71-26,544

CHENG, Benjamin Shujung, 1937-
THE EFFECTS OF DEVALUATION ON THE BALANCE OF TRADE: THE CASE OF BRITAIN IN 1967.

The University of Oklahoma, Ph.D., 1971
Economics, theory

University Microfilms, A XEROX Company, Ann Arbor, Michigan

© 1971
BENJAMIN SHUJUNG CHENG

ALL RIGHTS RESERVED

THIS DISSERTATION HAS BEEN MICROFILMED EXACTLY AS RECEIVED

Downloaded from SHAREOK. Persistent Handle URL: https://hdl.handle.net/11244/3013

THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE EFFECTS OF DEVALUATION ON THE BALANCE OF TRADE: THE CASE OF BRITAIN IN 1967

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

By

BENJAMIN SHUJUNG CHENG

Norman, Oklahoma

1971

PLEASE NOTE:

Some pages have indistinct print. Filmed as received.

UNIVERSITY MICROFILMS.

THE EFFECTS OF DEVALUATION ON THE BALANCE OF TRADE: THE CASE OF BRITAIN IN 1967

by Benjamin Shujung Cheng

Major Professor: Paul R. Gregory

The purpose of this dissertation is to study the effects of devaluation of the British pound in 1967 on the British balance of trade. This thesis is divided into two parts. The first part examines the theory of devaluation. The second part is an empirical study of the British devaluation in 1967. The method used is that of regression analysis.

Our study finds that the main determinants of exports of the United Kingdom are the income of the other countries and relative prices. Our findings as to the importance of lagged effects of relative prices on the level of exports of Britain shed some light on the current literature of the international price adjustment mechanism. With regard to imports, our study finds that the main determinants are income and changes of inventories of the United Kingdom. As to the lack of importance of relative prices, our findings are not inconsistent with those obtained by other investigators. We also find that the effectiveness of devaluation was supported by other policy changes aimed at curtailing absorption. Our findings indicate that the empirical evidence supports the theoretical arguments of both the price-elasticities and income-absorption approaches.

Our study has found that the export performance of the United Kingdom has improved to a certain degree since devaluation but the import showing was rather poor. The explanation for the moderate export performance is that the underlying ability to export was deteriorating rather sharply just before devaluation. The more serious this deterioration, the larger the corresponding devaluation effects have to be to offset it. As regards the continuous growth of imports after devaluation, our study finds that it was due to the fact that the relative price variable was not a significant determinant of imports in the case of Britain and that the elasticity of imports with respect to price was fairly low. Furthermore, the abnormal increase in silver and diamond imports, the effect of the 1967 dock strike, the increase in the propensity to import, and special factors all were other countributory factors.

To sum up, the countribution of devaluation toward alleviating Britain's balance of payments problem in the 1967-69 period was small, other than its effect in reversing the speculation against sterling. Though the effects were small, we do not know what the development of Britain's international transactions would have been if she had not devalued. In the negative sense of preventing deterioration of the British international balance, the devaluation of 1967 might have made some contribution.

THE EFFECTS OF DEVALUATION ON THE BALANCE OF TRADE:

THE CASE OF BRITAIN IN 1967

APPROVED BY

Paul R. Gregory

A. J. Kondonassis

Paul A. Brinker

J. Kirker Stephens

Robert A. Ford

DISSERTATION COMMITTEE

ACKNOWLEDGMENTS

This writer wishes to express his special thanks to Professor Paul Gregory for his invaluable suggestions and comments which light the way for the substantial improvement and for the successful completion of this thesis in partial fulfillment of the requirements for the doctor's degree at the University of Oklahoma.

Appreciation is also extended to Professors J. Kirker Stephens, A. J. Kondonassis, Paul Brinker, and Robert Ford for their patience in reading the manuscripts and for their constructive advice.

I also wish to extend my appreciation to Professor C. K. Liew for his suggestions and counseling in the computer work. Gratitude is due to the Department of Economics and Bureau for Business and Economic Research, University of Oklahoma for their generosity in providing computer services.

TABLE OF CONTENTS

		Page
LIST OF TABLES		vii
Chapter		
I.	INTRODUCTION	1
II.	BACKGROUND AND THEORY OF DEVALUATION	5
	Causes of Disequilibrium in the balance of payments	5
	Policies Available to Cure Disequilibrium	7
	Other policies	7
	Expenditure-reducing policy	7
	Direct controls	7
	Devaluation	8
	Elasticities Approach to Devaluation	9
	The stability of exchange rate	10
	The effect of devaluation on price of exports	11
	The effect of devaluation on price of imports	12
	Effect of devaluation on the value of exports and imports	12
	The Income-Absorption Approach	14
	The effect of devaluation on income	15
	Idle resources effect	15
	Resource reallocation effect	15
	Terms-of-trade effect	15
	Substitution effect	16
	The effect of devaluation on absorption	16
	Cash-balance effect	16
	The income-redistribution effect	16
	The money-illusion effect	17
	A Partial Reconciliation of Relative-Price and Income-Absorption Approach	18
	The Importance of Lagged Effect of Relative-Price and Income on Exports and Imports	20
	Summary	22

Page

III. INTERMEDIATE DEVELOPMENTS LEADING TO DEVALUATION 24

An Overview of the British Balance of Trade 24
The performance of Exports 25
The Performance of Imports 29
British Competitive Position in the World Market 30
Why Devaluation was Chosen in Favor of Other Alternative Policies . . 33
Summary 36

IV. THE EFFECT OF DEVALUATION ON EXPORTS 37

Determinants of Exports 38
The Regression Model 40
The Regression Results 43
The Effect of Devaluation on the Level of Exports 45
Disaggregated Exports by Commodity and Area. 47
The Effect of Devaluation on the Export Price 50
Analysis of Export Performance . . . 52
A Comparison of Export Performances of the OECD Devalued Countries 52
Summary 55

V. THE EFFECT OF DEVALUATION ON IMPORTS 57

The Import Function 57
The Regression Results 60
The Effect of Devaluation on the Level of Imports 62
The Disaggregate Analysis 64
Summary 69

VI. THE GENERAL ECONOMIC EFFECTS OF DEVALUATION 71

The Income-Absorption Analysis of Devaluation 71
Internal Financial Policy 74
Direct Effect of Devaluation on Absorption 75
Income Expansion and Absorption . . . 78
The Terms-of-Trade Cost of Devaluation 79
The Effects of Devaluation on the Visible and Invisible Trade of Balance 82
General Assessments 82
Visible trade of balance 83
Invisible trade of balance . . . 84
Summary 88

Page

VII. SUMMARY AND CONCLUSIONS 90

APPENDIX I 95

APPENDIX II 97

BIBLIOGRAPHY 99

LIST OF TABLES

TABLE		Page
1.	Ratio of Exports and Imports of Manufactures to Gross Domestic Products for the United Kingdom . .	26
2.	Ratio of Imports and Exports of Manufactured Goods to Gross Domestic Product at Constant Prices for European Economic Community and European Free Trade Area Countries, 1957-59 . . .	27
3.	Distribution of Exports of Manufactures for Eleven Countries . . .	28
4.	World Exports of Manufactures, Selected Countries for 1954 and 1966	31
5.	Index Numbers of Output Per Man-Hour in Manufacturing, 1960 = 100, and Export Prices of Manufactures, Selected Countries, 1958 = 100, for 1956 and 1966	32
6.	Alternative Methods for Improving for United Kingdom Balance of Payments by £100 Million A Summary	34
7.	The Actual, Predicted, and Residual Value from the Export Function of the United Kingdom, 1967I to 1969IV	46
8.	United Kingdom Share of World Exports of Manufactures	47
9.	United Kingdom Exports, by Commodity, 1966-69	48
10.	United Kingdom Exports, by Area, 1966-69	49

TABLE		Page
11.	Increase in Export Prices of the United Kingdom and the Effects of Devaluation	51
12.	Volume of World and United Kingdom Exports of Manufactures, 1956-68	53
13.	Export Performance, 1962-69, of OECD Countries Which Devalued in 1967	54
14.	The Actual, Predicted, and Residual Value from the Import Function, 1967I to 1969IV	62
15.	The Volume of United Kingdom Commodity Imports by Main Category	66
16.	Changes in the United Kingdom Imports by Main Category, 1968-69	67
17.	United Kingdom Gross Domestic Product at Constant (1963) Price, 1967-68, 1967-69	72
18.	Changes in Components of Gross Domestic Product of United Kingdom between 1967 and 1968, 1967 and 1969 . . .	73
19.	The Changes of Prices of Some Selected Commodities	77
20.	United Kingdom National Income Components, 1967-68, 1967II-69I . . .	79
21.	Imports and Exports Prices, and Terms of Trade of the United Kingdom, 1967-69	80
22.	Imports and Exports on Balance of Payments Definitions of the United Kingdom	81
23.	United Kingdom Balance of Payments, 1967-68	85
24.	United Kingdom Balance of Payments, 1968-69	86

THE EFFECTS OF DEVALUATION ON THE BALANCE OF TRADE: THE CASE OF BRITAIN IN 1967

CHAPTER I

INTRODUCTION

The theory of the price mechanism of the balance of payments is as old as economic theory itself. But even Taussig confessed "we still have pheonomena not fully understood."[1] Though considerable theoretical and empirical progress has been made, we are still not able to solve Taussig's puzzle. Jaroslav Vanek holds this view when he writes:

> Significant advances in this field of analysis have been made in recent years. By no means is it possible to say, however, that this treatment of the adjustment mechanism is complete and definitive. A good deal of work is needed in this field, both in order to supply the polciy maker with answers he needs to face present-day problems of international payments and in order to satisfy our scientific curiosity.[2]

It is believed that a study of the devaluation of an individual country can be made by "finding pieces and bits which will help shed some light on the price mechanism."[3] At least, we hope

---

[1]Frank Taussig, International Trade Theory (New York: The MacMillan Company, 1927), p. 120.

[2]Jaroslav Vanek, International Trade: Theory and Economic Policy (Homewood, Illinois: R.D. Irwin, Inc., 1962), p. 54.

[3]A.C. Harberger, "Some Evidence on the International Price Mechanism," Journal of Political Economy, Vol. 65 (February, 1957), pp. 506-521.

it will contribute some additional information. With this idea in mind, the purpose of this dissertation is to study the effects of devaluation of the British pound sterling in 1967 on the balance of trade of the United Kingdom.

The effects of the devaluation are examined in terms of the 1967-68 and 1967-69 periods. It is difficult to isolate the effects of other policy changes which were undertaken simultaneously with the devaluation. In fact, most of the policy changes were presumably part of the general policy of the government. The effects of factors unrelated to the policy of devaluation are isolated to whatever extent possible or are assumed to be zero for the sake of simplicity.

The method used in this thesis, in part, is one of comparing trade in a period of post-devaluation with a period of pre-devaluation. Wherever possible, comparison of trade between the United Kingdom and the countries which devalued or did not devalue will be made.

The heart of this analysis is found in chapters 5 and 6, which follow the regression method used by Johnston and Henderson.[4] Using the regression analysis approach, import and export functions are constructed in an attempt to obtain as good an explanation as possible of the movement of imports and exports before devaluation. We then use these functions to estimate what imports and exports would have been in the absence of the devaluation. Thus, the

---

[4]J. Johnston and Margaret Henderson, "Assessing the Effects of the Import Surcharge," Manchester School of Economic and Social Science, Vol. 35 (May, 1967), pp. 90-109.

effectiveness of the devaluation is analyzed in terms of the residuals which appear between estimated and actual values of imports and exports.

This dissertation is divided into two parts. The first part critically examines the theory and policy of devaluation. The second part is an empirical study of the devaluation of Britain in 1967. A brief outline of each chapter is as follows:

The introductory chapter presents the objectives of this study, and the methodology to be used.

Chapter II explains and critically evaluates the causes of disequilibrium in the balance of payments and the remedies to cure it. We also examine the price-elasticities approach, the income-absorption approach and their partial reconciliation in an attempt to present the theoretical foundation for the empirical study.

Chapter III investigates the economic situation of the United Kingdom on the eve of devaluation and the alternative policies, which the United Kingdom might have taken to correct the deficit in its balance of payments.

Chapter IV analyzes and examines the effects of devaluation on exports. Several aggregate export functions with different independent and dependent variables are constructed. The export function is then used to estimate what exports would have been without devaluation. The effectiveness of devaluation as regards exports is then estimated by comparing the actual value of exports with these predicted values.

Chapter V investigates the effect of devaluation on imports. The procedure is similar to that of the preceding chapter.

Chapter VI attempts to assess the effects of devaluation upon expenditures, income, and the balance of trade. The absorption approach to devaluation is stressed in this chapter.

Chapter VII contains a summary of the principal findings of this study and a statement of the conclusions which may be drawn from it.

CHAPTER II

BACKGROUND AND THEORY OF DEVALUATION

In this chapter, we examine and critically evaluate the causes of disequilibrium in the balance of payments and the remedies to cure it. Our special attention is centered on examination of the price-elasticities approach, the income-absorption approach and their partial reconciliation in an attempt to present the theoretical foundation for the empirical study in the following chapters.

Causes of Disequilibrium in the Balance of Payments

The social and political forces that induce a country to follow economic policies that cause balance of payments difficulties vary from country to country and from time to time. But the economic causes are all the same. The causes of disequilibrium in the balance of payments can be attributed either to monetary disturbances--i.e. prevailing inflation or price-cost disparity or to real, so-called structural disturbances. Structural disequilibrium occurs when a change in demand or supply of exports or imports alters a previously existing equilibrium or when a change occurs in the basic circumstances under which income is earned or spent abroad, in both cases without the requisite parallel changes elsewhere in the economy.

Disturbances caused by monetary practices, such as inflation and price-and-cost disparity, can be dealt with effectively by means of monetary policy or exchange rate adjustment while, in the case of structural disturbances, it is conceded that when some of them can not be corrected by means of monetary measures, other measures are required.[1]

It, however, is important to note that the cause of inflation may be social programs imposed by political necessity, or it may be due to psychological reasons fed by non-economic factors or to the immediate inflexibility existing in the economy. Under such circumstances, the balance of payments problem is not a monetary problem which can be corrected by deflation and devaluation.

To sum up, each individual case of disequilibrium must be studied separately to discover the particular cause. Furthermore, the causes and the measures adopted must be analyzed and evaluated within a general economic framework which includes the domestic economy along with the foreign sector and not for sole purpose of correcting the disturbance in the balance of payments.

Policies Available to Cure Disequilibrium

There are several ways to cure a disequilibrium in the balance of payments. In this section we will center our investigation on the following major policies: (1) deflation or expenditure-reduction, (2) direct controls, and (3) exchange-rate adjustment. The details of the operation of these policies are discussed below:

---

[1]R.G. Hawtry, The Balance of Payments and the Standard of Living (London: Longmans, Green and Co., 1950), p. 3.

Other Policies

Expenditure-Reducing Policy. A policy of expenditure reduction, or reduction of aggregate demand, can be implemented by the standard macro procedures such as tax increases, higher interest rates and reduced government expenditures. Such policies affect both expenditures and output. Expenditure is directly affected, and part of this reduction falls on domestic production, in turn setting off a multiplier effect which curtails expenditure and output still further. Consequently, the unfavorable effect will be smaller the more the initial reduction in expenditure falls on imports. So long as the marginal propensity to spend is less than one, the net effect of an expenditure-reducing policy must be an improvement in the balance of payments.

Direct Controls. A policy of direct controls is usually applied to restrict imports, in which case there will be a tendency for frustrated domestic consumers to buy domestic substitutes and for domestic producers to seek to produce domestic substitutes for imports no longer available. Thus import restriction tends to switch domestic expenditures toward domestic goods. Controls may also be applied in order to stimulate exports. In this case, the aim is to induce foreigners to switch their expenditures to domestic output.

Direct controls may be of great significance if other measures to correct the balance of payments fail. Direct controls may, however, impair efficient resource utilization due to their discriminatory nature.

Devaluation

A devaluation or an expenditure-switching policy shifts expenditures away from foreign-produced goods and towards domestically produced goods. This result is achieved either by varying the exchange rate or altering the price level. Such switches of expenditure will increase domestic output, and so long as the marginal propensity to spend is less than one they will improve the balance of payments. In other words, devaluation, by making the country's goods relatively cheaper compared with foreign goods, will tend to switch both domestic and foreign expenditure towards domestically-produced goods and in turn improve the balance of payments.

In the case of expenditure-switching policy, the aim is to increase the demand for domestic output. This raises the question of where the extra output required to meet this additional demand comes from. In this connection, we have to consider two possible cases for analysis.

The first case is that of a country with widespread unemployment, the switching policy will switch demand towards domestic output and in turn will give rise to increased domestic output and income by increasing the utilization of unemployed resources. The second case is that in which the deficit country has conditions of full employment, then the policy of switching expenditure should be backed by a complementary policy of reducing domestic demand--a combination of an expenditure-switching and an expenditure-reducing policy. The switching policy in this case is used as a

trimming device to ensure that a balance of payments equilibrium is achieved without sacrificing full employment.[2] An expenditure-reducing policy tends to lead to unemployment because expenditure would have to be curtailed sufficiently to cut down demand for imports enough to correct the deficit. This thus implies a reduction in demand for domestic output; so the switching policy is used here as a means to direct the reduction in spending entirely on to imports.

Elasticities Approach to Devaluation

The conventional answer to the effect of devaluation on the trade balance of the devaluing country runs in terms of the supply and demand conditions in the devaluing country and in the rest of the world. It is presumed that devaluation initially tends to reduce the foreign prices of the country's exports in proportion to the devaluation. At these reduced prices, foreign demand for the country's exports will be increased, thus tending to bid up the foreign prices of these exports part-way back to their predevaluation levels. To what extent the foreign currency proceeds of the country's exports will change then depends upon the elasticity of foreign demand for the country's exports and the elasticity of domestic supply of exported goods. By the same token, on the import side, the initial effect of the devaluation is to raise the domestic price of imports, presumably leading to some reduction in the country's demand for imports, which in turn may tend to reduce

---

[2]Harry G. Johnson, Money, Trade and Economic Growth (Cambridge: Harvard University Press, 1962), pp. 19-20.

the world price of the imported goods. The magnitude of the impact on imports depends upon the elasticity of foreign supply of imports.

The Stability of Exchange Rate

If the devaluation is to have a favorable impact upon the balance of trade, the sum of the elasticities of home demand for a country's exports and of its demand for imports must be greater than one. This is called the Marshall-Lerner condition or the exchange-rate stability condition.

Insofar as these conditions are crucial to the later empirical chapters, let us consider exchange-rate market stability further. Consider only two countries, Y_1 and Y_2 and let m_1 and m_2 be the elasticities of demand for imports in the two countries. Similarly, let e_1 and e_2 be the elasticities of supply of exports. If the discrepancy between exports and imports is small, relative to the total value of foreign trade, it can easily be shown that a devaluation of the currency of either country in proportion K will bring about a change in that country's balance of payments on current account (dB), which has the following value, relative to the value of exports.[3]

$$dB = K \left[\frac{m_1 m_2 \ (1 + e_1 + e_2) + e_1 e_2 \ (m_1 + m_2 - 1)}{(m_1 + e_2) \ (m_2 + e_1)} \right]$$

The foreign exchange market is stable if the expression in brackets is positive, for exchange stability requires that devaluation

---

[3]Lloyd A. Metzler, "The Theory of International Trade," in Survey of Contemporary Economics, ed. by Howard S. Ellis (Homewood, Illinois: Richard D. Irwin, Inc., 1952), pp. 226-227.

must increase a country's net supply of foreign exchange. The value in the right-hand of the equation will be positive if (1) the sum of m_1 and m_2 is greater than one; or (2) the sum of m_1 and m_2 is less than one but the elasticities of supply e_1 and e_2 are sufficiently low to make the second term of the numerator smaller than the first term.

This analysis concentrates on the price effect of exchange adjustment, assuming away secondary effects through income change. If we incorporate the income effect, then the stability criterion that emerges from this is that the sum of the elasticities of demand for imports and exports must be greater, not only one, but than one plus the sum of certain complex factors employing the direct and indirect effects of a change in income on expenditure.

The Effect of Devaluation on Prices of Exports

Given a percentage devaluation of a country's currency, there will be a tendency for foreign-currency prices of exports to fall. Export prices will fall by the percentage of devaluation, or by less, or not at all depending first, on the import content of exports, in which case the higher the import content the less prices of exports will fall (this is because import prices will rise after devaluation), and second, on the elasticity of supply of exports. The greater the elasticity of supply of exportable goods of the devaluing country, the less will be the rise of domestic prices following devaluation. For a devaluing country with many resources idle, output can be increased with little, if any, increase in costs and prices. If supply is infinitely or near infinitely elastic,

export prices in terms of domestic currency in home market will remain constant or rise very little; in foreign markets, they will fall in proportion to the home currency's devaluation, or a little less.

The Effect of Devaluation on Prices of Imports

Given a percentage devaluation, domestic prices of imports will increase by the amount of devaluation on the assumption that the total imports of the devaluing country constitute a small proportion of the world total. For example, the British share of the total world market imports is usually very small. Exceptions will occur when the foreign manufacturers are willing to reduce the profit margins on his exports to the devaluing country's market. In such cases, the supply elasticity may be considered infinite. In general, the more insignificant the home market in the total for a commodity, the higher the supply price elasticity of that commodity in the British market. Certain commodity prices are determined by world rather than home markets and the world price will remain unaffected by the devaluation of one country. If the supply elasticity is not infinite, then the import price is going to rise less than full amount of the devaluation. This will also happen if some of the imports are supplied by a country which has devalued its currency along with the United Kingdom.

Effect of Devaluation on the Value of Exports and Imports

After examining the effect of devaluation on prices of exports and imports, and its relationship to their elasticities, we will turn to look at the effect of devaluation on the value of

imports and exports. We can easily visualize that the impact of a devaluation on exports is to shift the demand curve upward. Every unit of foreign currency exchanges for more units of local currency, so that devaluation shifts the foreign demand curve upward. The upward shift of the demand curve for exports, expressed in local currency, raises the local-currency value of exports. With exchange devaluation, the local currency value of export cannot drop. At worst, if the demand curve is completely inelastic, i.e., straight up and down so that an upward shift could not be seen, the value of exports in local currency would remain unchanged.

Devaluation may, however, increase, reduce, or leave unchanged the local-currency value of imports. Devaluation involves an upward shift in the supply curve. Whether the value of imports will rise, fall, or remain unchanged depends on the elasticity of demand for imports. If this elasticity is unity, the value of imports remains unchanged. If it is less than one, it will increase. If it is greater than one, it will fall.

The conventional price-elasticities analysis, however, is an extension to imports and to exports as a whole of the familiar Marshiallian supply and demand analysis of a single commodity. Partial elasticities measure the effect of a change of price on the quantity supplied or demanded when all other things remain equal. Total elasticities relevant to a devaluation measure corresponding relationships when the other things have changed that are likely to change as a result of devaluation. Accordingly, Alexander contends that elasticities do not measure the direct effects of

price changes on the quantity, but the covariation of prices and quantities as the whole economic system seeks a new equilibrium. Therefore, a devaluation depends on the behavior of the whole economic system, and the effect of a devaluation depends on how the economic system behaves.[4] We will examine Alexander's theory of income-absorption as an approach to devaluation in the following section.

The Income-Absorption Approach

The income-absorption approach was developed by Sidney Alexander. His argument is that a country's net foreign trade balance is equal to the difference between the total goods and services produced in that country and the total goods and services absorbed domestically. To express this concept in an equation, we have:

$$B = Y - A$$

where B is balance of payments, Y is the total production, and A is absorption required to cover the domestic expenditure items-consumption, domestic investment and government expenditure. This relationship holds both in real and in money terms. To avoid certain difficulties, it is convenient to conceive output and expenditure in real rather than monetary terms. Thus, the income-absorption approach in this case implies constant prices.

With less than full employment, the balance of payments can be improved by increasing output more than absorption. But with conditions of full-employment the possibilities of improving

---

[4]S.S. Alexander, "Effects of a Devaluation on a Trade Balance," International Monetary Fund Staff Papers, Vol. 2 (April, 1952), pp. 263-278.

the balance of payments by devaluation turn on whether absorption can be decreased or not. The mechanisms by which exchange devaluation can improve the balance of trade are as follows:[5]

The Effect of Devaluation on Income

Idle Resources Effect. The principal effect on real income resulting from a devaluation is through the increased exports of the devaluing country and the induced stimulation of domestic demand through the export multiplier.

Resource Reallocation Effect. There is also another possibility, which Alexander neglected, of expanding real income by means of devaluation through resource reallocation.[6] Assume a balance of payments deficit with full employment. The exchange rate is overvalued. This means that resources have been drawn out of exports and import-competing goods into non-trade domestic line. Correcting the exchange rate leads to resource reallocation which improves real income.

Terms of Trade Effect. If devaluation affects the terms of trade, the change in the terms of trade will affect national income and absorption. The terms of trade effect can be divided into an initial effect through price changes and a secondary effect through income-induced changes in absorption. According to Alexander, the initial terms of trade effects upon the trade balance and upon real income are equal in direction and magnitude. If this is true, then

---

[5] Ibid.

[6] Fritz Machlup, "Relative Prices and Aggregate Spending in the Analysis of Devaluation," American Economic Review, Vol. 45 (June, 1955), pp. 255-278.

the ultimate terms of trade effect upon the trade balance is obtained by multiplying the initial (t) by marginal propensity to save, (1-m). Hence, the ultimate terms of trade effect upon balance of trade would be (1-m)t, and thus could be positive only if (1-m) is negative, that is, if m is greater than one.

Substitution Effect. This is the effect of shifts in relative prices and the effect of price increases which reduce real absorption even if absorption in money terms should be unchanged.[7]

The Effect of Devaluation on Absorption

Effects of devaluation on the balance of trade, which are not associated with changes in income but with changes in the absorption of given income, are called direct effects on absorption.[8]

The direct absorption effect can be divided into a cash balance effect, an income redistribution effect, and a money illusion effect.

Cash-Balance Effect. Devaluation raises the domestic prices of imports and exports, and it will tend to raise the prices of import substitutes, of potential exports, and of intermediate goods, required for their production. With a constant money supply, an increase in prices and money income may produce a decrease in consumption, as consumers try to build back the real value of their cash balances which have depreciated because of the rise in prices.

The Income-Redistribution Effect. There may be a redistribution of income to wage-and profit earners, on the one hand,

---

[7] Ibid.

[8] Alexander, op. cit.

from fixed-income groups, on the other; this may or may not reduce aggregate consumption, depending on the relative sizes of the marginal propensities to consume of the groups concerned, and the way in which the redistribution is shared between wages and profits. The government can, in advanced countries, usually be expected to have a low marginal propensity to spend, so that the tax shift might be a significant factor influencing the relationship of absorption to income, and so affecting the foreign balance.

The Money-Illusion Effect. Suppose savings are a positively rising function of money income rather than of real income. This implies a "money illusion," without reference to the level of prices. Under exchange devaluation, the general price level of consumer goods will rise. However, since consumers are not to pay attention to the changes in prices and since money incomes remain the same, they spend the same amount as before. Consequently, their level of real consumption spending falls and the result on the balance of payments will be favorable.

The income-absorption analysis is particularly relevant when a country is at full employment since with full employment at home, a devaluation will lead to no significant increase in real income. Under this condition, an improvement in the balance of trade depends upon the direct effect of devaluation on absorption or upon the simultaneous devaluation, a reduction of absorption can be achieved through a deflation policy.

Despite the contributions to the analysis of the effects of devaluation which the absorption approach has made, it presents

as did the elasticities approach only one side of the coin. The whole picture of the total effects of devaluation can only be seen clearly and analyzed in a comprehensive system in which changes in income and prices are all taken into account. With this idea in mind, a partial reconciliation of the relative-price and income-absorption approaches is presented below.

A Partial Reconciliation of Relative-Price and Income-Absorption Approach

From the analysis in the preceding sections, we find that both relative-price and income absorption approaches would agree when there is widespread domestic unemployment at home that devaluation will improve the balance of trade. The difference of opinion arises when there is full employment. The relative-price theories would still claim that devaluation is bound to improve the trade balance, provided that the sum of elasticities of demand of two countries is greater than one. On the other hand, adherents of the income-absorption approach would state that this condition is not warranted unless it could be shown first that domestic absorption is reduced.

It has been suggested that a reconciliation of the two approaches can be made by showing that if devaluation increases prices, it also cuts absorption; or conversely if devaluation does not result in the curtailment of absorption, then it also could not end up with a relative increase in the prices of exports

and imports. If correctly carried out, both approaches must lead to the same conclusion.[9]

Suppose devaluation does not reduce the demand for absorption, then the prices of exports and imports relative to domestic prices do not change; that is, the general price level in the devaluing country increases in the same proportion as the devaluation. Michaely's argument proceeds as follows:

> In the first stage after devaluation relative prices of exports and imports rise and the trade balance improves. This means that the amount of goods available for domestic absorption is smaller than it had been before devaluation (Since it has assumed that output and the terms of trade are not changed by absorption.) But the demand for domestic absorption has not changed, so that (assuming an initial position of equilibrium) there is now an excess of aggregate demand for goods and services over their aggregate supply, and this tends to raise the price level. The excess demand and the tendency of the level of prices to rise will prevail as long as the price level has not increased in full proportion of devaluation. Only when the general level of prices increases as much as the price of foreign exchange, and the trade balance returns to its predevaluation level, are we in a new equilibrium position.[10]

In this way, the relative-price approach leads to the same conclusion as the income-absorption approach.

On the other hand, after devaluation the price level will rise. On the basis of the Pigou effect, consumption, including the consumption of imports, will decline and in turn improve the balance of trade.

Thus, an increase in the ratio of external to internal prices, which is essential for an improvement of balance of trade

---

[9]Michael Michaely, "Relative-Prices and Income-Absorption Approaches to Devaluation: A Partial Reconciliation," American Economic Review, Vol. 50 (March, 1960), pp. 144-147.

[10]Ibid., p. 145.

according to the relative-prices approach, can only improve the trade balance when there is a reduction of absorption and a decrease of absorption can take place only if there is an increase in the general price level under the conditions of full employment. Therefore, the two approaches to the analysis of devaluation must lead to the same conclusion.

The Importance of Lagged Effect of Relative-Price and Income on Exports and Imports

The discussion of both theories of relative-prices and income-absorption approaches are implicitly carried on in current terms on the assumption that the effect on trade of a rise in demand is immediate and that the effect of relative price changes is effective during the current period. This writer asserts that the lag before the full effects are felt is a distributed one--both for the pull of demand on exports and imports and for relative prices.

It is a possible hypothesis that when domestic demand rises, the immediate impact on imports is, to some extent, delayed. By the same token, when the demand of foreign countries rises, the immediate impact is on their home products and the impact on the devaluing country's exports is, to some extent, delayed. Possibly a greater proportion of imported than of home-produced goods are subject to contract, so that it takes time for increased demand to lead to increased supplies. Furthermore, any sharp rise in demand leads, after a time, to a sharp increase in stock-building; and later still, to a rise in demand for plant and machinery. It is likely that the share of imported manufactures in final expenditure

on stock-building and on plant and machinery is higher than their share in other final expenditure items.[11] Both these factors might lead to a lag in the relationship between the movement of manufacturing production and the movement of imports and exports.

In the same way, it is often argued that, because of inertia and lack of knowledge for example, the effects of a change in relative prices will be spread over a long period of time. To discuss this, we can begin our discussion by recalling the well-known distinction between short-run and long-run elasticities of demand. That is, whenever a demand schedule is drawn in theory, it refers to some specified period of time. In the very short-run when habits are persistent, the demand schedule will be completely inelastic with respect to changes in price. The more time we permit for adjustment to prices changes, the more elastic the demand schedule will be.

The point we are trying to stress is that the adjustment of quantity depends on the past history of price changes and the sequence of prices within the relevant period as well as the total price change within the period. Thus, the central question that conce us here is the effect the time pattern of adjustment of quantity to changes in price has on the statistical estimating procedures. To neglect this point might cause misjudgment of the

---

[11]In the United Kingdom, the import content of finished manufactures appears to be significantly higher in stock-building than in other final sale. See W.A.H. Godley and J.R. Shepherd, "Forecasting Imports," National Institute Economic Review, No. 33 (August, 1965), p. 39. Estimates of the share of imports in fixed expenditure on household equipment and personal effects are given for major industrial countries over the period 1956-62. See Wilfred Beckerman et al., The British Economy in 1975 (Cambridge, England: University Press, 1965), p. 162.

effect of relative-prices on exports and imports in the empirical studies.

Summary

The causes of disequilibrium in the balance of payments can be attributed either to monetary distrubances--i.e. prevailing inflation or price-cost disparity or to real, so-called structural disturbances.

The major national remedial measures to cure external imbalances are expenditure-reducing policies, controls of trade, and devaluation. The remedy chosen to cure the balance of payments problem should be selected in the light of the cause of the imbalance.

Both the relative-price approach and the income-absorption approach to devaluation have their own merit. The relative-price analysis uses partial equilibrium elasticities and assumes other things, including income, equal. Similarly, the income-absorption analysis uses models which usually require an assumption of unchanged prices. Both are inadequate by themselves. When the elasticities approach is generalized to include changes in spending, or the absorption approach is expanded to include changes in prices, they merge into one another.

On the other hand, the elasticities approach can be broadened from partial-equilibrium analysis to include income changes, or the absorption approach can be broadened to include the effects of price changes in absorption. In either case, they become identical. In other words, there can be no neat dichotomy of the final

effect of a devaluation into a part that consists of the absorption solution and another that consists of the elasticities solution. The total effects must be analyzed in a comprehensive system in which changes in income and prices are all taken into account.

Both theories implicitly carried out assume that the effect of a rise in demand on the balance of trade is immediate and that the impact of relative price changes is effective during the current period. This writer asserts that the full effects of demand and relative price changes on imports and exports may be distributed over a period of time. The pattern of these lagged effects must be determined empirically. A neglect of this point could cause the wrong conclusions to be drawn on the importance of the effect of changes in relative prices on exports and imports in the empirical studies.

To sum up, the trade balance is mainly a function of two variables, relative prices and income of the current period and past periods. On the basis of this theoretical background, the case of British devaluation in 1967 will be taken up to examine how well empirical evidence supports this model in the following chapters.

CHAPTER III

INTERMEDIATE DEVELOPMENTS LEADING TO THE BRITISH DEVALUATION

Prior to evaluating the effect of the November 1967 British devaluation on exports and imports, we examine the economic situation of the United Kingdom on the eve of devaluation and the alternative policies which the United Kingdom might have taken to rectify the deficit in the balance of payments.

An Overview of the British Balance of Trade

If we look at the British trade balance over a long sweep of history, at no time during the last two centuries did British exports of merchandise consistently equal or exceed imports of merchandise. Generally only about three quarters of imports were covered by exports. over the entire period of the last two centuries, only six years of export surpluses were recorded, and two of these occurred in the last ten years. The traditional ways of covering the trade deficit and resources which were made available for capital exports—invisible earnings--have lately not been adequate. Two world wars have eroded the shipping, insurance, and financial services, and particularly the dividend and interest earnings from foreign investment that provided invisible surpluses. Thus it may be that Britain requires a trade surplus today even though it was

not necessary previously. The amount of surplus required depends on how much Great Britain must transfer in net capital outflows, including debt repayment, and aid to other countries. Thus a fixed target cannot be stipulated.

Between 1952-54, the average trade deficit was about £250 million; in 1956-58 there was rough balance in the trade accounts; in 1961-63 an average trade deficit of about £100 million appeared; and in 1964 the trade deficit increased to over £500 million and produced a crisis. Thus there was improvement through 1958, some deterioration from 1958 to 1963 and then sharp deterioration. Not only did Britain not develop the trade surplus needed to cover capital exports; they had to use other resources to cover a growing merchandise deficit. From 1964 to mid-1967, the trade balance improved in response to domestic restraining measures but then deteriorated sharply and became a major ingredient in the decision to devaluate.

The Performance of Exports

There is some superficial evidence to suggest that British exports have not increased satisfactorily, possibly indicating a loss of competitiveness in the world market. As indicated in Table 1 and Table 2, British exports of manufactures have grown at about the same rate as Gross Domestic Product (GDP). Taken together with a rising import/GDP ratio, a constand export/GDP implies a deterioration of the trade balance for the United Kingdom. If the growth of British GDP were greater than that of other countries, this combination need not imply a deterioration of

TABLE 1

RATIO OF EXPORTS AND IMPORTS OF MANUFACTURES GOODS TO GROSS DOMESTIC PRODUCTS FOR THE UNITED KINGDOM, 1956-66
(£billion and percent)

Gross Domestic Product and Type of Ratio	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Gross domestic product											
Current prices	18.2	19.3	20.1	21.2	22.6	24.2	25.2	26.7	28.8	30.7	32.1
Constant prices (1958)	19.8	20.2	20.1	20.8	21.9	22.7	22.9	23.8	25.2	25.9	26.3
Ratio of exports of manufactured goods to gross domestic product in 1958 prices	14.2	14.3	13.9	14.2	14.1	14.1	14.0	14.1	13.8	14.1	14.2
Ratio of imports of manufactured goods to gross domestic product on 1958 prices	4.1	4.4	4.5	5.0	6.3	5.9	6.1	6.3	7.4	7.6	7.9

Source: Central Statistical Office, National Income and Expenditure (London: H.M. Stationery Office, 1965, 1966, and 1967).

TABLE 2

RATIOS OF IMPORTS AND EXPORTS OF MANUFACTURED GOODS TO GROSS DOMESTIC PRODUCT AT CONSTANT PRICES FOR EUROPEAN ECONOMIC COMMUNITY AND EUROPEAN FREE TRADE AREA COUNTRIES, 1957-59 and 1964
(In percent)

Country	Imports		Exports	
	1957-59 Average	1964	1957-59 Average	1964
EEC				
Belgium-Luxembourg	17.5	28.0	26.1	35.3
France	3.3	7.2	7.3	9.4
Germany	5.0	7.1	14.2	15.3
Italy	4.6	9.9	7.5	14.1
Netherland	23.2	32.5	19.0	25.2
EFTA				
Austria	13.6	19.2	15.0	17.6
Denmark	18.3	24.6	8.9	12.5
Norway	25.2	26.1	12.4	15.9
Portugal	14.8	15.3	7.3	10.9
Sweden	15.3	18.5	13.3	17.7
Switzerland	16.1	21.8	20.6	21.1
United Kingdom	4.7	7.4	14.1	13.8

Sources: United Nations, Commodity Trade Statistics, Series D, 1957 and subsequence years; Organization for Economic Co-operation and Development, National Accounts Statistics, 1955-64 (Paris: OECD, 1966); and United Nations, Monthly Bulletin of Statistics, Vol. 20 (June, 1966).

TABLE 3

DISTRIBUTION OF EXPORTS OF MANUFACTURES FOR ELEVEN COUNTRIES, 1953-67
($billion and percent)

Country	1953	1955	1957	1959	1960	1961	1962	1963	1964	1965	1966	1967
Total exports of all eleven countries	11.0	12.3	15.5	16.8	19.1	20.3	21.5	23.3	26.6	29.7	33.1	41.5
						Percent of Total						
United Kingdom	19.1	19.4	17.8	16.7	15.5	15.2	14.7	14.5	13.3	13.4	12.9	11.9
United States	36.1	29.1	29.7	24.1	23.9	22.7	23.0	22.2	22.4	20.8	20.2	20.7
W. Germany	11.9	15.3	17.3	18.5	18.7	19.7	19.5	19.8	19.4	19.1	19.5	19.6
Belgium-Luxembourg	5.8	6.5	6.0	5.8	5.7	5.6	5.8	5.9	6.1	6.3	6.1	5.7
France	8.1	8.9	7.9	8.9	9.2	9.2	9.0	9.0	8.7	8.8	8.6	8.4
Netherlands	4.3	3.8	3.5	4.0	4.0	4.6	4.1	4.2	4.5	4.4	4.3	4.4
Sweden	2.4	2.6	2.8	3.0	3.0	3.2	3.3	3.4	3.4	3.3	3.3	4.4
Switzerland	n.a.	n.a.	n.a.	3.2	3.2	3.3	3.4	3.4	3.2	3.2	3.2	3.2
Canada	6.1	6.0	5.4	5.1	4.7	4.4	4.4	4.3	4.6	4.6	5.2	5.9
Italy	2.9	3.3	3.8	4.3	5.0	5.5	5.8	5.9	6.3	6.7	6.9	6.9
Japan	3.4	5.1	5.9	6.4	6.8	6.7	7.3	7.6	8.2	9.4	9.8	12.2

Sources: Organization for Co-operation and Development, Commodity Trade Statistics, Series C (Paris: OECD, 1963, 1965, 1966, 1968); United Nations, Monthly Bulletin of Statistics (New York: United Nations, 1960, 1965, 1968).

British competitiveness. But this was not the case. In particular, The British experience has not been characteristic of other EFTA or EEC member countries. A somewhat closer look at the performance of British exports can be obtained by comparing British manufacturing exports with those of other industrial countries. As shown on Table 3, the British share of the total exports of manufactured products of eleven leading exporting countries declined from about 19.3 percent in period 1953-55, to 16.6 percent in 1958-60, and to 13.7 percent in 1963-65. By 1967, the British share had declined to 11.8 percent. This decline could have resulted from a loss of competitiveness.

The Performance of Imports

In examining imports, one is really evaluating the performance of industries competing with imports. Two categories of imports--raw materials and foodstuffs--can be considered noncompetitive with domestic supplies since they supplement rather than compete with British natural resources. While there are some interesting short-run questions of inventory changes and raw materials and foodstuffs, most attention can be directed to competitive imports of manufactured products. Manufactured products have been taking an increasing percentage of the United Kingdom imports: 25.5 percent in 1955, 36.8 percent in 1960, and 44.1 percent in 1965. The more useful comparison, however, is between manufactured imports and the United Kingdom's production of import-competing goods. In Table 1, imports of manufactured products are shown as a percentage of GDP at constant prices. This percentage has clearly been rising and is affected by

cyclical pressures in the economy. During a period of rapid growth, 1958-60, the import ratio increased as one might expect but did not decline when demand pressures eased in the economy. These figures give a hint of a loss of competitiveness of import-competing industries, but only superficially and perhaps not significantly.

British Competitive Position in the World Market

The slow growth of Britain's exports raises the question of her competitive ability in overseas markets. A revealing way of looking at her position is in terms of the distribution of the world market for manufactured goods among various countires in 1966 compared with 1954. This is shown in Table 4. It is clear that so far as proportionate achievement is concerned, Britain's performance between 1954 and 1966 is the poorest of the industrial countries listed here, her share of world trade in manufactures having fallen by 7 percentage points. There are special reasons for the deterioration of certain markets, e.g., the ending of Commonwealth preference, but the inescapable conclusion is that Britain's competitive position in world markets has been steadily weakening, a trend reflected her loss of competitiveness with imports in her own home market.

It is not a simple matter to explain this loss of competitiveness, still less to illustrate it with statistical material. There are, however, two factors which are relevant; industrial productivity and the level of prices--in particular, export prices. Changes in productivity and prices are not independent, increase in prices usually being less where increases in productivity are

TABLE 4

WORLD EXPORTS OF MANUFACTURES, SELECTED COUNTRIES, FOR 1954 AND 1966

	1966		1954	Change 1954-66
	U.S. $billion quarterly averages	Per cent	Per cent	
Japan	2.26	9.7	4.7	+4.7
West Germany	4.50	19.3	14.8	+4.5
Italy	1.60	6.8	3.2	+3.6
Netherlands	1.04	4.4	3.8	+0.6
Sweden	0.77	3.3	2.8	+0.5
Belgium-Luxemberg	1.40	6.0	6.2	+0.2
France	1.99	8.5	9.0	-0.5
Switzerland	0.75	3.2	3.8	-0.6
Canada	1.20	5.2	6.3	-1.1
United States	4.78	20.5	25.1	-4.6
United Kingdom	2.99	12.8	20.4	-7.6

Source: United Nations, Monthly Bulletin of Statistics, Vol 21 (June, 1967), p. xx.

greatest. It is, therefore, illuminating to compare changes in the United Kingdom with those in other countries. The National Institute of Economic and Social Research of Great Britain has calculated index numbers of productivity and export prices for a number of major countries, and figures for 1956 and 1966 are given in Table 5.

TABLE 5

INDEX NUMBERS OF OUTPUT PER MAN-HOUR IN MANUFACTURING
1960 = 100, AND EXPORT PRICES OF MANUFACTURES,
SELECTED COUNTRIES, 1958 = 100,
FOR 1956 AND 1966

	Output per Man-Hour in Manufacturing			Export Prices of Manufactures		
	1956	1966	Percentage Increase	1956	1966	Percentage Increase
Japan	86	158	84	101	91	-10
W. Germany	81	132	62	99	112	14
Italy	87	167	97	101	94	-7
France	81	134	65	102	106	4
United States	85	124	46	94	109	16
United Kingdom	87	122	40	96	117	22

Source: National Institute of Economic and Social Research, National Institute Economic Review, No. 42 (November, 1967), Appendix.

The countries are listed in the same order in which they appear in Table 4. The first point which emerges is that those countries at the top of the list, i.e., those which have increased their share in the world market of manufactures, have all experienced considerable increases in productivity; whereas, the United Kingdom, whose share in the world market has fallen the most, has shown the least increase in productivity among the countries listed. Second, with the striking exception of West Germany (where the Deutsch mark was revalued in 1961), countries which have increased their share in the world market of manufactures have also shown a fall or a slight

rise in export prices. The United States and the United Kingdom, on the other hand, whose shares in the world have fallen most, show the greatest increases in export prices. Thus, some part of the explanation of the United Kingdom's loss of competitiveness is the failure of her industrial productivity to increase as fast as that of other countries and the more rapid increase in her export prices.

West Germany had the second greatest increase in shares in the world market but her increase in export prices was as high as those of the United Kingdom in terms of relative price changes over time. Competitiveness depends also on the absolute level of price (which is also associated with productivity), on quality, on design and styling, and on the certainty of delivery dates, etc.. There is, in fact, some evidence that the Britain's lack of competitiveness is, in part, to be explained in these terms. Nevertheless, the slow growth of industrial productivity seems to be fundamental and the most important single factor.

Why Devaluation was Chosen in Favor of Other Alternative Policies

In this section we examine the alternative policies the United Kingdom might have taken and why devaluation was chosen in favor of other policies in light of the theory we presented in Chapter II.

Richard Cooper has done a study of the balance of payments of the United Kingdom.[1] Table 6 summarizes the results of his study which indicates the impact on the balance of payments of several alternative courses of action. The table is set up to indicate the trade-offs among objectives with respect to a given

[1]Richard Cooper, "Balance of Payments," in Britain's Economic Prospects, ed. by Richard Caves and Others (Washington: Brookings Institute, 1968), pp. 147-197.

improvement in the balance of payments. Thus, for example, to avoid a currency devaluation of 1.41 percent requires accepting a higher unemployment rate of 0.34 percentage points or a reduction in overseas military expenditures by £143 million. The burden of adjustment need not fall on any one item, various combinations are possible. While the entries are drawn for an improvement in the balance of payments, they can be reversed, indicating that a reduction in the unemployment rate by 0.34 percent points or an increase in foreign investment by £110 million can be expected to worsen the balance of payments by £100 million.

TABLE 6

ALTERNATIVE METHODS FOR IMPROVING FOR UNITED KINGDOM BALANCE OF PAYMENTS BY £100 MILLION: A SUMMARY

Course of Action	
Rise in target unemployment rate	0.34 percentage points
Imposition of import surcharge on manufactures	4 percent
Reduction in overseas military expenditures	£143 million
Across-the-board in private capital outflow	£110 million
Across-the-board in foreign aid	£159 million
Currency devaluation	1.41 percent

Source: Richard Cooper, "Balance of Payments," in Britain's Economic Prospects, ed. by Richard Caves and Others (Washington: Brookings Institute, 1968), p. 196.

The entries in the table are calculated to yield an improvement of £ 100 million. If 1.4 percent is taken as the target unemployment rate, 1965 was nearly on target in this regard. Stock-building was a bit higher than normal, enlarging imports, but this effect was more than offset by the normal reflow of British portfolio capital from abroad, induced in part by government measures taken to affect capital flows, and by the presence of a 10 percent surcharge on manufactured imports. Growth in GDP was under 3 percent. Thus, according to Cooper, the size of the required adjustment was put roughly at £450 million. Thus, for example, the acceptable unemployment rate would have had to be raised by 1.5 percentage points if sole reliance were placed on changing that objective. A devaluation of 6.4 percent would have been necessary. They are obtained by multiplying the entries by a factor of 4.5.

The British government has understandably and sensibly resisted the notion of rigid trade-offs among objectives such as those shown here. Before 1967, it also attempted to avoid a direct choice among objectives, in part by resorting to a host of measures designed to ease conflicts among more basic objectives.

However, the British government avoided hard choices among objectives in part also by vacillating among them, shifting in particular from emphasis on employment to emphasis on the balance of payments and back again. In the mid-sixties the British government chose more decisively than previously to sacrifice some employment, some foreign investment, and some overseas military expenditure to help the balance of payments. By late 1967 it appeared that the price of maintaining the exchange rate was too high, and the pound was

devalued by 14 percent, from $2.80 to $2.40. The devaluation of 14.3 percent was expected to create an improvement in the balance of payments of over £800 million on a full employment basis. After allowance is made for a reduction in unemployment from the high level prevailing in late 1967, the actual improvement would be less.

Summary

The Great Britain's balance of payments had been deteriorating since mid-1950's. The trade balance had deteriorated sharply up through November of 1967 and it constituted a major ingredient in leading to the decision to devalue.

A close look at the United Kingdom's export share of manufactures in the world market discloses that her share of the world market had declined from 11.9 percent in 1953 down to 11.8 percent in 1967. In contrast, West Germany and Japan has steadily climbed from 11.9 percent and 3.4 percent up to 19.6 and 12.2, respectively. This downtrend signaled a warning that something was wrong and something had to be done.

A devaluation was chosen over the other alternative policies because it was the least costly and most effective policy by then. In addition, the British government chose to sacrifice some employment to help the balance of payments.

CHAPTER IV

THE EFFECT OF DEVALUATION ON EXPORTS

Having examined the economic background of the devaluation and having considered the question of why the policy of devaluation was chosen over the other alternatives, we now attempt to measure the impact of the devaluation upon British exports. Using the theory of devaluation presented in Chapter II, we first construct as good an explanation as possible of the movements of exports before the devaluation. We then use this function to forecast what exports would have been in the absence of the devaluation. The effects of other policy changes unrelated to the devaluation are assumed to be zero. Thus the effectiveness of the devaluation is analyzed in terms of the residuals between forecast and actual exports. (We will relax the assumption of zero effects of other policy changes in Chapter VI). A verbal analysis of disaggregated exports by commodity and area will be included with the support of numerical data in the second part of this chapter.

The simple regression analysis approach has been challenged by several writers on the grounds that it tends to underestimate the price elasticities.[1] Direct attempts to estimate both demand

---

[1]See Harberger, op. cit.; Fritz Machlup, "Elasticity Pessimism in International Trade," Economia Internazionale, Vol. 3 (February, 1950), pp. 118-137; G. Orcutt, "Measurement of Price Elasticities in International Trade," Review of Economics and Statistics, Vol. 32 (May, 1950), pp. 117-138.

and supply simultaneously, were made by Morgen and Corlett[2] in 1951, using data for a number of countries, but with a complete lack of success. In other contexts, the application of simultaneous estimation methods, when successful, has yielded results that were almost invariably very close to those yielded by the simple regression method. It now appears that in practice the single equation bias is much less than was first suspected.

This appears to be also the view of Klein, one of the earlier advocates of the simultaneous equations approach, who writes:

> In the quarterly model, all the foreign trade equations have explicit time lags of one or more quarters. These lags of one or more quarters together with the exogenous character of the overseas variables, transform the export-import equations into types in which the application of single equations method does not lead to bias except that due to the smallness of the sample size.[3]

Determinants of Exports

As was discussed in Chapter II, the price-elasticities approach to devaluation stressed that the primary determinants of exports are relative prices and demand and supply elasticities. On the other hand, the income-absorption approach emphasized income and expenditure. We argued in Chapter II that the total effects must be analyzed in a comprehensive system in which changes in income and prices are all taken into account. To integrate

---

[2]D.J. Morgen and W.J. Corlett, "The Influence of Price in International Trade: A Study in Method," Journal of the Royal Statistical Society, Series A, Vol. 104, Part III (1951), pp. 307-352.

[3]L.R. Klein and Others, An Econometric Model of the United Kingdom (Oxford: Basil Blackwell Inc., 1962), p. 131.

both approaches, we postulate the following export model in general lagged terms.

$$(1)\quad X_t = F(Y_t, Y_{t-1}, \cdots Y_{t-n}, P_1/P_{2t}, P_1/P_{2t-1}, \cdots P_1/P_{2t-n})$$

where X: Exports of the United Kingdom in constant prices

Y: Income of the other countries in constant prices

P_1: Index numbers of export price of the United Kingdom

P_2: Index numbers of export price of the other countries

t: Time period.

Income is chosen on the basis of the economic reasoning in Chapter II. As was stressed by the income-absorption theory, income indicates a country's ability to import from other countries. The normal measure of this ability is gross national product. However, only a few countries have quarterly figures for gross national product. A reasonable proxy for trends in the demand for exports of other countries is the index numbers of industrial production (IP). The series on total industrial production of the world is taken from Monthly Bulletin of Statistics, published by the United Nations. This is restrictive in covering only certain sectors of the economy, such as manufacturing and mining sectors, but possibly advantageous from the point of view of business cycle analysis since industrial production is more sensitive than a cyclically sluggish measure like gross national product.[4]

The relative price variable (P_1/P_2) is the ratio of the price level of U.K. exports to those of the rest of the world. For

---

[4] Ibid.

the source of data, consult the appendix. The inclusion of the relative price variable in the export function has been discussed in detail in Chapter II. A country's export competitiveness or her export strength is related to the relative prices and the elasticity of foreign demand for exports. However, we have to recognize that the actual measurement of the price elasticity of demand for a country's exports presents enormous difficulties. In the first place, the measurement of their prices is difficult; second, the prices of competing foreign goods have to have been taken into account; third, the effects of prices have to be sorted out from those of income; fourth, trade barriers of all kinds introduce immeasurable disturbances; and fifth, full-adjustment to price-changes takes place only after a time lag which it is difficult to allow for in empirical investigation.

The Regression Model

On the basis of the economic reasoning given in Chapter II, our formulation of the export regression equation stresses explicitly that the regressand responds to changes in explanatory variables with a delay. To build an export function with lagged response, let us first consider a lagged function with only one explanatory variable (Y) included. The simplest lagged function form of instantaneous response is illustrated below:

$$(2) \qquad X_t = b_o Y_{t-1} + e_t$$

where X_t = exports of the United Kingdom in period t and Y_t = income of the other countries in period t. (We omit the constant term for

simplicity.) A more general form allows for a distributed lag:

$$(3) \quad X_t = b_o Y_t + b_1 Y_{t-1} + b_2 Y_{t-2} + \ldots\ldots + e_t$$

Let us make the classical assumption about the residual term, in particular:

$$(4) \quad Ee_t^2 = \sigma^2 \quad ; \quad Ee_m e_n = 0 \text{ for } m \neq n; \quad Y \text{ and } e \text{ are independent.}$$

Although equation (3) is more general than (2) response of a single-period lag, its estimation presents obvious difficulties. And there is likely to be multicollinearity among the successive regressors. Some sort of restriction to specify a priori that the coefficients of the successive Y's decline geometrically is needed as we go further back in time:[5]

$$(5) \quad b_k = bh^k \qquad (k = o, 1, 2 \ldots.)$$

where $0<h<1$, so that the relationship may be written

$$(6) \quad X_t = bY_t + hbY_{t-I} + h^2 bY_{t-2} + \ldots. + e_t$$

The point is that if we lag (6) one period and multiply through by h we obtain

$$(7) \quad hX_{t-1} = hbY_{t-1} + h^2 bY_{t-2} + h^3 bY_{t-3} + \ldots. + he_{t-1}$$

which when subtracted from (6) gives, after rewriting

$$(8) \quad X_t = bY_t + hX_{t-1} + (e_t - he_{t-1})$$

Adding the effect of relative price in lagged form on the level

---

[5]See L.Kyock, Distributed Lags and Investment Analysis (Amsterdam: North-Holland Inc., 1954), pp. 25-45.

of exports and the constant variable, equation (8) becomes

$$(9) \quad X_t = b_0 + b_1 Y_t + b_2 (P_1/P_2)_t + hX_{t-1} + (e_t - he_{t-1})$$

If $(e_t - he_{t-1})$ satisfies the classical assumptions, this model becomes a straight regression model.

However, the suitability of a geometrically decaying lag structure of income and relative prices is open to criticism. It seems reasonable that adjustments to a price change would build up slowly rather than decay. Therefore, it may be useful to consider the somewhat more general approach for the relative price lag structure, attributable to Jorgenson.[6] According to Jorgenson, if we include lagged values of the explanatory variables and additional lagged values of the dependent variables, we can produce a very general lagged response, Accordingly, the export equation

$$(10) \quad X_t = a_o + b_o Y_t + b_1 (P_1/P_2)_t + c_o Y_{t-1} + c_1 (P_1/P_2)_{t-1} + hX_{t-1}$$

allows the current coefficients to be completely free, while all lagged responses form a geometrically declining series governed by the adjustment coefficient h. Clearly the multicollinearity has been mitigated as a result.

If we substitute index of industrial production (IP) for income (Y) and allow the one-period lagged coefficients to be completely free, while the lagged response of all other periods form a geometrically declining series represented by the adjustment coefficient h, then equation (10) becomes,

$$(11) \quad X_t = a_o + b_o IP_{t-1} + b_1 (P_1/P_2)_{t-1} + c_o IP_{t-2} + c_1 (P_1/P_2)_{t-1} + hX_{t-1}$$

---

[6] D.W. Jorgenson, "A Rational Distributed Lag Function," Econometrica, Vol. 32 (January, 1966), pp. 135-149.

The Regression Results

The forecasting equation (11) is fitted to the 1960I to 1967II period using quarterly data. The estimated equation below is chosen because it gives the most satisfactory results. R^2 denotes the multiple coefficient of determination, and S the standard error of the regression. The standard errors of individual coefficients are listed in paranthesis below the corresponding coefficients. For the sources of data, consult Appendices 1 and 2.

$$(12)\quad X_t = \underset{(22.922)}{914.933} + \underset{(1.815)}{2.389}\ IP_{t-1} - \underset{(215.402)}{580.246}\ (P_1/P_2)_{t-1} +$$

$$\underset{(1.587)}{1.921}\ IP_{t-2} - \underset{(182.209)}{209.681}\ (P_1/P_2)_{t-2} + \underset{(0.228)}{0.307}\ X_{t-1}$$

$R^2 = 0.95$ Durbin-Watson statistic = 1.57 S= 4.8

The results conform well to a priori expectations: the value of R^2 is statistically significant, and the standard error of the equation is statistically small. In addition, the signs of the individual coefficients are all internally consistent and in accord with the theoretical arguments presented in Chapter II.

Our results confirm the importance of lagged effects which we postulated in the theoretical chapter. The unusual finding of a significant lagged effect of the relative price variable on the price level of exports sheds some light on the current literature on the international price adjustment mechanism. A brief survey of past empirical studies in the area will help us understand better the significance of these findings.

Klein, by using a simultaneous model, found in only one of the estimated equations, that of the United Kingdom's exports to the dollars areas, could the relative price elasticity be considered of the right sign and statistically significant.[7] Polak worked with 25 countries for the interwar period and found only thirteen countries' export equations with price elasticities of substitution with proper signs but with insignificant elasticities.[8] Neisser and Modigliani found relative prices significant in ten out of thirty-seven cases, with elasticities ranging from -0.19 to 1.2.[9] Junz and Rhomberg found a wrong sign of elasticity of substitution between exports of Britain and other industrial countries.[10] Reton estimated the relationship between the value of United Kingdom manufactures exports and relative prices but found it insignificant.[11] Ball, Eaton, and Steur found relative prices insignificant in their studies of United Kingdom exports.[12]

---

[7]Klein, op. cit., pp. 126-128.

[8]J.J. Polak, An International Economic System (London: Allen and Unwin, Inc., 1954), pp. 157-169.

[9]Hans Neisser and Franco Modigliani, National Income and International Trade (Urbana: University of Illinois Press, 1953), pp. 100-120.

[10]H.B. Junz and R.R. Rhomberg, "Prices and Export Performance of International Countries, 1953-63," International Monetary Fund Staff Papers, Vol. 12 (July, 1965), pp. 224-271.

[11]G.A. Renton, "Some Projections for United Kingdom Exports on Manufactures," National Institute Economic Review No. 37 (August, 1966), pp. 25-36.

[12]R.J. Ball, J.R. Eaton, and M.D. Steur, "The Relationship Between United Kingdom Export Performance in Manufactures and the Internal Pressure of Demand," Economic Journal, Vol. 76 (September, 1966), pp. 501-518.

Our findings indicate that if lagged effects are considered, the whole picture changes. Price effects become significant. Our findings also demonstrate that the empirical evidence supports the theoretical arguments of both relative-prices and income-absorption approaches presented in Chapter II.

One of the purposes of the estimated regression equation is to estimate the impact of the various regressors on regressand. In the next section, we will estimate the effect of devaluation on the level of exports using equation (12).

The Effect of Devaluation on the Level of Exports

Our approach is to use the estimated regression equation (12) to forecast what exports would have been in the absence of devaluation. The effectiveness of the devaluation is thus analyzed in terms of the residuals which appear between predicted and actual exports.

The residuals are obtained by inserting the actual values of the explanatory variables on the right-hand side of the equation assuming that the 1967 price ratios would hold in the forecast period. Thus, we obtain the level of exports expected in the absence of devaluation in the various quarters. By subtracting the expected level from the actual level of exports, we measure the impact of devaluation on exports. The results are given in Table 7.

As the figures show in Table 7, the British exports rose around 5 percent which was attributed to the effect of devaluation, in 1968. These estimated values are close to those forecasted by

TABLE 7

THE ACTUAL, PREDICTED, AND RESIDUAL VALUE FROM THE EXPORT FUNCTION OF THE UNITED KINGDOM, 1967I TO 1969IV
(Seasonally adjusted, quarterly data, £mm, 1958 price)

Year		Actual Value	Predicted Value	Residuals
1968	I	1,221.0	1,094.7	126.3
	II	1,223.0	1,191.3	31.7
	III	1,336.0	1,193.4	142.6
	IV	1,365.0	1,239.5	125.5
1969	I	1,342.0	1,263.7	78.3
	II	1,413.0	1,269.2	143.8
	III	1,467.0	1,316.3	99.7
	IV	1,487.0	1,352.6	134.4

Source: Computed from Equation (12). For Date Consult Appendix I.

National Institute Economic Review before devaluation.[13] The rise of exports was about 8.5 percent in 1969 which was lower than expected. A possible explanation is that the underlying ability to export was deteriorating rather sharply just before devaluation. The more serious any such deterioration, the lower exports should be without devaluation and thus the larger would any corresponding devaluation effects have to be to offset it.

[13]National Institute of Economic and Social Research, National Institute Economic Review, No. 43 (February, 1968), p.33.

Now let us look at the United Kingdom share of trade after devaluation. As indicated in Table 8, the United Kingdom share of the trade had resumed its slightly downward trend in 1969 after a period of relative stability in 1968. Nevertheless, the total annual decline after devaluation was the smallest since 1961. This implies that price advantages have played some role in offsetting the deterioration.

TABLE 8

UNITED KINGDOM SHARE OF WORLD EXPORTS OF MANUFACTURES
(Seasonally adjusted)

Year	I	II	III	IV	Year
1967	12.8	12.2	12.4	10.4	12.2
1968	11.6	11.3	11.2	11.2	11.3
1969	11.2	10.9	11.4	11.2	11.2

Source: National Institute of Economic and Social Research, National Institute Economic Review, No. 52 (May, 1970), Appendix, Table 20.

Disaggregated Exports by Commodity and Area

Having examined the exports of United Kingdom after devaluation in aggregate term, we now turn to look at the disaggregated exports. As Table 9 shows, the 18.1 percent rise in textiles exports was the highest, whereas the 11.1 percent increase in the metal goods exports was the lowest in 1968. Nevertheless, in 1969 machinery export rose 12.4 percent compared to a 5 percent rise in metal goods, which was the lowest. The commodity

TABLE 9

UNITED KINGDOM EXPORTS, BY COMMODITY, 1966-69
(Volume index, 1963 = 100)

Category	1966	1967	1966-67 Percentage Increase	1968	1967-68 Percentage Increase	1969	1968-69 Percentage Increase
Manufactures							
Chemicals	123	131	6.5	150	14.5	163	8.7
Textiles	96	93	-3.1	108	16.1	120	11.1
Metal goods	105	108	2.8	120	11.1	126	5.0
Machinery (Transport & Equipment	112	105	-6.2	121	15.2	136	12.4
Others	122	124	1.6	144	16.1	170	18.1
Total	107	111	3.7	127	14.4	142	11.9
Non-Manufactures	107	109	1.9	126	6.4	129	2.4

Source: Calculated from: National Institute of Economic and Social Research, National Institute Economic Review, No. 51 (February, 1970), Statistical Appendix, Table 16.

TABLE 10

UNITED KINGDOM EXPORTS BY AREA, 1966-69
(Seasonally adjusted, £million)

Country	1966	1967	1966-67 Percentage Increase	1968	1967-68 Percentage Increase	1969	1968-69 Percentage Increase
United States	624	616	-1.28	880	42.80	872	-0.91
Canada	200	216	-1.80	260	22.60	300	15.30
EEC	956	964	0.88	1196	24.50	1412	18.60
EFTA	740	760	3.24	856	12.60	1040	21.50
Other Sterling Area	1588	1528	-3.77	1760	15.20	1984	12.70
Other Primary Goods Producers	508	512	0.79	600	36.70	824	17.70
Eastern Europe	148	168	13.50	224	33.30	228	1.78
Total Industrial Countries	2800	2820	0.71	3500	24.20	4004	14.40

Source: National Institute of Economic and Social Research, National Institute Economic Review, No. 51 (February, 1970), Statistical Appendix, Table 16.

classifications (not in Table 9) which experienced particularly large proportionate rises were road vehicles and miscellaneous manufactures.

In terms of destination, it appears that the largest increase of exports in 1969 was to Japan, France, and to the nations of the European Free Trade Area. Exports to Ireland and Mainland China had a large rise as well. However, exports to Eastern Europe and Austria remained unchanged, and there was a fall in exports to the United States, whose fight against domestic inflation required the reduction of imports. The decline was also associated with the American dock strike, anticipation of which drew exports into 1968 which otherwise would have been recorded in 1969.

The Effect of Devaluation on the Export Prices

As we pointed out in Chapter II, it is to be expected that export prices would rise as a result of devaluation. In this section, we investigate the magnitude and the causes of the rise of export prices after devaluation. Export prices have risen for several reasons.[14] First, the abolition of the export rebate at the beginning of April, 1967 (about 2 percent) caused export prices to rise. Second, the direct rise in costs resulting from the increase in import prices (about 2.5 percent) also had an effect. Finally, there was some rise in wage costs over and above the increases which would otherwise have taken place. All this led export costs to rise by about 7 percent. In addition a number of

---

[14] National Institute of Economic and Social Research, National Institute Economic Review, No. 42 (November, 1967), p. 6.

TABLE 11

INCREASE IN EXPORTS PRICES OF THE UNITED KINGDOM AND THE EFFECT OF DEVALUATION
(Percent, 1967 to 1968)

	Actual Increases: January-September on Average of 1967		
	Total Actual Increase	Of which, Attributed to	
		Normal Factors	Devaluation
Chemical	6.0	1.0	5.0
Textiles	2.5	1.0	1.5
Metals	9.5	7.0	2.5
Machinery and Transport Equipment	7.8	2.0	5.8
Other Manufactures	10.0	1.5	8.5
Total Manufactures	7.5	1.5	6.0
Non-Manufactures	5.0	-1.0	6.0
Total Exports	7.3	1.5	5.8

Source: National Institute of Economic and Social Research, National Institute Economic Review, No. 46 (November, 1968), p. 21.

export firms raised profit margins instead of reducing their prices. In fact, quite a number took the view that price reductions, in foreign currency terms, would not increase demand, and it would be rational for them to raise their prices in sterling by the full amount of devaluation. This also raised the export prices by another 2 percent. Altogether, export prices rose about 9 percent above the level they would otherwise have reached.

This gives an eventual net advantage over prices in non-devaluing countries of about 5 to 6 percent (subtracting the estimated 9 percent rise in export prices from the devaluation advantage of 14.3 percent). This is consistent with the figure shown in Table 11.

Analysis of Export Performance

The objective of this section is to examine the changes in the competitiveness of United Kingdom exports since devaluation.

It is not surprising that in the immediate aftermath of the devaluation the United Kingdom share of trade in value terms of foreign currency declined even faster than before. This is due to the fact that the export prices are expected to fall in terms of foreign currency after devaluation. However, before long gains would be made in the quantity of exports which would be more than sufficient to outweigh the effects of lower prices.

In fact, some of these expectations appeared to have been fulfilled. The fall in the United Kingdom's share of trade in value in the year after devaluation was steep. As is shown in Tables 8 and 12, the share of British manufactures declined from 11.5 percent in 1967 to 11.3 percent in 1958 and 10.8 percent in 1969.

A Comparison of Export Performances of the OECD Devalued Countries

In the case of the United Kingdom, in the first year after devaluation the benefits were few. The five OECD members which devalued in 1967, all but Spain have a poorer performance in terms

TABLE 12

VOLUME OF WORLD AND UNITED KINGDOM EXPORTS OF MANUFACTURES, 1956-68
(Value in $U.S. billion at 1963 price)

Year	World	U. K.	U. K. Share
1956	43.0	8.3	19.3
1957	46.0	8.5	18.6
1958	45.2	8.2	18.1
1959	49.1	8.5	17.2
1960	55.1	9.0	16.3
1961	57.1	9.2	16.1
1962	61.0	9.3	15.2
1963	65.6	9.8	14.9
1964	73.8	10.2	13.8
1965	80.9	10.7	13.3
1966	88.0	11.1	12.6
1967	93.2	10.7	11.5
1968	108.3	12.2	11.3
1969	134.6	14.6	10.8

Source: United Nations, Monthly Bulletin of Statistics Vol. 26 (December, 1970).

TABLE 13

EXPORT PERFORMANCE, 1962-69, OF OECD COUNTRIES WHICH DEVALUED IN 1967

Country	Total Output				Annual Rate of Rise (percent)			$Billion Share in Total Exports of OECD Countries (percent)			
	1962	1967	1968	1969	1962-67	1967-68	1968-69	1962	1967	1968	1969
Denmark	1.63	2.47	2.58	2.91	10.3	4.2	14.7	1.82	1.74	1.62	1.58
Iceland	0.08	0.10	0.08	0.11	5.0	-15.4	37.5	0.09	0.07	0.05	0.06
Ireland	0.49	0.78	0.80	0.89	11.8	3.1	11.2	0.55	0.55	0.51	0.42
Spain	0.73	1.38	1.58	1.90	17.8	14.5	20.3	0.82	0.93	0.92	1.03
U. K.	11.06	14.38	15.38	16.52	6.0	6.8	7.4	12.46	10.23	9.59	9.42
Total OECD Countries	88.82	140.67	158.72	183.30	11.7	12.7	15.5	100.00	100.00	100.00	100.00

Source: Calculated from: Organization for Economic Cooperation and Development Main Economic Indicators, April, 1970.

of export shares after devaluation than before. In fact, not merely their exports in value have risen more slowly than before, but at the same time the rate of increase in the value of total OECD exports has accelerated, as shown in Table 13. The fact that the exports of these countries, other than the United Kingdom, have a high agricultural content may detract from the relevance of this comparison. It is nevertheless striking.

Summary

In this chapter we have found that the movement of United Kingdom exports is statistically correlated with the movement of world income, which is measured by the index of world industrial production.

Our analysis of the impact of relative-prices on exports confirms the importance of lagged effects which we postulated in the theoretical chapter. The unusual finding of the significant effects of relative prices on the level of exports sheds some light on the current empirical literature on the international price adjustment mechanism. Our findings indicate that if lagged effects are considered, the whole picture of past empirical studies could be different.

Our findings also demonstrate that empirical evidence supports the validity of the theoretical arguments of both the relative-price and income-absorption approaches presented in Chapter II.

Our estimated figures indicate that the effect of the devaluation on British exports was to increase exports by 4.5 percent in 1968 and by 8.5 percent in 1969, both of which are not very encouraging results. The explanation of the moderate increases in

exports is that the underlying ability to export was deteriorating rather sharply just before devaluation. The more serious the deterioration, the larger the corresponding devaluation effects have to be to offset it.

Our study, however, finds that the share of trade of United Kingdom resumed a slight downward trend in 1969 after a period of relative stability in 1968. The total decline in the share of trade after devaluation was, however, the smallest since 1961. The serious deterioration of exports before devaluation could cause a worse balance of trade without devaluation. This implies that price advantage has played some role in offsetting the deterioration.

Having investigated the effect of devaluation on exports, in the next chapter we will take up the empirical study of imports.

CHAPTER V

THE EFFECT OF DEVALUATION ON IMPORTS

By using the same method as in the previous chapter, this chapter attempts to evaluate empirically the effect of the 1967 devaluation on British imports. Using the economic theory of Chapter II, an aggregate import function is estimated both to test the general validity of the theory of imports and to measure the impact of the devaluation on imports. A verbal disaggregate analysis supported by numerical data is included in the second part of this chapter.

The Import Function

In Chapter II, we indicated that imports are a function of the prices of the home country relative to the prices of other countries and income of the home country. As we indicated earlier, we postulated an import function in which the regressand responds to changes in the explanatory variables with a delay. We further postulate two additional determinants of imports--the level of domestic demand and the changes of stockbuilding--each of which is explained below. We then have the following equation in general lagged terms:

$$(1)\quad M_t = F(Y_t, Y_{t-1}, \ldots Y_{t-n}, P_1/P_{2_t}, P_1/P_{2_{t-1}}, \ldots P_1/P_{2_{t-n}},$$

$$\Delta S_t, \Delta S_{t-1}, \ldots \Delta S_{t-n})$$

where M: imports of the United Kingdom,

Y: income of the United Kingdom,

P_1: the domestic price level of the United Kingdom,

P_2: the price of imports from the other countries,

ΔS: inventory changes

t: time

Following the Godley-Shepherd study,[1] we break down imports in equation (1) into imports geared to domestic demand activity (M_1) and imports for stockbuilding purposes (M_2). For M_1, the first problem is the choice of explanatory variables. On the basis of the economic reasoning given in Chapter II, we first must consider whether indicators of total economic activity, such as gross national product; indicators of total sales, such as personal consumption expenditures, or possibly a mixture of consumption and income indicators should be used.

As a first step, let us take private consumption expenditures as our indicator of domestic demand activity. Then we shall later determine whether significant improvements can be made by using a more extensive set of explanatory variables. This method is, of course, a rough first approximation, but it may be justified on two grounds: first, the importance of consumption as the major component of economic activity and; second, the fact that decision makers in other fields often appear to base their forecasts on improvements in consumption. We then postulate

---

[1] W.A.H. Godley and J.R. Shepherd, "Forecasting Imports," National Institute Economic Review, No. 33 (August, 1965), pp. 35-42.

$$(2) \quad M_{1t} = f(C_t, C_{t-1} \ldots C_{t-n}, P_1/P_{2_t}, P_1/P_{2_{t-1}} \ldots P_1/P_{2_{t-n}})$$

where C_t indicates the level of private consumption expenditure in period t, P_1/P_{2_t} indicates the price in the home country relative to the other countries.

Using the simplest possible form of relationship between imports and current consumption expenditures and relative prices, we have:

$$(3) \quad M_{1t} = a_o + a_1 C_t + a_2 (P_1/P_2)_t + u_t$$

where u_t is the residual term. If a_o were negative, imports would be an increasing proportion of consumption expenditure, and if a_o were positive, they would be a decreasing proportion.

Since combining equation (3) and equation (5) gives the most satisfactory results in our experiments with various lagged terms, we decide to stick to the combination.

Now let us look at M_2. The stock-building element in imports will be geared to changes in inventories:

$$(4) \quad M_{2t} = b_o + b_1 (S_t^* - S_{t-1})$$

where S_t^* denotes the desired inventory for the end of quarter t and S_{t-1} the actual level at the end of quarter (t-1).
The desired level of inventories is of course unknown, and we can deal with the problem simply be substituting

$dS_t = (S_t - S_{t-1})$ for $S_t^* - S_{t-1})$ in the econometric analysis, which amounts to assuming that

$$(5)\quad dS_t = (S_t^* - S_{t-1}) + e_t$$

with $E(e_t) = 0$. The actual inventory is thus assumed to vary randomly about the desired change.

Adding M_1 and M_2, we obtain the following equation:

$$(6)\quad M_t = a_o + a_1 C_t + a_2 (P_1/P_2)_t + a_3 \Delta S_t + e_t$$

The Regression Results

The forecasting equation (6) has been fitted for the 1960I to 1967III period. The estimated equation is presented below:

$$(7)\quad M = -825.3490 + 0.3778\ C + 317.1087\ (P_1/P_2) + 0.3974\ \Delta S$$
$$\qquad\qquad (278.4215)\quad (0.0457)\qquad 361.4522)\qquad\qquad (0.2155)$$

$R^2 = 0.89$ Durbin-Watson statistic = 1.84 S = 7.13

The estimated equation is chosen on the basis of the magnitude of R^2 and the standard error of the estimate of the regression and individual coefficients.

The statistical results confirm well to a priori expectations. The value of R^2 in the equation is statistically significant, and the standard error of estimate is statistically small. In addition, the signs of the individual regression coefficients are all internally consistent and all significant except for the relative price variable. It follows that gross national product, personal consumption, and inventory changes are significant determinants of imports in the case of Britain.

As to the lack of importance of relative price changes, our findings are not inconsistant with those obtained by other investigators. J. Johnston and H. Henderson failed to estimate a significant relationship between the value of United Kingdom imports and relative-prices.[2] Polak found that for some two dozen countries in the interwar years, imports variations were not significantly determined by relative prices.[3] Neisser and Modigliani, even though they broke down the import statistics into major commodity groups, found prices to be significantly related to imports in only three out of 19 cases.[4]

We also compute the price elasticity using the formula, $dM/d(P_1/P_2) \cdot (P_1/P_2)/M$, from this estimated equation. Our estimated price elasticity is 0.24, which is close to that estimated by Neisser and Modigliani.[5]

It may be helpful to attempt to explain the lack of importance of price substitution in the imports of the United Kingdom. In the demand for raw materials, and food, there is very little room for substitution between imported and domestically produced goods, therefore, the elasticity of substitution is low.

---

[2]J. Johnston and H. Henderson, op. cit.

[3]Polak, op. cit.

[4]Neisser and Modigliani, op. cit.

[5]Ibid.

The Effect of Devaluation on the Level of Imports

As indicated in the preceding chapters, the residuals are obtained by inserting the actual values of the explanatory variables in the right-hand side of the equation (7), assuming that the 1967 values of the price ratio would hold in the forecast period. Thus, we obtain the level of imports to be expected in the absence of devaluation in the various quarters. By subtracting the expected level from the actual level of imports, we measure the impact of devaluation on imports. The residuals are given in Table 14 below:

TABLE 14

THE ACTUAL, PREDICTED, AND RESIDUAL VALUES FROM THE IMPORT FUNCTION OF THE UNITED KINGDOM 1967I TO 1969 IV
(Seasonally adjusted, quarterly data, £mm, 1958 price)

Year		Actual Value	Predicted Value	Residuals
1968	I	1,643.0	1,477.9	165.1
	II	1,624.0	1,456.0	165.0
	III	1,645.0	1,449.1	195.9
	IV	1,655.0	1,516.9	138.8
1969	I	1,650.0	1,489.2	160.8
	II	1,652.0	1,474.8	177.2
	III	1,659.0	1,473.5	185.5
	IV	1,663.0	1,561.1	101.9

Source: Calculated from Equation (7)

The figures shown in Table 14 carry no indication of an immediate effect on imports in the two years after devaluation. Imports did not slow down because of devaluation, but increased strongly. As a result, the residuals obtained from equation (7) have the wrong sign. This can be explained by the fact that the relative price variable is not a significant determinant of British imports. The lower elasticity of imports with respect to relative price (only 0.24) furnishes a further explanation. As we discussed in Chapter II, devaluation may increase the local-currency value of imports if elasticity of demand for imports is less than one. Consequently, devaluation did not reduce British imports. This obviously, is due to the fact that the United Kingdom imports quite a lot of raw materials which can not be produced domestically.

The figures in Table 14 indicate that the level of imports exceeded expectations partly because of the growth of final demand in equation (7), but further analysis suggests that the rise in the volume of imports was excessive in relation to the rise in demand, and this implies that additional explanations must be sought. Some may be termed 'special factors' explanations--abnormal increases in silver and diamond imports, the effect of the 1967 dock strike and speculative stock accumulation.

In addition, the effect of devaluation on imports may have been smaller than it had been conventionally assumed, or the underlying import propensity may have undergone a sturctural change. Some combination of all these possibilities may make up the full explanation.

The kind of equation which was used with some success in this study and others in the past to measure the aggregate propensity to import still gives significant underestimation of import volumes even before any devaluation effect is incorporated. The amount of underestimation involved seemed to have begun to diminish very slightly during the course of 1969, being due to a noticeable slackening in the rate of growth of the volume imported in 1969.

In the past, this kind of approach was quite compatible for evaluating the impact of either devaluation or import surcharge. The main reasons for the slower growth in imports can be found in the slower growth of final demand, and, at least in the second half of the year, in the marked decline in stockbuilding.

The Disaggregate Analysis

Devaluation on November, 1967, was followed by a series of policy changes designed to restrain domestic expenditures. These other policies would also have an impact on imports. The estimation in the previous sections was made by using the certeris paribus assumption. We will take this into consideration in the next chapter. However, it is worthwhile to examine the disaggregated import data, particularly for imports of goods, to see whether these provide any explanation in 1968.

Among the imported goods in the 1967-68 period, as shown in Table 15, the most marked increases were in basic materials (10 percent) and even noticeably in semi-manufactured goods (13 percent), where the relevant indicators of demand for such products--industrial and manufacturing production--rose by 4.5 percent and over 5 percent,

respectively. Even food imports rose by the comparatively large amount of 13 percent, against a rise in consumer's expenditure on food of 3 percent.[6] In total, the volume of imports of goods in the year after devaluation increased by 9 percent or well over 5 points faster than the growth in GDP.

Analysis of commodity groups suggests that a certain proportion of the total rise in imports can reasonably be attributed to the influence of 'special factors.'

The rise in the food, beverages, and tobacco category was caused by an increase in tobacco imports (up by 18 percent), which presumably reflected a massive replenishment of stocks following the earlier rundown after the Rhodesian crisis. The rise in food imports was also due to the 'Hangover' of the 1967 dock strikes and to the poor 1967 harvest.[7]

In basic materials, the rise in fuel imports owed something to the restoration of stock positions as hopes of an early opening of the Suez Canal faded and the use of giant tankers made alternative routes round the Cape of Good Hope less expensive.

In the semi-manufactures groups, imports of silver and platinum, and of diamonds, pearls, and precious stones accounted for 30 percent of the £ 520 million additional imports.[8]

---

[6]National Institute of Economic and Social Research, National Institute Economic Review, No. 47 (February, 1969), pp.13-16.

[7]Ibid.

[8]Ibid.

TABLE 15

THE VOLUME OF UNITED KINGDOM COMMODITY IMPORTS BY MAIN CATEGORY, 1967-68
(Indices, 1961=100, and percentage change on previous quarter, seansonally adjusted)

Category	1967				1968				1967	1968
	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Year	Year
Food, etc.	105	108	102	102	113	105	105	106	104	107
Percentage change		2.9	-5.6	--	10.8	-7.1	1.0			3.0
Basic Material	97	102	102	105	109	112	112	111	102	111
Percentage		5.2	--	2.9	3.8	2.8	--	-0.9		9.5
Fuels	172	158	153	181	165	178	180	185	166	177
Percentage change		-8.1	-3.2	18.3	-8.8	7.9	1.1	2.8		6.6
Manufactures	164	167	157	172	186	178	189	188	165	203
Percentage		1.8	-6.0	9.6	8.1	-4.3	6.2	-0.5		12.3
Semi-Manufactures	159	162	151	164	179	174	189	185	159	182
Percentage		1.9	-6.8	8.6	9.1	-2.8	8.6	-2.1		14.3
Finished Manufactures	190	194	184	203	217	203	208	213	193	210
Percentage change		2.1	-5.2	10.3	6.9	-6.5	2.5	2.4		9.8
Total Imports	132	133	127	134	144	141	144	144	132	143
Percentage change		0.8	-4.5	5.5	7.5	-2.1	2.1	--		9.3

Source: National Institute of Economic and Social Research, National Institute Economic Review, Vol. 47 (February, 1969), p. 16.

TABLE 16

CHANGES IN THE UNITED KINGDOM IMPORTS BY MAIN COMMODITY GROUP, 1968-69
(Seasonally adjusted)

	1968	Change on Previous Period				
		1969	Q_1	Q_2	Q_3	Q_4
Food, beverages and tobacco						
Value £ million	+138	+34	+7	+25	-33	+ 3
per cent	+ 8	+ 2	+2	+ 5	- 7	+ 1
Volume per cent	+ 3	- 4	-3	+ 6	- 6	- 2
Basic Material						
Value £ million	+195	+47	--	+ 1	+ 6	- 1
per cent	+ 19	+ 4	--	--	- 1	+ 1
Volume per cent	+ 10	- 3	-1	- 2	- 1	+ 1
Fuels						
Value £ million	+172	+ 9	+3	-20	- 2	+18
per cent	+ 24	+ 1	+2	- 9	- 1	+ 8
Volume per cent	+ 6	+ 7	+4	- 6	--	+10
Manufactures						
Value £ million	+828	+324	-17	+52	+39	+29
per cent	+ 30	+ 9	-2	+ 6	+ 4	+ 3
Volume per cent	+ 14	+ 5	-2	+ 5	+ 2	+ 1
Total Imports						
Value £ million	+1314	+384	--	+57	+13	+39
per cent	+ 20	+ 5	--	+ 3	+ 1	+ 2
Volume per cent	+ 9	+1.5	-1	+ 2	--	+ 1

Source: National Institute of Economic and Social Research, National Institute Economic Review, Vol. 51 (February, 1970), p. 13.

The rise in the volume of finished manufactures is more puzzling, for it is in this category that the devaluation response could have been expected to be most powerful, and where it was hoped that the substitution of domestically produced goods would occur.

There are certain considerations on the other side. First, the only group actually to show a substantial fall between the first and last quarters of the year was food and tobacco; the decline in finished manufactures was minimal, and in total manufactures there was a small rise. This pattern is the reverse of what might have been expected. Second, as already noted in connection with the behavior of finished manufactures, the level of the first quarter of 1968 was unusually high, following big increases both in that quarter and the previous one. Thus in the second half of 1968 total manufactures were some 14 percent above the average of 1967. But while the plateau in the level of imports might be ascribed, with these reservations, to the slow working of devaluation, the level of that plateau has still to be accounted for. An alternative explanation is that they were the result of both other factors and an increase in the propensity to import. Such an explanation would be consistent with that suggested, more tentatively, in the case of exports; so that in both cases a rather sudden deterioration in underlying competitiveness could be assumed to have taken place. If this is right, then the original devaluation expectations have been disappointed because they failed to foresee a sharp deterioration in the underlying situation, which had been demonstrated in the sharp rise of the domestic price level during 1967.

Disaggregation of the import bill is of little help in suggesting any positive conclusion; but it clarifies the record for 1968. Table 16 sets out the main volume and volume change by broad category of imports both for the whole years 1968 and 1969, and for the separate quarters of 1969. It shows that the restrained rise in the total volume of goods imported in 1969 was associated with falls of 4 and 3 percent respectively, in two major categories (foods, beverages and tobacco, and basic materials), which were not thought particularly sensitive to devaluation. Fuels grew by 7 percent and manufactures by 5 percent. The latter rate of growth is certainly below the coverage of recent years since 1966, although not particularly abnormal in relation to earlier years of relatively slow, or, as in 1958, zero growth.

Price changes more or less cancelled the sharp rise in the volume of fuel imports, and also largely offset the volume falls in food, beverages and tobacco, and the basic materials. In the case of manufactures, the volume rise was complemented by price increases, so that manufactured imports accounted for all but one-fifth of the rise in the total value of goods imported in 1969.

Summary

In summary, income and changes of stockbuilding mainly determine the British imports. As to the lack of importance of relative price changes, our finding is not inconsistent with those obtained by other investigators. The insignificant relative price variable and the lower elasticity of import with respect to price furnishes the explanation for the rise in imports after devaluation.

We have found that the level of imports rose between 1967 and 1968 by substantially more than would have been expected on the basis of past regression relationships. This either leaves no room for any response to devaluation or it implies that the devaluation response was overwhelmed by a rise in the propensity to import and by special factors; and it must also include some arbitrariness. The point of putting down actual figures is not to pretend to precision in projection where there can be none, but to try to set out the judgments which underlie the estimate.

There is some evidence that special factors inflated the import bill, and some reason to believe that unrecorded stockbuilding was large; there is also some reason to think that original expectations have been over-optimistic, and cause to suppose that underlying British import competitiveness declined sharply during 1967 and early 1968.

Despite the marked decline in import growth on the basis of the results of 1969, it is still impossible to say whether devaluation has begun to exert any significant effects on imports of Britain. It is not defensible on econometric grounds, nor can we, with the statistical techniques at our disposal, disern a significant devaluation effect on imports.

CHAPTER VI

THE GENERAL ECONOMIC EFFECT OF DEVALUATION

Using the regression analysis in Chapters V and VI, we evaluated empirically the effects of 1967 devaluation on British exports and imports. In the meantime, we tested the general validity of both theories of price and income approaches to devaluation and found their arguments generally true. But the conclusions hold only if it is assumed that other things are equal. In fact, devaluation in November, 1967, was followed by a series of policy changes designed to restrain domestic expenditures. Of course, we realize that it is difficult to isolate the effects of these other policy changes which were undertaken simultaneously with devaluation. Nevertheless, we will discuss these other polciy changes separately in this chapter in an attempt to examine the direct effect of devaluation on absorption and in turn on balance of trade. In addition, an assessment of the cost of devaluation will also be included in this chapter.

The Income-Absorption Analysis of Devaluation

Measured in real terms, an improvement in the balance of trade is similar to a reduction in absorption under the condition of full employment.

As Table 18 shows, of the £252 million by which the trade balance in constant prices was improved in the 1967-68 period,

£243 million was made available by increased output not absorbed by consumption, government expenditure on goods and services, and capital formation.[1] The remaining £ 9 million came out of changes in inventories from £169 million in 1967 to £160 million in 1968.

TABLE 17

UNITED KINGDOM GROSS DOMESTIC PRODUCT
IN CONSTANT (1963) PRICE,
1967-68, 1967-69
(Pound million)

	1967	1968	1969
Consumer's expenditure	22,039	22,562	22,620
Government expenditure	5,825	5,851	5,815
Gross domestic fixed investment	6,525	6,791	6,619
Changes in stocks	169	160	302
Exports of goods and services	6,564	7,321	7,968
Imports of goods and services	-7,104	-7,609	-7,767
Total GDP	34,018	35,076	35,557

Source: Organization for Economic Cooperation and Development, Main Economic Indicators (Paris: OECD), 1968, 1969, 1970.

[1]The £252 million trade balance of 1968 is obtained by the increase of exports (7,321-6,564) minus the increase of imports (7,609-7,104) in the 1967-68 period. For data consult Table 17. Alternatively, this can be computed by the income-absorption formula: total product minus total expenditures (personal consumption expenditure + public expenditure + fixed capital formation) ± change in stocks. For example, in the 1967-68 period, 1,058 - (523 + 26 + 266) + 9 = 252. For figures, consult Table 18.

TABLE 18

CHANGES IN COMPONENTS OF GROSS DOMESTIC PRODUCT OF UNITED KINGDOM BETWEEN, 1967 AND 1968, 1967 AND 1969
(Pound million)

	1967-68		1967-69
Total gross domestic product	+1,058		+1,539
Consumption	+523	+581	
Public expenditure	+ 26	- 10	
Fixed capital formation	+266	+ 94	
Excess of increase of total domestic expenditure over increase of consumers and public expenditures, and fixed capital formation	243		874
Changes in stocks	- 9		+ 133
Trade balance (Exports - Imports)	252		741

Source: Rearrangement of Table 17.

By the same token, in the 1967-69 period, of the £741 million by which the trade balance (in constant prices) was improved, £874 million was made available by increased output not absorbed by personal consumption, government expenditure in goods and services, and capital formation. But this amount was drawn down to £741 million by an increase in inventories of £133 million from £169 million in 1967 to £302 million in 1969, as shown in Table 17 and Table 18.

The improvement in the trade balance, in constant prices, in the 1967-68 period was brought about by an increase of exports of £ 757 million (which is obtained by subtracting £6,564 million from £7,321 million), while imports increased by £505 million (which is obtained by subtracting imports of 1967, £7,104 million from imports of 1968, £7,609 million). By the same token, the improvement in constant prices during the 1967-69 period was brought about by an increase of exports of £1404 million, while imports increased by £663 million.

Internal Financial Policy

From the preceding section, we find the improvement of the balance of trade in both the 1967-68 and 1967-69 periods was brought about, to some extent, by the reduction in public expenditure. This implies that the internal policies might have played some role in improving the balance of trade. In this section, we attempt to examine the effects of the internal policy changes which were undertaken simultaneously with devaluation.

Devaluation on November 18, 1967, was followed by a series of policy changes designed to restrain domestic expenditures and to make room in the economy for a new phase of export-oriented growth. Measures to shift resources from domestic use toward improvement of the current foreign balance were taken in four stages.[2]

In November, 1967, at the time of devaluation, the bank rate was raised to 8 percent, and banks were requested to hold

---

[2]Organization for Economic Cooperation and Development Economic Outlook, No. 3 (July, 1968), pp. 81-82.

loans at the then existing levels. At the same time, certain measures to become effective in fiscal 1968-69 were announced, including a £200 million cut in public expenditure plans, withdrawal of the selective employment tax premium from all manufactures outside the development area, and abolition of the export rebate.

In January, 1968, further cuts in public expenditure plans of £300 million in 1968-69 and £416 million in 1969-70 were announced.

In March, 1970, the budget-imposed tax increase was estimated to yield more than £900 million in a full year. The measure mainly affected indirect taxes and the corporation tax; the standard rate of income tax remained unchanged. Taking account of higher family allowances, the net increase in taxation amounted to £840 million. The impact on demand was estimated to amount to an annual rate of £500-600 million by the end of 1968.

In May, 1970, the ceiling on bank advances was extended to cover all lending to the private sector, including exports.

Direct Effects of Devaluation on Absorption

As we discussed in Chapter II, effects of devaluation on the balance of trade which are not associated with changes in income but with changes in the absorption of given income

are called direct effects on absorption.

The magnitude of direct effects of devaluation on absorption depends on the extent of the rise in price level, which reduces the real demand for goods and services (1) through its effect on real liquid assets, (2) through the redistribution of income from fixed-income groups to wage-and-profit earners, (3) or through progressive taxation--as income rises in monetary terms the real burden of taxation becomes higher. Insofar as the government spends no extra revenue but accumulates it in a budget surplus, there is a deflationary effect on consumption. However, it is doubtful that such was the case in Britain, since the preparation of the British government's budget is based on the real expenditures deemed necessary.

The effect of rising price levels on investment is a complex relationship. The direct impact of devaluation can be only roughly estimated on consumption alone.

It is possible that a large increase in consumers' goods prices would have produced a measurable reduction in real consumption expenditure. However, the actual rise of the retail price index after devaluation was quite small. Price controls, wage policy, and long-term contracts setting import prices for many commodities all served to dampen the effects of devaluation on domestic price levels.

The retail price index rose from 115.3 in 1967 to 120.7 in 1968 (about 4.6 percent) from 120.7 in 1968 to 127 in 1969 (about 5.3 percent).

TABLE 19

THE CHANGES OF PRICES OF SOME SELECTED COMMODITIES
(Index number, 1963 = 100)

	Plant vehicles	Building	Retail prices	Food	Drink, tobacco	Housing	Durable goods	Total final prices
1967 Q_1	111.1	109,8	114.5	111.4	121.8	123.2	105.0	113.3
Q_2	109.9	112.0	115.5	112.3	122.4	123.2	105.5	113.9
Q_3	110.0	112.0	114.9	112.1	122.3	125.0	105.9	115.3
Q_4	111.0	113.6	116.3	112.3	122.3	126.2	107.7	116.0
Year	110.5	112.0	115.3	111.8	120.8	125.2	106.1	114.7
1968 Q_1	112.2	114.1	117.9	113.3	121.4	127.9	108.9	119.6
Q_2	115.0	114.9	120.7	114.3	126.3	128.7	109.4	120.3
Q_3	116.3	115.1	121.3	115.7	126.1	130.5	109.5	121.4
Q_4	116.1	115.2	122.8	117.2	127.7	132.3	110.4	120.2
Year	114.8	114.8	120.7	115.2	125.7	130.7	112.8	120.5
1969 Q_1	116.8	118.0	125.2	118.5	133.9	132.9	111.7	124.2
Q_2	117.8	119.5	127.2	121.3	134.1	133.5	112.7	125.4
Q_3	119.2	121.9	127.4	121.8	134.3	138.3	114.3	126.9
Q_4	121.8	124.1	129.1	123.3	137.9	141.1	116.9	128.0
Year			127.2	121.5	135.2	136.9	115.4	126.2

Source: National Institute of Economic and Social Research, National Institute Economic Review, No. 52 (May, 1970), Statistical Appendix, Table 7.

Since there is no way to measure precisely the impact on absorption of such a small rise in prices, on the basis of the extent of the rise of price level after devaluation we can only roughly conclude that the direct effects of devaluation on absorption might be minimal.

Income Expansion and Absorption

An improvement in the trade balance without a reduction in absorption is possible only to the extent that income is increased without parallel increase in absorption. The proportion of the increase in national income which is spent, other things being equal, will depend on the rise in consumption, which in turn depends on the increase in disposable income and on marginal propensity to consume or to save.

As Table 20 shows, ₤1,743 million of the ₤4,250 million increase in gross national expenditure, or 68 percent, went to disposable income in the 1967-68 period. The increase in personal savings in 1968 over 1967 was insignificant in comparison to the increase in disposable income. Thus, the shiphoning-off of the increase in gross national product into taxes and gross business savings was not large enough to make significant contributions to restraining the rise of consumption.

When we look at the 1967II-69I period, the picture, however, is quite different. The increase in personal savings in the first year of 1969 over the second half of 1967 was tremendous in comparison to the increase of disposable income. The drain-off of the increase in gross national product into taxes and savings did make a

TABLE 20

UNITED KINGDOM NATIONAL INCOME COMPONENTS
1967-68, 1967II-69I
(Pound billion)

	1967	1968	Increase	1967II	1969I	Increase
Gross national expenditure	47,174	51,379	4,250	23,806	26,329	3,523
Disposable income	27,522	29,265	1,743	14,174	15,064	890
Consumer expenditure	25,339	27,605	1,726	13,192	13,930	538
Personal savings	2,183	2,200	17	982	1,325	382

Source: Calculated from: Central Statistical Office, Economic Trend, No. 192 (October, 1969), Appendix Table.

great contribution to checking the rise of consumption. This implies that the improvement in the trade balance during the 1967II-69I period was, to some extent, due to lower marginal propensity to consume or higher marginal propensity to save.

The Terms-of-Trade Cost of Devaluation

Having examined the gains of devaluation in the previous sections, we attempt to evaluate the cost of devaluation in this section.

The price indices in Table 21 show that prices of both imports and exports rose between 1967 and 1969 and also that import prices rose more rapidly than export prices. This second

TABLE 21

IMPORT AND EXPORT PRICES, AND TERMS OF TRADE
OF THE UNITED KINGDOM, 1967-69
(Index number, 1967 = 100)

Year	Import Price	Export Price	Terms of Trade (P_x/P_m)
1967	100.0	100.0	100.0
1968	110.4	107.2	97.1
1969	115.0	110.9	96.1

Source: Calculated from: National Institute of Economic and Social Research, National Institute Economic Review, No. 52 (May, 1970), Statistical Appendix.

aspect, the changing relation between import and export prices, is described as the change in the terms of trade, as shown in Table 21. Import prices rising relative to export prices add to a country's balance of payments problem since imports become more costly in terms of exports. Such a relative price movement is called an adverse movement in terms of trade. Conversely, a fall in import prices relative to export prices is a favorable movement in the terms of trade.

Between 1967 and 1968, as has been shown in Table 21, both import and export prices rose. The official price index numbers (1967 = 100) for 1968 were: exports, 107.2; imports, 110.4, given the terms-of-trade index of 97.1, which shows a deterioration of 3 percent on the average of the two years. Annual values of imports and exports in 1967, 1968 and 1969 were as follows:

TABLE 22

IMPORTS AND EXPORTS ON BALANCE OF TRADE DEFINITIONS OF THE UNITED KINGDOM
(Pound Million)

Years	Imports	Exports	Visible Balance of Trade
1967	6,436	5,228	-1,208
1968	7,896	6,432	-1,464
1969	8,328	7,336	- 992

Source: National Institute of Economics and Social Research, National Institute Economic Review, No. 52 (May, 1970), Statistical Appendix.

During the interval between the two years, the visible balance of trade declined by £256 million. The value of imports in 1968 would have been £7,656.4 million, obtained from the recorded value multiplied by the terms of trade, and the visible deficit in 1968 would have been £1,124.4 million instead of £1,464 million. Thus the effect of the greater increase in import prices was to increase the deficit on the visible balance by £339,6 million, so that the increasing deficit on the visible balance between 1967 and 1968 could mainly be attributed to the adverse movement in the terms of trade. By the same token, the effect of the increase in import prices was to increase the deficit on the visible balance of trade by £331.1 million, so that the deficit on the visible balance should be £656.9 million instead of £990 million in 1969.

The results obtained by these calculations are inevitably only rough measurements. The measurements, therefore, are intended

only to bring out the quantitative importance of relative price changes. What we have tried to do is to give some idea of the orders of magnitude involved.

The Effects of Devaluation on the Visible and Invisible Trade of Balance

In the preceding sections, we examined the effects of devaluation on exports and imports of goods and services taken together. In this section, we attempt to investigate the effects of devaluation on goods and services taken separately.

General Assessments

The balance of trade since devaluation has been most disapppointing and, in spite of favorable circumstances, it has fallen short of official expectations of an improvement of £500 million per year. In the invisible account, however, there has been an increase in net income from investment, and the travel balance also appears to have benefited substantially. In the visible trade account, the effects of devaluation so far have not been very favorable in the 1967-68 period. Despite the favorable effect of the dock strike, there was deterioration in the visible trade balance by £150 million in 1968, as shown in Table 23, compared with 1967. At £800 million, the 1968 deficit was the largest in the history of the U. K.

Various explanations can be given for this disturbing situation. There is some evidence, for example, that the underlying British competitiveness was deteriorating sharply before devaluation, and on the import side there were certainly some special

factors operating in favor of raising the level of imports.

Another possibility is that, in the short run at any rate, the volume of United Kingdom trade is much less responsive to price change than had commonly been supposed.

It would certainly be premature as yet to pass a final judgment on the effectiveness of devaluation. It may be that much of its effects have been merely delayed. It is, however, clear that the present competitive position of the United Kingdom is not as strong as had been hoped for on the basis of its trade showing in 1968.

However, if one looks at the 1967 figure, the picture appears much more optimistic. As Table 24 shows, the current balance for 1969 had a surplus as high as £275 million, which was an improvement of nearly £650 million from 1968. This can be interpreted as evidence of the impact of devaluation.

Visible Trade Balance

Without the delays caused by the dock strike in the fall of 1967, the deterioration in the balance of visible trade in 1968 would probably have been about £375 million, according to the estimate of the National Institute of Economic and Social Research.[3] Of this £375 million, £300 million is attributable to a decline of some 3 percent in the terms of trade and a rise of about 11.5 percent in import prices partly balanced by the rise of 8 percent in export prices.[4]

---

[3] National Institute of Economic and Social Research, National Institute Economic Review, No. 47 (February, 1969), p.24.

[4] Ibid.

In 1969, it was the improvement in the balance of visible trade which accounted for the largest part of the turn around in the current balance of trade. Of the total improvement in the visible balance of nearly £480 million, as shown in Table 24, some was due to a drop in payments for military aircraft and missiles imported from the United States; but the rise in the value of other imports was offset by an increase in the value of exports.

Three quarters of the increase in the value of imports of goods in 1969 was due to the rise in import prices.[5] The total volume of imports remained unchanged during the year and (excluding United States military aircraft) increased by more than .5 percent a year. As for exports, the reverse was true, with volumes up by more than twice the unit value. The fact that the increase in the value of imports was mostly due to the rise in import prices might help explain away the puzzle that imports that had risen continually rose after devaluation.

Invisible Trade Balance

The surplus on invisible transactions was about £150 million higher in 1968 than in 1967, as shown in Table 24. Of this, some was attributable to non-payment of the annual interest on the North American loans, which is subject to deferment provisions. Together with the favorable effects of devaluation on earnings in sterling terms, this helped net investment income to recover considerably in spite of the big service charges which resulted from the continuing high bank rates and outstanding international assistance.

---

[5]National Institute of Economic and Social Research, National Institute Economic Review, No. 51 (February, 1970), p. 14.

TABLE 23

UNITED KINGDOM BALANCE OF PAYMENTS, 1967-68
(£ million)

	1967	1968				
	Year	Q_1	Q_2	Q_3	Q_4	Year
Current transaction (Seasonally adjusted)						
Imports	5,660	1,689	1,695	1,751	1,760	6,895
Exports	5,023	1,488	1,435	1,565	1,607	6,095
Visible balance	-637	-201	-200	-185	-153	-800
Shipping	+ 1	+ 12	+ 12	+ 7	+ 9	+ 40
Civil aviation	+ 29	+ 10	+ 2	+ 5	+ 8	+ 25
Travel	- 39	- 4	- 1	+ 3	+ 7	+ 5
Other private services	+347	+ 92	+ 97	+101	+100	+390
Government						
Services	-269	- 70	- 67	- 69	- 96	-275
Transfers	-184	- 48	- 43	- 39	- 45	-175
Private transfers	- 62	- 25	- 18	- 16	- 16	- 75
Property income	+410	+ 83	+129	+118	+115	+445
Invisible balance	+233	+ 50	+111	+110	+109	+380
Current balance	-404	-151	-149	- 76	- 44	-420
Long-term capital (Seasonally adjusted)						
Official	- 57	- 23	+ 31	+19	- 17	+ 10
Private	- 29	-110	- 40	+173	- 48	- 25
Balance	- 86	-133	- 9	+192	- 65	- 15
Normal balancing item (Seasonally adjusted)	+ 60	+ 15	+ 15	+ 15	+ 15	+ 60
Basic balance	-430	-269	-143	+131	- 94	-375
Less seasonal adjustments	--	+ 37	+ 26	- 47	- 16	--
Basic balance (actual)	-430	-232	-117	+ 84	-110	-375

Source: National Institute of Economic and Social Research, National Institute Economic Review, No. 47 (February, 1969), p. 23.

TABLE 24

UNITED KINGDOM BALANCE OF PAYMENTS, 1968-69
(£ million)

	1968	1969				
	Year	Q_1	Q_2	Q_3	Q_4	Year
Current transactions (Seasonally adjusted)						
Exports	6,233	1,779	1,803	1,796	1,832	7,010
Imports	6,910	1,645	1,725	1,808	1,832	7,210
Visible balance	-677	-134	- 78	+ 12	--	-200
Shipping	+ 61	+ 8	+ 5	+ 3	+ 4	+ 20
Civil aviation	+ 20	+ 14	+ 9	+ 10	+ 12	+ 45
Travel	+ 11	+ 8	+ 11	+ 10	+ 11	+ 40
Other non-government services	+441	+108	+121	+127	+124	+480
Government Services	-284	- 71	- 69	- 71	- 74	-285
Transfers	-178	- 47	- 42	- 45	- 46	-180
Other transfers	- 78	- 20	- 22	- 23	- 25	- 90
Property income Public	-235	- 76	- 93	- 83	- 88	-340
Private	+654	+239	+226	+205	+215	+885
Invisible balance	-412	+163	+146	+133	+133	+575
Current balance	-265	+ 29	+ 68	+145	+133	+375
Long-term capital (Seasonally adjusted)						
Government	+ 21	- 44	- 27	+ 12	- 41	-100
Other	-163	- 43	+ 34	+ 61		
Balance	-142	- 87	+ 7	+ 73		
Balancing item (Seasonally adjusted)	-130	+137	- 28	- 74		
Basic balance (Seasonally adjusted)	-537	+ 79	+ 47	+144		
Less seasonal adjustments	--	+ 12	+ 70	+ 11		
Basic balance (unadjusted)	-537	+ 91	+117	+155	-93	--

Source: National Institute of Economic and Social Research, National Institute Economic Review, No. 51 (February, 1970), p. 15.

In addition, there must have been improvement in the shipping and the travel accounts, resulting probably in a substantial surplus in these accounts. Since the restriction on travel expenditure remained in force through the year, the effects of devaluation on sterling unit costs, particularly fares, helped to bring about a 14 percent increase in the number of incoming tourists.[6]

In 1969 the invisible trade surplus improved by £160 million, as shown in Table 24, despite the resumption of full service of the North American loans. There was a particularly large surplus in the first quarter of the year which was not afterwards maintained; it appears to have been due to erratically large figures relating to oil companies' transactions.

The chief factor in the improvement in the invisible balance of trade was a big rise in net investment income. As a result mainly of large-scale official borrowing from overseas in 1968 and the resumption of the 1945 loans from the United States and Canada, net payments by the public sector were about £100 million higher. But the private sector's net earnings increased much more. There was a big rise in income from direct investment overseas, particularly in oil, where the return on foreign private investment in this country was relatively low.

The balance on services has improved by about £50 million in the 1968-69 period. Miscellaneous private services were responsible for practically all the net gain in the first quarter. With restrictions still in effect on tourist expenditure in the

---

[6] Ibid.

non-sterling area and receipts still apparently stimulated by the effects of devaluation, net travel earnings rose, and the upward trend in net earnings from civil aviation was resumed after a check attributable to the strike of BOAC pilots in 1968. Despite the improvement in the balance of trade, net shipping earnings declined, apparently because of the fall in tanker rates, while the deficit on government transfer payments increased, particularly the contributions to international organizations and private unilateral transfer.

Summary

The overall current account of the United Kingdom balance of payments between 1967 and 1968 improved to a minor extent. However, the deterioration in the visible balance of trade was offset to a certain extent by a substantial increase in the invisible balance. The gain in invisible trade was mainly in the miscellaneous categories. Though the components of this group are not itemized, one can conclude that increased net earnings on oil transactions--a development not attributable to devaluation--was responsible for most of the gain.

The improvements in the trade balance were minimal (since prices rose very little) after devaluation was favorably implemented by internal financial devaluation on absorption (which could have been produced by a rise in the price level).

The improvement in the trade balance which occurred in 1968 and 1969 was accomplished by (a) increased output not absorbed and (b) disinvestment in inventories. This strongly supports the proposition of the income-absorption approach.

A deterioration in the terms of trade was, of course, a natural consequence of devaluation. But the 3 percent deterioration in terms of trade in the 1967-68 period was not large. It had, however, been supposed that the deterioration on this account would be more than balanced by a higher rate of growth in the volume of exports and a lower rate of growth in the volume of imports. But in practice the volume of exports appears at best to have risen only slightly in relation to world trade, and the volume of imports rose more in relation to United Kingdom output than might reasonably have been expected in the light of past propensities. The terms of trade were more favorable in the early part of 1969 than they had been in 1968; but thereafter they worsened slightly from quarter to quarter and for the year as a whole showed a marginal deterioration.

The improvement in the trade balance was made possible, to a great extent, by increased output which was not absorbed. The effectiveness of the exchange rate adjustment was undoubtedly helped by the effort of government to provide more favorable accompanying conditions.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The most immediate economic development leading to devaluation in 1967 were the sharp deterioration of Britain's trade balance through November of that year and the great loss of competitive strength in terms of the share of trade in the world market (a 62 percent drop from 18.1 percent of 1958 to 11.9 percent of 1967). In addition, it was thought--there a notion, held and openly expressed by influential circles--that Britain's balance-of-payments problem was due to the weakness of her currency.

The export performance of the United Kingdom has improved to a certain extent since devaluation. Our study finds that, in the first year, the contribution of devaluation was very slight. The growth in the imports was highly disappointing, for imports continued to rise and appeared very strong in the first year after devaluation. However, the loss due to the unfavorable visible trade had been offset to a great extent by a clear gain in invisible trade caused by an increase in net income from investment and an improvement in the travel balance.

The explanation for the disappointing export situation is that the underlying ability to export was deteriorating rather

sharply just before devaluation. The more serious this deterioration, the larger the corresponding devaluation effects would have to be to offset it.

Furthermore, the continuous rise of imports after devaluation was also due to the fact that relative price variable was not a significant determinant of imports in the case of Britain and that the elasticity of imports with respect to price was fairly low. Further analysis suggests that abnormal increases in silver and diamond imports, the effect of the 1967 dock strike, the increase in the propensity to import, and special factors all were the contributory factors. The basic factors show that the level of imports rose between 1967 and 1968 by substantially more than would have been expected on the basis of past regression relationships. Thus the devaluation response was overwhelmed by a rise in the propensity to import and by special factors.

The export picture in 1969 was rather different. Exports continued to rise in 1969, and there was very noticeable slackening in the rate of growth of the volume of imports in 1969. The main reason for the slower growth of imports was due to the slower growth of final demand not devaluation.

The invisible trade surplus continued to rise through 1969 primarily as a result of large increases in direct investment overseas, particularly in oil--a development not attributable to devaluation.

Our study finds, however, that the share of trade of the United Kingdom resumed a slight downward trend in 1969 after a period

of relative stability in 1968. Nevertheless, the total fall in share of trade, year on year, was the smallest since 1961. The serious deterioration of export before devaluation could have led to even slower export growth if devaluation had not been adopted. This implies that devaluation and price advantage have played some role in offsetting the deterioration.

The effectiveness of devaluation was supported by other policies aimed at curtailing absorption. The improvement in the United Kingdom balance of trade in 1968, according to our study, was made possible mainly by the increased output and export plus a small drawing-down of inventories, but in 1969 it was made totally by the increased export and the increased output not absorbed.

Our study has found that the main determinants of exports of the United Kingdom are the income of the other countries, and relative prices. Our findings as to the importance of lagged effects of relative prices on the level of exports shed some light on the current literature of the international price adjustment mechanism. It indicates that if lagged effects are considered, the picture of past empirical results could be completely different. Our findings demonstrate that the empirical evidence supports the theoretical arguments of both the price-elasticities and income-absorption approaches.

With regard to imports, our study finds that it is income or consumption and changes of stockbuilding that primarily determine the level of imports. As to the lack of importance of relative prices, our finding is not inconsistent with those obtained by other investigators.

In regard to the impact of devaluation on prices and wages, it appeared rather moderate. The small increase in export prices in terms of local currency meant that the reduction in the real value of sterling balance held abroad was materialized only to a minor extent.

The cost of devaluation to the United Kingdom due to the unfavorable terms of trade, however, was high. The terms of trade were more favorable in the early part of 1969 than they had been in 1968; but thereafter they worsened slightly from quarter to quarter and the year as a whole showed a marginal deterioration.

The unfavorable findings about the short-run effects of devaluation may appear to support the more pessimistic views of exchange-rate adjustment as an equilibrating device.

The contribution of devaluation toward alleviating Britain's balance of payments problem in the two-year period was small, other than its effect in reversing the speculation against sterling. It seems that the exchange rate adjustment in its two-year period cannot be deemed a success. Though the effects were small, we do not know what the development of Britain's international transactions would have been if she had not devalued. In the negative sense of preventing deterioration of the British international balance, the devaluation of 1967 might have made some contribution.

APPENDICES

APPENDIX I

DATA USED IN EXPORT REGRESSION FUNCTION
(1958 = 100)

Year		X	IP	P_1	P_2	P_1/P_2
1960	I	916	115	103	103	1.000
	II	891	118	103	103	1.000
	III	881	113	103	103	1.000
	IV	901	118	103	103	1.000
1961	I	895	116	103	101	1.020
	II	896	119	104	103	1.010
	III	911	122	104	103	1.010
	IV	896	125	104	103	1.010
1962	I	908	126	105	103	1.019
	II	941	128	105	103	1.019
	III	941	129	105	103	1.019
	IV	923	130	105	103	1.019
1963	I	927	130	106	103	1.029
	II	959	134	106	102	1.039
	III	988	136	107	102	1.049
	IV	991	139	108	103	1.049
1964	I	1,038	142	108	104	1.038
	II	1,021	146	109	104	1.048
	III	1,008	148	109	105	1.038
	IV	1,046	150	110	106	1.038
1965	I	1,063	155	111	106	1.047
	II	1,049	155	112	106	1.057
	III	1,088	159	113	107	1.056
	IV	1,118	161	114	107	1.065
1966	I	1,113	166	115	108	1.065
	II	1,092	168	117	108	1.083
	III	1,090	170	118	109	1.083
	IV	1,146	172	118	108	1.093
1967	I	1,176	169	120	108	1.111
	II	1,117	169	120	108	1.111
	III	1,087	172	122	108	1.130
	IV	1,000	176	114	107	0.986
1968	I	1,221	178	109	108	1.103
	II	1,223	179	112	109	1.103
	III	1,336	182	112	109	1.103
	IV	1,365	186	113	110	1.104

APPENDIX I (CONTINUED)

Year		X	IP	P_1	P_2	P_1/P_2
1969	I	1,342	188	114	112	1.022
	II	1,413	197	114	112	1.022
	III	1,467	198	114	113	1.023
	IV	1,487	200	114	114	1.000

Sources: National Institute of Economic and Social Research, National Institute Economic Review: 1962, 1963, 1964 1965, 1966, 1967, 1969, and 1970, Vils. 21, 26, 30, 34, 38, 42, 50, 54; and United Nations, Monthly Bulletin of Statistics: 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, Vols. 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, and 26.

APPENDIX II

DATA USED IN IMPORT REGRESSION FUNCTIONS
(1958 = 100)

Year		M	GDP	C	S	P_1	P_2	P_1/P_2
1960	I	1,123	5,439	3,911	70	100	100	1.000
	II	1,141	5,519	4,177	154	100	100	1.000
	III	1,130	5,429	4,139	140	99	99	1.000
	IV	1,115	5,319	4,307	228	100	100	1.000
1961	I	1,190	5,524	4,190	120	104	97	1.072
	II	1,096	5,564	4,198	104	104	99	1.041
	III	1,107	5,599	4,226	36	106	97	1.093
	IV	1,119	5,547	4,202	37	106	97	1.094
1962	I	1,129	5,472	4,204	-4	107	97	1.103
	II	1,165	5,611	4,255	48	108	96	1.125
	III	1,203	5,560	4,274	50	109	96	1.135
	IV	1,057	5,531	4,318	2	109	97	1.124
1963	I	1,136	5,711	4,360	-17	109	99	1.101
	II	1,185	5,960	4,468	70	109	100	1.090
	III	1,236	5,939	4,536	3	111	100	1.110
	IV	1,234	6,146	4,598	121	111	102	1.088
1964	I	1,353	6,165	4,726	87	111	104	1.067
	II	1,390	6,237	4,690	164	112	103	1.087
	III	1,387	6,240	4,730	123	114	103	1.107
	IV	1,393	6,340	4,797	106	114	103	1.107
1965	I	1,321	6,449	4,869	68	115	104	1.106
	II	1,402	6,414	4,744	95	117	104	1.125
	III	1,409	6,476	4,819	113	119	103	1.155
	IV	1,428	6,555	4,852	89	119	104	1.144
1966	I	1,447	6,578	4,988	77	119	105	1.133
	II	1,417	6,256	4,974	50	121	107	1.131
	III	1,424	6,566	4,879	96	123	106	1.160
	IV	1,328	6,629	4,872	-23	124	106	1.170
1967	I	1.486	6,704	4,967	39	121	105	1.152
	II	1,500	6,670	4,963	48	121	104	1.163
	III	1,484	6,700	5,083	-32	122	105	1.162
	IV	1,547	6,715	5,085	72	122	110	1.109
1968	I	1,643	6,998	5,196	-69	128	117	1.094
	II	1,624	6,885	5,005	57	132	117	1.128
	III	1,645	7,021	5,008	37	134	118	1.135
	IV	1,655	7,186	5,097	122	134	119	1.126

APPENDIX II (CONTINUED)

Year		M	GDP	C	S	P_1	P_2	P_1/P_2
1969	I	1,650	6,895	5,037	110	138	120	1.150
	II	1,682	6,945	5,062	50	140	121	1.160
	III	1,659	7,040	5,098	0	140	123	1.140
	IV	1,663	7,284	5,098	161	142	125	1.140

Sources: Same as Appendix I

BIBLIOGRAPHY

Public Documents

Great Britain, Central Statistical Office. Annual Abstract of Statistics: 1967, 1968, and 1969. Her Majesty's Stationery Office, 1969.

Great Britain, Central Statistical Office. Economic Trends No. 192 (October, 1969). Her Majesty's Stationery Office, 1969.

Great Britain, Central Statistical Office. National Income and Expenditure: 1967, 1968, and 1969. Her Majesty's Stationery Office, 1969.

Great Britain, Central Statistical Office. United Kingdom Balance of Payments: 1967, 1968, and 1969. Her Majesty's Stationery Office, 1969.

International Monetary Fund. International Financial Statistics, Vol. 14: 23 (January, 1961-May, 1970).

United Nations, Department of Economic Affairs. Economic Survey of Europe in 1967. Washington: By the Research and Planning Division, Economic Commission for Europe, 1968.

United Nations, Department of Economic Affairs. Monthly Bulletin of Statistics, Vol. 15: 25 (January, 1961-May, 1970).

Organization for Economic Cooperation and Development, Economic Outlook, No. 1: 6 (January, 1967-December, 1970).

Organization for Economic Cooperation and Development, Main Economic Indicators, (January, 1966-May, 1970).

Organization for Economic Cooperation and Development. Over-All Trade by Countries: 1967, 1968, and 1969. Paris: OECD, 1967, 1968, and 1969.

Organization for Economic Cooperation and Development. Statistical Bulletin,Series B, Commodity Trade: 1966, 1968, and 1969. Paris: OECD, 1967, 1968, and 1969.

Books

Caves, Richard E., and Associates. Britain's Economic Prospect. Washington, D. C.: Brookings Institution, 1968.

Clement, M. O.; Pfister, R. L.; and Rothwell, K. J. Theoretical Issues in International Economics. Boston: Houghton Mifflin Company, Inc., 1967.

Haberler, Gottfried. A Survey of International Trade. Princeton: Princeton University Press, 1961.

Hawtry, R. G. The Balance of Payments and the Standard of Living. London: Royal Institute of International Affairs, 1950.

Kemp, Murray. The Pure Theory of International Trade. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1964.

Meade, J. E. The Theory of International Economic Policy, Vol. 1 The Balance of Payments. London: Oxford University Press, 1951.

Mundell, Robert A. International Economics. New York: The MacMillion Company, Inc., 1968.

Robinson, Joan. Essays in the Theory of Employment. New York: The MacMillion Company, Inc., 1927.

Scott, Maurico FG. A Study of the United Kingdom Imports. Cambridge, England: Cambridge University Press, 1963.

Vanek, Jaroslav. International Trade: Theory and Economic Policy. Homewood, Illinois: R. D. Iwin, Inc., 1962.

Wells, Sindney. British Export Performance: A Comparative Study. Cambridge: Cambridge University Press, 1964.

Articles and Periodicals

Alexander, S. S. "Devaluation versus Import Restriction as an Instrument for Improving Foreign Trade Balance," International Monetary Fund Staff Papers, Vol. 1 (April, 1951).

Alexander, S. S. "Effects of Devaluation on a Trade Balance," International Monetary Fund Staff Papers, Vol. 2 (April, 1952).

Alexander, S. S. "Effects of Devaluation: A Simplified Synthesis of Elasticities and Absorption Approaches," American Economic Review, Vol. 45 (June, 1955).

Allen, R. G. D. "Price and Devaluation," London-Cambridge Economic Service Bulletin, Vol. 4 (November, 1949).

Ball, R. J.; Eaton, J. R.; and Steuer, M. D. "The Relationship Between U. K. Export Performance in Manufactures and Internal Pressure of Demand," Economic Journal, Vol. 76 (September, 1966).

Bernstein, E. M. "Strategic Factors in the Balance of Payments," International Monetary Fund Staff Papers, Vol. 5 (August, 1956).

Brems, Hans. "Devaluation and Monopolistic Competition," Economic Journal, Vol. 63 (June, 1953).

Brems, Hans. "Devaluation, a Marriage of the Elasticity and Absorption Approaches," Economic Journal, Vol. 67 (March, 1957).

Caves, Richard. "Flexible Exchange Rates," American Economic Review, Vol. 43 (May, 1963).

Chang, T. C. "A Statistical Note on the World Demand for Exports," Review of Economics and Statistics, Vol. 30 (May, 1948).

Chang, T. C. and Polak, J. J. "Effect of Exchange Depreciation on a Country's Export Price Level," International Monetary Fund Staff Papers, Vol. 1 (February, 1950).

Cheng, H. S. "A Collection of Elasticities and Propensities in International Trade," International Monetary Fund Staff Papers, Vol. 7 (April, 1959).

Day, A. C. L. "Devaluation and the Balance of Payments," Economica, Vol. 17 (November, 1950).

Day, A. C. L. "Relative Prices, Expenditure and the Trade Balance," Economica, Vol. 21 (February, 1954).

De Vries, B. A. "Immediate Effects of Devaluation on Prices of Raw Materials," International Monetary Fund Staff Papers, Vol. 1 (September, 1950).

Fleming, Marcus. "Exchange Depreciation, Financial Policy and the Domestic Price Level," International Monetary Fund Staff Papers. Vol. 6 (April, 1958).

Gehrels, Franz. "Effects of Price on Europe's Exports to United States," Kyklos, Vol. 14 Fasc. 1 (1961)

Gray, H. P. "Imperfect Markets and the Effectiveness of Devaluation," Kyklos, Vol. 18, Fasc. 4 (1965).

Haberler, Gottfried. "The Relevance of the Classical Theory under Modern Conditions," American Economic Review, Vol. 44 (May, 1954).

Hall, Margaret. "The United Kingdom after Devaluation," American Economic Review, Vol. 40 (December, 1950).

Harberger, A. G. "Currency Depreciation, Income and the Balance of Trade," Journal of Political Economy, Vol. 58 (February, 1950).

Harberger, A. C. "Some Evidence on the International Price Mechanism," Journal of Political Economy, Vol. 65 (December, 1957).

Harrod, Roy. "Devaluation and Monopolistic Competition," Economic Journal, Vol. 63 (June, 1953).

Hinshaw, Randall. "The Effect of Devaluation on the Price Level: Further Comment," Quarterly Journal of Economics Vol. 72 (November, 1951).

Hirshman, A. O. "Devaluation and the Trade Balance: A Note Review of Economics and Statistics, Vol. 31 (February, 1949).

Holmans, A. E. "Invisible Earnings," Scottish Journal of Political Economy, Vol. 13 (February, 1966).

Johnson, H. G. "Industrial Productivity, Income-Price Trends and the Trade Balance," Economic Journal, Vol. 64 (September, 1954).

Johnson, H. G. The Balance of Payments," Pakistan Economic Journal, Vol. 8 (June, 1958).

Jhnston J. and Henderson, Margaret. "Assessing the Effect of Import Surcharge," Manchester School of Economic and Social Studies, Vol. 35 (May, 1967).

Junz, H. B. and Rhomberg, R. R. "Price and Export Performance of Industrial Countries, 1953-63," International Montary Fund Staff Papers, Vol. 12 (July, 1965).

Kennedy, Charles. "Devaluation and the Terms of Trade," Review of Economic Studies, Vol. 18 (1959-60).

Liu, T. C. "The Elasticity of U. S. Import Demand: A Theoretical and Empirical Reappraisal," International Monetary Fund Staff Papers, Vol. 5 (February, 1954).

Lorette, Boissonneault, and Rhomberg, Rudolf. "Effects of Income and Price Changes on the U. S. Balance of Payments," International Monetary Fund Staff Papers, Vol. 11 (March, 1964).

MachDougal, G. D. A. "British and American Exports: A Study Suggested by the Theory of Comparative Costs," Economic Journal, Part I, Vol. 60 (December, 1951); Part II, Vol. 62 (September, 1952).

Machlup, Fritz. "Relative Prices, Aggregate Spending and Devaluation Analysis," American Economic Review, Vol. 45 (June, 1955).

Machlup, Fritz. "The Terms of Trade Effect of Devaluation upon Real Income and the Balance of Trade," Kyklos, Vol. 9 (1956).

Major, R. L. "The Competitiveness of British Exports since Devaluation," National Institute Economic Review, No. 48 (May, 1969).

Metzler, Lloyd and Laursen, Suend. "Flexible Exchange Rates and the Theory of Employment," Review of Economics and Statistics, Vol. 32 (November, 1950).

Michaely, Michael. "Devaluation, Cost Inflation and the Supply of Exports,: Economia Internazionale, Vol. 9 (February, 1956).

Michaely, Michael. "Relative Prices and Income Absorption Approaches to Devaluation: A Partial Reconciliation," American Economic Review, Vol. 50 (May, 1960).

Morgan, D. J. and Corlett, W. J. "The Influence of Price in International Trade: A Study in Method," Journal of the Royal Statistical Society, Series A, Part III, Vol. 114 (1951).

Mundell, R. A. "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability," International Monetary Fund Staff Papers, Vol. 9 (March, 1962).

Orcutt, G. H. "Measurement of Price Elasticities in International Trade," Review of Economics and Statistics, Vol. 32 (May, 1950).

Polak, J. J. "Note on the Measurement of Elasticity of Substitution in International Trade," Review of Economics and Statistics, Vol. 32 (February, 1950).

Renton, G. A. "Forecasting British Exports of Manufactures to Industrial Countries," National Institute Economic Review, Vol. 42 (November, 1967).

Savosnick, K. M. "National Income, Exchange Rates and the Balance of Trade," Economica, Vol. 17 (May, 1950).

Seton, Francis. "Productivity, Trade Balance and International Structures," Economic Journal, Vol. 66 (December, 1956).

Smith, W. L. "Effects of Exchange Adjustments on the Standard of Living," American Economic Review, Vol. 44 (December, 1954).

Smithies, Arthur. "Devaluation with Imperfect Markets and and Economic Controls," Review of Economics and Statistics, Vol. 32 (February, 1950).

Smyth, D. J. "Stop-Go and U. K. Exports of Manufactures,: Oxford University Institute of Economics and Statistics, Vol 30 (February, 1968).

Sohmen, Egan. "The Effect of Devaluation on the Price Level," Quarterly Journal of Economics , Vol. 79 (May, 1958).

Streeten, Paul. "Elasticities Optimism and Pessimism in International Trade," Economia Internazionale, Vol. 7 (February, 1954).

Tsiang, S. C. "The Role of Money in Trade Balance Stability: Synthesis of the Elasticities and Absorption Approaches," American Economic Review, Vol. 51 (December, 1961).

Unpublished Materials

Sirkin, Gerald. "The 1949 Devaluation of the Pound Sterling." Unpublished Ph. D. Dissertation, Columbia University, 1956.

Kostsonis, D. S. "The Devaluation of the Greek Drachma in 1953." Unpublished Ph. D. Dissertation, Columbia University, 1964.