} to Q_o' when for fear of scarcity the supply schedules (hence price) shifts from S_{b1} to S_b .¹⁶ The illegal market demand schedule D_b is determined among other things by those who for various reasons are rejected from participating in the official market; those who require more foreign exchange than officially entitled; and also those who for various administrative delays in the official market decides against the uncertainty associated with the workings of the Official machinery. Since demand is also affected by fear of prosecution, D_b will lie to the left of D_f . The effective result produced in the unofficial market foreign exchange market with demand (D_b) and Supply (S_b) is the associated exchange rate of B_r .

Exploring possibilities within the ongoing framework will suggest likely results. For example, it is possible to

¹⁶The location of S_b , the illegal market supply, will depend on the differential between Q_r , (Official pegged rate) and E_r , the equilibrium rate.

introduce harsher penalties on those who demand illegal market foreign exchange and therefore, shift the demand for such activities to say D_b'' . This will reduce illegal market rate to the level of B_r2 which is now below the equilibrium rate E_r . However, this is unlikely to be sustained, if it occurred, for two reasons. Firstly, it is more difficult to police those who demand illegal market foreign exchange as no record exist. Secondly, the market will tend towards an equilibrium in the long run; coupled with a price differential between the official and the unofficial market rate, profiteering will again provide incentives for the regeneration of trade in the illegal market, and a demand situation beyond D^* is therefore unlikely.

5.4

A Model of Illegal Market Exchange Rates within the Framework of Purchasing Power Parity Theory

So far, theoretical analysis of the illegal market indicates that it arises whenever there is an official exchange control, and that the rate differs from what would normally prevail in the market when exchange control is absent. As potential buyers of foreign exchange are turned away by the authorities for various reasons, they thereby seek alternative market to fulfill demand. Supportive theories also suggest that, as a rule, the illegal market rate tends to be above the official rate; with the gap between the two being a function of associated penalties for illegal transactions and the deviation between the official and the free market equilibrium rates.

A few preliminary remarks on data used in the empirical analysis are in order. By the very nature of the developing countries and the peculiarity of the subject of illegal market transactions, data on illegal market exchange rate activity and the necessary supportive data used in the model cannot lay claim to high levels of numerical precision. Indeed, in a regime of official price controls, the accuracy of official price indices is an open question. Further, as the economic situation worsened, government publications of economic data in Nigeria has become very irregular. However, in the absence of a more realistic data source, those presented can be applied with some confidence.

The model assumes a small country, which cannot exert influence on internationally traded assets and securities. The home country equilibrium currency rates is thereby given

by the rest of the world in a market without control. It also assumes that domestic and foreign currency supply are controlled by the authorities, who also fix an official exchange rates for foreign currencies. Finally, monetary variables is assumed the main factor underlying the behaviour of the illegal market.¹⁷

An empirical investigation of the determinants of the illegal market exchange rate should therefore reveal detailed relationships between the illegal market and the free market rates. Consequently, if because of limited foreign currency reserves, exchange controls has to be applied, it can then be undertaken with some knowledge that both the economic and econometric consequences can be fully determined.

¹⁷The residents of the country demand foreign exchange for the purpose of carrying out international sales and purchase of commodities; with little demand requirement for the purchase of international assets and securities. In addition, the country does not issue international assets and securities to domestic residents and therefore cannot influence the rate of interest on traded securities.

5.4b

Tested Model:

A Monetary Approach to the Unofficial (illegal) exchange rate determination in Nigeria

This section of Chapter five develops a model of illegal (unofficial) market exchange rate determination for the case of Nigeria, and tested for the periods 1960-1982.

As discussed in the earlier part of the chapter, a price ceiling, or other instances of intervention by the authorities with or without rationing, can give rise to the establishment of an illegal market; where prices are usually higher than that of the official setting. In developing countries, an understanding of determinants of a parallel (unofficial) market in foreign exchange can be of valuable help in policy decisions. With widespread use of exchange controls and other restrictive trade practices,¹⁸ if only in the accounting sense, the numbers of transactions in this market have become large enough for it to be considered an important variable in most economies, particularly with regards to objectives on foreign exchange reserves and its allocations.

In postulating an expression which can be used to investigate the determinants of an illegal market exchange rate for Nigeria, the model which is adopted presents an extension of the monetary approach to exchange rate determination.¹⁹ Monetary approach is thereby extended where

¹⁸A detailed discussion on exchange controls and foreign trade restrictions can be found in Little et al. [(1970), Chapters 2 and 6].

¹⁹The importance of monetary variables in the determination of exchange rates is well documented. See, for example, (Footnote continued)

international movement of capital are restricted in the presence of strict and prolonged exchange restrictions, therefore, market forces cannot be accepted as the overwhelming determinants of the official version of the exchange rate. The administratively determined exchange rate is therefore largely a strategical response from the government, to maybe, a condition of utility maximisation of a dwindling foreign exchange reserve.

For the model to have any meaningful implications therefore, it follows that the postulation that exchange rate in the illegal market is freely determined by market forces and responds to disequilibria in domestic money market, while that in the official exchange rate which is administratively determined does not, must hold.²⁰ The model follows an approach in Bhagwatti (1978); and augmented Blejer (1978) for the particular case of Nigeria. Culbertson (1975) provided the first attempt in the study unofficial markets in foreign currencies by using a test of purchasing power parity theory. Factors which influences the illegal exchange rate in the Culbertson model are the source of supply and the state of official reserves. The model lay too much emphasis on resale of the official allocations as the source of supply and thereby ignores other supply source such as the receipts from over-invoicing of imports and under-invoicing of exports, as well as undeclared transfers abroad. The result is that only

¹⁹(continued)

Frenkel and Johnson (1978); and this mode is now subjected to empirical findings for the particular case of Nigeria in the thesis.

²⁰The illegal market has among its primary functions therefore, to act as an outlet for capital transactions that are barred from the official market.

the proxy for the equilibrium exchange rate (the ratio of home to foreign price level) was found to be significant in Culbertson; with the regression equations showing a high degree of first-order serial correlation.

Blejer (1978) on the other hand, provided us with a model which ignored the existence of restrictions on foreign trade, by implicitly assuming that all current account needs are satisfied by the official market.²¹ The restrictive approach of unofficial (illegal) foreign exchange transactions considered in Beljer thereby resulted as a desired portfolio adjustments by the public and not for the purpose of carrying out international sales and purchase of commodities.²²

Using a monetary approach framework, but departing from earlier works,²³ it is possible to write a long-run demand for money in real terms according to the expression:

$$(M^*/P)^d = \alpha (Y/P)^\beta e^{\chi\pi^*} \text{-----}(1)$$

where:

²¹By doing away with the existence of restrictions on foreign trade, Blejer's model does not allow for foreign exchanges demanded for smuggling.

²²In the context of developing countries, and for the particular case of Nigeria, the model considered here recognises the effect of smuggling; to the extent that the supply of foreign currency to the illegal market might also originate from under-invoicing of exports, and over-invoicing of imports and not solely from official allocations.

²³Particularly, Blejer (1978) and Culbertson (1975) who ignored foreign trade restrictions and the effects smuggling in their models respectively.

$(M^*/P)^d$ is the long-run demand for real money balances.
 (Y/P) is Real income, and
 π^* is expected rate of inflation.²⁴

In the model being considered, the version of the monetary approach one is interested in analysing assumes that Nigeria is a small country, in terms of being able to affect world prices. An interesting assumption is that there is perfect capital mobility of goods and assets, which is achieved by assuming smuggling to place.

Following these assumptions, equation(1) can now be extended by considering other assets which are held by individuals, and purchased out of officially allocated foreign exchange. The additional demand introduced by this assumption thereby allows for supplies to illegal markets to be incorporated in the analysis.²⁵ These considerations now enables equation (1) to be re-expressed to take into account, the prices of smuggled goods and the purchase of assets by using unofficial foreign exchange.

Thus:

$$(M^*/P)^d = \alpha (Y/P)^\beta P_i^\eta e^{\chi\pi^*} \text{-----}(2)$$

²⁴ Expectations about inflation are assumed to follow the adoptive expectation hypothesis and its derivation had been carried through the tested models in Chapter 3 and 6.

²⁵ Supplies other than that originating from the official channels therefore allows for stock of assets which yield services that are distinct from that yielded by the stock of money balances. Supplies can originate from under-invoicing of exports and over-invoicing of imports. These activities produces foreign exchange, which are supplied to the illegal market for smuggling and purchases of other assets, which the officially supplied foreign exchanges does not cover.

where the variable P_i represents prices of illegal (smuggled goods) and unofficial remittances abroad, and other variables retain previous definitions.

Taking natural logs, equation (2) can now be expressed as:

$$\ln (M^*/P)^d = \ln(\alpha) + \beta \ln(Y/P) + \eta \ln(P_i) + \chi \pi^* \text{ -----(3)}$$

where: $\chi < 0$

If assumed that the money stock in existence adjusts to the quantity demanded, reflecting the long-run tendency of the money market to move to the equilibrium. Then, one can write:

$$M^s = M^d \text{ -----(4)}$$

where superscript S refers to the quantity supplied.

Assume also, that the domestic price level is a weighted average of the prices of traded and non-traded goods. When this is expressed in logarithms, it is possible to write:

$$\ln P = \rho \ln P_t + (1-\rho) \ln P_{nt} \text{ -----(5)}$$

In expression (5), P_t and P_{nt} are prices of traded and non traded goods respectively, and ρ is the share of traded goods in total expenditure. Since trade takes place both at the official and the illegal Exchange rate, the postulation is that a weighted average of both of these exchange rates is an

appropriate rate in which to determine the domestic price of tradeables.

Expressing prices of tradeables in logarithms gives:

$$\ln P_t = [\psi \ln E_o + (1-\psi) \ln E_i] + \ln P_w \quad \text{-----}(6)$$

where ψ represents the proportion of trade which is carried out through the official channels at the administratively determined exchange rate E_o (defined as the domestic price of foreign currency); E_i is the illegal (unofficial) market exchange rate (defined as the domestic price of foreign currency in the parallel market); and P_w is the world price level. The previous assumptions of perfect capital mobility of goods and financial markets means that domestic prices will be equal to respective world values and will be determined exogenously. This is catered for by P_w in equation (6), which introduces the concept of Purchasing Power Parity theory that links the domestic price level with the foreign price level through the parity condition.

In Nigeria, the result obtained from the tested model of chapter four suggest that the allocation of foreign exchange at the official rate is not relevant for determining market prices of traded goods. Where this is recognised, the weight attached to the illegal exchange rate market (E_i) should be greater than that in the share of smuggling and other illegal activities in total trade. It can also be assumed that the prices of non-traded goods vary in isolation with the prices of traded ones.²⁶

²⁶ Here, an increase in the relative price of tradeables (E_o)
(Footnote continued)

Thus;

$$\ln P_{nt} = e (\ln P_t) \quad \text{-----}(7)$$

where e is the elasticity of prices of non-traded goods with respect to the prices of traded goods.

Substituting equation (7) into (5) to give:

$$\ln P = [\rho \ln P_t + (1-\rho) e(\ln P_t)] \quad \text{-----}(8)$$

and if (6) is then substituted in (8), it is possible to express the domestic price level in Nigerai as:

$$\ln P = [\psi \ln E_o + (1-\psi) \ln E_i + \ln P_w] \kappa \quad \text{-----}(9)$$

where κ is $[\rho + (1-\rho)e]$;

if e and $\rho = 1$, then $\kappa = 1$; The implication is therefore that all goods are tradeables and no distinction is made between tradeable and non-tradeable goods.

Going back to equations (3) and (4), it is possible to solve for the general price level P : That is;

$$\ln M - \ln P = \ln \alpha + \beta \ln(Y/P) + \eta \ln P_i + \chi \pi^* ; \quad \text{-----}(9')$$

²⁶(continued)

or E_i depreciating; or both, or an exogenous change in P_w takes place) creates an excess demand for non-traded goods, which will result in an increase of non-traded goods.

Therefore,

$$\ln P = \ln M - \ln \alpha - \beta \ln(Y/P) - \eta \ln P_i - \chi \pi^* \quad \text{-----}(10)$$

Substituting (10) into (9) to get equation (11):

$$\begin{aligned} \ln M - \ln \alpha - \beta \ln(Y/P) - \eta \ln P_i - \chi \pi^* = [\psi \ln E_o + (1-\psi) \ln E_i \\ + \ln P_w] \kappa \quad \text{-----}(11) \end{aligned}$$

again, when $e = 1$ and $\kappa = 1$; which implies all goods are traded.

Solving [11] to obtain a solution for E_i yields (12):

First, [11] can be expressed as (11') giving:

$$\begin{aligned} \ln M - \ln \alpha - \beta \ln(Y/P) - \eta \ln P_i - \chi \pi^* - \psi \ln E_o - \ln P_w = (1-\psi) \ln E_i \\ \text{-----}(11') \end{aligned}$$

Rearranging (11') ,

$$\begin{aligned} \ln E_i = [\ln M - \ln(\alpha) - \beta \ln(Y/P) - \eta \ln(P_i) - \chi \pi^* \\ - \psi \ln(E_o) - \ln P_w] / (1-\psi) \quad \text{-----}(12) \end{aligned}$$

In equation (12), the principal determinants of the illegal market for foreign exchange in the Nigerian economy are stipulated. These are: the nominal quantity of money, real income, prices of illegal goods (smuggling, illegal purchases abroad; transfer of unapproved fees and so on), expected rate of inflation, official exchange rate, and the world price level.

Table R5(i)

A Monetary Approach to the Unofficial (illegal) exchange rate determination in Nigeria

Estimated Equation:

$$\ln E_i = [\ln M - \ln(\alpha) - \beta \ln(Y/P) - \eta \ln(P_i) - \chi \pi^* - \psi \ln(E_o) - \ln P_w] / (1 - \psi)$$

Explanatory variables	Parameters					R ²	DW	SER
	α	β	η	χ	ψ			
Dependent variable								
E _i	-16.377	3.9839	1.9204	.3930	.1665	.6315	1.5502	.2587
	(-3.9132)	(3.1780)	(4.7915)	(1.5324)	(0.5453)			
Starting values	-11.84	3.01	1.59	0.30	-0.04			

Notes:

The method of estimating the maintained hypothesis is the non-linear least squares. Where convergence is achieved by Gauss method after four iterations, with a convergence criterion equal 0.01; (stepsize method = BRAD). The starting conditions for the estimation were obtained by estimating equations (9) and (9') by ordinary least squares method. The reported goodness of fit for estimated parameters is the adjusted R². The t- statistics are presented in parentheses below the estimates, and the reported Durbin - Watson statistics are the customary ones. The parameters α, β, η, χ and ψ refers to the constant term, and those associated with the coefficients; real income, prices of illegal goods, expected rates of inflation and official exchange rates respectively.²⁷ The data for illegal market exchange rates has been obtained from Pick's Currency Yearbook.

Empirical Results

Table R5(i) presents the regression estimates of the equation (12) for the illegal (E_i) exchange rates for Nigeria, using annual data for the period 1960 - 1984. The explanatory power of the tested model for the illegal exchange rate determination produced a satisfactory result. The adjusted R^2 is relatively high and the equation is significant at the 1 per cent level. With the reported Durbin - Watson statistics at 1.5502, this suggests two important things. First, that there is a minimal degree of the first order serial correlation. Secondly, and more important, that there is no important variable omitted from the theoretical specification of the model, and therefore, the case for multicollinearity is not encountered.

From the building blocks of equations (9) and (9'), it can be seen that all the variables in the estimated model have the right signs and significantly different from zero. However, the parameters attached to the variable real income (Y/P), is more than two standard errors greater than zero; and only statistically significant at better than 5 per cent. The real income term constitute a link between the illegal market (E_i) exchange rate, monetary sector and the real sector. Its changes on the illegal market rate is such that an increase in real income in Nigeria, through an increase in

²⁷The proxy of prices of illegal goods, such as illegal purchases abroad, transfer of unapproved educational fees and smuggling was taken to be the U.K's retail price index; since the U.K has been determined in chapters three and four to be Nigeria's main trading partner; both official and otherwise. Expected rates of inflation was calculated following the same procedure in the mentioned chapters.

demand for money, will cause the illegal exchange rate to appreciate.

The parameter attached to the variable labelled (E_0), official exchange rate in the model is statistically insignificant at both the conventional levels. This supports the fact that the influence of the official rate on the illegal rate is minimal, since the inclusion of the (E_0) variable is neither detrimental nor superfluous in the model. The variable (π^*), the expected rate of inflation enters the regression at a significant level of better than 10 per cent. On the influence of the expected inflation rate on the illegal market exchange rates, a higher increase in expected inflation rate at home reduces money demand, and causes the illegal exchange rate to appreciate.

The variables real income (Y/P) and prices of illegal goods (P_i) are both statistically significant at better than 11 per cent level. Real income changes on the illegal exchange rate was discussed earlier, the effect of changes in the prices of illegal (smuggled) goods on the unofficial exchange rate is however a complex one. Independent estimation carried out suggest among other things, that this price level (P_i) is a function of money demand and supply condition in the U.K in particular, and the rest of the world in general. Other things remaining the same, rising prices for example, in the U.K of 10 per cent, due to perhaps, a monetary expansion in excess of real money demand, will cause the unofficial exchange rate for Nigeria to appreciate in excess of 19.2 per cent.

The most interesting aspect of table R5(i) is that the result showed a remarkable explanatory power for the tested

model, and provides evidence that prices of illegal goods, real income and the expected rate of inflation are the principal determinants of the illegal market exchange rate for Nigeria; with the officially announced rates having almost no influence on such exchange rate.

5.5

Correcting Illegal Transactions in the Nigerian Foreign Exchange Market

As at 30th December 1983, the United Nations statistical figures indicated 115 countries that practise various systems of foreign exchange controls. And, since non of these countries can prevent its residents from wanting to hold foreign currency, the parallel market has a relevant function within the economy.

Illegal markets developed in Nigeria during the Second World War at a moderate scale, and during the Civil War escalated through overinvoicing of imports payoffs (dash) and rates of "commissions" or kickbacks, into the grand market it has become today. Participation in the market includes the political and military regimes who transferred out funds using illicit nonbank transfers; and Lagos has now become a major center for illegal trading of neighbouring country's currencies.

The story of the Nigerian currency since the de facto devaluation of the U.S. dollar of August 15, 1971, has been filled with uncertainty as a result of the balance of payments account mismanagement. The value of the Naira is set by the Central Bank and maintained by exchange controls. Following the U.S. dollar devaluation, Lagos established a two-tier exchange market on August 23, 1971. The official rate of U.S. \$2.80 applied to government and foreign trade transactions, while a floating rate based on the then Nigerian Pound apply to all other transactions. When the link to Sterling was severed on November 1st 1971, the two-tier market was abolished, and the official rate at U.S.

\$2.80 was applied to all transactions. The U.S. dollar devaluation of December 18th, saw Lagos realigned the official rate to U.S. \$3.04 on December 23rd, a calculation based on the then Nigerian Pound's unchanged gold content.

Foreign credits and the surging oil revenues from during 1973 until early 1981 propped up the official version of the foreign exchange value of the Naira. This helped in classifying the Naira as a "strong" currency, while domestic currency debasement coupled with the high cost of imports inflated economic statistics; until eventually, the unceasing destruction of its purchasing power collapsed in the beginning of 1983. The government reacted with a wide control measure on various imports, which had the undesirable effect of a sharp increase in consumer prices as a result of shortfall in supply. Illegal market foreign exchange transactions intensified, because to satisfy imports, foreign exchange has to be earned illegally. The dilemma for the authorities was that, when it prints money, the real value cannot be guaranteed by the extent to which official exchange rate differ from the illegal market rate. This is because reserve holding changes are a function of official and the unofficial market exchange rates. Thus, with a critical and almost embarrassing ritual announcements of shortages of foreign exchange, there are little demand for the domestic currency and an increase demand for foreign ones.

In an attempt to narrow the gap between the official and unofficial market rate, the Naira was being allowed to drift downwards against the dollar since 1980.²⁸ Further, the

²⁸ See figures of the appreciation of the U.S. dollar against
(Footnote continued)

currency exchange operation of April 1984 was also aimed at this objective. However, despite attempts by the authorities to discourage illegal market transactions, the market is not clandestine. Indeed, the introduction in October 1986 of the second-tier foreign exchange market (SFEM) seem an attempt by the authority of accepting an intermediate position of legality in what is an illegal but also conspicuously 'public' market. SFEM therefore should be able to capture the relationship between the illegal market and an uncontrolled foreign exchange market prices. The authorities who officially control foreign exchange rates and usually devote much attention to the illegal market prices can now concentrate on watching the SFEM activities.

Before SFEM was introduced, the foreign trade sector control created economic factors which generated an illegal market that absorbs some of the disequilibria in the foreign exchange market. Thereby, one can say that the adjustments of the exchange rate towards a 'realistic' rate and hence an equilibrium, has been an elusive aimed policy of the various governments in the history of Nigeria. While the introduction of SFEM will not reveal all the determinants of the unofficial market rate, the authorities are clearly hoping that it will keep its rate differential with the official rate down, so as to allow the country gain foreign exchange reserves. This will provide a mechanism for legalizing the illegal market by replacing it with a legal "parallel" market, and thus allow the emergence of a SFEM

²⁸(continued)

the Naira in the 1984 Lloyds Bank Group Economic Report for Nigeria.

market rate to take at least some of the strain in terms of allocating scarce foreign exchange reserves.

The mechanism by which SFEM works requires market separation of the foreign exchange market into the official rate, and another determined by bids for limited amount of foreign exchange auctioned by the Central Bank of Nigeria. To realise the market separation required to make an efficient SFEM work, the authority has to choose an intervention strategy in the foreign exchange markets, and has to equally adopt a set of regulations channelling official and other transactions into desired markets. Therefore the practical functioning of a dual market system such as SFEM will depend on the form of intervention strategy chosen by the Central Bank. Importantly, care must also be exercised to reflect international transactions in foreign exchange markets. Thus, if the two-tier market is efficiently managed, there would be no pegs, and the parities that the authorities are obliged to follow will be dictated by the market forces. However, though the currency is free to 'float', it has an added advantage in that the Central Bank can intervene in the foreign exchange market to avoid undesirable consequences of excessive appreciation.

A successful two-tier will therefore operate along lines similar to an uncontrolled market, which warrants the Central Bank to add to the supply of, or demand for foreign exchange as emerging circumstance indicates. A desired (or more realistic) exchange rate would therefore result, depending on reserves and the ability of the Central Bank to manage any chosen intervention strategy. This will help ease scarcity of foreign currency and goods, by allowing the importation of

essential goods due to the mobilization of idle balances held by Nigerians abroad. More importantly, it will also have the beneficial effect of demonstrating how overvalued the Naira was at the official rate prior to the introduction of SFEM.

There is at least one area where the present discussion leaves scope for generalization. In that, the true effect of SFEM on the Naira exchange rate can be effectively analysed after some periods of observation. The illegal market effect of SFEM would also provide useful guidelines on future policy decision on the question of foreign exchanges.

An Analysis of the first six months of the Two-Tier Foreign Exchange Operations: (October 1986-April 1987)

The Two-tier foreign exchange was introduced as part of the Structural Adjustment Programme (SAP); the principal objective of the exchange rate action within the SAP is to reduce the balance-of-payments deficits. With the Two-tier, the Second-tier Foreign Exchange Market (SFEM) will cover all public and private sectors' foreign exchange transactions, excluding debt servicing and contributions by government to international organisations, which is covered under the First-tier (FEM).

SFEM is a financial policy introduced by the government in order to deregulate the nation's monetary policy. It will thus lead to a restructure of the economy, by restructuring demands for foreign exchange. It was also argued that, demand restructuring will imply a more inward looking attitude within the economy, which, as a move towards self reliance, is the impetus for SAP. An important goal of the SAP is the doubling of non-oil exports by 1990, thereby reducing Nigeria's dependence on the uncertain and volatile oil market.

Before SAP was adopted, plummeting oil price had already forced the country into some form of tight fiscal stance. In the process, the Naira has been undergoing a downward slide;²⁹ and the Federal government appeared caught in a predicament. The total external debt stood at over \$20bn in

²⁹World Bank annual report for the 1985/6 fiscal year, estimated the Naira to exchange for about 25 cents during 1986 and 1987; 22 cents in 1988; 18 and 16 cents in 1989 and 1990 respectively. Forecasts were provided on the current world market prices of crude oil.

early 1986, and export credit facilities had been suspended since 1984. However, the backing and advice of the IMF and World Bank provided SAP, which was aimed at reversing this trend. It has at its core the introduction of a two-tier exchange system. This in effect led to an effective 66 percent devaluation of the Naira, and ended the old system of import licencing. Under SFEM, available hard currency is auctioned each week (later changed to once every two weeks), and an import licence is automatically issued to successful bidders.

Before analysing the Nigerian experience with SFEM, it should be pointed out that its record in sub-Saharan Africa is less than convincing. Given the experience of countries such as Ghana, Zaire and Zambia, there is every justification for caution on its long term effect on the economy. The Zambia experience with SFEM was accompanied with inflation put at about 600 percent; though the Zambia Kwacha vis-a-vis the dollar was stable at the time. The highest bidder was sold foreign exchange by the Central Bank, and within four months the Zambia Kwacha rose to 6.2 Kwacha to one U.S. dollar from an official rate of 1.7 Kwacha to the dollar. High bid rates by companies who wishes to purchase raw materials from abroad, led to increased production cost, which consequently hiked the prices of goods. Ghana's experience with Stratified Foreign Exchange Market system (SFEM) lasted only five months. Further, the apparent benefits of the system becomes questionable in Zaire with the corresponding inflation that resulted. Local manufacturing sector which depends on imported raw materials were gradually terminated, or squeezed out of existence.

In Nigeria, the second-tier market is assisted by a tight domestic credit control. In theory, at least, the country is now in a position to reschedule most of its debt, thus easing the foreign exchange crisis and helping the financing of the recovery programme. The government and its creditors argued that the key to adjustment is a healthy balance of payments, hence the decision to allow the exchange rate to find its own level in the second-tier market. However, while international creditors and the federal government seem delighted with the SAP package, its effect on the economy has been limited to the raft of policies aimed at boosting non-oil exports in both agriculture and the manufacturing sectors.

The first six months of SFEM operation shows that it is still surrounded by an air of uncertainty. The situation lacked operational information which will clarify and specify every operational facet of the SFEM programme. Thus, wild fluctuations in the exchange rate witnessed in the first six months of SFEM were a reflection of both fluctuations in supply and demand, and also a reflection of the distortions inherent in the initial body of rules drawn up by the authorities. What is more, SFEM does not operate entirely on a free market. The combination of restrictive quotas for individual banks coupled with the adoption of the marginal rate system ensured that a handful of banks set the exchange rate for the economy. This has led to each bidding session being characterised by administrative interference. Thus, a period of uncertainty, expectations and speculations continued on what should be a realistic exchange rate for the Naira; the par value against major traded currencies which

should be determined by the interaction of the forces of supply and demand. The frequent intervention by the Central Bank on SFEM's operation can be interpreted to mean that the administrators have an idea of what the realistic exchange rate for Naira ought to be. If this assertion is correct, then bidding on a limited and pre-stated amount of foreign exchange can be regarded as a pointless exercise.

Apart from limited supply of foreign exchange to fund the two-tier market, the Naira rather than finding its true value in SFEM, has been subjected to arbitrary manipulation by market participants, the result of which led to the continuing depreciation of its value at each bidding session. Further adjustments in the procedures of SFEM was thereby forced upon the federal government on the recommendations of the Central Bank, which has had the cause to intervene in the market on a number of occasions to restore some order. The adjustments include the abandonment of the average bid rate in favour of the marginal rate, which guaranteed a higher value for the Naira. Other major changes so far in place includes the use of the Dutch System of auction, which began in early April 1987,³⁰ and the move from weekly to a fortnightly auction. Though much is being made of recent changes, their usefulness is at best uncertain.

Within the SAP itself, almost all transactions - the main exception being debt servicing - are being carried out at SFEM rates, and accordingly little attention is being paid

³⁰The Dutch Auction would help ensure that penalties accompany reckless bidding, thereby leading to a clustering of bids which will help to reduce the incidence of wild fluctuation and hence the CBNs intervention in the exchange rate operations.

to the first-tier exchange quotations. From the governments point of view, the importance of the first-tier rate is that it is being brought down to a market-determined level. The strategy is to narrow the gap between the first and second tiers with a view to merging the two rates. To this end, a gradual depreciation of the Naira on the first-tier has continued in the last six months. The rate is down from N1.50 to the dollar to the N3.00 range. Within the economy, bankers expect the two rates to merge in the range of N3.50 to N4.00 to the dollar.

Long term factors that will affect SFEM operations will include the structure of the rest of the economy, particularly its export and import structure, the national budget and financial magnitudes. According to the governor of CBN, the economy depends increasingly on autonomous source of funds for the operation of SFEM. In the long-run, this type of fund would be more important than funds officially provided. On present form it seems that oil revenues and loans from the World Bank, the African Development Bank, and the Commercial Banks will allow the CBN to offer at least \$50m on the auctions to see through 1987.

Some related issues need to be addressed within the SAP by the Federal Government, without which, a clear framework for an industrial and other export promotion policies will not exist. First, the reforms has sharply reduced the number of imports banned from Nigeria, thereby making local manufacturers vulnerable to world competition. The determination of the exchange rate through SFEM has also rendered the general banking securities given to small scale industries ineffective, as a result, small scale industries

requiring foreign exchange are being edged out due to insufficient working capital. Further, since the multinationals have purchased 90 percent of foreign exchange since the inception of SFEM, the role of the growth of small scale industries in the development process is called into question. Secondly, SFEM might create a situation where unremitted profits of multinationals are exported via high bid rates, thereby leading to a capital flight problem. This, combined with large proportions of foreign exchange allocation going to importers of finished goods will result in inflation.

Although the implicit effect of SFEM is the devaluation of the Naira by allowing it to find its level through market forces, politically for the authorities, all indication is that this is more acceptable than an outright devaluation and the discontinuation of SFEM. Further, since the inception of SFEM, external reserves position has continued to improve. This seems to suggest that SFEM is achieving its purpose of trying to improve Nigeria's balance of payments, by establishing a realistic value for the Naira. But, to accept that the current level is optimal because it arises from some form of market reactions to a number of specific economic factors, and a particular set of economic policies, is to accept that the general economic policies are on the right line. However, this cannot be the case until perhaps differential inflation rates or other monetary factors are used to explain, at least in part, market reactions of the Naira against other currencies. What is more, SFEM has failed to wipe out illegal markets. The trade in foreign currency via the illegal market has continued to boom,

defying the SFEM, whose introduction was partly to stamp out the trading of the Naira by traffickers.

The cumulative result is such that foreign investors are now sceptical about far reaching reforms in the procedure for conducting business which SFEM does not confront, and the anticipated reopening of credit lines has been slow in forthcoming, making it difficult for industries to function properly again. And perhaps the core to this slow response is the probability that the two-tier may be abandoned at a short notice.

5.6

The Efficiency of the Illegal Markets in Foreign Exchange

It has already been discussed that the transactions on the parallel market within the economy is of quantitative significance which thereby justify a test of efficiency, and hence the likelihood of an acceptance of the illegal market exchange rate as an indicator of the equilibrium rate. Which, due to the foreign exchange controls is difficult to establish in the official market. Thus, if there are no rigorously enforced penalty structures, and there are absolutely no perceived legal or moral risks involved in dealings in illegal markets by participants, the illegal market equilibrium if established, would correspond to the 'free' market equilibrium. The fact that there are stipulated laws and penalties by the authorities, and at least not all applications for the demand from the official source are turned away, however, means that the illegal market rate is not exactly determined by the same forces of supply and demand which characterise an entirely free market.³¹

Consequently, the acceptance of the operations of the parallel market is not a riskless affair, and price changes occur for a number of reasons. Importantly, constancy of price in this type of market depend on assumptions of informal rationing in which each participant shares, and also

³¹The implication here is that, the illegal market rate alone does not determine the overall equilibrium exchange rate, but can act as some indicator for the hypothetical equilibrium rate. Giddy (1978a), for example has shown that movements of the illegal market rates appear closely associated with movements in the equilibrium exchange rate.

of lack of inhibition as to participating in the market.³² Further, if the concept of market efficiency is analysed with reference to information set, which is in turn reflected in the series of past prices and returns, the efficiency implications of the well established illegal market can be of more important value. Precisely because, with the controlled official exchange rate, only the officially perceived relevant information will be reflected. On the other hand however, the illegal market rate will reflect a better display of efficiency which uses a more realistic information set concerning the foreign exchange market. For example, if changes in the penalty structure or in the equilibrium rate are anticipated by market participants, it was argued, there will be speculative reasons for movements of foreign exchange in the parallel market. Thus, the efficient use of information will ensure that future events affect current rates.³³

Where an uncontrolled foreign exchange market exist, forward rate signals will normally provide a more reliable guide for the future official rate movements. However, as historical events will show shortly, in the absence of changes in controls or penalty structures for speculations in Nigeria, changes in the illegal market exchange rate reflected changes in fundamental economic and political

³²If there is formal rationing, this would suggest that perceived demands of foreign exchange by consumers will not be increased through quantity available announcements by the authority.

³³The view that the illegal market rate is an efficient one in the presence of exchange control can also be found in Fishelson (1978) and Giddy (1978a;1978b).

conditions and expectations. This is now analysed by a brief look at historical movements in both the official and unofficial market rates.³⁴

From the time of independence in 1960, to the end of the third quarter of 1971, the official market rate of the Nigerian currency, (then the Nigerian Pound) stayed static at the rate of U.S. \$2.80 to the pound. The devaluation and troubles of the dollar during 1971 brought some appreciation in the currency, which reached \$3.04, and remained at this rate throughout 1972. With the introduction of the Nigerian Naira in January of 1973, at 0.50 rate of the old pound, the corresponding official rate depreciated, dropping to \$1.52. This situation remained more or less static for a prolonged period, changing without any real significance until the third quarter of 1979, when the Naira showed an appreciation, and the dollar was officially listed at \$1.74 to the Naira. During 1980, it touched a peak of \$1.87, before it declined in 1981. This decline continued, and reached a new low of \$1.2372 to the Naira by the end of the fourth quarter of 1984.

Comparing the illegal market rate of the same period, it becomes quite evident that, the unusually long and static periods characterising the official rates are now replaced by more frequent changes in the parallel market rates. Particularly, the speculative nature of the market is reflected in the corresponding changes associated with the event-sensitive years. Though the U.S. dollar devaluation

³⁴See figure 5(i) for the corresponding comparison between the official and the illegal markets in foreign exchange.

of 1971 brought no significant improvement in the illegal market rate, it reached \$2.45 before the introduction of the Naira in 1973; when it was listed at \$1.25 before slipping to \$1.09 in October. While the wealth of oil revenue kept the official rate of the Naira strong without reflecting illegal capital flight from the country, the unofficial market channel of the illegal capital transfer showed up in rate fluctuations in the parallel market before the defacto upvaluation of April 1974. The rest of 1974 saw the exchange rate in this particular market fluctuating erratically. Events such as the coup of 1975, and the abortive coup and assassination in early 1976 were very much reflected in the illegal market rates; where a low of \$0.92 was recorded in July of 1975. By the end of 1977, it listed at \$0.74, dropping from its March peak of \$1.08. With the global decline of the U.S. dollars in 1978, the unofficial market rate showed an informed sensitivity towards international exchange market, something particularly unrepresented in the corresponding official rate of the period. During 1979, the exchange rate fluctuated between bouts of strength and weakness, listing in May at \$0.81, and in December at \$1.02.

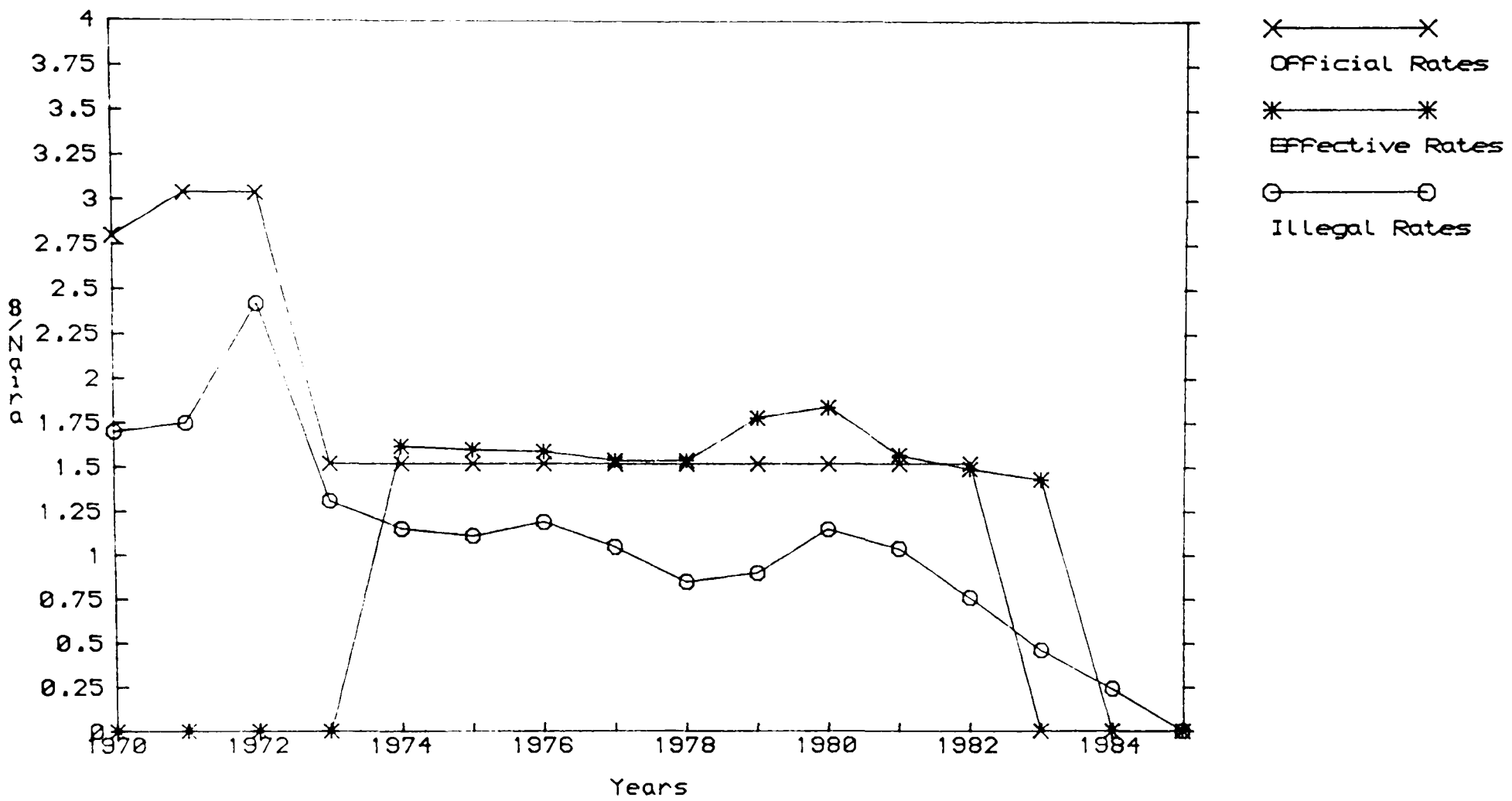
On the domestic political scene, any continued improvements in the exchange rate was halted as the civilian regime eat their way into any reserves, upon which the illegal market rate is also reflective. Near the close of 1982, the rate was down to \$0.76, before finally closing the year at \$0.81. The shambles of the economic and political situations which followed, plunged the rate to a record low of \$0.24 by the end of 1983.

As again indicated by the diagram below, (Figure 5(i)),

the illegal market rate in comparison with the official rate showed periodical fluctuations which seem to suggest its use of available information to be more effective. This efficiency implication can thereby indicate that, any changes in the unofficial market rate could signify future changes in the official rates; particularly when official rates are slow to reflect currency debasements due to political sensitivity of any economic adjustments required.

Plots of Illegal Market and Official Exchange Rates for the
Naira (1960-1985)

Figure 5(i).



5.7

Concluding Remarks

Illegal market exchange rate operation in Nigeria has become a major part of the overall economic phenomenon. While at the same time, the debate in Nigeria and the international foreign exchange market of a 'realistic' exchange rate for the Naira has become more intense. The chapter showed that with foreign exchange restrictions, disequilibrium occur in the foreign exchange market and this can lead to the establishment of a parallel market. The economic structure of the country is such that imports constitute a major part of expenditure. Therefore, in order to reconcile the higher levels of foreign exchange demand to facilitate imports, with whatever foreign currency reserves is available, the authorities maintain a control on the foreign trade and currency exchange. In essence, an official exchange rate price is maintained by the authority, which differs from that which would prevail in the absence of exchange controls. The resultant illegal market exchange rates behaviour was thereby considered with the knowledge of administrative regulations prohibiting such transactions.

Considering that an equilibrium exchange rate can only occur in a completely free market without government intervention, it was shown that the illegal market rate though not identical to an hypothetical equilibrium rate, is determined by a process that is identical to that determining an uncontrolled market. In that, regardless of the quantity each foreign exchange participant purchases at the official pegged rate, if resale is possible at negligible transactions cost with large profiteering, and is not subject to severe

penalty, the marginal values of participants in the foreign exchange market tends towards equality through exchange. That is, the possibility of resale in the parallel market and the type of penalty structure observed will make the foreign exchange market clear at a price higher than the official rate, but closer to the free market equilibrium.

Inspite of the illegality constraint of the unofficial market, its exchange rate can be efficient and was shown to be more responsive to economic events regarding the economy. More importantly, and from the empirical results obtained by applying Purchasing Power Parity theory in the determination of illegal exchange rates, it appears that illegal market exchange rates are not independent of events that take place in the international market. Hence, an understandably stable illegal market rate has characteristics attributed to an uncontrolled foreign exchange market. Thereby, it can be a useful guide to a more 'realistic' official rate, and, can also become a pointer in decision making for any devaluation whenever the currency of officially pegged exchange rate is considered to be overvalued.

Chapter 6

The Macroeconomic Implications of Oil Revenue Increases in the Nigerian Economy

- 6.1 Introduction/Review
- 6.2 Oil Revenue Increase and the Dutch-Disease effect: a theoretical explanation, and its relevance in a developing country
- 6.3 Macroeconomic and Structural Adjustments of the Dutch-Disease phenomenon in a developing economy
- 6.4 Oil Export Boom, Relative Prices and Sectoral Competitiveness: A Geometric analysis
- 6.5 The Tested Model:
 - (i) Oil Export Revenue and the Monetary aspects of Inflation in Nigeria
 - (ii) The Macroeconomic Response to a Monetary Shock in the Nigerian Economy
- 6.6 The Oil Shock: Prospects and Policies; Some Implications of the oil sector on the economy
- 6.7 Concluding Remarks
- 6.8 Selected Chapter References (see reference Chapter.)

6.1

Introduction/Review

The world oil price increases of the early 1970s and the 1980s, and its consequential growth in revenue which accrued to the Nigerian economy as a net oil exporter, is of an important focus in fiscal development for the country.¹ But, has the oil-boom period and its resultant windfall led to an unbalanced sectoral change within the economy? The answer to this particular point is central to the issues explored throughout the chapter; often with the view to account, at least partially, for the pattern of macroeconomic adjustments that can be traced in the economy. While the chapter sets out to explore, and where necessary, establish any consistency with arguments of the effects of increased exports, and hence revenue from a resource such as oil to the macroeconomic effects of the particular case of Nigeria, the effects of resource discoveries on an open economy have stimulated interest in economic literature in the Netherlands, United Kingdom and Australia for some time.²

The adverse effects of resource discoveries on manufacturing industry, have been recognised and deplored as the Dutch - disease or deindustrialisation in countries like the United Kingdom, Australia and Norway. Mainly, the dutch

¹In the light of the much discussed macroeconomic effects of resource discoveries and the resultant loss of competitiveness in the traditional tradeable sector of some resource-sufficient economies, a similar findings will have important policy implications in development planning.

²See, for example, Eastwood and Venables (1982); Forsyth and Kay (1980); Neary (1983); Neary and Purvis (1981); van Wijnbergen (1984) and Gregory (1976).

disease analysis is built upon the familiar small open economy mode, where the focus is on the structure of the economy as defined in a broad sense; encompassing various structural parameters in the markets for tradeable and non tradeable goods, and their role in determining the nature of macroeconomic adjustments in the wake of oil price increases or new resource discoveries. In theory, the dutch disease is also concerned with the various dynamic effects which are likely, under a set of plausible assumptions, as a consequence of a commodity export boom. In the United Kingdom and Norway for examples, theoretical papers include those by Neary (1983), Eastwood and Venables (1982), Buiter and Miller (1981), Forsyth and Kay (1980) and Harberger (1981); where it is increasingly recognised that the dutch disease is instrumental in producing responses in domestic prices via imported goods prices, employment, prices in the non-traded goods sector, and the trade balance.

In essence, under a set of some plausible assumptions, the theory asserts that as consequence of a commodity export boom (discoveries), the equilibrium relative price of other tradeables decline both in terms of non-tradeables and in terms of the booming commodity (oil). Thus, a real effect of the export boom on the economy is the long-run decline in the equilibrium price of the other tradeables. According to Harberger (1981), if as a result of the export boom, the government monetizes part of the additional earnings accruing to it, a short-run excess supply of money may result. When this is the case, the short-run implications is such that, the relative price of traditional tradeables, with respect to non-tradeables, will fall below its new long-run equilibrium,

thereby, further squeezing profitability in the tradeable sector.

Forsyth and Kay (1980) on the dutch disease and the U.K economy, used comparative statics to describe what would have happened had oil not been discovered in the North Sea, and concluded that the North Sea adds to the United Kingdom output. However, this addition to output was deemed to take a highly unbalanced form, coming wholly in the form of traded goods. So, the increase in output is broadly matched by an ex-ante improvement in the U.K's current account, as indigenous oil is either exported or substituted for imports. Their central point in this line of argument is that, due to Britain's acquired self sufficiency in oil, the contraction of the manufacturing sector (output) and the associated increase in the domestic absorption of imported manufactures are practical means by which the British economy can benefit from the North Sea. However, for this to occur, an increase in the exchange rate within the market mechanism will need to take place. Further, if for some reason this channel was suppressed, some alternative means of achieving the same result would be inevitable, and deemed required.

While Forsyth and Kay (1980) points out that the rise in exchange rate is a beneficial mechanism for achieving structural readjustments, and that this confers significant indirect gains on the economy, Rays (1980) has pointed out some inaccuracy of their analysis in providing an explanation for the U.K economy's poor performance since oil began to be produced in significant quantities.³ His contention was

³See also, Spencer (1984) on the incidence of the dutch
(Footnote continued)

whether the dutch disease was at all relevant to the U.K, pointing out that the advent of North Sea oil does not in itself require fundamental changes in the economy, and therefore, neither is the reported decline in the manufacturing sector inevitable nor necessarily beneficial. Further, Forsyth and Kay (1980) described a structural adjustment that reveals little of the adjustments required relative to past trends, as a result of the combination of higher-oil prices and the possession of the North Sea oil. In other words, in estimating the long-run equilibrium, it was implicitly assumed that the U.K has fully adjusted to the rise in real oil prices through the periods studied. The concern therefore is that, had oil prices not risen during the 1970s, would the share of other sectors of the economy, for example, the manufacturing, continue in line with past trends; particularly, the need to capture and be able to identify those aspects where the booming sector may not be extractive, such as the displacement of older industry by technologically more advanced activities.

The extent to which a boom in a particular export sector affects competitiveness in the rest of the economy - the dutch disease - has been extensively researched in advanced economies with structural similarities, and this may play a crucial role in determining the effects of the dutch disease on the economy. In order to abstract from structural problems when looking at a developing economy, and to be able to establish some consistence of the arguments of the dutch

³(continued)
disease and 'theoretical ambiguities' concerning the British economy.

disease and its applicability to the particular case of Nigeria, some conventional assumptions are re-examined and additional ones considered, to cater for the structural peculiarities of developing nations. Particularly, the typically assumed perfect capital mobility and perfect foresight. While the analysis adopted recognises structural differences between Nigeria and many of the studies of dutch disease cases of the advanced countries, the effects of the booming oil sector on the Nigerian economy however retains most of the structural parameters deemed important in the analysis. This option means that, empirical results and policy implications will relate the relevance of the dutch disease to developing economy; and particularly, to Nigeria.

6.2

Oil Revenue Increase and the Dutch-Disease effect: a theoretical explanation, and its relevance in a developing country

The theoretical framework of the phenomenon commonly referred to as the dutch disease, addresses issues of structural changes effected by an export boom, usually in a small open economy with flexible or fixed exchange rates regime. In theory, there has emerged a concensus that, to an extent, a boom in a particular export sector (oil, for example) affects competitiveness in the rest of the tradeable sectors. Thus, the problem is manifested by the co-existence within the traded goods sector of progressing and declining, or booming and lagging subsectors; and it has been recognised for example, with Minerals in Australia, Natural gas in the Netherlands and the emergence of the North Sea oil in the United Kingdom. For economies which are both manufacturing and oil (or gas) producer, there is now a widespread recognition that the possession of oil or gas requires major adjustments in the structure of the economy following the price increases in oil.⁴ For the U.K economy for example, the conclusion emerges that the development of the North Sea Oil at a time of sharp increase in world oil price has had a significant macro-economic effect on the economy, and some structural impact seem inevitable. In particular, North Sea Oil has been seen as a major factor contributing to the

⁴See, for example, Forsyth and Kay 1980 and 1981. The quantitative significance of the effects of North Sea Oil on structural adjustments in the U.K economy is however, disputed. On this, see Minford (1977) and the Bank of England 1980 and 1982.

relative contraction in the size of the manufacturing sector, and hence its decline.

The squeeze of the manufacturing sector or "deindustrialisation" as it is sometimes referred, is recognised to occur as a result of a combination of both monetary and real factors.⁵ To begin, an increase in oil prices represents an increased transfer from abroad, which tends to raise reserves. In turn, this increases disposable income and the demand for both traded and non traded goods. Given a nominal money supply in the short-run, there is a monetary contraction that tends to appreciate the exchange rate; this appreciation of the home currency makes import cheaper, thereby shifting emphasis and new investments away from the manufacturing to other sectors, particularly oil based ones - tradeable squeeze. The increase in oil prices and the resulting real appreciation of the exchange rate thus lead to loss of competitiveness in other non-oil tradeable sectors. Also as a result of the boom in the oil sector, the marginal products of factors of production within the sector will increase; and therefore, nominal wages. This increase in nominal wages will tend to draw resources from other sectors, giving rise to various adjustments in the rest of the economy. Sometimes factors needed in the oil sector, for example, are sector specific. However, tradeable squeeze can still take place because, due to appreciation of the currency the imported price of tradeables will fall relative to domestic goods ; and when all oil revenue is spent, and a

⁵ Neary (1982) gave a detailed consideration to the effects of real and monetary aspects of the dutch disease; see also, Corden (1981).

constant level of employment is maintained, tradeable squeeze will emerge because, owing to higher spending, the price of non tradeables will need to rise.

For a developing economy, the analysis of the dutch disease takes on a more significant interpretation, both as a result of the lack of a comparable manufacturing sector, and the interdependent relationship placed on export and economic growth. Therefore, one needs to explore the nature of any resulting pressures from increased oil revenues on the economy's export stance on the traditional agricultural sector, as well as on prices, money supply and the exchange rates. If export is accepted as a key factor in the promotion of economic growth,⁶ then a rise in exports will stimulate an increase in aggregate economic growth. Thus, it can be argued that export development will tend to concentrate investments in the more efficient sectors of the economy, and this would be a healthy phenomenon regarding growth. If this premise is accepted, the consequential neglect of other sectors thereby reflects some inefficiency and misallocation of resources within such sectors in the economy, and the long-run effect should be an overall improvement in economic growth when resources are reallocated in efficiency terms. If this is the case, the contraction of agricultural output in the advent of increase oil revenues should benefit countries like Indonesia and Nigeria. That is, the incidence of the dutch disease and the problem of

⁶Export-led growth studies that found a strong relationship between export and growth in developing countries include that of Chenery and Strout (1966), The Pearson Report (1969) and Emery (1967).

"deindustrialisation" should confer beneficial changes in the economy in the longer run, due to its effect in allocating resources more effectively.

However, it has become increasingly clear that the extent of structural changes resulting from a sectoral boom depends crucially on the fiscal and monetary response accompanying the boom periods. For a developing economy the issue is to what extent is the oil revenue spent, directly or indirectly, and to what extent is it used to retire debt problems. Economies such as Mexico, Indonesia, and Nigeria as oil producers are encountering serious problems in building up other credible diversified export base; and from a policy point of view, the dutch disease has important implications through the effect that changes in the price of oil have on the real exchange rates, money supply and the domestic prices. Oil production and price increases influence the exchange rate directly through the current account, and indirectly through the market's perception of the home currency as strong. International reserves is swelled by higher oil revenue, which in turn leads to a higher growth rate of the money supply and thus higher inflation rate. Resulting from a strong improvement in the oil balance, the growth of the oil sector changes the structure of the balance of payments. To restore an equilibrium, the real exchange rate appreciates. The combination of inflation and appreciation of the home currency reduces the attractiveness of non-oil exports as imports become cheaper. This shifts emphasis away from the agricultural sector, and the idea of a non-oil export led growth. The loss in competitiveness in the non-oil tradeable

goods sector will also affect profits, thereby influencing internal structural change.

A higher exchange rate is recognised as the main mechanism through which oil export earnings exert influence on the economy, by indicating the necessary structural changes through a decline in the fortunes of traditional industries no longer able to compete in the internationally traded goods market. This problem is compounded for economies with weak structural links when structural changes are forced on such economy by a high exchange rate, because it becomes difficult to identify structural changes which are attributable to failures in economic management and those that are not. Also in a developing economy mode, it is not immediately evident why the rise in oil prices should require substantial falls in production in other sectors of the economy, particularly where large spare capacity is recognised to exist. Notwithstanding, the resulting loss of competitiveness in the non-oil and mainly traditional tradeable goods sectors of some developing countries have prompted some governments to act in order to combat the main effects of the dutch disease. In this regard for example, the Indonesian devaluation of 1978 is in response to the notion of dutch disease. Whereby the increase in oil revenues was seen to have generated a domestic inflation which was higher than the world rate, thereby resulting in a damaging effect on the competitiveness of traditional palm oil and rubber exports. The Mexican devaluation of February 1982 can also be viewed as an attempt to combat the real appreciation of the Peso, resulting from the then booming oil and gas sector. Though the Nigerian Naira was not officially

pronounced as devalued, the introduction of the two-tier exchange rate market at the end of 1986 however, at a stroke, devalued the Naira by 66 per cent.⁷ Again, all indication suggests that the domestic currency have continuously appreciated during the oil boom and had become excessively overvalued.

Attempts to reverse the traditional tradeable squeeze by seeking to restore the real exchange rate to its 'equilibrium' value however, has to take into consideration, the degree and severity of the adjustment pressures operating in the economy. If real appreciation of the domestic currency is considered a short-run phenomenon generated by the dutch disease syndrome, then devaluation will work. On the other hand, if appreciation is the result of a real long-run equilibrium consequence of a commodity export boom, a devaluation would have no lasting effect, and a wider scope for halting the damaging influence of the dutch disease will need to look at basic structural readjustments and expenditure programmes. Importantly, where there is a mapped-out development programme, and expenditure is adjusted to maintain such development pattern (for example, maintaining a particular level of employment), oil revenue impact will involve a structural shift from tradeables to non tradeables that will affect both expenditure and development plans. In the medium-run context therefore, inasmuch as the

⁷See the section relating to the two-tier operation of the Nigerian exchange rates in Chapter 5. The de facto devaluation was carried out implicitly, with the view to improve Nigeria's international competitive position by revaluing the Naira and thus stimulating the development of exports in the non-oil sectors and import substituting industries.

whole revenue gained is not used for the purchase of foreign financial assets, it would require a reduction in expenditure to reverse tradeable squeeze.

For a developing economy such as Nigeria, oil price increases have raised issues beyond the accepted resulting inflation created by the appreciation of the home currency and the resulting damaging effect of the import substitution effects of relatively cheap imports. Indeed, the employment and other benefits of the oil bonanza completely failed to materialise. When oil revenue began to flow into the country's reserves, the Nigerian Naira was perceived as a strong currency, thereby causing the appreciation of the home currency. This in turn created a cheap avenue for import substitution policies to grow, with a total dependence on the oil industry and a loss of competitiveness in the traditional traded goods sector. A recognition of a severe structural disruption within the economy followed the failures in attempts to revive the agricultural sector as a major export base for the economy, and thereby reduce dependence on the oil sector. These structural disruption that followed oil price increases have their origins in monetary aspects of the price rise, and therefore, it is important that the focus of analysis should be on monetary considerations, which will in turn highlight structural aspects of the boom.

6.3

Macroeconomic and Structural Adjustments of the Dutch-Disease effect in a developing economy

The dutch disease debate has taken place against the background of noticeable decline in the prices of traded goods relative to non traded goods, as a response to a boom in one traded goods sector; and a seemingly paradoxical outcome of a squeeze on other traded goods industries. This has been observed in countries like Holland and Britain, where a sharp drop in manufacturing output, and a significant shift in macro-economic policy in the traditional manufacturing sector had accompanied the Dutch gas and the North Sea Oil developments respectively.⁸ In response to large mineral resource discoveries other than oil, the same phenomenon is known as the "Gregory effect" in Australia.⁹

The contention is that, resource discoveries adversely affect manufacturing (or traditional) industries through the real appreciation, which the effect of a discovery induces on domestic currency; and in turn, this will require some adjustments within the economic structure.

Under a developing economy framework, changes in the world oil market prices will no doubt force structural readjustment problems on countries whose main source of foreign exchange is through the exports of primary products,

⁸ Though the conceptual background on related theory can be traced to McKinnon (1976), there is now an extensive and established literature on the dutch disease phenomenon. For example, see Forsyth and Kay (1980), Buiter and Purvis (1983), Corden (1981), Corden and Neary (1982) and van Wijnbergen (1984).

⁹ See Gregory (1976) and Snape (1977).

and are totally dependent upon oil imports. However, the issue of any adjustment problems and its resultant effect upon existing structures on an economy such as Nigeria, without major manufacture exports, but a net oil producer is caused by the windfall gain which resulted from the rise in oil prices. If adjustment is taken to mean allowing revenues from oil to be absorbed into the domestic economy, and it is assumed that adjustment does occur, there will be a consequential effect on the structure of the domestic economy; and the mechanism of structural adjustments can be of real and nominal appreciation that involves exchange rate.¹⁰

Analysing structural adjustments of the dutch disease following the real and nominal appreciation aspects for the Nigerian economy is useful in two ways. First, it allows the structural adjustment problems confronted by the country since the "oil boom" era to be undertaken, following established arguments.¹¹ Secondly, it simplifies the impact of what are clearly complicated events within such an economy; the rise of oil prices effect on an economy without a consolidated manufacturing sector, as was the case that characterised other studies. In Nigeria therefore, the

¹⁰Other mechanisms of structural adjustments include a fixed rate without sterilization, and the possibility of achieving adjustments by reduction in any existing protection, such as reduction of tariff or relaxation of quotas.

¹¹Naturally however, since the major analysis of the dutch disease has been undertaken for the more advanced countries, any adoption for the Nigerian economy will require stylised assumptions, which, may bear limited relationship to conventional analysis, but perfectly realistic under a developing economy framework. One such assumption is that a manufacturing sector can be represented by other export producing sector, such as the agriculture.

theoretical and indeed, any econometric analysis of macroeconomic adjustments to the oil price shocks need to recognise the importance of variations in structural parameters which characterises the developing nations. Broadly speaking, if accepted that the manufacturing sector is in its infancy when oil production and exports began in large quantities, then the main source of traditional exports and foreign exchange, would largely comprise of the agricultural sector. In this regard macroeconomic adjustments to oil price changes should produce unique results within economies with similar structural parameters; and meaningful comparative analysis outside this scope becomes irrelevant, as it requires elasticities of demand and factor substitutions to be identical across countries. Thus, consensus on the dutch disease and structural adjustments of both the developing and those of the more advanced economies is not necessarily arrived at simultaneously.

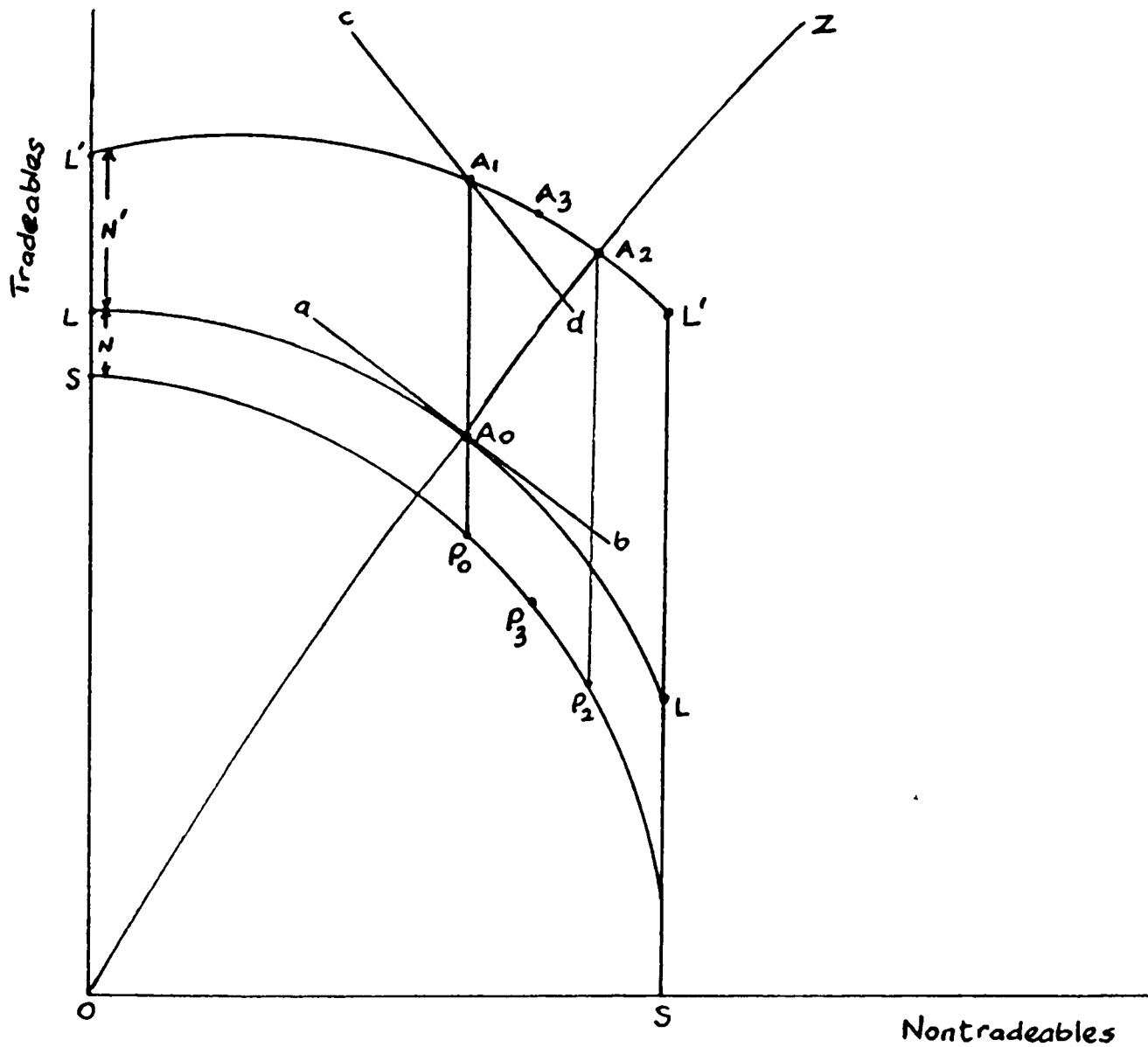
Structural adjustment analysis of monetary implications to the effects of a boom of a particular sector, can show the degree and severity of adjustment pressures on the economy, by the development of rapid appreciation of the real exchange rate for the domestic currency between the boom periods. However, the exchange rate issue in such consideration starts from a more intractable problem of oil price increases on the rate of inflation. To begin, Nigeria would not be affected in isolation, since the rise in oil prices is a world event; thereby, quantification of combination of effects and the way they interact becomes difficult. For example, it requires isolating the effects of oil related influences on the exchange rate and other economic variables, from factors that

range as widely as the general stance of economic and monetary policy both in Nigeria and other countries; in particular, its principal trading partners. Further, the size of the change in Nigeria's real exchange rate will depend on how responsive supply and demand are to changes in domestic and world prices. In general, higher prices will increase the domestic demand for money; and following Dornbusch (1976), in the short-run, an increase in the nominal quantity of money is an increase in the real quantity of money. Accordingly, the conventional effect of a monetary expansion resulting from a resource boom, is the short-run increase in output with induced inflation.¹²

It has to be equally recognised, that macroeconomic and structural adjustment effects of a boom in the petroleum sector may depend on mechanisms that work with longer lags than those with short-run focus described above. If this is the case, then the analysis will have to shift to purely real variables; and the essentials of the adjustment problem can thus be represented diagrammatically, as in figure 6.1 below.

¹²The Authorities might attempt increasing interest rates to maintain initial money supply, but this will end up pushing up the exchange rates and, in the short-run lowering output. Although the effect of oil price increase induced inflation may cancel, one would be faced with the problem of contending with the time paths of interest and exchange rates; and this makes the short-run overshooting of exchange rates a weaker feature of the adjustment process.

Figure 6.1



The framework adopts a small open economy, producing commodities classified as tradeables and non tradeables.¹³ Following McKinnon (1976), the increase in oil prices is

¹³Tradeables are typically agriculture and other primary products and oil, and non tradeables are construction, certain services and the public sector infrastructure. If as assumed, in the analysis that increases in oil prices are treated as exogenous capital transfer from abroad, then the term 'tradeables' will refer to non-oil tradeable. Furthermore, in a developing economy framework, it is difficult to distinguish and separate the two categories, where it is possible for agricultural products to face natural or policy-induced barriers to international markets.

treated as an exogenous capital transfer: it is also assumed that the prices of traded goods are given exogenously at world prices, and the non-traded goods price move flexibly to equate domestic supply and demand. Further, to eliminate the problem encountered when petroleum is used as an intermediate input by other sectors, it is assumed that all goods are used for final consumption.

Returning to figure 6.1, the vertical axis represents tradeables, and the horizontal axis represents domestic nontradeables, and SS represents the production frontier for tradeables and nontradeables, given available factor supplies but excluding production of an exportable oil surplus. LL shows the absorption locus for the Nigerian economy, where the distance N account for the possibility of obtaining extra supplies of traded goods through petroleum export. The OZ curve is similar to an Engel curve and shows the locus of different levels of absorption (consumption and investment) when income distribution is constant,¹⁴ for relative prices of tradeables to non-tradeables, and is given by the tangent ab. Initially, before the oil price rise, absorption is at A0 and production at P0.

Following an oil price rise, the potential absorption locus LL is shifted vertically upwards to L'L', with the distance N' added to the possibility of obtaining extra supplies of traded goods through petroleum export because, for a real transfer to occur, it must be embodied in

¹⁴The implicit assumption here is that interest rates in Nigeria rarely reflect opportunity cost of holding cash balances, and stays unchanged; hence, one can further assume that aggregate nominal expenditure does not alter as the price of either goods changes.

tradeable goods; since in the short run the supply of non traded goods is limited. Demand has now moved to A1, and if non-traded goods are normal goods, this new demand position is therefore only possible with an increase in their relative price.¹⁵ The domestic price of tradeables will tend to fall, and the domestic price of non-tradeables will tend to rise. This resulting appreciation of the real exchange rate - the price of nontradeables relative to tradeables - may result in domestic inflation if the nominal exchange rate is fixed, or if flexible, by appreciation of the nominal exchange rates against trading partners's currencies. In either event, profitability (and perhaps wages) in the nontraded goods sector will be raised, and this will have the effect of drawing resources away from other sectors to the nontraded; thereby, enabling it to grow at the expense of the non-oil tradeable sector, particularly agriculture. With zero or declining growth of the non-oil tradeable sector, the economy will need to adjust to accommodate for the consumption and output increase of nontradeables. If adjustment were to proceed as far as the consumption production pair A2 P2 on the absorption curve, there will still be an incentive to move production into tradeables out of non-traded goods, therefore, the final consumption production lies to the left of A2 P2 at A3 P3, representing an increase in the relative price of non-traded goods.

The diagram focuses attention on several crucial

¹⁵Failing the immediate satisfaction of increased demand for non-traded goods out of domestic production, that is, where existing resources production cannot meet with current demand, the extra demand can be met by supply from higher imports. However, this will only be a short-run phenomenon.

matters. First, it shows that the more rapid is the increase in aggregate absorption, the greater will be the equilibrium degree of real appreciation. Secondly, after the oil price rise, the potential to sustain higher real expenditure has to be matched by real absorption of the additional tradeable goods that are made available. Thirdly, it indicates that, for internal and external balance to be maintained, two changes must occur almost simultaneously; both absorption, and switching of the price ratio. Finally, it can be used to further highlight adjustment problems faced by the agricultural sector in the economy. For example, when there is a slump in the oil market and exportable surplus declines, the consumption locus contracts back to SS with declining oil exports and real incomes. However, in order to maintain past expenditure levels, other sector's contribution to real incomes will be required to increase in proportion to the fall arising from the loss in the oil sector. This requirement will pose difficult structural adjustment problems, since the initial trend during the boom period was for the domestic production of tradeable goods such as agriculture to decline. To this extent, the sector will be forced to cope with two seemingly impossible situations; changes in the intensity of demand required to meet the new sectoral pattern, and at the same time shifts in relative prices that are taking place.

This point can be further expanded by considering a situation where Nigeria had no oil. As petroleum prices rise, the country would have had to divert resources into manufacturing, or increased it within the agricultural sector, in order to earn valuable foreign exchanges required

to purchase the more expensive petroleum. When this happens, the country is made to keep full pace with adjustments taking place everywhere as a result of oil price shocks. However, with the Nigeria's self sufficiency in oil production, and the resulting high revenues obtained from its exports, the economy is partially insulated from the full effects of required adjustments. As a result, while other countries without oil, but with similar agricultural sector as Nigeria expands their primary producing sectors to meet foreign exchange requirements, Nigeria, by concentrating on the oil sector loses its share of this market; and the extent to which output loss is traded internationally, and hence its contribution in foreign reserves prior to the oil price shocks will be reflected in the scale of structural adjustments required when oil revenue starts to decline.¹⁶

The ongoing analysis strongly indicates that adjustment issues are primarily linked to absorption levels, and adjustment problems can therefore be influenced by policy options that affects domestic savings and investment decisions. In Nigeria, the desire to raise absorption rapidly in line with rising revenues in an economy with a weak co-ordinated structural network creates added adjustment problems. With the type of institutional framework in the economy, sectoral-lagged adjustment problems are likely to complicate matters in the long-run. In the short-run however, this can be avoided, and the level of absorption

¹⁶The implicit assumption here is that, if oil prices had not risen during the 1970s, or had Nigeria no oil, the situation will then ensure that the same 'volume' of resources have to be devoted to the oil sector as would have been required to produce exports of traded goods for foreign exchange.

need not increase. This will happen if the authorities allow foreign exchange reserves to rise, and then take off setting fiscal and monetary measures to sterilise any expansionary effects of the inflow of financial assets and investments into the economy;¹⁷ to this extent, adjustment problems in Nigeria resulting from efforts to increase absorption will then be reduced.

It follows that for Nigeria and other oil exporting developing countries, adjustment problems and the theoretical base of its dutch disease link cannot be an abstraction of observed government behaviour that directly follows windfall gains. Therefore, dynamic issues facing the country as an oil economy, has to accommodate and reflect institutional constraint on the level of production and governmental extraction profile for the petroleum sector over time. Importantly, it will also reflect upon how revenue accruing to the authorities are divided into consumption and accumulation; and the policy issues that relate to appropriate sectoral distribution of domestic current and capital spending out of oil revenues.

¹⁷This idea of a "limited" growth for the Nigerian economy follows that of a non-growing economy in Currie (1976).

6.4

Oil Export Boom, Relative Prices and Sectorial Competitiveness: A Geometric Analysis

A geometrical analysis through real and monetary channels, of the effects of an increase in revenue of the oil sector (oil boom) on the relative price and competitiveness of the traditional tradeable sector (here agriculture) is considered in this section; where the long-run real effects and the short-run disequilibrium dynamics in the money market are the main tools of explanation.¹⁸ The analysis begins by considering Nigeria as a small open economy with fixed exchange rates that produces three goods, two of which are traded at exogenously given world prices: oil tradeables (O_t) and Traditional and Agricultural tradeables (A_t). The third, the non-tradeable (N_t) is such that its price is flexible and equates supply and demand. The long-run effects of the oil sector's increased revenue on relative prices and competitiveness is considered purely through real channels, and this ignores monetary considerations which is looked at when short-run effects are discussed.

It is assumed that the Nigerian government owns the oil sector, and that production factors employed there are sector specific both in the short and longer runs. The fixed exchange rate is set to one, and it is further assumed that domestic oil consumption is quite negligible compared with exports. If this is the case, any excess demand for non

¹⁸The analysis here closely followed Aoki and Edwards (1983). Harberger (1982) and Edwards (1984) also looked at short-run problems as a consequence of monetary disequilibrium resulting from an increase in capital inflows generated by increased revenues.

tradeables can be assumed to depend on prices and income, which at equilibrium should be equal to zero, and can be expressed as an equation:

$$N_t = N_t \left(\begin{matrix} R_t \\ (+) \end{matrix}, \begin{matrix} Y \\ (+) \end{matrix} \right) = 0, \quad (1)$$

where R_t is the relative price of traded to non-traded goods (i.e., $R_t = PA_t/PN_t$), and Y is real incomes in terms of non tradeables.¹⁹ Below the functions argument in equation (1) are signs enclosed in parenthesis, which refers to the assumed signs of partial derivatives. For R_t , the positive sign stems from the assumption of gross substitutability between non traded and tradeable goods. To obtain an equilibrium in the non traded goods sector, it requires for excess demand for this type of goods equal to zero, both in the short and long-run. And when Y is expressed in terms of non traded goods in equation (1), it gives:

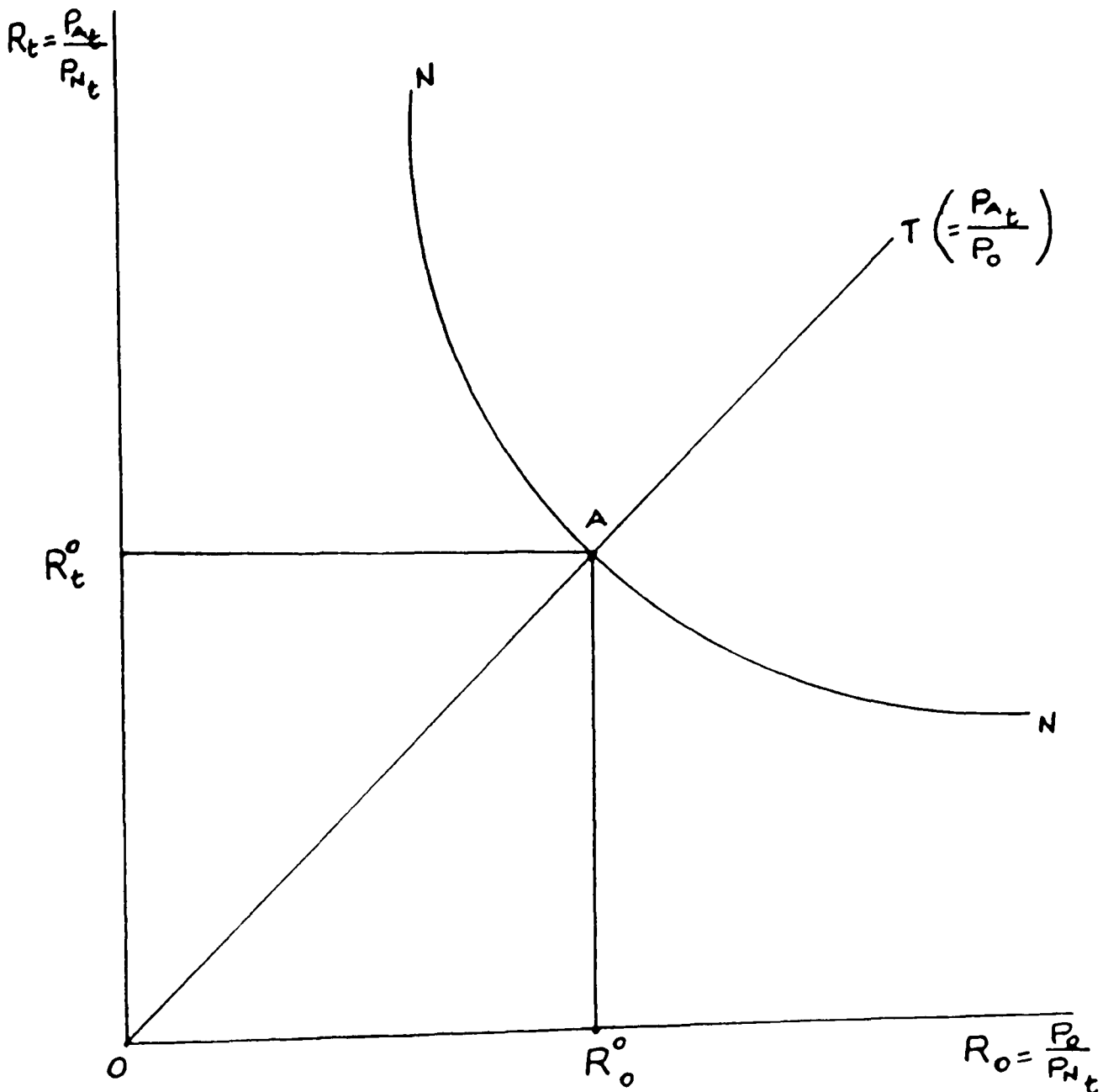
$$Y = Q^S N_t + R_t Q^S A_t + R_o Q^S \bar{O}_t \quad (2)$$

where $Q^S N_t$, $Q^S A_t$ and $Q^S O_t$ are supplies of the non tradeables, agricultural or traditional tradeables and oil respectively, and the term R_o is the relative price of oil in terms of non-tradeable goods. For simplification, the supply of oil is held fixed; and the price index is denoted by PI , which is assumed to depend only on the nominal prices of non-tradeables (PN_t) and traditional tradeables (PA_t).

¹⁹The expression shows that the relative price of oil is excluded from the argument. This stems from the assumption that Nigerians consume a negligible amount of oil relative to the amount exported, and that factors of production within the oil sector is specific.

If the assumption of gross substitutability is retained, it is now possible, using Dornbusch (1974), to discover the effect of an increase in the price of oil on the relative price of traditional tradeables with respect to non-tradeables. The equilibrium solution that emerges in the non-tradeables market can now be depicted in figure 6.2 below.

Figure 6.2



The NN schedule describes the combination of R_t and R_o that is compatible with equilibria in the non-traded goods market, and its slope can be given by:²⁰

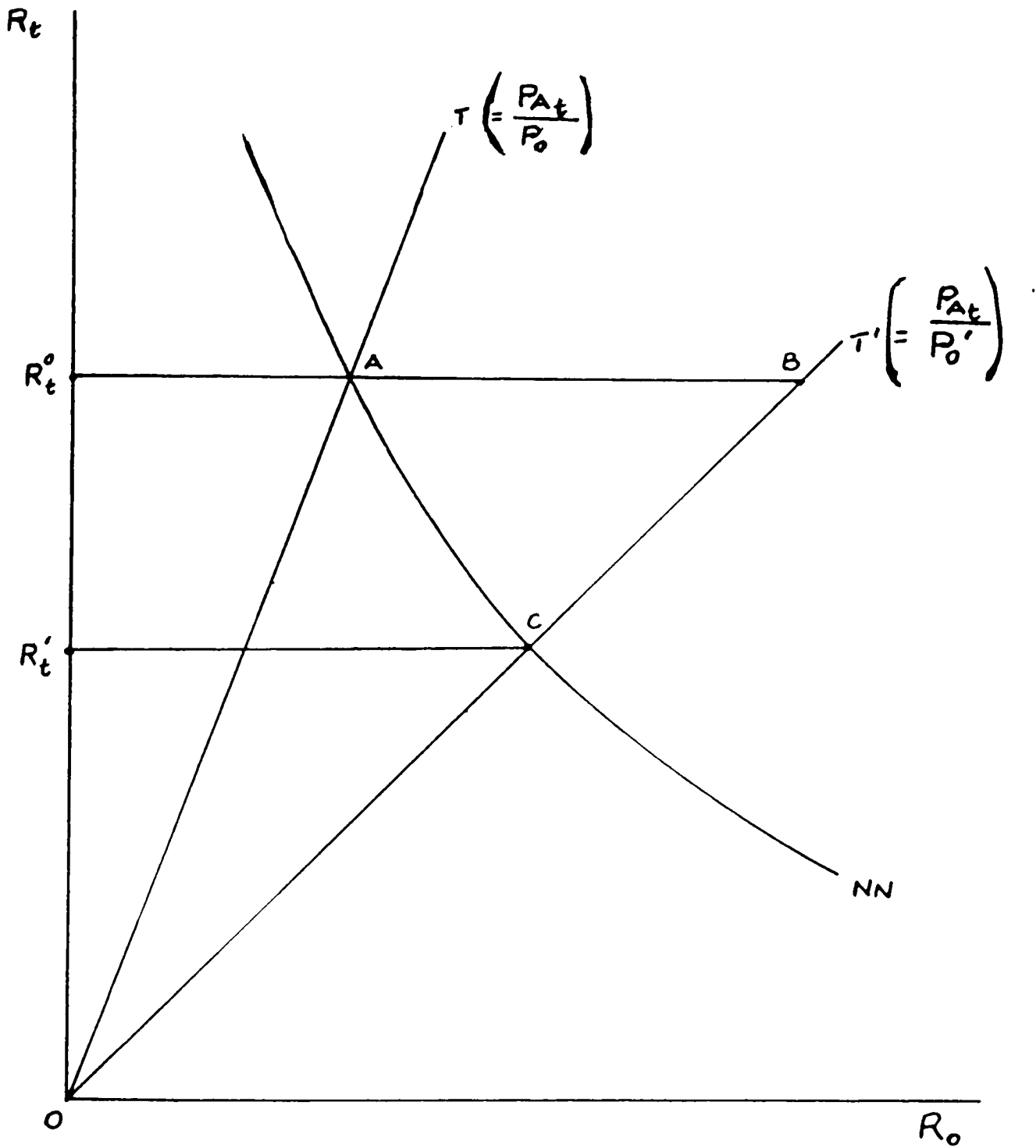
$$\frac{\partial R_t}{\partial P_o} = - \frac{(\partial N_t / \partial Y) \bar{O}_t}{[(\partial N_t / \partial R_t) + (\partial N_t / \partial Y) Q^S A_t]} < 0$$

where on the other hand, the ray OT measures the relative price of both tradeable goods - traditional agricultural tradeables to oil (PA_t/P_o); with the initial equilibrium position given by A, and equilibrium relative prices being equal to R_t^o and R_o^o , respectively.

The next level of the long-run analysis now considers the effects of an exogenous increase in the price of oil, the effects which are now discussed with the aid of figure 6.3. below.

²⁰The derivative is based on the assumption that the relative price of oil does not feature as an argument in the excess demand function for non tradeables, since domestic demand is assumed small. Further assumptions are made; for example, oil and non-tradeables are assumed to be substitutes. Moreover, the authorities are assumed to share expenditure of the oil revenue between tradeables and non tradeables in a way that is similar to how domestic residents allocate their spending.

Figure 6.3



The effect of an exogenous increase in the price of oil will rotate the OT ray clockwise towards the OT' position. Assuming that the nominal price of non tradeables was constant, then the new equilibrium would be given by B , with constant relative price of traditional tradeables with

respect to non-tradeables. However, the slope of NN at B is negative, therefore suggesting an excess demand for non-tradeables at point B, that will require an increase of the relative price of these goods, both with respect to the price of oil and traditional tradeables. The final equilibrium will then be attained at C.

The consequence of the increase in the price of oil is a decrease of the relative price of traditional tradeables both with respect to oil (i.e., $PA_t/P'_O < PA_t/P_O$) and with respect to non-tradeable goods (i.e., $R_t^O > R'_t$). This relative price reduction of traditional tradeables will encourage resources to move out of the sector (which is largely rural based) into other more prospering sectors of the economy such as oil. However, if the assumption that production factors of oil are sector specific holds, then relatively few resources can be drawn to it from the declining sector without some structural difficulties. Therefore, the pull will be towards the non-tradeable sectors such as the public services and constructions (which are largely urban based). For the more advanced economies, this phenomenon has been referred to as de-industrialization effects of an export boom - a shift away from the traditional manufacturing sectors - Corden and Neary (1982). More appropriately for an economy such as Nigeria, it fuels a migration trend towards the urban areas, and without adequate structural absorption possibilities of the resource shift, rising unemployment is the resultant effect. The movement from A to C is a real phenomenon resulting from an increase in P_O , which is considered permanent enough for the long-run effect features described to be observed.

The analysis so far has focused attention on real

long-run effects of an exogenous increase in revenue, as a result of an oil export boom, on the competitiveness of the rest of the tradeable sector, within the economy. The short-run effect of an oil export boom is now considered by introducing some dynamic elements through the monetary sector.²¹ If it is now assumed that there is a slow clearing monetary sector operating in the economy, and also maintaining the assumption of a fixed exchange rate, then an increase in the price of oil (export boom effect), in addition to the real effects previously considered, will affect both the supply and the demand for money. In Nigeria, because of exchange controls, free capital mobility is restricted, and if assumed that the Central Bank monetizes reserve inflows, then petroleum export boom will increase the supply of money by producing a balance of trade surplus.²²

Due to the increase in income brought about by higher price of oil, the demand for money will also increase. The eventual outcome is either an excess supply or an excess demand for money; following Walras' Law, these situation respectively imply an excess demand for goods - both tradeables and non tradeables - or an excess of supply of money, there is a resulting excess demand for tradeables, caused by the short-run disequilibriums in the money market

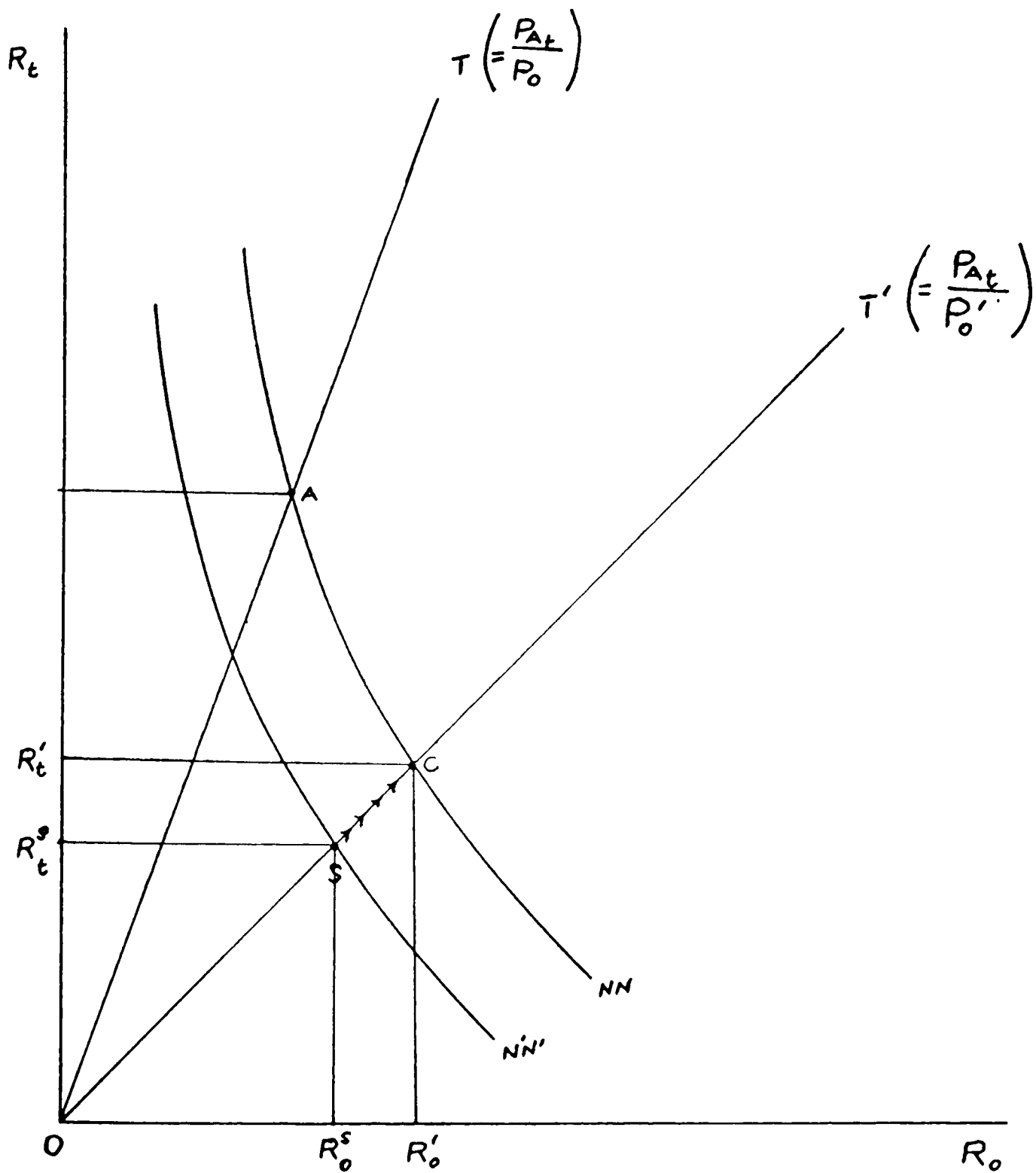
²¹The dynamic consideration introduced here for the short-run effects of an oil boom, follows a slow-clearing monetary sector as in Harberger (1981). Neary and Purvis (1981) looked at short-run restrictions to intersectoral capital mobility between tradeables and non-tradeables. This provides for additional source of dynamic effects.

²²Surplus in the balance of payments triggers an increase in money demand, and in order to maintain equilibrium, the Central Bank adjusts the disequilibrium caused by increase demand by an increase in money supply.

because of a slow clearing monetary sector earlier introduced. The situation is such that, this short-run monetary disequilibrium reinforces that caused by real factors previously discussed, with the outcome that R_t decreases in the short-run, by a greater amount than would be caused by real factors alone. The combination of both factors will cause the nominal price of non tradeables to overshoot its new long-run equilibrium, and the loss of competitiveness of the traditional tradeable sector, measured by the decrease of R_t , will be greater in the short-run than in the long-run.

Excess demand for money on the other hand, will cause R_t to decrease in the short-run by less than real factors alone would indicate. However, in either situation (excess supply or excess demand for money), as monetary equilibrium is restored through balance of trade, long-run factors dominate and R_t will move to its new long-run equilibrium value that is determined by real factors. This dynamic consideration is now explained with the aid of figure 6.4. next page.

Figure 6.4



If assumed that the increase in the price of oil and the corresponding gain in revenue leads to an excess demand for tradeables, this implies an excess supply of money in the short-run. If as in the case of Nigeria monetary operations is assumed to clear slowly, then the short-run effects of an

exogenous increase in the price of oil causes the NN curve to shift downwards to $N'N'$, due to the excess supply of money. Simultaneously, OT 's ratio alters and rotate to OT' , with the NN curve obtaining its downward shift because, if there is an excess supply of money at the old relative price for non-tradeables, there will be an excess demand for these goods. Hence, the new short-run equilibrium is attained at S , with the final long-run equilibrium obtained, as before, in C .

The dynamics considered here are characterized by shifts in the $N'N'$ curve to the right towards NN . This stems from the assumption that the balance of trade surplus resulting from the increase in the price of oil is monetized by the authorities. If monetization does not occur, then an excess demand for money is generated; and there is a simultaneous shift of the NN curve to the right and a downward rotation of the OT ray. However, this situation is not considered, as it was assumed that the Central Bank does monetize reserve inflows. Under the situation considered, the speed of adjustment depends on how rapid the excess supply of money is eliminated. The particular framework here indicates that relative price of traditional tradeables undershoots the final equilibrium level, showing that the loss of competitiveness of the traditional tradeable sector (mainly primary products), measured by the decline of R_t , is greater in the short run than in the longer-run.

6.5

The Tested Models:

- (i) Oil Export Revenue and the Monetary aspects of inflation in Nigeria.
- (ii) The Macroeconomic Response to a Monetary Shock in the Nigerian Economy.

The two models looked at in this chapter are now outlined and the results obtained discussed. In themselves, these models should provide further insights as to why Nigeria as an oil exporter is encountering serious problems in building up a diversified export base. Despite a huge increase in oil revenue, shortages have occurred in the non-oil exportable sector, and there is also an absence of employment benefits thought to be associated with increased revenue.

Model (i)

The long-run effect of an exogenous increase in the price of oil on the competitiveness of the non-oil tradeable industries was discussed in section 6.4 without dynamic considerations. The purpose of the model adopted here is to introduce dynamic effects through the monetary sector of the economy. In so doing, it would also be possible to establish any wealth effect associated with increased oil revenue, in the monetary aspects of inflation in Nigeria.

In quantifying the inflationary impact of the oil price increase on the economy, a framework of the monetary model is adopted. A look through the literature suggests that studies concerned with the monetary aspects of the inflationary

process in developing economies use Cagan's (1956) model as a building block;²³ though his study of hyperinflation stressed a unidirectional causation of changes in money causing changes in prices.²⁴ It is the contention of the model to follow in the direction of Dutton (1977) and Aghevli and Khan (1977) and recognise that the expansion in the money supply may not be independent of inflation. Further, by introducing the wealth effect of the increase in income, which is precipitated by the higher price of oil, the model encapsulate the "Dutch disease" phenomenon.

To abstract from microeconomic issues, the model assumes that oil is perfectly tradeable, and the production process involves no extraction cost. The conventional demand for real money balances defined as a function of the level of real income and the opportunity cost of holding assets in the form of money needs modification for an economy such as Nigeria. The reason being that, there is a limited range of financial assets which acts as an alternative to holding money.²⁵ Within such an economy, the substitution between money and physical assets becomes more important, and

²³See for example, Harberger (1963); Diz (1970); and Pastore (1975). Money supply is treated as exogenous (or policy determined), hence inflation is caused by the expansion of the money supply without any feedback.

²⁴Cagan's (1956) work was questioned by Sargent and Wallace (1973); Jacobs (1977); and Frankel (1977) (employing causality tests in Sims (1972) and Pierce (1977)). Who all came to the conclusion about two-way causality between money and prices.

²⁵Quantity theory, which includes income as the only variable in explaining demand for money, have been found to be more realistic in relation to an economy with Nigeria's type of financial market. See, for example, Wong (1977) and Polak (1957).

therefore the return on financial assets plays a limited role and can therefore, be ignored. Thus, for money holders in Nigeria, the relevant opportunity cost is the rate of return on physical assets or goods; that is, the expected rate of inflation.

Using the expected rate of inflation as an argument, it is now possible to express the conventional demand for money that assumes an adaptive expectation or error-learning mechanism,²⁶ of the form:

$$\Delta \Pi_t = \beta [\Delta \log P_t - \Pi_{t-1}] \quad 1 > \beta > 0 \quad \text{-----}(1)$$

where β is the coefficient of expectations and $\Delta \log P_t$ denotes the current rate of inflation. If economic agents assume that previous inflation will persist in the current period, then it is possible to set $\beta=1$; and thereby formulate the expected rate of inflation upon the growth rate of past trends; in the form:

$$P = ae^{\chi t} = \text{growth rate in prices.}$$

$$\pi = P = ae^{\chi t} \quad \text{-----}(1b)$$

That is, the growth rate of prices is taken to be the expected rate of inflation.

Expressed in natural log form, (1b) becomes:

$$\log P = \log a + \chi t$$

π can now be set to equal inflation growth. That is,

²⁶This assumption is made in the light of available works on developing economies. See, for example, Adekunle (1968); Auernheimer (1979); Wong (1977); Musa (1975) and Shahi and Sheikh (1979).

$$\pi_t = \log P = \log a + \chi t$$

therefore,

$$\pi_t = \log a + \chi t \quad \text{-----}(2a)^{27}$$

where χ is the rate of growth.

If this is the case, the conventional demand for real balances can now be specified in log linear terms to reflect the above observations; hence:

$$\log (M/P)_t^d = a_0 + a_1 \log Y_t - a_2 \pi_t \quad \text{-----}(2)$$

As equation (2) stands, it does not measure the specific effect of oil price increase on domestic demand. The direct impact of higher oil wealth on money demand can be explained by considering the private sector. On liquidity grounds, if oil revenue accrues as a transfer to the private sector, it should increase transactions demand for money directly. On the other hand, if one assumes (as in the case at hand) that all oil revenue accrues directly to the authorities, private sector wealth can be raised through the anticipated "oil boom" windfall or reduction in future tax liabilities. In amending for real present value of a direct oil wealth effect in money demand;

$$\epsilon + e - p$$

is used as a measurement. Where ϵ represents the real rate of growth in oil revenue over the period under

²⁷ From preliminary result for the case of Nigeria between 1960-1984, inflation was estimated to be growing at a constant amount of 2.3502 at 0.1047 rate.

consideration.²⁸

This wealth effect induces an increase in the supply and demand for money via another channel that relates to income; which in turn, affects the demand for import and home produced goods. The income effect is such that increases in income precipitated by the higher prices of oil results in increased demand for money. The resulting implication is that, it raises the level of demands for goods, both tradeables and non tradeables. In turn, there will be an increase in the price level, if this is not matched by an equivalent devaluation, will tend to generate a real appreciation for the Naira. The state of the domestic currency in turn affects the non-oil tradeable sector, and the domestic price of imports. With Nigeria's history of a sustained import substitution policy, the macroeconomic significance of imported inputs can therefore, be captured by extending the model to include a factor for the relative prices of domestic and imported goods; this is represented by:

$$\alpha p + (1-\alpha)e$$

(2) therefore becomes

$$\log(M/P)_t^d = a_0 + a_1 \log Y_t - a_2 \Pi_t + (\varepsilon + e - p) + \alpha p + (1-\alpha)e \quad \text{-----(2a)}$$

$$a_1, a_2 > 0$$

where:

²⁸This is similar to the view expressed by Neary and Wijnbergen (1984), in their case $f(\varepsilon)$ here) represents the infinite term annuity value of the oil wealth in foreign currency.

M = stock of nominal money balances

P = price level

Y = level of real income

Π = expected rate of inflation

e = The exchange rate (the domestic price of imports, or the domestic currency cost of a unit of foreign exchange)

The weights α and $(1-\alpha)$ expresses the contributions of the domestic output price and import price respectively, to the price index appropriate to the demand for domestic money.

Finally, the superscript "d" signifies demand.

With the actual stock of real money balances assumed to adjust proportionally to the difference between the demand for real money balances and the actual stock in the previous period;²⁹

$$\Delta \log (M/P)_t = \kappa [\log (M/P)_t^d - \log (M/P)_{t-1}] \quad \text{-----}(3)$$

where κ denotes the coefficient of adjustment; and

$$1 > \kappa > 0.$$

substituting (2a) into (3), to give:

$$\begin{aligned} \Delta \log (M/P)_t = \kappa [a_0 + a_1 \log Y_t - a_2 \Pi_t + (\epsilon + e - p) + \alpha p + (1-\alpha)e \\ - \log (M/P)_{t-1}] \quad \text{-----}(3a) \end{aligned}$$

Solving for the level of real money balances to obtain,

$$\log (M/P)_t - \log (M/P)_{t-1} = \kappa a_0 + \kappa a_1 \log Y_t - \kappa a_2 \Pi_t +$$

²⁹See, Aghevli and Khan (1978), for alternative specifications.

$$\kappa(\varepsilon+e-p) + \kappa\alpha p + \kappa(1-\alpha)e - \log (M/P)_{t-1}$$

which implies,

$$\log (M/P)_t = \kappa a_0 + \kappa a_1 \log Y_t - \kappa a_2 \Pi_t + \kappa(\varepsilon+e-p) + \kappa\alpha p + \kappa(1-\alpha)e - \kappa \log (M/P)_{t-1} + \log (M/P)_{t-1}$$

Finally, to give

$$\log (M/P)_t = \kappa a_0 + \kappa a_1 \log Y_t - \kappa a_2 \Pi_t + \kappa(\varepsilon+e-p) + \kappa\alpha p + \kappa(1-\alpha)e + (1-\kappa) \log (M/P)_{t-1} \quad \text{-----(4)}$$

(4) can now be solved to obtain a model of the price level; given as:

$$\log P_t = -\kappa a_0 - \kappa a_1 \log Y_t + \kappa a_2 \Pi_t - \kappa(\varepsilon+e-p) - \kappa\alpha p - \kappa(1-\alpha)e - (1-\kappa) \log (M/P)_{t-1} + \log M_t \quad \text{-----(5)}$$

This extended monetary model (5) now allows for the measurement of exported oil revenue and monetary aspects of the economy, on inflation in Nigeria.

Estimated equation:

$$\log P_t = -\kappa a_0 - \kappa a_1 \log Y_t + \kappa a_2 \Pi_t - \kappa(\varepsilon+e-p) - \kappa\alpha p - \kappa(1-\alpha)e - (1-\kappa) \log (M/P)_{t-1} + \log M_t$$

An extended monetary model on oil export revenue and inflation in Nigeria.

Table R6 a(i)

Explanatory Variables	κ	Parameters			α	R^2	DW	SER
		a_0	a_1	a_2				

Dependent
Variable

1.1121 4.9418 -0.4048 -2.1866 1.0024 .9846 1.8545 .0989
 P_t (5.8535)(6.6444)(-2.1767)(-15.868)(972.09)

Starting
Values for 0.02 -2.33 0.06 0.14 0.07
Estimation

Notes:

As in the reported estimation to Chapter 5, the maintained hypothesis is estimated by using non-linear least squares; where convergence is achieved by GAUSS method after seventeen iterations. The convergence criterion = 0.01 with the step size method = BARD. In determining the starting conditions for estimation, equations (2) through (3a) was used, and the real rate of growth in oil revenue (ϵ) was found to be 0.2012 per annum; using ordinary least squares in this process. The reported goodness of fit for the estimated parameters is the adjusted R^2 , and t-statistics are presented in parenthesis below the reported estimates. For the Durbin-Watson statistics, the customary tables are reported.

In table R6 a(i) the regression estimates of equation (5) of model (i) in chapter 6 is reported for an extended monetary model that allows for the measurement of exported oil revenue on inflationary aspects of the Nigerian economy for the period 1960-1984.

Empirical Result

As indicated by table R6 a(i), the fit of regression is satisfactory as measured by the R^2 . With the number of explanatory variables involved in estimating the final

equation, the Durbin-Watson result for the model is significant at the 5 per cent level. Also from the table, the reported Durbin-Watson statistics provides evidence of no first order serial correlation, and more importantly, there is also no evidence of important variables being omitted from the model. This consequently, eliminates a case for multicollinearity.

The signs associated with the reported parameters determines the overall relationship of coefficients in the tested equation and, this is of utmost importance. The adjustment coefficient (κ) maintained expected signs when the true (overall) relationships of the coefficients of the equations are considered. The parameter (a_1) and the adjustment coefficient (κ) associated with the level of real income (Y_t), combined to give a significant result at better than 0.05 level. Indicating that the overall effect of increased in real incomes is an increase in the general price level.

On expected inflation (Π_t) the associated parameter turned out the wrong sign, and a hasty look at economic theory might tempt one to conclude that the obtained result suggest that a higher oil price and the consequent revenue increases does not have a significant effect on domestic inflation. However, the actual relationship from the estimated equation provides an explainable theory for an economy such as Nigeria. Precisely because, the question of expectation depends very much on how integrated the economy is. In this case, where the economy is less integrated, and expectations often differ from real outturn of the authority's performance. Then the result holds true for an explanation

for these occurrences. This being the case, the result therefore turns out to be significant at better than 0.01 level.

From the estimated equation, it is interesting to note that the overall effect of the result on the coefficient of exchange rates (e), showed that higher oil price has a significant effect on domestic inflation via the exchange rate channel. This is consistent with the theoretical framework of the 'Dutch disease' approach; indicating a rather dominant role played by the domestic price of imports, as a primary determinant of inflation in the Nigerian economy. Using the result of the adjustment coefficient to determine the effects of lags in real money demand (supply), and on inflation, showed some remarkable results. Overall, the true relationship indicates that, with other things constant, an increase in money supply past and present, generate a more than proportionate increase in the rate of inflation.

In combination, the reported result provide a proof of the explanatory power of the maintained hypothesis. The evidence therefore is that, increase in real incomes associated with the "oil boom" era resulted in an adjustment dilemma for the authorities. The effect of the authorities in amending for real present value of a direct oil wealth effect in money demand, therefore, leads to the consequent inflationary cycle.

model (ii)

What follows in this second model is an attempt to quantify the macroeconomic effects of an increased revenue

from oil; in order to clarify its various impacts on the economy. To abstract from microeconomic issue, the model assumes that oil is perfectly tradeable and the production process involves no extraction cost. The issue of structural changes is covered in the chapter under section 6.3, and therefore, the model presented here abstracts from any structural changes.

The approach follows closely that developed by Eastwood and Venables (1982), which in turn builds on Dornbusch (1976). However, it departs from Eastwood and Venables (1982) on two fronts: First, it allows for a direct impact of higher oil wealth on money demand.³⁰ Secondly, in the model adopted here, speculative demand for money plays a negligible role. Money is assumed to be held primarily for transaction purposes, since there are few alternative financial assets available to wealth holders in an economy such as Nigeria.³¹ As in the Eastwood and Vanables (1982), the aggregates of the equation in the model are as follows:

(m), money, an interest bearing asset

(y), locally produced exportable (non-oil) output-
which in the absence of oil revenue equals

³⁰On liquidity grounds if the oil revenue accrues as a transfer to private sector it should increase transactions demand for money directly. On the other hand, if all oil revenue accrues to the government, private sector wealth is raised through the anticipated reduction in future tax liabilities.

³¹Quantity theory, which includes income as the only variable in explaining demand for money, have been found to be more realistic in relation to an economy with Nigeria's type of financial market. See for example, Wong Chong huey (1977) and Polak (1957).

- national income
- (\bar{y}), Normal output
- (p), The price of domestic output
- (e), The exchange rate (this is the domestic price of imports or the domestic currency cost of a unit of foreign exchange)
- (d) Aggregate demand for domestic output.

The Eastwood and Venables (1982) model also include foreign interest rates (r^*) and domestic interest rates (r); to arrive at equations of the model with positive parameters:

$$m = jy - kr + \alpha p + (1-\alpha)e \quad \text{-----} \quad (1)$$

(1) presents the money market equilibrium. With nominal money supply assumed fixed, the demand for real balances is shown to depend on income and interest rates. Where $\alpha p + (1-\alpha)e$ represents the general price level. That is, the weights α and $(1-\alpha)$ expresses the contributions of the domestic output price and the import price respectively, to the price index appropriate to the demand for domestic money. If the money market is always clear, then (1) will always hold.

The general monetary model presented in (1) needs modification if it is to be applied to the Nigerian case. This is because interest rates do not generally reflect money market conditions in the country; therefore, speculative demand for money is negligible as money is mainly held for transactions purposes. Studies on alternative forms of demand for money function for developing countries have

focused on the measurement of the opportunity cost of holding money. Where this has been the case, the expected rate of inflation has been considered or found to be a powerful explanatory tool in the demand for money function.³²

Using the expected rate of inflation as an argument will enable the conventional demand for money to be specified as a function of income as well as the rate of inflation. If expectations about inflation are assumed to follow the adaptive expectation hypothesis,³³ then it is possible to write:

$$\Delta \Pi_t = \kappa [\Delta \log P_t - \Pi_{t-1}] \quad \text{-----}(2)$$

$$\text{for } 0 < \kappa < 1$$

where κ is the coefficient of expectations and $\Delta \log P_t$ denotes the current inflation rate.

If economic agents assume that previous inflation rate will persist in the current period, then it is possible to set $\kappa=1$; and thereby, formulate expected rate of inflation on past growth trends thus:

$$P = ae^{\chi t} = \text{growth rate in prices.}$$

$$\pi = P = ae^{\chi t}$$

That is, the growth rate of prices is taken to be the

³²See for example, Diaz Alejandre (1970); Deaver (1970), Campbell (1970); Crockett et.al (1980); and Hynes (1967).

³³This assumption is made in the light of available evidence from developing economies. See the works of Adekunle (1968); Auernheimer (1979); Wong (1977); Musa (1975); and Shahi and Sheikh (1979).

expected rate of inflation.

Expressed in natural log form, (1b) becomes:

$$\log P = \log a + \chi t$$

π can now be set to equal inflation growth. That is,

$$\pi_t = \log P = \log a + \chi t$$

therefore,

$$\pi_t = \log a + \chi t \quad \text{-----}(2a)^{34}$$

where χ is the rate of growth.

It is now possible to write a demand for money function which is applicable to Nigeria.

$$m = \theta y + \kappa \pi_t + \alpha p + (1-\alpha)e \quad \text{-----}(3)$$

The demand function for domestic (non-oil) output can be expressed as a function of relative prices of domestic and imported goods, income, and inflation rate. Thus,

$$d = \delta(e-p) + \kappa y - \sigma(\pi_t - \dot{p}) \quad \text{-----}(4)$$

If the assumption that output is demand determined is retained, then

$$y = d \quad \text{-----}(5)$$

³⁴From preliminary result for the case of Nigeria between 1960-1984, inflation was estimated to be growing at a constant amount of 2.3502 at 0.1047 rate.

and Phillips curve gives

$$\dot{p} = \beta (y - \bar{y}) \text{-----}(6)$$

where \bar{y} is the log of 'normal' output.

$$\theta, \kappa, \delta, \chi, \sigma, \beta, > 0; \quad 0 \leq \alpha \leq 1.$$

For the steady state solution, \dot{e} and \dot{p} are set to zero, having set d and y equal to \bar{y} and $\Pi_t^e = \Pi_t$;

To obtain the long - run money market equilibrium condition:

$$m = \theta \bar{y} + \kappa \Pi_t + \alpha p + (1-\alpha)e \text{-----}(7)$$

and goods market equilibrium condition

$$\bar{y} = \delta (e-p) + \chi \bar{y} - \rho \Pi_t \text{-----}(8)$$

However, these long-run equilibrium do not capture the increase in income precipitated by the higher prices of oil in the markets. Amending for real present value of oil wealth in home currency using $f+e-p$ as a measurement, thereby following Eastwood and Venables (1982). However, unlike their model where f represents the infinite term annuity value of the oil wealth in foreign currency, the real rate of growth in oil revenue over the period studied is considered. The long-run market conditions can thus be expressed:

$$m = \theta \bar{y} + \kappa \Pi_t + \alpha p + (1-\alpha)e + \varepsilon(f+e-p) \text{-----}(9)$$

Here, $(f+e-p)$ is the logarithm of the value of oil revenue in domestic currency. Oil revenues will always be large enough for $(f+e-p)$ to always be positive.

Since the price of domestic output is already captured in the expression about inflation, it is possible to write the long-run money market equilibrium condition as:

$$m = \theta \bar{y} + \kappa \Pi_t + (1-\kappa)e + \varepsilon(f+e-p) \quad \text{-----}(10)$$

[wealth effect]

and the long-run goods market equilibrium condition as:

$$\bar{y} = \delta (e-p) + \chi \bar{y} - \rho \Pi_t + \gamma (f+e-p) \text{ -----(11)}$$

[income effect]

γ = elasticity of aggregate demand with respect to oil revenue.

ϵ = macroeconomic elasticity of demand for money with respect to oil revenue.

Formation of equations (10) through (12) has now enabled equation (9) to be expressed in terms of observable variables. Thus, (9) can now be written in a form which allows for a monetary approach model test on factors determining Nigeria's exchange rates. That is:

Testing equations (10) and (11) to capture overall macroeconomic effect of increased oil revenue on the economy. First the wealth effect (which is different from the 1st model;) which tested for inflationary aspects of the effect of an exogenous increase in the price of oil; and in (11), the income effect is tested.

The tested equation is a long-run money market equilibrium condition, that extends the monetary model of the maintained hypothesis of section 6(a), in order to capture the specific wealth effects of the dutch disease in the economy.

Estimated Equation:-

$$m = \theta \bar{y} + \kappa \Pi_t + (1-\kappa)e + \frac{\varepsilon(f+e-p)}{[\text{wealth effect}]}$$

Table R6 b(i)

Explanatory Variables	Parameters					
	θ	κ	ε	R_2	DW	SER
Dependent Variable						
m	0.3034	2.7581	-0.0102	0.9798	0.6877	0.2187
	(3.4228)	(5.7809)	(-10.4870)			
Starting condition for estimation	0.01	0.60	0.20			

Table R6 b(ii)

Explanatory Variables	Parameters					
	θ	κ	ε	R_2	DW	SER
Dependent Variable						
m	0.6201	4.0329	-0.0129	0.9743	0.8007	0.2473
	(14.4820)	(4.6214)	(-9.8327)			
Starting condition for estimation	0.01	0.60	0.20			

Notes:

Equation (10) is linear in the parameters θ , κ and ε . With the starting conditions for estimation given in the above tables. Convergence is achieved by GAUSS after one iterations, with the convergence critierion set = 0.01; with stepsize method = BARD.

The starting values $\varepsilon = 0.20129$, $\theta = 0.014$, $\kappa = 0.60$ and $\alpha = 1.1964$ were obtained from equations (7) and (9), using ordinary least squares in this estimation. The true and estimated regression lines are reported in tables 6b(i) and 6b(ii), with the goodness of fit for the parameter estimates based primarily on statistical criteria, using the square of the correlation coefficient, R^2 . However, in detailed explanatory power of regression that follow the notes, the theoretical as well as econometric criteria are also discussed. The t-statistics are presented in parentheses below estimates, and the customary Durbin-Watson statistics are given under the D-W.

Equation (10) is adapted and tested, to allow for evidence of the wealth effect of oil price increases of the period 1960-1984, in the money market equilibrium condition for the Nigerian economy. Table 6b (ii) reports on augmented version of the tested model without the inflationary expectation coefficient (Π_t)

Empirical Result

Judging the goodness of the parameter estimates on R^2 ; the coefficient of determination, the two tables showed satisfactory results. Since the rate of inflationary expectations has been determined to be negligible for the economy in R6 a(i), table R6 b(i) thereby tested a version of the model without this coefficient. The reported Durbin-Watson is quite low at 0.6877, and testing for serial correlation; this proves insignificant at both conventional levels. However, the signs associated with adjustment coefficients maintained the expected signs when the overall

relationship of the coefficients are determined, with the exception of ϵ , the adjustment coefficient on the real rate of growth in oil revenue. In all cases, the parameter estimates are significant at better than 0.01 level; however, the adjustment coefficient of the parameter κ is more than two standard error different from zero.

Purging (10) of the inflationary expectations coefficient was purely based on the obtained result of R6 a(i) and since the result obtained thereof is inconclusive, and also draw ones attention to some evidence of serial correlation, it was decided to run another test which includes this variable. Further, this would enhance a more complete form of the theoretical interpretation of the model.

Table R6 b(ii) therefore showed the result obtained from this exercise, with the coefficients maintaining the expected signs. The remarkable aspects of this test however is that, there has now been an improvement in the Durbin-Watson estimates of the model. More significantly, testing for serial correlation showed that the Durbin-Watson statistics now obtained, is acceptable for the significance point of 1 percent.

In this test, the associated wealth effects of higher oil revenue on the money market equilibrium for the Nigerian case is found to depend on overall revenue, than on the real rate of growth in oil revenue. With the exception about inflation, marginally affecting the result. The result show some consistency regarding the economic conditions prevailing during the "oil boom" era, in that, the distribution of incomes was not well managed, thereby making the effective turnover for the whole economy low.

In order to establish the income effect of the dutch disease syndrome on the economy, the estimated equation is adapted in the form:

$$\bar{y} = \delta (e-p) + \chi \bar{y} - \rho \Pi_t + \gamma (f+e-p) \quad [\text{income effect}]$$

Table R6 c(i)

Explanatory Variables	δ	Parameters χ	γ	R^2	DW	SER
Dependent Variable						
	-2.6061	-0.1041	0.0154	0.9635	0.7398	0.2233
\bar{y}	(-42.2750)	(-2.7268)	(13.9070)			
Starting conditions for estimation	-0.90	-0.43	1.28			

Table R6 c(ii)

Explanatory Variables	δ	Parameters χ	ρ	γ	R^2	DW	SER
Dependent Variable							
	-2.0448	-0.1468	1.8854	0.0121	0.9739	0.8933	0.1937
\bar{y}	(-10.0770)	(-4.0844)	(2.8675)	(7.9625)			
Starting conditions for estimation	-0.90	-0.43	1.28				

Notes:

The version of the tested model of equation (11) is linear in the parameters δ , χ , ρ , and γ , whose starting conditions

for estimation are given in the above tables. These values were obtained by preliminary estimation of equation (8), using ordinary least squares. The convergence criterion for the estimation equals 0.01, using stepsize method of BARD; with the maximum number of stepsize iteration (MAXSQZ)=10. Convergence was achieved by GAUSS after one iteration. Table R6 c(i) report estimates of equation (11) without the inflationary expectation coefficient, and R6 c(ii) includes this coefficient.

The adjusted R^2 is reported in order to determine the goodness of fit for the estimated parameters, and t-statistics are presented in parentheses below the estimates. The reported Durbin-Watson statistics are the customary ones.

Empirical Result

The maintained hypothesis of equation (11) allow for the effects of oil revenue increases on incomes in the economy to be determined. To begin, the starting condition for the elasticity on aggregate demand with respect to oil revenue (γ) proves quite elastic, at 1.28. This implies that, a one percentage rise in oil revenue leads to a 1.28 rise in aggregate demand. A comment on this point is made latter in the chapter. Table R6 c(i) gives estimates of equation (11) with the adjustment coefficient (ρ), for expectations about inflation being purged from the maintained hypothesis. The result is quite significant judging by the goodness of the parameter estimates R^2 , at 0.9735, and the associated signs maintained theoretical expectations. The Durbin-Watson test for serial correlation is not however acceptable for the

significance point of one per cent. The t-statistics of parameters with the number of explanatory variables are nonetheless significant at better than the 0.01 level.

In table R6 c(ii), another test was carried out in order to purge for the effect of possible serial correlation of R6 c(i), and thereby the parameter associate of expected rate of inflation (ρ) was included. The result is such that, an improvement was obtained regarding the goodness of fit and the Durbin-Watson statistics for the tested model. The regression line further produce a better fit to the observed data, since this explains over ninety seven per cent of total variation of dependent variable values around their mean. Significantly, including the parameter coefficient for expected rate of inflation does not prove to be superflous, thus discounting any effect of multicollinearity, on both a priori and statistical criteria. Overall, the income effect of the oil shock in a monetary model is thus affected by inflationary expectations, incomes, and the elasticity of aggregate demand with respect to oil revenue, with their respective estimates at better than the 0.01 significance level.

Exchange Rates prove a critical channel for the transmission of monetary changes to an increase in aggregate demand and output. It appreciates, following increase in revenue that takes place only in association with the extra demand generated by oil revenue. The contractionary effect of real exchange rates, in turn depends on how responsive supply and demand are to changes in prices, both in Nigeria and the rest of the world. If the constraint on growth is from the supply side, rather than deficient demand, then the

sequence of events would depend on the authorities' policy towards exchange rates.

In general, the higher the supply and demand elasticities the smaller will be the change in the real exchange rate. The assumption of highly elastic demand is unrealistic, for it implies, for example, that the law of one price holds for broad classes of goods; Kravis and Lipsey (1978) suggested there is no convincing evidence for this position. Changes in domestic price of imports and thus, the relative price change, switches the excess demand associated with oil revenue towards foreign goods. In essence, the absolute values of price and exchange must change so as to hold the price index in the money demand equation constant. These changes played a dominant role in the determination of inflation in Nigeria, rather than excessive domestic monetary expansion.

The overriding importance of growth makes the appropriate model a long-run one, with the concomitant need for a greater emphasis on informational content in the model adopted. Besides, economic complexities, such as data limitation and monetization, makes the short-run 'fine tuning' econometric approach less appropriate here. In general, the dynamics will also depend upon whether or not there is a lag in the direct demand for money effect.³⁵ The increase in expenditure associated with the higher national income will increase the transaction demand for money. In this

³⁵ This could occur if the benefits associated with government oil revenues have not been conferred to consumers, because of delays caused by the financial market imperfections.

situation, the wealth effects, and both the demand and monetary effects will have to wait on any lag developments.

6.7

The Oil Shock : Prospects and Policies; Some Implications of the Oil Sector on the Nigerian Economy

Following the oil price increases of late 1973 and early 1974, and the recent ones of the 1980s, several organizations predicted large accumulations in international reserves of major oil exporting countries for the end of the 1980.³⁶ While in the event, net oil exporter's balance of payments surpluses on current account and reserve accumulation may have turned out substantially lower than expected, it is an acceptable fact that oil price increases during the last decade provided an important stream of income for economies such as Nigeria. However, whether the Nigerian economy is better off as an oil exporter, is more of a controversial issue, and the analytical and empirical discussions raised on the subject had been the main theme of the chapter so far. Ultimately, the central issue is the extent to which increased oil revenue affected the structure of the rest of the economy. Particularly, how far it has contributed to the decline of other sectors, plus of course, other macroeconomic effects.

The effect of increased oil revenues on other sectors of the economy will depend upon the extent to which their output is traded internationally. The essentials of the price rise adds considerably to the growth of the economy, especially in the oil sector. However, the concentration of growth in a

³⁶The estimates of reserve between 1973 and 1980 ranged from U.S. \$180 billion to more than \$600 billion. A discussion of such estimates may be found in Rimmer de Vries (1974); Wells (1976); and The Economist (1975).

single sector takes a highly unbalanced form in relation to the overall economy. Thus, the rise in oil prices have spill over effects, which have implications for the economy. Some of which were discussed in the earlier part of the chapter. The technical argument is that, for a country like Nigeria which is a net oil exporter, changes in oil price and the consequential result of a change in production affects the balance of payments equilibrium. And since in the long-run, the aim is for a balanced balance of payments, the implication of a substantial growth in the oil tradeable sector is that, a concentration of the remainder of traditional traded goods sector has to take place. This effect strikes the agricultural sector particularly, since it played much of a central role in relation to the traded goods sector prior to the oil boom, and therefore, disproportionately represented. The overall effect is that squeeze on agricultural tradeables would be higher than any squeeze in non tradeables. If the oil price rise effect persist long enough, the continual capital inflow will cause the exchange rate to appreciate, thus precipitating a further contraction in the traditional tradeable output. Thus, the result of changes in the oil export sector acts as a compensating adjustments in the levels of domestic production and consumption of other traded goods and services; failing of course, other compensating movements on capital account.

In the short-run, it is usually presumed that a tradeable squeeze would be associated with a real appreciation, and given nominal money supply, the issue of an oil revenue increase gives rise to an effect that is adverse to the tradeable goods, through nominal appreciation. If the

authorities attempt a monetary contraction, both appreciation and a tradeable squeeze will then result. In essence, the short to medium-run difficulties of economic management occasioned by windfalls accruing to the economy concerns capital inflow. To the extent that oil investment is primarily foreign financed, there must be a considerable non-tradeable content included. If this is the case, capital inflow would, on balance, exceed any additional demand for tradeables. Further, where the economy is believed to be relatively stronger, speculative capital inflow - anticipating the Nigerian Naira's appreciation - will also cause a contraction in the traditional tradeables output.

From a developing economy's perspective, the incorporation of an oil premium in the exchange rate of the Naira implies that prices of traditional tradeables will seem high in relation to those of other countries. Further, if any policy to prevent real appreciation that follows the petroleum boom is motivated by the belief that the boom is perhaps temporary, and that adjustment costs are high in the short-run, then it would appear reasonable to produce fewer tradeables outside the petroleum sector. In effect, real appreciation of the Naira would indicate that tradeables can now be purchased abroad, and production diverted to non tradeables instead, since the purchase of these goods from abroad is limited.

Overall, the analysis is strongly suggestive that revenue increase from oil involves a structural change from tradeables to non-tradeables, at least if the whole of the revenue is not used for the purchase of financial assets. However, the absorption level of the economy in relation to

the pace of structural change might imply an increasing level of unemployment, as the oil sector, which is mainly factor specific, is unable to absorb factors displaced from within the traditional tradeable sectors. Moreover, although it is expected that some contraction in the size of the agricultural tradeable output sector is required to confer benefits of the oil price rise to the economy at large, uncertainty about the oil price implies uncertainty about the magnitude of the reduction required. Furthermore, how these changes are managed is important, and it is not automatically the case that they are best handled through the channel of passive acceptance of high exchange rate and unemployment. In a developing economy, the extent of structural changes will depend, crucially among other things, on the fiscal policy response : to what extent is the oil revenue spent, directly or indirectly by the authorities, and to what extent it is used to retire debt.

So far, the oil sector's impact on the economy depends on world oil prices, which is in turn subject to sharp variations. Besides, the almost ritual OPEC's review of members quotas shows an indication that production had peaked and is beginning to decline. To earn more foreign exchange when oil prices begin to fall therefore requires diverting resources from supplying the home market with non-traded goods and services, and expanding the production of exportables other than those of the oil sector. This case of reversal in order to restore the initial structure of the pre-oil era could however be avoided, if sufficient investment of oil revenues had initially been made to transform their windfall nature into a permanent increment to

national income.

In effect, it is therefore more efficient and socially desirable not to allow the rest of the tradeable sector to run down in the advent of the oil economy, only to be expanded again. Where revenues from oil are spent and absorption is accepted to take place, the case for fast and slow absorption would need to be considered at the margin, with the benefits from accumulating reserves, as perhaps indicated by real interest rates in countries where reserves will be kept. However, since oil price cannot be assumed to rise with international interest rates, and there are extraction costs involved in oil production, other problems, such as depletion policy and revenue measurements enter into the framework.

Accurate measurements of oil revenues contribution has to precede an effective policy considerations. At the moment, the impact of oil revenues on the economy can be measured by considering the increase in national income which directly results from oil exports or by its net effects on the balance of payments. When considering implications and policy options for other sectors of the economy however, it should be remembered that this estimates, although will measure the direct contribution to Gross National Product (GNP) as a result of oil revenue in a national accounting sense, they will not measure precisely, the extent to which GPN is higher as a result of the increment in revenues from oil than it would otherwise have been.

In a situation where estimates of the impact of oil revenues increment uses its contribution to Gross Domestic Product (GDP) as a measure, the problem encountered is that

it can easily overestimate the importance of the oil sector, in which foreign owned companies play a major role. Further, extraction costs are involved, and therefore oil revenue cannot be independent of depletion policy.³⁷ Therefore, the net impact of the oil industry's revenue from export on the economy, balance of payments and policy choice path does not only depend on the quality of oil exported and its value in real terms, but also on how the economic rent from oil is used.

Where reasonable sectoral balance is not attained in an oil economy, excessive reliance on the oil sector leads to the fluctuations in availability of foreign exchanges when petroleum exports run out and prices fall, or both. For a country such as Nigeria, fluctuations or scarcity in foreign exchange receipts generates fluctuations in domestic activity, and this increases the difficulty of development planning. Therefore, if the petroleum revenues are to benefit the economy, they must, in the long run, be absorbed into the domestic economy. The dynamic issues facing the oil economy should then reflect policy options, where the prime decision relates to the petroleum sector's extraction profile over time, the split of income into consumption and accumulation, and the division of investment into real domestic capital formation and the accumulation of claims of foreign countries.

More importantly for an oil exporting developing economy

³⁷ Depletion policy will have an impact, so far as it affects the time path of spending out of oil revenue. The microeconomic question raised when oil revenue ceases to be independent of depletion policy have been discussed in Dasgupta et. al. (1978), Eastwood and Heal (1978).

is the policy issues relating to the appropriate sectoral distribution of domestic current and capital spending out of oil revenues. The subsequent level of choice facing the authority concerns policy and institutional development, in order to shape appropriate distributional, consumption, saving, investment, debt servicing, and production patterns in a post-oil economy for Nigeria.

6.8

Concluding Remarks.

The analysis covered is suggestive of the effects on the economy of an increased sectoral revenue, and of possible policy response. This is an important development, since there appears to be no accurate account of the commonly expressed view that revenue increase from oil has generated economic drawbacks and structural adjustments of some unbeneficial consequence in Nigeria. The chapter therefore provides a major insight into the dutch-disease phenomenon regarding the Nigerian economy.

The chapter dealt with the effects of an increased oil revenue on broad sectors of the economy, and therefore abstracts from possible microeconomic questions. Oil is assumed to be perfectly tradeable, and since it is priced and sold in foreign currency, increased revenues can be considered as a foreign exchange windfall. The effect of increased revenue on the economy's steady state that was considered does not distinguish the effects of rising oil production (constant prices) from that of rising oil prices (constant production). Precisely, it would be difficult to achieve. Besides, the dutch disease development over the years have involved both effects, and the analysis becomes more difficult to handle, if one was to disentangle their separate influences.

The increase in oil revenues experienced by Nigeria in the 1970s led to incipient capital inflows, which resulted in exchange rate appreciation. This, in turn, caused a higher price of domestic output and a lower domestic price of foreign goods. In essence, tradeable squeeze occur through

exchange rate appreciation. The higher exchange rate of the Naira led to a fall in incomes of traditional tradeables, which in turn generate a fall in aggregate expenditures. Thus, even when interest rates remain unchanged (as is the case for many developing countries) and investment does not fall, tradeable squeeze still occur as demand for non-tradeables and tradeables continue to fall because of the initial lower incomes in tradeables.

The dutch disease consideration of the macroeconomics of a developing economy showed some short-run features that affect the long-run expansion path. The adapted perspective explores the short-run effects of revenue increase arising from the oil sector, by looking at the economy's monetary policy effectiveness. When there is a positive wealth elasticity of money demand, higher wealth leads to an incipient excess demand for money after the increase in oil revenue; to accommodate for this, the real money stock has to rise, and this will result in a greater appreciation of the exchange rate, which in turn affects the competitiveness of the traditional traceable goods sector. In the long-run, there is a contraction of the overall traded goods sector other than oil.

The nature of the oil price rise is such that Nigeria did not face it in isolation. The distribution caused by the oil price effect therefore affects Nigeria's major trading partners simultaneously. If the effect is such that it sets off a recession in such countries, then foreign demand for Nigeria's traditional tradeables will decline. This combined with the rise in exchange rates, leads to the issue of structural adjustment problems. Often, it affects policy

choice for the economy, as it takes the form of a decline in the level of activity in export oriented and import-competing sectors.

The dutch disease phenomenon in an economy such as Nigeria extends beyond the particular effect of oil on the Naira's exchange rate, structural adjustment and re-adjustment problems in the wake of declining prices. It is now almost impossible to disentangle the separate effects of oil and other economic variables, including the high level of inflation. Thereby, the chapter covered related issues of the dutch disease phenomenon in an overall macroeconomic framework. Equally, there has to be a recognition that an appropriate policy response to oil price rise effects on the economy, cannot consider any effects of Nigeria's position as an oil producer in isolation of the world economy.

Chapter 7

Conclusion - An Overview

Though it is now an acceptable practice to group countries of similar structural characteristics as either "the less developed" or "advanced", the effects of individual policy implications of any universally accepted theoretical application to these economies cannot however be analysed without considering both the way in which they are administered, and the economic environment within which they operate. The premise underlying the whole contribution of this work is thus that, it provides a careful and detailed analysis with empirical evidence, of the monetary approach to the question of exchange rates, the macroeconomic effects of oil price increases (resource discoveries) and the dutch disease phenomenon for the Nigerian economy, and, this in turn, provides a platform for other developing economies, within an operational reference viewpoint.

The analysis therefore examined the relationships among money, prices, expectation, the oil price rises and the exchange rates. Datawise, the time period analysed (1960-1984) enabled the empirical isolation of key relationships of oil and the exchange rate determination. In particular, since this period also covers the "oil boom" era, which resulted in fundamental structural changes of the economy. Its analysis help to provide an insight into the exchange rate effect of real disturbances,¹ while at the

¹Here, it is recognised that rapid developments during the "oil boom" period, which corresponds to high government expenditure, can also provide an hinderence to detailed analysis of the channels of transmission of disturbances among the various sectors in the economy. However, this does
(Footnote continued)

same time covering the much wider concept of a general macroeconomic stance for the economy.

Interest in the economics of exchange rates and of the international monetary system, which has led to new developments in economic theory and empirical analysis of exchange rates, are usually found related to the more advanced countries. The work that is covered expands this renewed interest in the economics of exchange rates, to take into account structural differences that separates developed countries from the less developed economies. A second specific contribution of the work is that, it provides empirical results to the accepted theoretical concepts relating the monetary approach to exchange rates determination, and, it further extends the monetary approach argument to take into consideration, oil revenue rise (resource discoveries) and how any resultant macroeconomic effects are channeled through the price and exchange rate framework.

With the exception of chapter two, all the analysis carried out involved a test of some developed model(s) of the economy to an undergoing related theory of each chapter. The structural differences that separates developed from the less developed economies imply a careful approach to developing a model. In this regard, the developed models were simple, with emphasis on main relevant features and interrelationships important within the economy, so as to ascertain major relationships important for policy reference purposes. The

¹(continued)

not present any serious analytical problem since the primary objective insight is of a different nature.

emphasis on simple models implicitly recognises the fact that, whatever the main features the model was designed to bring out, it was reasonable to assume the various economic limitations within an economic structure such as Nigeria, as opposed to the more advanced countries in which the fundamentals of adopted models are usually applied.

The models developed for chapters three and four tests a monetary approach to Nigeria's exchange rates determination, and purchasing power parity as a critical ingredient of this approach respectively. In deriving estimates of the parameters for the maintained hypothesis, the ordinary least squares was employed. This was done for two main reasons. First, the ordinary least squares provides an essential component of most other economic techniques, and secondly, it has proven to produce fairly satisfactory results in a wide range of economic relationships.

In its estimation, chapter three provides an acceptable explanation for the contention of the monetary approach to Nigeria's exchange rate tested, by indicating that the world prices, the domestic money supply and nominal incomes are the principal determinants of exchange rates. The role of expectation is influential only in a limited sense. However, this is not surprising within such an economic structure, given the paucity of the flow of information on monetary and other financial markets.

The implications of the estimations in chapter four is that, it provides empirical evidence for linking monetary and real variables as jointly influencing the equilibrium level of the exchange rate. Overall, the estimated result consistently showed that Purchasing Power Parity as a theory

holds better when tested for the unofficial rather than the official exchange rates. The stronger explanatory power of the unofficial version of the doctrine concerns its conditions of operation. Basically, a lack of an explicitly imposed restrictions as in the case of officially stipulated rates resulted in a quicker and more efficient equilibrium market condition for the unofficial rates.

The importance of the model developed and tested in chapter five is that, it stresses the illegal exchange rate determinants in a general equilibrium framework,² and where it is acknowledged that a practice of tight control on the foreign trade sector operates, this provides an alternative guide for the exchange rate to be incorporated along with monetary and fiscal as a policy instruments by the authorities. Precisely because of two factors. First, with the official rates, it is difficult to derive any satisfactory measure of policy performance in the economy to date. Secondly, once a curb market emerges along the officially pegged rate, no automatic forces operate to bring about a reunification of the two exchange rate systems. Indeed, in the case of an increase in money financed government expenditures, and with an inflationary environment encountered in the economy over the studied period, the official exchange rate had become increasingly overvalued. In turn, the unofficial premium had increased over time, with

² Making monetarist assumptions and stressing monetary factors in no way indicates that the role of real factors is overlooked. This enters the model in the form of determinants of demand for real balances; which in turn exerts an influence on the exchange rates in the illegal market.

the resultant effect of the volume of transactions conducted in the official market being reduced in significant proportion.

The explanatory power of the regressed estimates of the maintained hypothesis in chapter five provide supportive evidence that, prices of illegal goods, real incomes and the expected rates of inflation, primarily combine to determine the illegal market exchange rate. Since there is no satisfactory measure of the current exchange rates policy performance, this result carries an immediate operational significance on two specific points. First, it further substantiate the basic theoretical framework of the monetary approach to balance of payment, in that, exchange rates are essentially a monetary phenomenon. This being the case, the asset markets require sufficient numbers of active participants to make it work efficiently; and the illegal market in foreign exchanges, which has no explicit restrictions on the number of participants, provide this operational facilities, when compared with the restrictive official channel. Secondly, it recognises the important role played by unorganised money markets in the foreign exchange market, by empirically providing evidence that, the transactions in the unofficial markets are of quantitative significance to justify an acceptance of the market's exchange rate as an indicator of the equilibrium rate. That is, in the absence of any exchange control, the model developed and tested for the unofficial exchange rate determinants in the chapter provides a guide as to what the equilibrium rate should be.

The economic efficiency and distributional implications

of any alternative methods of exchange control will of course, produce different results. In particular, the relationship of exchange control regime to growth, vis a vis the static efficiency of the official rates as indicated under the framework considered.

Two primary models were explored and tested in chapter six. The first model considered quantified the inflationary impact of the oil price increases on the economy within a monetary approach framework. In the second, the macroeconomic response to a monetary shock in the economy was first set out, and the incomes and wealth effects of oil price increases were then ascertained within this setting. The effect of the export boom primarily represents income in the form of foreign exchange in the hands of the authorities. This increase in the price of oil is a real variable, which affects the domestic prices through monetary channels. In quantifying the resultant inflationary impact, there is a strong indication that the overall effect of an increase in real incomes from oil revenues generated a rise in the domestic price level.

Under a general macroeconomic stance that was also considered, the incomes and wealth effects of an increased revenue from oil confirms that, for associated wealth effects on money market equilibrium, the most important real variable is the real level of revenue, rather than the rate of growth in revenue. On the other hand, for the income effect of the oil shock, the monetary model supports the contention that the generated shock can be transmitted through a monetary channel. However, this is influenced by the expectation about inflation, incomes, and the elasticity of aggregate

demand with respect to oil revenues. This induced response of the wealth and incomes effect in the growth of real incomes that is associated with oil revenue increases is also proof that the exchange rates provide a critical channel for the transmission of monetary changes in the adjustment process.

Finally, it is politically sensitive, that, a study of oil and the exchange rates has to embody aspects of the economy, of which the study can only address a few. However, any serious intent of maintaining a sound and effective economic base for progress, cannot ignore the issue of oil as the dominant income generating sector of the economy, and the exchange rates as the primary source upon which effective management of the country's balance of payments, and hence, any monetary and fiscal policy instruments will have to depend.

The Reference Chapter

2.10

Selected References to Chapter 2

1. Abel, A.B. (1982). "accelerated depreciation and the efficacy of temporary fiscal policy : implications for an inflationary economy." Journal of Public Economics, 19 : 23-47.
2. Adelman, Morris. A. (1972). The world Petroleum Market, John Hopkins University Press.
3. African Economic Digest. May 1984; Special Report.
4. Amuzegar, Jahangir. (1983). "Oil Exporters' Economic Development in an Independent World." IMF Occasional Paper No 18.
_____ and Fekrat, Ali. M. 1971. Iran: Economic Development Under Dualistic Conditions. Univeristy of Chicago Press.
5. Askari, Hossein and John T. Cunnings (1978). Oil, OECD and the Third World: A vicious Triangle?, University of Texas Press.
6. Balassa, Bela. (1981). "The Policy Experience of Twelve Less Developed Countries: 1973-1978." World Bank Staff Papers No 449.
7. Basu, Kaushik. (1984). The Less Developed Economy, a Critique of Contemporary Theory. Oxford; Blackwell.
8. Bienen, Henry. (1983). "Oil Revenues and Policy Choice in Nigeria." World Bank Staff Papers No 592.
9. Branson, N. and Katseli (1980). Income Instability, terms of Trade and the Choice of Exchange Rate Regime." Journal of Development Economics 7: 47-69.
10. Central Bank of Nigeria. Economic and Financial Review. volume 23, No 1, 1985. vol 21, No 2. 1983, and vol 19, No 1.1981.
11. Colander, David. (1981). "New approaches to Anti-Inflation Policy." Journal of Public Finance. 36: 39-53.
12. Cox, W. Michael. (1981). "Unanticipated Money, Output and Prices in the Small Economy." Journal of Monetary Economics 6: 359-384.
13. Corden, W.M. (1981). Inflation, Exchange Rates, and the World Economy. Oxford University Press.

14. Fair, Ray. C. (1978). "The Sensitivity of Fiscal Effects to Assumptions about the Behaviour of the Federal Reserve". Econometrica. 46(5) : 1165-1179.
15. Farer, Tom. J (ed.) (1965). Financing African Development, Article by Gustafson Douglas. The Monetary and Fiscal Background to Nigerias' six Year Development Plan. Cambridge. Massachusetss.
16. Financial Times, London. Survey; 25th February 1985.
 " " " " 26th February 1985.
 " " " " 3rd March 1986.
 " " " " 24th February 1986.
17. Floyd, John E. (1969). "Monetary and Fiscal Policy in a World of Capital Mobility." Review of Economic Studies. 36: 503-517.
 1973. "Monetary and Fiscal Policy in a world of Capital Mobility: A Reply." Review of Economic Studies 40(2): 299-303.
18. Hablutzel, Rudolf. (1981). "Development Prospects of Capital Surplus Oil Exporting Countries: Iraq, Kuwait, Libya, Qutar, Saudi Arabia and United Arab Emrate." IMF Staff Working Paper No 483.
19. Hamilton, Adrian. (1986). Article in the Sunday Observer. London, February 9th.
20. Hanson, James, A. and Neal, Craig, R. (1985). "Interest Rate Policies in selected Developing Countries: 1970-1982." World Bank Staff Working Papers No 753.
21. Heller, Peter, S. (1980). "Impact of Inflation on Fiscal Policy in Less Developed Countries, IMF Staff Papers vol. 27.
22. Idachaba, F.S. (1975). "Revenue Instability in Developing Countries: The Ghananian Experience." Journal of Public Finance (30) : 96-107.
23. Johnson, Harry G. and Jacob, A. Frenkel. (1978). The Economics of Exchange Rates : Selected Studies. Addison - Wesley Publishing.
24. Kirk-Greene, Anthony and Rimmer Douglas (1981). Nigeria since 1970; A Political and Economic Outline. Holmes and Meier.
25. Krueger, Anne, O. (1983). Exchange-Rate Determination; Cambridge Survey of Economic literature. Cambridge University Press.
26. Lloyds Bank Group Economic Report (NIGERIA) 1983; 1984; 1985.
27. May, Ernesto. (1985). "Exchange Controls and Parallel Market Economies in Sub-Saharan Africa : Focus on Ghana." World Bank Staff Working Papers. No 711.

28. McLenaghan, John. B. Saleh, M. Nsouli, and Klaus-Walter Riechel. (1982). "Currency Convertibility in the Economic Community of West African States." IMF Occasional paper No. 13.
29. Nigerian National Development Plans. 1962-68; 1970-74; 1975-79 and 1981; Nigerian First National Development Plan (1962-68) an appraisal in the Nigerian Journal of Economic and Social Studies vol v July 1963.
30. Nigerian Economic Society. (1972). Rural Development in Nigeria, Proceedings of the 1972 Annual Conference. pp 97-143.
31. Nowzad, Bahram and Richard C. Williams, (1981). "External Indebtedness of Developing Countries." IMF Occasional Papers No. 3.
32. Obadan, M.I. and I.I. Ihmodu (1985). "Balance of Payments Policies under the Military Regime in Nigeria" paper presented at the National Institute for Policy & Strategic Studies, Kuru, March 1985.
33. Olakanpo, J.O.W. (1961). "Monetary Management independent Economies." Economics 28 : 395-408.
34. Omotunde, Johnson. (1976). "The Exchange Rates as an Instrument of Policy a Developing Country." IMF Staff Papers 23: 334-348.
35. Onimode, Bode. (1982). Imperialism and Underdevelopment in Nigeria: The Dialectics of Mass Poverty. Zed press London. pp 168-171.
36. Oystein, Noreng, (1978). Oil Politics in the 1980s: Pattern of International Co-operation. New York.
37. Panter-Brick. Keith (ed) (1978). "Soldiers and Oil; the Political transformation of Nigeria." Studies in Commonwealth Politics and History. No 5.
38. Park, Yung. Chul. (1973). "The Role of Money in Stabilization Policy in Developing Countries." IMF Staff Papers 20:379-418.
39. Pearce, Joan (ed) (1983). The Third Oil Shock, the effects of lower oil price. Chatam House Special Paper. London; Routledge and Kegan Paul for Royal Society of International Affairs.
40. Randle, J.K. (1985). Who is fooling who. West African Book Publishers Ltd: Lagos Nigeria.
41. Rimmer, Douglas. (1985). "The overvalued currency and over administered Economy of Nigeria". Paper given at SOAS, London 1985.
42. Schatz, Sayre. P. (1977). Nigerian Capitalism . Berkley, London. University of California Press.

43. Sokunbi, D.O.B. (1962). "The Impact of the oil industry in the Economy of Nigeria." Nigerian Journal of Economic and Social Studies IV: 77-84,
44. Soutar, Geoffery. N. (1977). "Export Instability and Concentration in the Less Developed Countries: A cross sectional analysis." Journal of Development Economics. (4): 279-297.
45. Standard Bank Review; Standard Chartered Review various issues.
46. Svensson, Lars, E.O. (1984). "Oil prices, welfare and the Trade Balance". Quarterly Journal of Economics. 99: 649-672.
47. Thirwall, A.P. (1983). Growth and Development. Macmillan Press Limited: Third Edition.
48. von Furstenberg, George M. (1980). "Inflation, Taxes and Welfare in Less Developing Countries." Public Finance 35 : 179-212.
49. Yung, Whee, Rhee. (1985). "Instruments for Export Policy and Administration : Lessons from the East Asian Experience". World Bank Staff Working Papers No 722.
50. Yesufu, T.M. (1962). "The Manpower situation in Nigeria". Nigerian Journal of Economics and Social Studies. 4: 207-227.

3.6

Selected References to Chapter 3

1. Aghevli, Bijan.B. and Khan, Moshin S. (1977). "The Monetary Approach to Balance of Payments Determination: An Empirical Test". In The Monetary Approach to the Balance of Payments. Washington, IMF.
3. Amacher, Ryan. C. and J.S. Hodgson. "Purchasing Power Parity Theory and Economic Reform in Yugoslavia", Journal of Political Economy, vol. 82. pp 809-16.
3. Artus, J.A. (1976). "Exchange Rate Stability and Managed Floating: The Experience of the Federal Republic of Germany". IMF Staff Papers, 23: 312 _ 33.
1979. "Fixed and Flexible Exchange Rate" A renewal of the Debate". IMF Staff Papers 26: 654 _ 698.
4. Bond, M.E. (1980). "Exchange Rate, Inflation, and Vicious Circles". IMF Staff Papers 27: 679 _ 514.
5. Boyer Russel.S. (1978). "Optimal Foreign Exchange Market Intervention". Journal of Political Economy 86 (6): 1045 _ 55.
6. Bruno, M and Sussman, Z. (1979). "Exchange Rate Flexibility, Inflation, and Structural Change: Isreal Under Alternative Regimes". Journal of Development Economics 6: 483 _ 514.
7. Chandavarkar, A.G. (1977), "Monetization of Developing Counteries", IMF Staff Papers, vol, XXIV, No.3.
8. Coats, W.L. Jr. (1979), "The Efficacy of Monetary Rules for LDCs." In Money and Monetary Policy in Less Developed Countries: A Survey of Issues and Evidence. Edited by W.L. Coats, Jr. and D.R. Khatkhate, Pergamon Press, Oxford, 1980.
9. Cooper, R.N. (1982). "Flexible Exchange Rates, 1973 - 1980: How Bad Have They Really Been?" In R.N. Cooper et al (eds.), The International Monetary System under Flexible Exchange Rates: Global, Regional, and National: Essays in Honour of Robert Triffin. Harper and Row, Cambridge, Mass.:
10. Corden, W.M. (1977). Inflation, Exchange Rates, and the World Economy. University of Chicago Press.
1971. The Theory of Protection. Claredon Press, Oxford.

11. Crockett, Andrew D. and Saleh, M. Nsouli. (1977).
 "Exchange Rate Policies for Developing
 Countries". Journal of Development Studies
 13: 125 - 143.
12. Dornbusch, R. (1978). "The Theory of Flexible Exchange
 Rate Regimes and Macroeconomic Policy". In
 Jacob A Frenkel and Harry G. Johnson (eds).
 The Economics of Exchange Rates, pp 27-46.
 Reading, Mass: Addison - Wesley.
1975. "A Portfolio Balance Model of The Open
 Economy." Journal of Monetary Economics 1:
 3-19.
1976. "Expectations and Exchange Rate Dynamics".
 Journal of Political Economy. 84: 1161-1176.
13. Dunn, Robert. M. (1979). "Exchange Rates, Payments
 Adjustment, and OPEC: Why Oil Deficits
 Persists, Essays in International Finance, No.
 137. Princeton University.
14. Fama, Eugene F. (1970). "Efficient Capital Markets: A
 Review of Theory and Empirical Work." Journal
 of Finance. 25, No 2:383-417.
15. Fischer, Stanley. (1977). "Stability and Exchange Rate
 Systems in a Monetarist Model of the Balance
 of Payments". In Robert Z. Aliber (ed), The
 Political Economy of Monetary Reform.
 pp 59-73. New York: Macmillan.
16. Fishelson, Gideon. (1976). "The Exchange Rate in a
 Controlled Foreign Exchange Market (Israel)"
 Working Paper No. 32-76. Foerder Institute
 for Economic Research, Tel Aviv University.
17. Flanders, M. June and Helpman Elhanan. (1978). "On
 Exchange Rate Policies for a Small Country".
 Economic Journal 88 (349): 44-58.
18. Fleming, J. Marcus. (1962). "Domestic Financial Policies
 under Fixed and Floating Exchange Rates". IMF
 Staff Papers 9: 369-379.
19. Frenkel, Jacob. A. (1980). "The Demand for International
 Reserves Under Pegged and Flexible Exchange
 Rate Regimes and Aspects of the Economics of
 Managed Float". In David Bigman and Teizo
 Taya (eds.), The Functioning of Floating
 Exchange Rates: Theory, Evidence and Policy
 Implications, pp 169-95. Cambridge, Mass:
 Ballinger.

1981. "Flexible Exchange Rates, Prices and the Role
 of 'News'; Lessons from the 1970". Journal of
 Political Economy. 89: 665-705. and Johnson,
 Harry. G. 1976. "The Monetary approach to the
 Balance of Payments: essential Concepts and
 Historical Origins". In J.A. Frenkel and H.
 G. Johnson (eds.), The Monetary Approach to

- the Balance of Payments. Allen and Unwin, Ltd. London.
1978. In Jacob.A. Frenkel and Harry. G. Johnson . (ed). In The Economics of Exchange Rates. Addison-Wesley Publishing Company Inc;.
20. Friedman, Milton. (1953). "The Case for Flexible Exchange Rates". In Friedman, Essay in Positive Economics. University of Chicago Press (reprinted in abridge from by Caves and Johnson, 1968; Caves, E., and H. G. Johnson (eds.). A. E. A. Readings in International Economics, Vol. Xl. Homewood, Ill.: Irwin.
1959. "The demand for Money: Some Theoretical and Empirical Results". Journal of Political Economy 67: 327-351.
21. Fry, Maxwell. J. (1976). " A Monetary Approach to Afghanistan's Flexible Exchange Rate". Journal of Money, Credit and Banking 8: 219-225.
22. Goldsmith, W.R. (1966), The Determinants of Finance Structure (Paris: Organization for Economic Cooperation and Development).
1969. Financial Structure and Development. (New Haven: Yale University Press).
23. Goldstein, Morris, (1980). "Have Flexible Exchange Rates Handicapped Macroeconomic Policy?". Princeton Special Papers in International Economics, No.14. International Finance Section, Princeton University.
24. Guitian, Manuel, (1973). "Credit Versus Money as an Instrument of Control". IMF Staff Papers, 20: 785-800.
25. Gurley, John, G. and E.S. Shaw (1955), "Financial Aspects of Economic Development," American Economic Review, vol. XLV (September).
1960. Money in a Theory of Finance (Washington, D.C.: The Brookings Istitution).
1967. "Financial Stucture and Economic Development", Economic Development and Cultural Change, vol.15 (April).
26. Hanson, A. James and NeaL, R. Craig. (1985). "Interest Rate Policies in Selected Developing Countries, 1970-1982:.. World Bank Staff Working Papers No. 753.
27. Hause, John C. (1966). "The Welfare Costs of Disequilibrium Exchange Rates". Journal of Political Economy 58: 47-60.
28. Helpman, Elhanan. (1981). "An Exploration in the Theory

- of Exchange Rates Regimes". Journal of Political Economy. 89: 865-890. and Assaf Razin. 1979. "Towards a Consistent Comparison of Alternative Exchange Rate Regimes". Canadian Journal of Economics 12 (3): 394-409. and
1980. "A Comparison of Exchange Rate Regimes in the Presence of Imperfect Capital Markets". Seminar Paper 155N 0347-8769. Institute for International Economic Studies, Stockholm.
29. Isard, Peter (1978). "Exchange Rate Dtermination: A Survey of Popular Views and Recent Models, Princeton Studies in International Finance, No. 42. Princeton University.
30. Johnson G. Harry. (1972). " The Monetary Approach to Balance of Payments Theory". Journal of Financial and Quantitative Analysis. 23: 1557-1572.
1973. Further Essays in Monetary Theory, London, Allen and Unwin.
1970. "The Case for Flexible Exchange Rates, 1969". Federal Reserve Bank of St. Louis Review 52: 12-24. and Frenkel, Jacob. A. 1978. The Economics of Exchange Rates: Selected Studies. Reading, Mass: Addison _ Wesley.
31. Johnson, Omotunde, (1976). " The Exchange Rate as an Instrument of Policy in a Developing Country". IMF Staff Papers. 23: 334-348.
32. Kaldor, N. (1970). The New Monetarism: Lloyds Bank Review, July, 1-18.
33. Kareken, John and Neil Wallace. (1977). "Portfolio Autarky: A Welfare Analysis". Journal of International Economics 7 (1): 19-44.
34. Kenen, Peter B. (1975). "Floats, Glides and Indicators: A Comparison of Methods for Changing Exchange Rates". Journal of International Economics 5(2): 108-151.
35. Khan, Moshin S. (1974). "Experiments with a Monetary Model for the Venezuelan Economy". IMF Staff Papers 21: 389-413.
36. Krueger, O. Anne. (1978). Foreign Trade Regimes and Economic Development: Liberalization Attempts and Consequences. Cambridge Mass: Ballinger for the National Bureau of Economic Research.
1983. Exchange-Rate Determination. Cambridge Survey of Economic Literature, Cambridge University Press.

37. Laffer, Arthur. B. (1973). "Two Arguments for Fixed Exchange Rates". In Johnson, H. G and Swoboda, A. K. (eds.). The Economics of Common Currencies. George Allen and Unwin Ltd., London. pp 25-35.
38. Lanyi, A. (1969). The Case for Floating Exchange Rates Reconsidered, Essays in International Finance, No. 72, Princeton University.
39. Levich, R. and Frenkel, J. (1977). "Transaction Costs and Interest Arbitrage: Tranquil Versus Turbulent Periods". Journal of Political Economy 85 (6): 1209-26.
40. Lursen, K. and Pedersen J. (1964). "The German Inflation 1918-1923". North - Holland, Amsterdam.
41. McKinnon, Ronald. I. (1973), Money and Capital in Economic Development, (Washington, D.C.: The Brookings Institution).
42. McKinnon, R. I. (1981). "The Exchange and Macroeconomic Policy: Changing Post-war Perceptions". Journal of Economic Literature. 19 (2): 531-557.
43. Modigliani, Franco. and Robert, J. Schiller. (1973), "Inflation, Rational Expectations and the term Structure of Interest Rates". Economica, 40, No. 152. pp 12-43.
44. Mundell, Robert. A. (1960). "The Monetary Dynamics of International Adjustment under Fixed and Flexible Exchange Rates". Quarterley Journal of Economics 74: 227-57.
 1963. "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates". Canadian Journal of Economics and Political Science. 29: 475-85.
 1964. "Exchange Rate Margins and Economic Policy". In Murphy, C. (ed.). Money in the International Order. Southern Methodist University Press.
 1968. International Economics. Macmillan. 1968.
 1971. Monetary Theory: Inflation, Interest and Growth in the World Economy. Pacific Palisades, Carlifornia;
 1973. "Uncommon arguments for Common Currencies". In Johnson, H. G. and Swoboda, A. K. (eds.). The Economics of Common Currencies. George Allen and Unwin Ltd., London.
45. MacDonald and Hallwood, (1986). International Money, Theory, Evidence and Institutions. Basil Blackwell.

46. Mussa, Michael. (1979). "Macroeconomic Interdependence and the Exchange Rate Regime". In Rudiger Dornbusch and Jacob. A. Frenkel (eds.). International Economic Policy: Theory and Evidence. Baltimore: John Hopkins University Press. pp 160-199.
1974. "A Monetary Approach to Balance-of-Payments Analysis". Journal of Money, Credit and Banking. 6: 1-50.
1976. "The Exchange Rate, the Balance of Payments and Monetary and Fiscal Policy under a Regime of Controlled Floating". Scandinavian Journal of Economics 2: 229-248.
47. Myint, Hl. (1965). "Economic Theory and the Underdeveloped Countries". Journal of Political Economy 73: 477-491.
48. Olakanpo, J. O. W. (1961). "Monetary Management in dependent economies". Economica 28: 395-408.
50. Officer, H. Lawrence. (1976). "The Productivity Bias in the Purchasing Power Parity Theory: An Economic Investigation". IMF Staff Papers 23: 545-579.
51. Osakwe, J. O. (1983). "Government Expenditures, Money Supply and Prices: 1970-1980". Economic and Financial Review; Central Bank of Nigeria. Vol.21. No.2. pp 4 - 18.
52. Park, Yung Chul. (1973), "The role of Money in Stabilization Policy in Developing Countries," IMF Staff Papers, vol. XX No.2 (July).
53. Patrick, Hugh T. (1966), "Financial Development and Economic Growth in Underdeveloped Countries," Economic Development and Cultural Change, vol. XIV (January).
54. Piple, D.M. (1978). "The Transmission of Fluctuations in Economic Activity: some Recent Evidence". In Managed Exchange-Rate Flexibility: The Recent Experience. Federal Reserve Bank of Boston, Conference Series, No.20.
55. Polak. J. J. (1957). "Monetary Analysis of Income Formation and Payments Problems". IMF Staff Papers 6:1-50. and Boissonneault, Lorette. 1960. Monetary Analysis of Income and Imports and Its Statistical Application. IMF Staff Papers 7: 349-415.
56. Porter, Richard. C. (1965), "Narrow Security Markets and Monetary Policy: Lessons from Pakistan," Economic Development and Cultural Change, vol. XIV (October).

57. Putnman, B. H. and Van Belle, J. J. (1978). "A Monetary Approach to Afghanistan's Flexible Exchange Rate: A Comment". Journal of Money, Credit and Banking 10: 117-118.
58. Rhomberg, Rudolf. R. (1965). "Money, Income and The Foreign Balance". In Economic Development in Africa: Papers Presented to the Nyasaland Economic Symposium Held in Blantyre, 18 to 28 July 1962. Jackson, E. F. (ed.) pp 254-275.
59. Schumpeter, J.A. (1911 and 1934), The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Buisness Cycle. (Harvard University Press).
60. Shaw, Edwards. S. (1960,1967), see under Gurley, J.G.
1973. Financial Deepening in Economic Development (New York: Oxford University Press).
61. Sheikh, M.A. (1976). "Black Market for Foreign Exchange, Capital Flows and Smuggling". Journal of Development Economics 3: 9-26.
61. Swoboda, Alexander. (1974). "The Dual Exchange Rate System and Monetary Independence". In Robert.Z. Aliber (ed.). National Monetary Policies and the International Financial System. University of Chicago Press. pp 285-270.
1983. "Exchange Rate Regimes and European - U.S. Policy". In Hooke, A. W. (ed.) Exchange Rate Regimes and Policy Interdependence, Washington. IMF.
62. The Monetary Approach to the Balance of Payments. Washington, D. C.: International Monetary Fund 1977.
63. Thomas, Lloyd, B.(1973). "Behaviour of Flexible Exchange Rates: Additional Test from the post-world war one Episode". Southern Economic Journal. vol. 40. pp 167-82.
64. Turnovsky, Stephen J. (1979). "On the Insulation Properties of Flexible Exchange Rates". Revue Economique 30 (4): 719-746.
65. Van Duyne, Carl (1980). "Imperfect Foresight and the Insulation Properties of Flexible Exchange Rate". Scandinavian Journal of Economics. 30: 352-361.
66. Van. Wijnbergen, S. (1983). "Interest Rate Management in Less Developed Countries". Journal of Monetary Economics 12: 433-452.

67. Wai, U. Tun. (1957). " Interest Rates Outside the Organised Money Markets of Underdeveloped Countries". IMF Staff Papers 6: 80-133.
68. Westerfield, Janice Moulton. (1977). " An Examination of Foreign Exchange Risk Under Fixed and Floating Rate Regimes". Journal of International Economics 7: 181-200.
69. Whitman. (1975). "Global Monetarism and the Monetary Approach to the Balance of Payments". Brookings Papers on Economic Activity, 3: 491-536.
70. Williamson, John. (1971). " The Choice of a Pivot for Parities". Essays in International Finance. No. 90. Princeton University.
71. Wilson. C. (1979). "Anticipated Shocks and Exchange Rate Dynamics". Journal of Political Economy. 87: 639-647.
72. Yeager, Leland. B. (1958). "A Rehabilitation of Purchasing Power Parity". Journal of Political Economy 66: 516-530.
73. Zis, George. (1984). "Flexible Exchange Rates: Lessons from the last Decade". Greek Economic Review 6 (1): 47-76.

4.6

Selected References To Chapter 4

1. Aliber, R.Z. (1975). "Exchange Risk, Political Risk, and Investor Demand for Currency Deposits". Journal of Money, Credit, and Banking, 7, No.2. pp 161-180.
2. Balassa, Bela. (1961). "Patterns of Industrial Growth: Comment". American Economic Review, vol. 51 pp 394-97.

1964. "The Purchasing Power Parity Doctrine: A Reappraisal". Journal of Political Economy. vol. 72. pp584-596.

1974a "Purchasing Power Parity and Factor Price Equalisation: Comment". Kyklos, vol.27. pp 879-83.
3. Beckerman, Wilfred. (1966). International Comparison of Real Incomes, Organization of Economic Cooperation and Economic Development, Paris.
4. Cassel, Gustav, (1916). "The Present Situation of the Foreign Exchanges". Economic Journal vol.28. pp 62-65.

1918 "Abnormal Deviations in International Exchanges". Economic Journal vol.28. pp413-15.
5. Clague, Christopher, and Vito Tanzi, (1972). "Human Capital, National Resources and the Purchasing-Power Parity Doctrine: Some Empirical Results". Economia Internazionale, vol.25 pp 3-18.
6. Darby, M.R. (1980). "Does Purchasing Power Parity Work?" National Bureau of Economic Research, Working Paper No. 607.
7. DeVries, Margaret,G. (1968). "Exchange Depreciation in Developing Countries". IMF Staff Papers. vol.15. pp 560-78.
8. Dornbusch, Rudiger, (1975). "Exchange Rates and Fiscal Policy in a Popular Model of International Trade". American Economic Review. 65: pp 859-71.
9. 1975a "A portfolio Balance Model of the Open Economy". Journal of Monetary Economics. 1: pp 3-20.

10. 1980a "Exchange Rate Economics: Where Do We Stand?"
Brooking Papers on Economic Activity. 1:pp
143-85.
11. Fama, Eugene, F. and Faber Andre. (1979). Money, Bonds
and Foreign Exchange". American Economic
Review 69: pp 639-49.
12. Frenkel, Jacob, A. and Rodriguez, Carlos, A. (1975).
"Portfolio Equilibrium and the Balance of
Payments: A Monetary Approach". American
Economic Review 65: pp 674-88.
13. Frenkel, Jacob, A. (1980a). "The Collapse of Purchasing
Power Parity during the 1970s". NBER working
paper No.569. European Economic Review. 16: pp
145-65.
14. Genberg, Hans. (1978). "Purchasing Power Parity Under
Fixed and Flexible Exchange Rates". Journal of
International Economics. 8: pp 247-276.
15. Gilbert, Milton, and Irvin, B. Kravis. (1954). An
International Comparison of National Products
and the Purchasing Power of Currencies: A
study of the United States, the U.K, France,
Germany, and Italy, OEEC, Paris.
16. Hagen, Everett, E. 1957. "Comment in Problems in the
International Comparison of Economic Accounts
(Princeton University Press, 1957. pp 387-88).

1960 "Some Facts About Income Levels and Economic
Growth", Review of Economic Statistics,
vol.26. pp 182-84.
17. Helpman, Elhanan and Razin, Assaf. (1981). "Comparative
Dynamics of Monetary Policy in a Floating
Exchange Rate Regime". Foerder Institute for
Economic Reasearch, working Paper No. 9-81.
18. Isard, P. (1977). "How Far Can We Push The Law Of One
Price?" American Economic Review 67: pp
942-48.
19. Johnson, Paul, R. (1970). "Balance of Payments
'Pressure': The Colombian Case", Southern
Economic Journal, vol. 37: pp 163-73.
20. Kindleberger, Charles, P. (1973). International
Economics. (Homewood, Illinois, Fifth
Edition).
21. Kravis, I.B. and Lipsey, R.E. (1978). "Price Behaviour in
the Light of Balance of Payments Theories".
Journal of International Economics. 8: pp
193-246.

22. Krugman, Paul. R. (1978). Purchasing Power Parity and Exchange Rates: Another Look At Evidence". Journal of International Economics. 8: pp 397-407.
23. McKinnon, Ronald. I. (1979). Money in International Exchange. Oxford University Press.
24. Officer, Lawrence, H. (1974). Purchasing Power Parity and Factor Price Equalisation". Kyklos 27. Fasc. 4
- 1976a. "The Purchasing Power Parity Theory of Exchange Rates: A Review of Article". IMF Staff Papers. 23
- 1976b "The Productivity Bias in the Purchasing Power Parity Theory: An Econometric Investigation". IMF Staff Papers. 23. pp545-79.
25. Pigou, A. C. (1922). "The Foreign Exchanges", Quarterly Journal of Economics. vol.36.
26. Roll, R. and Solnik Bruno. (1977). "A Pure Foreign Exchange Asset Pricing Model". Journal of International Economics. 7: pp 161-79.
27. Scammel, W.M. (1961). International Monetary Policy. (London, Second Edition. 1961).
28. Stocckman, Alan. C. (1980). "A Theory of Exchange Rate Determination". Journal of Political Economy. 88(4): pp 673-98.
29. Whitman, Marina, V.N. (1975). "Global Monetarism and The Monetary Approach to The Balance of Payments". Brookings Papers on Economic Activity. 3: pp 491-536.
30. Yeager, Leland, B. "A Rehabilitation of Purchasing Power Parity". Journal of Political Economy, vol.66. pp 516-30.

5.8

Selected References to Chapter 5.

1. Bhagwati, Jagdish. N. (1964) "On the Underinvoicing of Imports"? Bulletin of the Oxford University Institute of Economics and Statistics, vol.26. pp 389-393.

____ (1973). "A Theoretical Analysis Of Smuggling" Quarterly Journal of Economics, pp 172-187.

____ (ed). 1974. Illegal Transactions in International Trade: Theory and Measurement. Amsterdam.
2. Blejer, Mario, I. (1978) Exchange Restrictions and the Monetary Approach to the Exchange Rate. In Jacob A. Frenkel; Harry G. Johnson (eds.) The Economics of Exchange Rates; Addison-Wesley Series, Reading.
3. Boulding K.E. (1937) "A note on the theory of the Black Market." Canadian Journal of Economics and Political Science. pp 153-155.
4. Bronfenbrenner, M. (1947) "Price control Under imperfect Competition." American Economic Review, pp 107-120.
5. Browning, E.K and W.P. Culberston Jr. (1974) "A Theory of Black Markets Under Price Control: Competition and Monopoly." Economic Inquiry: 12. pp 175-189.
6. Cornell, W. Bradford and J. Kimball Dietrich. (1978) "The Efficiency of the Market for Foreign Exchange under Floating Exchange Rates." Review of Economics and Statistics. vol. 60. pp 111-120.
7. Culberston, William. P. Jr. (1975) "Purchasing Power Parity and Black Market Exchange Rates." Economic Inquiry, (19) pp 287-296.
8. Fishelson, Gideon. (1976) The Exchange Rate in a Controlled Foreign Exchange Market (Israel). Foerder Institute For Economic Research, Tel-Aviv University Working Paper No. 32-76.

____ (1978) "The Determinants of Black Market Exchange Rates." The Foerder Institute for Economic Research, Tel-Aviv University, Working Paper 32/76.

9. Flood, R. (1978) "Exchange Rates Expectations in Dual Exchange Markets. Journal of International Economics. (8) pp 66-77.
10. Giddy, Ian. H. (1978a) "The Efficiency of Black Markets for Foreign Exchange." A paper presented at the Academy of International Business Annual Meetings, Chicago. U.S.A.
____ (1978b). "The Predictive Power of Black Market Exchange Rates." Business International Money Report, pp 186-187.
11. Gonensay, E. (1966) "The Theory of Black Market Prices" Economica. (33) pp 219-225.
12. Grubel, H.A. (1977) International Economics, Homewood.
13. Little, Ian; Tibor Scitovsky & Maurice, Scott (1970) Industry and Trade in some Developing Countries: A comparative Study. London.
14. Lloyds Bank Group Economic Report for Nigeria (1984) London. U.K.
15. Michaely, M. (1954) "A Geometrical Analysis of Black Market Behaviour. American Economic Review. pp 627-637.
16. Nordan, J.A. and W.R. Moore. (1947). "Bronfenbrenner on Black Market." American Economic Review. pp 933-934.
17. Plumptre A.F.W. (1947). "The theory of the Black Market: Further Considerations." Canadian Journal Of Economics and Political Science. pp 280-282.
18. Pick's Currency (Now World Currency?) Yearbook N.Y. various issues.
19. Sheikh, Munir, A. (1976) "Black Market for Foreign Exchange, Capital Flows and Smuggling." Journal of Development Studies. vol.3. pp 9-26.

6.9

Selected References to Chapter 6

1. Adekunle, J.O. (1968) "Demand for Money : Evidence from Developed and Less Developed Economies", IMF Staff Papers, Vol. 15. No. 2.
2. Aghevli, B.B. and Mohsin S. Khan (1978) "Government Deficits and the Inflationary Process in Developing Countries", IMF Staff Papers, Vol.25, pp. 383-416.
3. --- (1977). "Inflationary Finance and the Dynamics of Inflation : Indonesia 1951-1972", American Economic Review, Vol. 67, pp. 390-403.
4. Agosin, M. (1973) "On the Tird World's Narrowing Trade Gap : A Comment", Oxford Economic Papers.
5. Alejandre Diaz, C. (1970) "Money and Price in Argentina", 1935-1963 in D. Meiselman (ed.), Varieties of Monetary Experience, University of Chicago Press, Chicago.
6. Arrow, K. (1962) "The Economic Implications of Learning By Doing", Review of Economic Studies, Vol. 9, pp. 153-173.
7. Auernheimer, L. (1979) "Adaptive Regressive Expectation and the Price Level : A Formation", Journal of Monetary Economics, Vol. 5.
8. Bank of England (1980) "The North Sea and The U.K. Economy : Some Long-Term Perspectives and implications", The Bank of England Quarterly Bulletin, Vol. 20, No. 4, pp. 449-454.
9. Bond, M. and Knobl, A. (1982) "Some Implications of North Sea Oil for the U.K. Economy", IMF Staff Papers (29), No. 3.
10. Brittan, S. and Riley, B. (1978) "A People's Stake in North Sea Oil", Lloyds Bank Review, No. 128 (April).
11. Bruno, M. and J. Sachs (1979) "Macroeconomic Adjustment with Import Price Shocks : Real and Monetary aspects", Institute for International Economic Studies, Seminar Paper No. 118, Stockholm.
12. Buiter, W.H. and Miller, M.H. (1981) "Monetary Policy and International Competitiveness. The Problem of Adjustment" in W.A. Eltis and P.J.N. Sinclair (eds.), The Money Supply and the Exchange Rate, Oxford University Press.

13. Buiter, W.H. and Purvis, D.D. (1983) "Oil, Disinflation and Export Competitiveness" in Economic Interdependence and Flexible Exchange Rates (ed. J. Bhandari and B. Putnman), Cambridge Mass : MIT Press.
14. Cagan, Phillips, (1956) "The Monetary Dynamics of Hyperinflation" in Studies in the Quantity Theory of Money, ed. by Milton Friedman (University of Chicago Press, pp. 71-162).
15. Campbell, C.D. (1970) "The Velocity of Money and the Rate of Inflation in Recent Experiment in South Korea and Brazil" in D. Meiselman, ibid.
16. Corden, W.M. and Neary, J.P. (1982) "Booming Sector and De-industrialisation in a Small Open Economy", Economic Journal, Vol. 92, pp.825-848.
17. Corden, M. (1981) "The Exchange Rate Monetary Policy and North Sea Oil : The Economic Theory of the Squeeze on Tradeables" in Eltis, W.A. and P.J.N. Sinclair (eds.), The Money Supply and the Exchange Rate, pp.23-46.
18. Crocket, D.A., et al (1980) "Demand for Money in Middle Eastern Countries", IMF Staff Papers, Vol. 27.
19. Currie, D.A. (1976) "Some Criticisms of the Monetary Analysis of Balance of Payments Corrections", Economic Journal, (86) 343.
20. Dasgupta, P., et al (1978) "Resource Management in a Trading Economy", Quarterly Journal of Economics, Vol. 92.
21. Dervis, K., De Melo, J. and Robinson, S. (1980), General Equilibrium Models for Development Policy, Cambridge University Press.
22. Dornbusch, R. (1976) "Expectations and Exchange Rate Dynamics", Journal of Political Economy, Vol. 84.
23. --- (1983) "Real Interest Rates, Home Goods and Optimal External Borrowing", Journal of Political Economy, Vol. 91.
24. Dutton, Dean, S. "A Model of Self-Generating Inflation : The Argentine Case", Journal of Money Credit and Banking, Vol. 3, pp. 245-262.
25. Eastwood, R.K. and Venables, A.J. (1982) "The Macroeconomic Implications of a Resource Discovery in an Open Economy", Economic Journal, Vol. 92, pp. 285-299.
26. Economist (1975) "Survey : The Gulf. Economist, Vol. 255 (May 17, 1975), pp. 27.

27. Edwards, E. and Aoki, M. (1983) "Oil Export Boom and Dutch Disease", Resources and Energy, Vol. 5, pp. 219-242.
28. Emery, R. (1967) "The Relation of Exports and Economic Growth", Kyklos No.2.
29. Forsyth, P.J. and Kay, J.A. (1980) "The Economic Implications of North Sea Oil Revenues", Fiscal Studies, Vol. 1, part 3, pp.1-20.
30. Frenkel, Jacob, A. (1977) "The Forward Exchange Rate, Expectations and the Demand For Money : The German Hyperinflation", American Economic Review, Vol. 67, pp. 653-670.
31. Gelb, Alan H. (1981) Capital-Importing Oil Exporters : Adjustment Issues and Policy Choices, World Bank No.475.
32. Gregory, R.G. (1976) "Some Implications of the Growth of the Mineral Sector", Australian Journal of Agricultural Economics, Vol. 20, pp. 71-91.
33. Harberger, A.C. (1982), "The Chilean Economy in the 1970s : Crisis Stabilization, Liberalization, Reform". In K. Brunner and A. Meltzer, eds., Economic Policy in a World of Change, Carnegie-Rochester Conference Series, Vol. 17 (North Holland, Amsterdam).
34. Hynes, A. (1967) "The Demand for Money and Monetary Adjustments in Chile", The Review of Economic Studies, Vol. 34.
35. Jacobs, Rodney, L. (1977) "Hyperinflation and the Supply Money", Journal of Money Credit and Banking, Vol. 9, pp. 287-303.
36. Kravis, I.B. and Lipsey, R.E. (1977) "Export Prices and Transmission of Inflation", American Economic Review 67, pp. 155-167.
37. --- (1978) "Price Behaviour in the Light of Balance of Payments Theories", Journal of International Economics, (8), pp. 193-246.
38. Krueger, A. (1974) "The Political Economy of Rent-Seeking Society", American Economic Review, pp. 291-303.
39. Leff, N.H. and Sato, K. (1975) "Simultaneous Equation Model of Savings in Developed Economies", Journal of Political Economy, Vol. 83, pp. 1217-1228.

- (1980) "Macroeconomic Adjustment in Developing Countries : Instability, Short-run Growth and External Dependency", Review of Economics and Statistics, Vol. 62, pp. 170-179.
40. Maizels, A. (1968), Exports and Economic Growth of Developing Countries, Cambridge University Press.
41. Massel, B.F., Pearson S.R., Fitch, J.B., (1972), Foreign Exchange and Economic Development : An Empirical Study of Selected Latin American Countries, Review of Economic and Statistics.
42. McKinnon, Ronald I. (1981) "The Exchange Rate and Macroeconomic Policy : Changing Postwar Perceptions", Journal of Economic Literature, Vol. 19, pp. 531-557.
43. McKinnon, Ronald I. (1976) "International Transfers and Non Traded Commodities : The Adjustment Problem" in Danny Leipziger (ed.), The International Monetary System and the Developing Nations (Washington D.C. : Bureau of Program and Policy Coordination, Agency for International Development).
44. Minford, P. (1977) "North Sea Oil and the British Economy", The Banker (December).
45. Morganm, David (1979) "Fiscal Policy in Oil Exporting Countries, 1972 - 1978", IMF Staff Papers, Vol. 26, No. 1, pp. 55.
46. Musa, Michael (1975) "Adaptive and Regressive Expectations in a Rational Model of Inflationary Process", Journal of Monetary Economics, Vol. 1 (October).
47. Neary, J.P. (1982), Real and Monetary Aspects of the "Dutch Disease", Centre for Economic Research, University College Dublin, Working Paper No. 5.
48. --- and Purvis, D.D. (1981) "Real Adjustment and Exchange Rate Dynamics", Department of Economics, University of Warwick, Discussion Paper.
49. --- and Wijnbergen, S. van (1984) "Can Oil Discovery Lead to a Recession? A Comment on Eastwood and Venables", The Economic Journal 94, pp. 390-395.
50. Parikh, A. (1983) "A Quantitative Analysis on Patterns of Trade of Selected Asian Developing Countries", Economic Bulletin for Asia and The Pacific.
51. Pastore, A.C. (1975) "Notes on the Recent Monetary Policy in Brazil", Annals of Economic and Social Measurement, Vol. 4 (Fall), pp. 489-508.

52. Pierce, D.A. (1977) "Relationships and The Lack Thereof between Economic Time Series with Special Reference to Money and Interest Rates", Journal of the American Statistical Association, Vol. 72, pp. 11-22.
53. Porter, M.G. (1978) "External Shocks and Stabilization Policy in a Small Open Economy : The Australian Experience, Weltwirtschaftsliches Archiv, Heft (114), pp.709-735.
54. Polak, J.J. (1957) "Monetary Analysis of Income Formation and Payments Problems, IMF Staff Papers, Vol. 6.
55. Rhys, J.M. (1980) "Oil Exchange Rates and the U.K. Economy : A Lesson in Making the Worst of Your Advantages", Journal of Fiscal Studies, Vol. 13.
56. Rimmer de Vires (1974) "The Build-up of OPEC Funds", World Financial Markets (Morgan Guarantee Trust Company, New York, September 23), pp. 1-10.
57. Salter, W.E.G. (1959) "Internal and External Balance : The Role of Price and Expenditure Effects", Economic Record, Vol. 35, pp. 226-238.
58. Sergeant, Thomas, J. and Neil Wallace (1973) "Rational Expectations and the Dynamics of Hyperinflation", International Economic Review, Vol. 14 (June), pp. 328-350.
59. Shahi, M.A. and Sheikh, I.H. (1979) "Inflation Expectations and Monetary Adjustment in Nigeria : 1960-1978", The Pakistan Development Review, Vol. XVIII, No. 4.
60. Sims, Christopher A. (1972) "Money, Income and Causality", American Economic Review, Vol. 62, pp. 540-552.
61. Snape, R.H. (1977) "Effects of Mineral Development on the Economy", Australian Journal of Agricultural Economics, Vol. 21, pp. 147-156.
62. Spencer, P.D. (1984) "The Effect of Oil Discoveries on the British Economy : Theoretical Ambiguities and the Consistent Expectations Simulation Approach", Economic Journal, pp. 633-644.
63. Stein, L. (1971) "On the Tird World's Narrowing Trade Gap", Oxford Economic Papers, March.

64. Syron, R.F. and Walsh, B.M. (1968) "The Relation of Exports and Economic Growth : A Note", Kyklos No. 3.
65. Taylor, L. (1979), Macro Models for Developing Countries (McGraw-Hill (1979)).
66. The Pearson Report (1969), Partners in Development, Report of the Commission on International Development (London : Pall Mall Press, 1969).
67. Treasury H.M. (1980), Macroeconomic Model Technical Manual, December.
68. Wijnbergen, S. van (1984) "Inflation, Unemployment and the Dutch Disease in Oil Exporting Countries : Disequilibrium Analysis", Quarterly Journal of Economics.
69. --- (1984b) "The 'Dutch Disease' : A Disease After All?", Economic Journal (94), pp. 41-55.
70. Whiteman, John (1981), North Sea Oil and the U.K. Economy, National Economic Development Office Paper.
71. Wilson, C.A. (1979) "Anticipated Shocks and Exchange Rate Dynamics", Journal of Political Economy, Vol. 87, pp. 639.
72. Wong Chong Huey (1977) "Demand for Money in Developing Countries : Some Theoretical and Empirical Studies", Journal of Monetary Economics, Vol. 3, January.